

DO STOCKHOLDERS BENEFIT FROM STOCK REPURCHASES?

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ABSTRACT

Over the past few years, many firms have announced significant numbers of stock repurchases. Using data for 1996 – 2002, we record 2-day announcement returns of 2.12% and 5-day returns of 2.81%, both significant at the 1% level. We find that the abnormal returns are negatively related to the size of the firm, but do not appear to be related to the size of the announced repurchase percentage or the actual amount repurchased during the first six months. We believe that the announcement returns indicate a strong signaling effect, particularly for small size firms. **JEL Classification:** G14

INTRODUCTION

Stock repurchase refers to the reversal of equity offerings. The issue of stock repurchases has been the focus of much theoretical and practical research and is often touted as one of the classic methods to raise a firm's stock price. By reducing the number of shares outstanding, the interaction of demand and supply is expected to cause the stock price to float upward. However, many stock repurchases don't shrink the total equity pool of the firm since repurchases are often used to offset employee stock options and prevent shareholder dilution. We examine market reaction to a total of 743 repurchase announcements from 1996 to 2002 and document a statistically significant two-day cumulative abnormal return (-1, 0) of 2.12%. We also find that the announcement returns are inversely related to the size of the firm but not related to the percentage repurchase amount or to the actual amount repurchased by the sixth month.

RELATED RESEARCH

Some of the earliest empirical research concentrates on the reason for and the effects of stock repurchase announcements and the abnormal returns associated with such announcements. Lakonishok and Vermaelen (1990) examine stock repurchase data for repurchase tender offers that occurred between 1962 and 1986 and presents evidence of abnormal returns of more than 9% over a period of less than one week. Vermaelen (1981) and Ikenberry, Lakonishok and Vermaelen (1995) find abnormal returns of approximately 3% over a two-day announcement period. In addition, Ikenberry, Lakonishok and Vermaelen (1995) hypothesize that stock repurchases primarily serve as a signaling mechanism and thereby provides new information. Comment and Jarrell (1991) investigate the signaling hypothesis as it relates to stock repurchase announcements. They examine the three main methods of

repurchasing stock – tender offers, Dutch auction, and open market repurchases and conclude that fixed-price tender offers generally signal the most information to investors and open-market repurchase the least. The signaling hypothesis would also imply that firms time repurchases to gain maximum benefits from repurchasing when management perceives that the stock is most undervalued. Comment and Jarrell (1991) also find evidence that firms tend to announce open-market repurchase plans following a decline in their share price, when their stock is more likely to be undervalued.

Stephens and Weisbach (1998) examine 450 repurchase programs between 1981 and 1990 and find that share repurchases are negatively related to prior stock price performance, suggesting that firms increase their purchasing depending on the degree of perceived undervaluation. Persons (1997) presents an asymmetric information model of share repurchases and finds that managers in the model repurchase shares at a premium above the post-repurchase share value – transferring wealth from shareholders who do not tender to those who do – in order to signal that the firm is undervalued. The model also demonstrates that share repurchases are more effective, i.e. less costly to the signaler, than many other possible signals (such as dividends) as repurchases dominate these as a signaling device in this model. Barth and Kasznik (1999) compare a sample of firms that made repurchase announcements between 1990 and 1994 with a sample of all firms that have 1992 Compustat data (the median year) and do not announce any share repurchase between 1985 and 1994. They find that firms with more intangible assets are more likely to repurchase shares and have more positive repurchase announcement returns. In addition, they also find that idle cash is positively related to repurchase likelihood and negatively related to announcement returns.

A second stream of current research also focuses on firm's earnings changes surrounding stock repurchases. Nohel and Tarhan (1998) examine tender share repurchases to differentiate between the information signaling and free cash flow hypothesis and conclude that operating performance following repurchases improves only in low-growth firms, and that the gains are generated by more efficient utilization of assets, and asset sales, rather than improved growth opportunities. Lie and McConnell (1998) examine announcements between September 1981 and December 1994 and test whether the earnings improvement following fixed-price self-tender offers is greater than those following Dutch auction self-tender offers. They find evidence that earnings improve following both types of self-tender offers, but find no statistically significant difference in earnings improvement between the two types of offers.

Lastly, other research concentrates on whether or not firms that announce repurchases actually carried through on the announcements. Kracher and Johnson (1997) cite several examples where CEOs later admitted that they had no intention of purchasing stock as per the announced plans and showed that most firms *do not* repurchase anywhere near the amount of stocks they had earlier indicated. Our study differs from earlier research by examining the abnormal returns following a repurchase announcement and discerning if there is any difference in abnormal returns related to the level of repurchases. We arrange the sample of firms that made a repurchase announcement between January 1996 and December 2002 into quintiles based on the level of repurchases actually made the sixth months following the announcement. We find that the size of the announcement abnormal returns is not related to either the size of the announced repurchase nor the amount actually repurchased during the six months following the announcement. We do find that it is

negatively related to firm size, perhaps indicating that repurchase announcements act as a stronger signaling device for firms where less information is regularly reported.

HYPOTHESES

According to Stephens and Weisbach (1998) and Comment and Jarrell (1991), the signaling explanation of repurchases predicts that the event-day returns on announcement of a repurchase program should be related to the information contained in the announcement. If this is true, then the subsequent level of repurchases should not be significant in determining the extent of abnormal returns surrounding the announcement. Given this, we calculate the actual level of repurchases in a twenty-six week period starting on the announcement date and compare this repurchase activity to the abnormal returns of the stock. Abnormal returns are examined for two time periods; a two-day announcement window and a one-week period, all starting on the day before publication in the *Wall Street Journal*.

The primary issue is whether stock repurchase announcements are correct signaling events and to what extent the size of the announced repurchase and the actual amount repurchased during the first six months affects the abnormal announcement returns.

H1: There is a direct relationship between announcement abnormal returns and the level of the announced repurchase percentage. .

Alternatively, if the market reaction to the repurchase announcement is only a response to a signal of under-pricing, then stock prices may not adjust to reflect the size of the announced stock repurchases. Furthermore, since Kracher and Johnson (1997) find that many firms do not follow through with their repurchase announcements, we test if the size of the repurchases the first six months has any effect on the initial announcement returns.

H2: There is a direct relationship between announcement abnormal returns and the level of repurchases over the first six months.

SAMPLE

Our sample consists of stock repurchase announcements obtained from the *Wall Street Journal (WSJ)* between January 1996 and December 2002 by utilizing various keywords, including 'stock repurchases' and 'stock announcements'. Deleting firms that merged with other firms, were acquired outright, or did not have detailed stock information we have a final sample size of 743. We obtain stock prices and outstanding stock information from the CRSP database. In a few instances, we supplement outstanding stock information with data regarding actual repurchases from the *WSJ*. Tables 1 and 2 partition the sample by year and percentage repurchased with the actual announcements in Table 1 and the percentage distribution in Table 2.

Table 1
Repurchase Announcements 1996-2002

	1996	1997	1998	1999	2000	2001	2002	TOTALS
Included in Final Sample	137	186	124	109	111	47	29	743
Percentage Repurchased								
0 - 20	77	91	67	46	49	17	7	354
21 - 40	15	3	0	1	1	0	0	20
41 - 60	10	0	1	0	0	1	1	13
61 - 80	6	0	2	0	0	0	0	8
81 - >100	29	92	54	62	61	29	21	348

The mean announced size of the repurchase program is approximately 11% of the firm's total shares outstanding at the announcement date and the median is approximately 6.6% percent of the firm's shares outstanding. The number of repurchase programs announced averaged over one hundred between 1996 and 2000, but fell off dramatically in 2001 and fell further to only 29 in 2002. Additionally, the programs are generally increasing in size during the sample period. The number of shares to be repurchased is indicated in the *WSJ* announcements for the majority of the firms in the sample. In instances where only a dollar value was indicated for repurchases, the number of shares to be repurchased is determined by dividing the dollar value announced by the stock price on the last trading date prior to the announcement.

Table 2
Repurchase announcements in 1996-2002
Percentage Distribution of Sample

	1996	1997	1998	1999	2000	2001	2002	TOTALS
Percentage Repurchased								
0 - 20	56.2%	48.9%	54.0%	42.2%	44.1%	36.2%	24.1%	47.6%
21 - 40	10.9%	1.6%	0.0%	0.9%	0.9%	0.0%	0.0%	2.7%
41 - 60	7.3%	0.0%	0.8%	0.0%	0.0%	2.1%	3.4%	1.7%
61 - 80	4.4%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	1.1%
81 - >100	21.2%	49.5%	43.5%	56.9%	55.0%	61.7%	72.4%	46.8%
Totals	100%	100%	100%	100%	100%	100%	100%	100%

Our data is somewhat different from that used by Kracher and Johnson (1997), in that the percentage of firms actually repurchasing stock subsequent to an announcement is roughly equal to the percentage of firms not repurchasing after announcing a repurchase plan. In terms of actual repurchases, 47.6% of firms purchase less than 20% of the indicated repurchase target within twenty-six weeks after an announcement to repurchase, and 46.8% of firms purchase 80% or more of the indicated target in the same time period. Interesting too, is that 331 or 44.5% of our sample firms do not purchase any of the announced shares within 6 months of the repurchase announcement. Further, we detect evidence that some firms actually increase their total outstanding stock instead of reducing stock through repurchases.

The sample is divided into quintiles depending on the extent of share repurchases and this designation reveals some interesting statistics. Of these, 354 (47%) purchased less than 20%, 20 (3%) purchased between 21% and 40%, 13 (2%) purchased between 41% and 60%, 8 (1%) purchased between 61% and 80%, and 348 (47%) purchased more than 80% of the announced repurchase target. Thus, the upper quintile (81% - >100% repurchases) and lower quintile (0% - 20% repurchases) account for over 90% of the sample.

There are several explanations for the distribution pattern. Several firms announced that they had suspended their repurchase plans for reasons unrelated to the stock price. For example, the *WSJ* (October 21, 1996) announced that several big U.S. companies abruptly rescinded repurchase programs. The programs were rescinded in response to a March 1996 Securities and Exchange Commission staff bulletin that effectively restricted stock repurchases by companies that make acquisitions and account for them using the pooling-of-interest accounting methodology. Additionally, the data may show either a willingness to follow through on the announced repurchases or management basically ignoring the announcements. Several *WSJ* articles and daily stock prices surrounding the announcements indicate positive short-term abnormal returns. It is possible that management is simply using the announcement as a signaling device without intending to follow through.

METHODOLOGY

Stephens and Weisbach (1998) point out that share repurchases can be neither observed at the time the transaction occurs nor directly measured afterward. They use four methods as proxies for the actual number of shares repurchased by firms subsequent to the announcement of open market repurchase programs. The four methods are: 1) monthly decreases in the firm's shares outstanding from CRSP, 2) quarterly decreases in the firm's shares outstanding from Compustat, 3) dollars spent reacquiring firm stock using minimum and average quarterly purchase price, and 4) quarterly increases in the dollar value of treasury stock divided by minimum and average prices during the quarter. Empirically, the four methods produced results that were basically similar. This paper uses monthly decreases in the firm's shares outstanding from CRSP as a proxy for the actual number of shares repurchased by firms subsequent to the announcement of an open-market repurchase program.

Announcement Abnormal Returns

Standard event-study procedures as used by Comment and Jarrell (1991) and Stephens and Weisbach (1998) are used to calculate the abnormal returns. The abnormal return in any given period is the market model residual, which is the difference between the stock's actual return and the expected stock return using CAPM for that period. The Betas are estimated using the 100 days prior to day -10 of the repurchase announcement. Hence the market model abnormal returns are calculated as:

$$AR_{ij} = RS_{ij} - ES_{ij} \quad (1)$$

Where

AR_{ij} is the abnormal return for firm j on day i.

RS_{ij} is the actual return for firm j on day i.

ES_{ij} is the expected return for the firm j on day

The announcement date (day 0) is given as the announcement publication date in the *WSJ*. Since many repurchase announcements are sometimes publicized on the day prior to publication in the *WSJ*, we calculate the full announcement effect (cumulative abnormal return) over a two-day period:

$$CAR_j = \sum AR_{ij}, \text{ for days } i = -1 \text{ and } 0 \quad (2)$$

Average cumulative abnormal returns (ACAR) for the N events over the (-1, 0) window are calculated as:

$$ACAR = \frac{\sum_{i=1}^n CAR_j}{N} \quad (3)$$

Next, the analysis is extended to determine the abnormal returns for the sample over a five-day trading period starting on day -1. By examining this interval, we investigate whether the market slowly absorbs the information content of the repurchase announcement or if the total reaction occurs only during the announcement (-1, 0) window. Given that the actual repurchase of shares are generally expected to occur over an extended period, investors may not immediately respond to the announcement. Abnormal returns are calculated as in Equation (1) and the five-day cumulative abnormal return for each firm is calculated as:

$$5\text{-Day } CAR_j = \sum AR_{ij}, \text{ for days } i = -1, 0, 1, 2, 3 \text{ and firm } j \quad (4)$$

Cumulative abnormal returns are then averaged over the five-day period as in Equation (2) above. The ACARs are then compared for statistical difference between the means in each quintile. Statistical significance of the difference in the means would indicate that abnormal return is related to the level of repurchases undertaken during the five-day period.

Announcement Abnormal Returns Cross-Sectional Analysis

Our last analysis is to determine what factors affect the announcement abnormal returns. We use a multivariate analysis to ascertain whether or not the announced repurchase amount or the subsequent percent of shares actually repurchased affects the abnormal returns. We also examine the impact of firm size and if the firm is in the financial industry for their impact on announcement returns.

$$Car_j = \beta_0 + \beta_1 ANNSIZE_j + \beta_2 PERREPO_j + \beta_3 FINAN_j + \beta_4 FSIZE_j \quad (5)$$

Where:

CAR_j is the abnormal return for firm j over the (-1, 0) window.

$ANNSIZE_j$ is a continuous variable of the actual percentage size of the announced repurchases relative to total shares outstanding.

$PERREPO_j$ is the percentage of repurchases undertaken by the firm compared to the amount announced.

FSIZE_j is a continuous variable for firm size calculated as the natural log of the firm's total market capitalization at the time of the repurchase announcement.

FINAN_j is a dummy variable for industry with a value of 1 if the firm is in the financial sector and 0 otherwise.

It is expected that since the repurchase announcement has informational value, then both the size of the repurchase announcement as well as the actual stock repurchases should produce additional price gains. Hence we expect the coefficients for both *ANNSIZE* and *PERREPO* to be positive and significant since one can argue that firms are better off when they use funds to repurchase stock if no value-enhancing projects are available to be undertaken. We expect that firms in the financial sector are exceptions in that they have another alternative use of the funds. Such firms can use surplus funds to finance clients' projects instead of repurchasing stock. Hence, β_3 should be negative and significant signaling that financial firms that repurchase stock are not using resources optimally.

Several firm-specific events such as profit warnings (e.g., Jackson & Madura 2003) have been shown to have varying effects on firms of different size. We expect that the market reaction to repurchase announcements will also be influenced by firm size in that the stocks of larger firms are generally more widely dispersed and there is often more dissemination of information relating to such firms. On the other hand, investors in smaller firms' stock are often devoid of information on a regular basis and hence a stock repurchase announcement may come as a bigger surprise resulting in a larger market reaction. We therefore expect that the coefficient for *FSIZE* will be negative and significant, i.e., larger firms will have smaller CARs.

RESULTS

The results of our calculation of abnormal returns for both windows as well as by year and repurchase quintile are presented in Table 3. We find evidence that stock prices continue to indicate positive abnormal returns over the week following the announcement rather than just the two day window.

Announcement Returns

The results from the calculation of the average cumulative abnormal returns over a two-day (-1, 0) window are in Panel A and indicate that the repurchase announcement results in an average 2.12% (t-value 8.238, significant at 1% level) gain in stock price. This result confirms the signaling hypothesis that the stock price was under-valued and is similar to other studies such as that by Ikenberry et al., (1995) that find 2-day abnormal returns of approximately 3%. Furthermore, the positive returns are for all quintiles and all years with only one exception. Additionally, as shown in Panel B, the data shows that the difference between the quintiles is only significant between the first and fifth quintile.

Table 3 Panel C indicates that the overall sample had an average five-day cumulative abnormal return of 2.81% (t-value 8.956, statistically significant at 1% level). This finding indicates that the market response continues beyond the traditional two-day announcement period and is perhaps explained by a delayed reaction by some investors since a repurchase announcement often does not imply immediate action by the firms' management (i.e., some announcements indicate that

the repurchases will occur over an extended period). A paired samples test in Panel D shows that the difference between the two and 5 day period are significant at the .001 level.

Table 3

The market model abnormal returns are calculated as: $AR_{ij} = RS_{ij} - ES_{ij}$. Cumulative Abnormal Returns (CAR) as: $CAR_j = \sum AR_{ij}$, for days $i = -1$ and 0 . An average cumulative abnormal return (ACAR) for the N events over each window is calculated as: $ACAR = \sum CAR_j / N$.

The symbols *, **, and *** indicates statistical significance at the 10%, 5%, and 1% levels respectively

Panel A		Mean Abnormal Returns 1996 – 2002 for Quintiles							
Event Window (-1,0)	1996	1997	1998	1999	2000	2001	2002	TOTALS	
0 – 20	2.53 (3.307)***	1.28 (2.117)**	5.09 (3.404)***	1.99 (1.878)*	1.52 (1.770)*	3.46 (1.882)*	3.45 (1.932)	2.64 (6.060)***	
21 – 40	3.01 (3.165)**	-	-	-	-	-	-	2.19 (2.589)**	
41 – 60	2.43 (2.764)**	-	-	-	-	-	-	2.90 (3.926)**	
61 – 80	4.88 (2.190)*	-	-	-	-	-	-	4.47 (2.701)**	
81 - >100	2.69 (2.910)**	1.09 (2.213)**	2.47 (5.216)***	0.78 (0.921)	1.78 (1.746)*	-1.36 (-1.013)*	3.79 (2.686)**	1.52 (4.770)***	
Total	2.71 (5.482)***	1.14 (2.949)**	3.83 (4.812)***	1.30 (1.972)**	1.66 (2.462)**	0.53 (0.480)	4.08 (4.060)***	2.12% (8.238)***	
Panel B		Quintile 1	Quintile 1	Quintile 1	Quintile 2	Quintile3	Quintile4		
Differences between the means for different quintiles		Vs. 1	Vs. 1	Vs. 1	Vs. 2	Vs. 3	Vs. 4		
		Quintile 2	Quintile 4	Quintile 5	Quintile 5	Quintile 5	Quintile 5		
		(0.297)	(-0.628)	(0.494)	(0.828)	(0.828)	(1.391)		
			3	5					
			(-0.111)	(2.074)**					
Panel C									
One Week Returns									
1 st Week (-1, 3)	1996	1997	1998	1999	2000	2001	2002	TOTALS	
0 – 20	2.50 (2.706)**	1.94 (2.410)**	6.03 (3.578)***	1.54 (1.265)	3.42 (2.696)**	4.23 (1.919)*	5.81 (1.124)	2.64 (6.060)***	
21 – 40	4.30 (2.995)**	-	-	-	-	-	-	3.24 (2.715)**	
41 – 60	4.24 (2.258)**	-	-	-	-	-	-	3.99 (2.784)**	
61 – 80	4.28 (1.757)	-	-	-	-	-	-	0.605 (2.334)**	
81 - >100	3.58 (3.319)**	1.07 (2.000)**	3.35 (4.004)***	1.31 (1.463)	2.97 (2.679)**	-0.10 (-0.056)	3.61 (1.519)**	1.52 (4.770)***	
Total	3.13 (5.482)***	1.48 (3.055)**	4.82 (5.077)***	1.41 (1.965)**	3.15 (3.823)***	1.51 (1.076)	4.82 (2.971)**	2.81 (8.956)***	
Panel D									
Paired Samples Test		window							
2 day window vs.		(-3.705)							
5 day		****							

Cross Sectional Analysis

The cross-sectional regression coefficients are presented in Table 5. We report two models which are similar except for the omission of the *PORREPO* variable in Model 2. The coefficient with the largest impact is that for firm size which is negative and significant as expected. This indicates that as firm size increases, the CARs decrease. The coefficient for *FINAN* is also negative but not significant in either model. We interpret this result as indicating that the CARs of financial firms are negatively affected by repurchases since investors would rather these firms utilize the resources to finance clients' needs.

Table 4
Cross-Sectional Analysis

$$Car_j(-1,0) = \beta_0 + \beta_1 ANNSIZE_j + \beta_2 PERREPO_j + \beta_3 FINAN_j + \beta_4 FSIZE_j$$

Where: CAR_j is the announcement abnormal return for firm j. ANNSIZE is a continuous variable of the announced repurchases relative to total shares outstanding. PERREPO is the percentage of repurchases undertaken by the firm compared to the amount announced. FINAN is a dummy variable for industry with a value of 1 if the firm is in the financial sector and 0 otherwise. FSIZE is a continuous variable for firm size calculated as the natural log of the firm's total market capitalization at the time of the repurchase announcement.

The symbols *, **, ***, **** indicates statistical significance at the 10%, 5%, and 1% levels respectively.

Coefficients	Model 1	Model 2
Constant	0.104 (6.141)****	0.104 (6.175)****
ANNSIZE	-0.00002 (-0.276)	-0.000019 (-0.267)
PERREPO	-0.00000002 (-0.656)	
FINAN	-0.0112 (-1.434)	-0.0112 (-1.430)
FSIZE	-0.00568 (-4.894)****	-0.00572 (-4.936)****
R ²	0.034	0.033
Adjusted R ² =	0.028	0.029
F =	6.433****	8.441****

The coefficients for both the ANNSIZE and the PERREPO variables are negative but not significant in size or statistically. We conclude from this result that the signaling effect occurs at the announcement and investors are not particularly concerned with either the proportion of stock announced for repurchase or the actual percentage repurchased in the long run.

CONCLUSIONS

Earlier research indicates that stock repurchases primarily serve as a signaling mechanism of management's view that their firm's stock is undervalued. We test that view and follow up by examining what proportion of the announced repurchase occurs within six months. We find that the abnormal returns are positive for all years and for all amounts of subsequent repurchase percentages. One surprising result is that the percentage of the announced repurchase target being accomplished is almost a dichotomous variable with almost half of the firms completing less than 20% of the announced repurchase amount and almost fifty percent buying back 80% or more of the proposed amount. A cross section regression shows that the two day announcement abnormal returns are not determined by either the percentage of the stock repurchase announced nor the amount actually repurchased. Thus it is the signal of undervaluation which is most important for the actual returns. This view is further reinforced by the fact that smaller firms have larger announcement returns, indicating that repurchase announcements have a stronger signaling effect for small firms. This has significant implications for managers and investors. Stock repurchase announcements are a relatively easy and cost effective means of announcing management's belief that the stock is undervalued.

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