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## Market underreaction to open market share repurchases

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### Abstract

We examine long-run firm performance following open market share repurchase announcements, 1980–1990. We find that the average abnormal four-year buy-and-hold return measured after the initial announcement is 12.1%. For ‘value’ stocks, companies more likely to be repurchasing shares because of undervaluation, the average abnormal return is 45.3%. For repurchases announced by ‘glamour’ stocks, where undervaluation is less likely to be an important motive, no positive drift in abnormal returns is observed. Thus, at least with respect to value stocks, the market errs in its initial response and appears to ignore much of the information conveyed through repurchase announcements.

*Key words:* Stock repurchase

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## 1. Introduction

Corporations distribute substantial sums of wealth to shareholders by repurchasing their own stock. From 1980 to 1990, the aggregate value of stock repurchased on the New York Stock Exchange (NYSE), the American Stock Exchange (ASE), and the National Association of Securities Dealers Automated Quotations (NASDAQ) was about one-third of the value of dividends. Toward the end of the 1980s, the dollar value of stock repurchases increased substantially, becoming nearly half the amount paid as cash dividends. Framed differently, the dollar value of stock repurchases announced between 1985 and 1993 was nearly three times larger than that raised through initial public offerings (IPOs).<sup>1</sup> In 1994, stock buybacks continued at a rapid pace: more than \$65 billion were announced. Firms can reacquire shares through tender offers or through open market transactions. Historically, managers have chosen the latter approach by wide margins. For example, the dollar value of all share repurchases announced between 1985 and 1993 to be completed through open market transactions. In this paper, we examine the long-run performance of firms that chose this approach for repurchasing shares.

The literature provides a lengthy list of motivations for why a firm might repurchase their own shares: capital structure adjustment, tax deferral, signaling, excess cash distribution, substitution for cash dividends, and wealth expropriation from bondholders. While all of these reasons are plausible, signaling has emerged as one of the most prevalent explanations (Myer, 1981; Dann, 1981; Asquith and Mullins, 1986; Ofer and Thakor, 1987; Titmides and Grundy, 1989). The Traditional Signaling Hypothesis, motivated by asymmetric information between the marketplace and managers, states that if, in management's assessment, the firm is undervalued, managers will choose to buy back stock. Making such an announcement is thus serving a valuable signal to a less informed marketplace. If markets are efficient, prices should adjust immediately in an unbiased manner and the equilibrium price should fully reflect the 'true' value of the firm. In this case, no wealth transfer should occur between long-term shareholders and the firm selling shares to the firm.

When managers are asked why they repurchase shares on the open market, the most commonly cited reason is 'undervaluation' and that they believe the shares represent a 'good investment', two reasons seemingly consistent with the signaling hypothesis (Baker, Gallagher, and Morgan, 1981; Dann, 1983; Wansley, Lane, and

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<sup>1</sup>From 1985 to 1993, the total value of all announced share repurchases recorded by the Securities and Exchange Commission was \$334 billion (excluding REITs and closed-end funds). The comparable dollar value of initial public offerings over the same period was \$114 billion.

1989). Yet, paradoxically, if prices adjust instantaneously, how can the stock be a good investment for long-term shareholders? In an efficient market, the stock should no longer be undervalued after the announcement, thus eliminating the motivation to undertake the repurchase.

However, managers typically do not announce that they are canceling a repurchase program. This would suggest that the initial market reaction is too low. Given that the average market reaction is only on the order of 3%, this would indeed seem to be the case. It hardly seems plausible that managers would, first, have the ability to recognize such small valuation errors, and second, choose to react to such minor discrepancies. Placed in perspective, 3% is not that much greater than the daily standard deviation of returns for many stocks. If managers are reacquiring shares because of mispricing, it is likely that they perceive substantially greater valuation errors. For example, in October 1993, Midland Resources Inc., a U.S.-based oil and gas concern, announced an open market share repurchase for 5% of its shares. At the announcement, the chairman was quoted as saying: 'If you look at the amount of our reserves, we think (our stock) should be trading for about twice its current value. What it boils down to is, if you can buy a dollar for 50 cents, why not buy it?'

We hypothesize that the market treats repurchase announcements with skepticism, leading prices to adjust slowly over time. We refer to this as the Underreaction Hypothesis, or UH. Evidence consistent with this hypothesis has been documented in a study on fixed-price tender offer stock repurchases. Lakonishok and Vermaelen (1990) find that on average, prices remain at bargain levels for at least two years. Other examples of delayed market reactions include IPOs (Ritter, 1991), mergers (Agrawal, Jaffe, and Mandelker, 1992), proxy contests (Ikenberry and Lakonishok, 1993), and spinoffs (Cusatis, Miles, and Woolridge, 1993). In what is essentially the mirror image of a stock repurchase, Loughran and Ritter (1995) observe a sluggish response by the market to seasoned equity offerings.

Is it possible that the market fully incorporates the information conveyed through an open market repurchase? If so, we should observe that stock prices following the announcement are unbiased, and that long-run performance is not above average. Or, alternatively, do managers in fact really know what they are doing and are correct in their assessment that their stock is a good investment, even after the repurchase announcement? These fundamental questions motivate the remainder of this paper.

We examine a sample of 1,239 open market share repurchases announced between January 1980 and December 1990 by firms whose shares traded on the NYSE, ASE, or NASDAQ. Similar to the findings reported in earlier research, the average market response to the announcement of an open market share repurchase is 3.5%. Furthermore, this initial reaction is consistent with several predictions of the TSH. For example, the market reacts more favorably to

announcements made by low market capitalization firms and by firms with large repurchase programs.

The most striking finding of this paper is that the information content of open market share repurchases is largely ignored. Managers of firms that repurchase their own shares appear to have been correct, on average, in assuming that they can buy shares at bargain prices to the benefit of long-term shareholders. Beginning in the month following the repurchase announcement, the average buy-and-hold return over the next four years is more than 12% above that of a control portfolio.

If undervaluation is an important motive overall, it should be particularly important for out-of-favor stocks, which tend to have high book-to-market ratios. Yet, surprisingly, the market reaction to repurchase announcements is similar across all book-to-market groups. Over the long run, the largest abnormal returns following buyback announcements are for high book-to-market firms. The average return over the next four years for a buy-and-hold portfolio of these stocks is 45.3% above that of a control portfolio of similar size and book-to-market firms. For low book-to-market firms, no abnormal performance is observed in long-run returns.

The remainder of the paper is organized as follows: In Section 2, we describe the data and our sample. Issues regarding performance measurement and significance tests are discussed in Section 3. In Section 4, we examine short-run returns surrounding the announcement of open market share repurchases. In Section 5, we examine long-run performance. In Section 6, we examine the determinants of long-run performance. In Section 7, we check the robustness of our findings. Conclusions are provided in Section 8.

## 2. Data

Our sample was formed by identifying all announcements reported in the *Street Journal* from January 1980 through December 1990 that stated that a firm intended to repurchase its own common stock through open market transactions. We examine all open market share repurchase announcements with the exception of those for which we determine whether the programs were actually completed. We further require that firms be included on the daily Center for Research in Security Prices (CRSP) NYSE and ASE tapes or daily CRSP NASDAQ tapes, as well as on the Compustat industrial file at the time of the announcement. For our analysis, we exclude all announcements made in the fourth quarter of 1987. Following the 1987 crash, 777 NYSE, ASE, and NASDAQ firms initiated either new or increased share repurchase programs totalling over \$10 billion, largely in response to their low post-crash share prices. Although we include announcements made during this period, these cases are not included in our results we report in order to avoid having this unusual period dominate

Table 1 shows the distribution of the repurchase announcements by year, the average percentage of shares repurchased, and the dollar value of the repurchase announcements. These repurchases, if fully completed, would have totalled \$142 billion. Over the entire 11-year period, sample companies announced repurchases for, on average, 6.6% of their outstanding shares. This percentage generally rose over our sample period. Table 1 also shows the distribution of announcements according to firm size. Size deciles were determined in the month prior to the announcement, and were based on market equity value relative to the universe of all NYSE and ASE stocks covered by both CRSP and Compustat. Our sample has a bias favoring larger firms. Nearly one-third of our sample is ranked in the two largest size deciles.

### 3. Methodology

#### 3.1. Performance measurement

We examine both short-term returns surrounding the announcement and long-term performance following the announcement. Short-term performance is calculated over various windows from 20 days before to 10 days following the announcement. When abnormal returns are calculated over such short intervals, the results are not overly sensitive to the benchmark used. Thus, we report results using a straightforward approach, calculating abnormal returns in relation to the CRSP equal-weighted index of NYSE and ASE firms. We also calculated short-term performance relative to other benchmarks, including the CRSP value-weighted index as well as a size-based approach, but the results were essentially the same.

Care must be taken when calculating long-run performance, because the findings can be sensitive to the procedures used (see Chopra, Lakonishok, and Ritter, 1992). In this paper, we pursue two different approaches. The first is the more common technique based on cumulative abnormal returns (CARs) relative to some benchmark. The second approach calculates long-run abnormal performance assuming a buy-and-hold strategy. For both of these methods, abnormal returns are calculated relative to four benchmarks: the CRSP equal- and value-weighted indices of NYSE and ASE firms, a size-based benchmark, and a size- and book-to-market-based benchmark. This last benchmark is motivated by the recent work of Fama and French (1992, 1993) and Lakonishok, Shleifer, and Vishny (1994).<sup>2</sup>

<sup>2</sup>To distinguish 'value' stocks from 'glamour' stocks, a variety of ratios exist aside from book-to-market. For example, Lakonishok, Shleifer, and Vishny (1994) find that classifying stocks by cash-flow-to-price produces an even larger spread in returns than does sorting by book-to-market. However, sorting on the basis of cash-flow-to-price poses some difficulties when cash flow becomes negative. Hence, we classify firms using book-to-market ratios.

Table 1  
Descriptive statistics for open market share repurchase announcements between January 1980 and December 1990

This table reports the number of open market share repurchases announced in the *Wall Street Journal* by year for ASE, NYSE, and NASDAQ firms, the dollar value of these announcements, the percent of shares announced for repurchase, and the size decile rank of the firms when the announcement was made. In some cases, firms did not state the number of shares they intended to repurchase. Size decile rankings are determined relative to all ASE and NYSE firms on the annual industrial Compustat tape in the month prior to the repurchase announcement, where the smallest firms are ranked in decile 1.

Year	n	\$ (billion)	Mean % of share announced	Percent of shares announced for repurchase					Size decile rank at announcement				
				0 to 2.5%	2.5 to 5%	5 to 10%	Above 10%	Not stated	Small 1-2	3-4	5-6	7-8	Large 9-10
1980	86	1.429	4.73	31	20	27	6	2	9	15	16	18	28
1981	95	3.013	5.24	29	26	23	13	4	13	12	16	21	33
1982	128	3.106	5.74	25	38	42	18	5	22	14	35	21	33
1983	43	1.645	5.05	11	18	9	3	2	5	4	6	10	18
1984	203	10.105	5.57	34	78	53	24	14	35	39	50	28	51
1985	113	14.380	7.45	22	30	34	24	3	16	23	17	18	39
1986	145	17.189	7.12	30	36	37	33	9	17	27	26	29	46
1987	92	27.380	7.92	14	20	31	26	1	10	15	14	18	35
1988	121	14.967	7.15	20	30	38	26	7	17	15	23	24	42
1989	117	31.971	8.53	18	28	35	33	3	14	15	17	24	47
1990	96	17.403	7.84	10	28	37	21	0	14	18	15	18	31
All years	1239	142.587	6.64	244	352	366	227	50	172	197	235	229	406

### 3.1.1. The CAR approach

Under 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 firms receiving equal portfolio weights each month. Furthermore, abnormal performance is not based on compounded returns. Although takeovers and bankruptcies reduce the number of firms in the sample as event-time progresses, these cases are not excluded from our analysis. Abnormal performance is measured using the returns to all companies existing in a given event month, even those that eventually depart the sample.

Calculating performance relative to the CRSP equal- and value-weighted indices is straightforward and requires no further discussion. To calculate abnormal returns adjusted for size, we form ten size-based portfolios at the end of April each year, using all NYSE and ASE firms on both CRSP and CompuStat. 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 firm relative to its respective size benchmark. CARs are then calculated by averaging across all repurchase firms each month, and summing 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 stocks in a given size decile with the lowest book-to-market ratios. At the other extreme are the 20% of firms 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). As is done when we adjust only for size, all firms are ranked at the end of each April for the following 12 months. We assume a four-month lag in reporting financial results to avoid any look-ahead bias. Thus, for companies whose fiscal year ends in December, the book equity value will be recent. For firms with fiscal year-ends following December but preceding April, we calculate book-to-market ratios using book equity values from the prior year. Abnormal performance for each of the repurchase firms is then calculated using the appropriate size and book-to-market benchmark.<sup>3</sup>

<sup>3</sup>As a check on the validity of this approach, we examined whether a randomly drawn sample with the same size and book-to-market characteristics would also produce abnormal performance. We did this by pooling the announcement dates of all repurchases firms along with their corresponding size and book-to-market rankings. We then formed a random sample by arbitrarily drawing from this pool 2,500 times and assigning the announcement date to a randomly chosen NYSE or ASE firm that had the same size and book-to-market ranking at that point in time. In each of the 48 months following the 'event' month, the cumulative abnormal return for this random sample was less than  $\pm 1.5\%$ , using the size and book-to-market approach, and was always within one standard error. When performance was measured using the CRSP equal- or value-weighted index of NYSE and ASE stocks, CARs were in excess of two standard errors in many cases.

### 3.1.2. *The buy-and-hold approach*

The results obtained using the CAR approach should be re-descriptive in nature, since they do not represent a realistic investment strategy. However, our second approach presents a more feasible strategy. We use an equal-weighted buy-and-hold investment in all repurchase firms beginning the month following the announcement and continuing for 12 months. At the end of the year, the portfolio is rebalanced, thus reducing the possibility that a few firms will dominate the return calculations. The multi-year total return investment strategy is calculated by compounding average annual returns over time.

If a firm departs the sample prematurely, we assume the investment is liquidated at the last available price on CRSP, and that the proceeds from the sale are reinvested for the remainder of the year in that firm's benchmark portfolio. At the end of the year, the portfolio is rebalanced, using only the surviving firms. Firms used to calculate benchmark returns were treated similarly.

To calculate abnormal performance, we form four benchmarks similar in spirit to the four benchmarks created for the CAR approach. They are calculated in a manner consistent with the buy-and-hold investment strategy. To save space, we report results only for the size and book-to-market approaches. To form the reference portfolio, all firms listed on NYSE and ASE and also carried on Compustat are sorted each month into size and book-to-market portfolios, as described earlier. Beginning each month, the one-year buy-and-hold return is calculated for each firm's portfolio. The equal-weighted average of all annual returns in a given month is then used as a benchmark return for firms ranked in that particular book-to-market rank at that point in time. Thus, this procedure allows us to compute annual buy-and-hold returns for each of the 50 benchmark portfolios each calendar month.

In addition to annual returns, we also measure compounded performance for two, three, and four years following the repurchase announcement. To calculate a two-year abnormal return, we take the difference between the compounded two-year return to repurchase firms, assuming reinvestment after the first year, and that of the reference portfolio.<sup>4</sup> Abnormal performance in years three and four is treated similarly.

### 3.2. *Significance testing*

Significance levels are calculated for daily, monthly, and annual returns. For daily cumulative abnormal returns, we use the event-time methodology

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<sup>4</sup>The size and book-to-market ranking of a particular firm may change from year to year. To accommodate this, we also allow the benchmark used to compute abnormal performance to change over time.