

Returns to Target Shareholders From Initial Purchases of Common Shares: A Multivariate Analysis

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The purchase of a substantial fraction of a firm's equity, along with other information that accompanies this purchase, sends important signals to the market about the target firm's value. Using a multivariate testing procedure, this paper examines the returns to the target's shareholders from such purchases. The buyer's purpose in making the purchase, the fraction purchased, the type of security purchased, and the size of the target firm are found to be significant factors affecting returns at the purchase date. The results for purpose, fraction purchased, type of security, and analysis of returns in the period following the purchase support the possibility of a control transfer as the reason why these returns occur.

INTRODUCTION

This paper investigates the returns to target shareholders associated with a significant event: the purchase of a substantial fraction of the target's common shares or share-equivalents as evidenced by the filing of a 13D statement with the SEC. The purchase of shares or share-equivalents (convertibles, options, etc.) and the information associated with this purchase send a set of important signals to investors about the value of the firm. A multivariate testing procedure is used to analyze the individual and interactive affects of several factors on the returns associated with a 13D purchase.

PRIOR STUDIES OF INITIAL PURCHASES

Under the Williams Act of 1968 as amended in 1970, when an investor acquires over 5 percent of the outstanding equity of a firm, the investor must file a 13D schedule with the SEC within ten days of passing the 5 percent ownership threshold. The investor also must update this filing for increases in position or changes of intent. The filing of a 13D often precedes a takeover proposal or a tender offer. Most 13D filings result from open market purchases of shares or share-equivalents, and most are unannounced until the 13D is filed.¹

¹ Only about 17 percent of 13Ds in the sample used in this research were preceded by an announcement appearing in the *Wall Street Journal*. For the remainder, the announcement either appeared on or after the purchase date or no public announcement appeared in the *Wall Street Journal* at all.

While several studies examine purchases associated with specific outcomes (such as targeted repurchases (Bradley, Desai, and Kim, 1988) and greenmail (Ang and Tucker, 1988)), Mikkelsen and Ruback (1985) were the first to contrast the returns associated with the initial purchase of shares according to the characteristics of the purchase and to examine the returns between the initial purchase and its outcome. These features of their research are important for several reasons. First, by contrasting returns among the characteristics of the purchase, Mikkelsen and Ruback were able to obtain insights into two competing hypotheses with respect to purchases: the control transfer hypothesis and the undervaluation hypothesis. The control transfer hypothesis suggests that returns occur because investors expect the purchaser to force value-increasing actions on the firm either by disciplining its current management or by taking over. If the control transfer hypothesis holds, the initial returns associated with the purchase will be affected by factors that influence investors' perceived likelihood of a control transfer. Also, returns after the purchase will be negative if a control transfer does not occur. The undervaluation hypothesis suggests that the purchase signals that the purchaser believes the target to be temporarily undervalued. If this is the major factor in determining returns, factors reflecting takeover probability will not influence initial returns, and expected returns after the purchase will be zero.² Second, by examining total returns from the initial event to its outcome, Mikkelsen and Ruback were able to gain insight on the effects on total return of various outcomes that can occur from the investment process.

Starting with 437 new schedule 13D filings by NYSE and AMEX firms from 1978 to 1980, Mikkelsen and Ruback identified 337 purchases that were not associated with an outstanding takeover attempt and were not contaminated by additional concurrent events. Based on articles in the *Wall Street Journal*, they classified the 337 purchases into four groups based on the purchaser's stated reason for purchase.³ They traced these purchases to their eventual outcomes. Among their important results were:

- There were significant positive returns to both the target and purchasing firm at the announcement of a 13D filing. These returns varied substantially depending on the reason given for purchase; returns were highest for both target and purchaser for those considering acquisition;
- The percent of the target firm initially acquired varied among their four reasons for purchase;
- There was no difference in returns to targets between those purchases made by frequent and infrequent purchasers;
- Returns from the announcement date through the outcome for purchases that reached an outcome were significant and positive. Returns for purchases without an outcome within three years following the purchase were significant and negative;
- When the outcome was a targeted repurchase, there were significant negative returns at the announcement of this outcome. Over the entire period from

² See Choi (1991) and Holderness and Sheehan (1985) for a more complete discussion and literature review with regard to these two hypotheses.

³ Mikkelsen and Ruback's four reasons for purchase were: the purchasing firm is considering acquisition of the target, the purchase is a negotiated transaction, the purchase is for investment purposes, and there is no *Wall Street Journal* report stating the reason for the purchase.

the purchase to the outcome, however, shareholders in firms experiencing targeted repurchases had positive and significant returns.

In more recent research, Choi (1991) also examined the results of purchases associated with 13D filings. Using a sample of 322 13D purchases occurring from 1982 to 1985 where the targets were AMEX or NYSE firms, he investigated the effects of takeovers or other control transfers occurring within one year of the 13D purchase. Other control transfers include management turnover or other changes that may have been caused by the purchase. He found that firms experiencing 13D purchases were much more likely to incur subsequent control transfers than firms not undergoing such purchases. He found support for the control transfer hypothesis, as firms with control transfers following 13D events obtained positive and significant abnormal returns in the post-13D period, but firms with no such control events earned negative abnormal returns following their 13D purchase.

Mikkelsen and Ruback's original work was pathbreaking, but much remains to be done. The goals of this study are:

- To investigate, in a multivariate framework, the effects on the returns to the target of various signals associated with the purchase. In this way, the research seeks to gain additional insight into the relative power of the control transfer and undervaluation hypotheses;
- To explore the returns from purchases of smaller firms (Mikkelsen and Ruback's and Choi's work included only AMEX and NYSE firms) and the effects of firm size on returns at purchase (Arbel and Strebel, 1982; Basu, 1983; Reinganum, 1981);
- To determine whether Mikkelsen and Ruback's results for target firms hold in another time period.

ASPECTS OF THE INITIAL PURCHASE

Five aspects of the purchase that may influence either the market's perception of the information possessed by the purchaser (and, thus, the purchaser's ability to detect undervaluation) or the market's estimates of the probability of takeover or other control transfer are identified:

- The stated purpose of the purchase—Any purchase may signal that the purchaser has favorable information about the target. If the control transfer hypothesis holds, however, returns will be higher for purchases where the purchaser states that the purchase is for purposes of merger or control than for purchases where the stated purpose is investment or where the purpose of the purchase is ambiguous;
- The fraction of the firm purchased—The larger the fraction purchased, the closer is the purchaser to obtaining a controlling interest and the more influence the purchaser can exert on the firm's management. Also, the larger the fraction purchased, the closer is the purchaser to having the controlling interest necessary for a takeover. Consequently, under the control transfer hypothesis, the larger the fraction purchased, the higher the return;

- Whether there has been a recent prior purchase of the firm—If there has been such a purchase, the firm is considered to be *in-play*.⁴ Firms that are *in-play* usually are thought to be targets for a control transfer that may increase the firm's value. It is the initial purchase that provides this signal, however, so subsequent purchases of the same firm result in release of less incremental information than does the initial purchase. If the control transfer hypothesis holds, returns should be higher for initial purchases of target firms than for subsequent purchases;
- The type of security purchased—If a purchaser wishes to obtain control, the most direct route is to purchase common equity. Purchases of convertible bonds, convertible preferred, etc., require conversion and are less likely to be associated with takeovers or other control transfers;
- Whether the purchaser is a frequent or infrequent purchaser—Frequent purchasers may be perceived to be more regularly associated with takeovers or other control transfers. Frequent purchasers, however, also may be perceived as market insiders with special access to information about firms, meaning they are better able to detect undervaluation.⁵

These aspects of the purchase may have interactive effects on returns to the target. For example, a purchase for the purpose of takeover or control transfer may be credible only if a large fraction of the firm is purchased.

METHODOLOGY

SAMPLE

The data set covers purchases associated with 13D filings where these purchases occurred from 1981 to 1983. To develop a reliable database of these filings, all information on initial 13D filings from the *SEC News Digest* was encoded where the date of the purchase fell between January 1, 1981 and December 31, 1983. Five pieces of information were obtained on approximately 5,100 filings: the purchaser's identity, the target's identity, the date of the purchase, the percent of shares purchased, and the type of security purchased.⁶ The *Insider's Chronicle*, another source that reports 13D filings, was consulted to confirm the first four pieces of information and to obtain the purpose of the purchase. (See discussion of this source for the stated reason for the purchase in Ang and Tucker, 1988.) Information on about 1,500 purchases was confirmed in this fashion.⁷

⁴ A firm can be *in-play* without a prior purchase having been made. For example, similar firms could have been purchased recently or there could be rumors circulating concerning an impending bid for control. Defining *in-play* as this paper does, however, leads to a straightforward empirical specification of the concept.

⁵ Holderness and Sheehan (1985) investigate the returns surrounding 13D filings by six well-known corporate raiders and find support for both hypotheses. They find that a filing by these purchasers resulted in significant positive returns to the target. These returns are greater than returns associated with a random sample of filings by nonraiders.

⁶ These 5,100 filings are not all the filings during the sample period. It was impossible to obtain copies of the *SEC News Digest* for approximately 16 weeks of the 156 week sample period, and filings reported during these 16 (noncontinuous) weeks are missing from the database.

⁷ The difference in number between the 5,100 records generated from the *SEC News Digest* and the 1,500 records matched from the *Insider's Chronicle* is due largely to size; the *Insider's Chronicle* uses a screen based on the dollar value of the transaction and reports only larger transactions. Because larger capitalization firms tend to have larger dollar value transactions, there is some size bias in the sample. However, about one-half of the sample is formed of OTC firms.

When a firm is the target of a tender offer, the offerer will file a 14D-1 at the tender offer's inception, then file a 13D when the 5 percent threshold is passed. To eliminate firms with outstanding tender offers from the sample, all the 14D-1 filings from January 1, 1981 through December 31, 1983, again using the *SEC News Digest* as a source, were encoded. The database of 13D filings then was searched for situations where a 14D-1 filing on a target firm occurred in the six months preceding the 13D filing. All such targets were excluded from the sample.

STATISTICAL METHODOLOGY

The dependent variable for the analysis of the returns associated with initial purchases was the abnormal return during a three day event window around the earlier of the date of the purchase as given in the *SEC News Digest* or the date that the *Wall Street Journal* published information indicating an impending purchase. The first of these is the date on which, according to the purchasing firm's 13D filing, it reached the 5 percent ownership threshold. The second was determined by searching the *Wall Street Journal* for a six month period preceding the 13D filing.⁸ To adjust for risk and market return, betas were estimated by regressing the returns for the security on the market returns for a period starting at 240 days before the event and ending 60 days before the event. These estimated betas were used with the market model to calculate expected returns during the event window.⁹ Total abnormal returns for the event window were calculated by subtracting expected return based on the market model from actual return. Returns data were related to aspects of the purchase via factorial analysis of variance (ANOVA), using Bonferroni confidence intervals as a *post hoc* test to compare means.¹⁰ ANOVA allows for linear or nonlinear relationships, as it contrasts the means among treatments of the explanatory variables without requiring a functional relationship among these treatments. Treatments for the explanatory variables were:

⁸ Similar analyses to those performed here also were undertaken where the event date was defined as the date on which the purchasing firm files its 13D. (This filing may occur as much as ten days after the firm passes the 5 percent threshold.) No statistically significant returns were found. It appears that the information associated with 13D purchases is reflected fully in prices by the time of the filing.

⁹ All tests also were performed using the Scholes-Williams (1977) betas. Results were virtually identical to those presented.

¹⁰ While a standard methodology in other social sciences, factorial ANOVA appears rarely in the finance literature, though a few recent studies have employed the technique to analyze returns (e.g., Eddy and Siefert, 1988; Tseng, 1988). Factorial ANOVA is appropriate when the research hypothesizes a difference in the dependent variable among distinct conditions (or treatments) of the explanatory variables. The technique provides for simultaneous statistical tests of the effects of multiple categorical variables and the interactions of these variables on the dependent variable; see Kerlinger (1973, pp. 242-269) and similar tests for complete discussion. If a significant difference is detected among the conditions of an explanatory variable, differences in the means of the dependent variable among these conditions can be investigated by pairwise comparisons of means using *post hoc* (*a posteriori*) techniques (such as the Bonferroni approach used here; see Harris, 1975). An alternative procedure in analyzing returns is regression, which has been used in several recent studies (Jaffe, Keim, and Westerfield, 1989; Kane, Lee, and Marcus, 1984; Lamoureux and Sanger, 1989). When dummy variables are employed to represent distinct conditions of the explanatory variables (a common procedure in these studies), regression is statistically equivalent to analysis of variance. In addition to ANOVA, which, like regression, incorporates normality assumptions, the main effects also were tested via nonparametric techniques to assess the sensitivity of results to the distributions of returns. Results were essentially the same as those reported here.

- Stated purpose of the purchase—Based on information in the *Insider's Chronicle*, five treatments were used: for investment purposes; to obtain an equity interest; merger or control; arbitrage or other business activities; and *Insider's Chronicle* lists the purchase but gives no purpose;¹¹
- Fraction of the firm purchased—A substantial number of 13D filings represent purchases just over the 5 percent threshold. If an investing firm purchases 20 percent or more of a target, a change in accounting treatment is required to recognize effective control (though purchases below this level also may be treated in this way if the investor has significant influence). Based on these considerations, three treatments were employed: less than 10 percent purchased, 10 through 20 percent, and over 20 percent;¹²
- In-play/Not in-play—The target was designated as in-play if there had been a prior purchase of the target during the preceding six months, as determined from the 5,100 entries in the database of 13D filings encoded from the *SEC News Digest*. This selection procedure resulted in two treatments: in-play and not in-play. Note that this procedure resulted in the loss of all events before June 30, 1981, as six months of prior data were not in the database for these events;¹³
- Type of security purchased—Three treatments were used: common, capital, ordinary, or class A shares; convertible preferred and convertible debt; and warrants, options, and rights on common;¹⁴
- Frequent/infrequent purchaser—Frequent purchasers were defined as those who made initial purchases of over 5 percent of three or more different firms (an average of one purchase per year) from 1981 to 1983 as evidenced by 13D filings;¹⁵

¹¹ *Insider's Chronicle* also lists another purpose: compensation for services. No transactions within the current sample occur for this purpose, however. These purposes are taken from the 13D document filed by the purchaser.

¹² Unlike all the other explanatory variables except size, percent acquired is continuous rather than categorical. Percent acquired could have been incorporated as a continuous variable by using analysis of covariance rather than ANOVA, but the relationship between percent purchased and return was not believed to be linear; Holderness and Sheehan (1985) tested for such a linear relationship, but did not find one. Therefore, the research elected to treat percent acquired as a categorical variable and sought natural breakpoints to determine categories based on two considerations: the number of purchases occurring in various ranges and perception of the investor's power in holding various fractions of the firm. (See Kerlinger, 1973, pp. 158-161 for discussion of considerations in determining breakpoints for continuous variables.) Purchases in the lowest range are viewed as classic toeholds, with relatively less power to influence management or take over the firm. The upper range is viewed as situations where this power is large, as signaled by the change in accounting treatment.

¹³ Also note that because 16 weeks of data are missing over the sample period, firms may be classified incorrectly as not in-play if a 13D were filed during that period. This tends to introduce a slight bias against finding statistically significant results for this factor.

¹⁴ During the sample period a few purchases (13) were made of classified stock of classes other than A. Because this is too small a group on which to perform meaningful statistical comparisons, these purchases are excluded from the sample.

¹⁵ Any such designation is to some extent arbitrary; the question is how many purchases a purchaser must make in order for the market to react differently than for a purchase by another purchaser. In the designation system used here, 156 of the 709 purchases are made by frequent purchasers. In contrast, Mikkelsen and Ruback designated an average of two purchases per year as frequent (six purchases for their three year sample period).

- Size of the target—The sample was divided into thirds based on the market value of the target's common equity, ordinary, or class A shares 60 days prior to the purchase.¹⁶

Losses because of tender offers, exclusion of purchases of shares of classes other than A, missing data on returns and size, and the exclusion of purchases between January 1, 1981 and June 30, 1981 resulted in a final sample of 709 purchases.

EMPIRICAL RESULTS

MAIN EFFECTS AT PURCHASE EVENT DATE

The average risk-adjusted return to the target firm during the purchase event window was 2.49 percent with a t-statistic of 7.52; the return is statistically different from zero at the .0001 level. This average return is similar to Mikkelson and Ruback's average return of 2.98 percent and Choi's return of 2.2 percent, both of which were calculated over the announcement day and the preceding day. The overall F for the factorial ANOVA model analyzing returns during the purchase event window is 1.80 with 68 and 640 degrees of freedom, which is significant at the .0002 level. The model explains 16 percent of the variance in returns.

Table 1 presents means, sample sizes, ANOVA results, and *post hoc* comparisons of means for the main effects.¹⁷ Stated purpose, fraction purchased, type of security, and size of target are significant in determining excess returns during the event window. In general, results support the control transfer hypothesis.

Returns are much higher for the purpose (*merger or control*) that suggests the greatest likelihood of future takeover or other control transfer. The pairwise *post hoc* comparisons show that returns associated with merger or control are significantly greater than returns associated with purchases for any other purpose except *arbitrage and other business purposes*. Higher fractions purchased also are associated with higher returns, though the relationship is not linear; returns are significantly lower if less than 10 percent is purchased, but returns in the larger fraction categories are not statistically different.¹⁸

Results based on type of security purchased are not completely as expected. As hypothesized, excess returns associated with the purchase of convertible preferred or convertible debt are less than for the purchase of common shares, but the difference is not statistically significant based on the *post hoc* test. Returns from the purchase of warrants, options, and rights are significantly higher than those for common share purchases or for

¹⁶ The use of the market value prior to the event as a measure of firm size follows Bradley, Desai, and Kim (1988) and Maltesta (1983). While recent research on the size effect frequently uses five groups (see, for sample, Jaffe, Keim, and Westerfield, 1989; Tseng, 1988; Zarowin, 1990), thirds are used in the current research to increase the sample sizes in the cells. Parallel research also was performed using exchange listing rather than equity market value to proxy for size. (See Lamoureux and Sanger, 1989.) Results are similar to those presented here.

¹⁷ The confidence level for tests of significance for the six main effects and their 15 two way interactions is .90. *Post hoc* tests comparing means within treatments are performed using Bonferroni confidence intervals that control the maximum experimentwise error rate for multiple comparisons. The maximum experimentwise error rate used for these *post hoc* tests was .10.

¹⁸ Holderness and Sheehan (1985) ran linear regressions relating percent initially purchased to return and did not find a significant relationship. The nonlinear relationship found by this research may explain their result.

Table 1—Results of Factorial Analysis of Variance and *Post Hoc* Tests: Main Effects*

Panel A

Tests for Significance of Main Effects

Main Effect	F	Significance of F
Purpose	4.59	0.001
Fraction Purchased	4.28	0.014
In-Play/Not In-Play	0.63	0.426
Type of Security	5.09	0.006
Frequent/Not Frequent Buyer	0.37	0.543
Size of Target Firm	8.97	0.001

Panel B

Means and *Post Hoc* Comparisons: Main Effects

Main Effect	Sample Size	Mean Return (in percent)
Purpose (Significant at $p = .001$)		
1—For Investment Purposes	411	2.22
2—To Obtain an Equity Interest	63	1.71
3—Merger or Control	98	5.76
4—Arbitrage/Other Business Purposes	39	2.06
5—None of the Above	98	1.04
Statistically significant differences in means: 1,3; 2,3; 3,5		
Fraction Purchased (Significant at $p = .014$)		
1—Less Than 10 Percent	445	1.77
2—10 Percent to 20 Percent	127	3.76
3—Greater Than 20 Percent	137	3.64
Statistically significant differences in means: 1,2; 1,3		
In-Play/Not In-Play (Not significant)		
In-Play	231	2.13
Not In-Play	478	2.67
Type of Security Purchased (Significant at $p = .006$)		
1—Common, Capital, Ordinary, Class A	632	2.47
2—Convertible Preferred or Debt	49	0.37
3—Warrants, Options, and Rights	28	6.78
Statistically significant differences in means: 1,3; 2,3		
Frequent/Not Frequent Buyer (Not significant)		
1—Frequent	156	2.12
2—Not Frequent	553	2.59
Size of Target Firm (Significant at $p = .001$)		
1—Smallest Third	236	4.25
2—Middle Third	236	2.26
3—Largest Third	237	0.97
Statistically significant differences in means: 1,2; 1,3		

*The sample size is 709. F statistics are based on a multiple analysis of variance of the main effects and two way interactions. This table describes the results for main effects in this analysis of variance; Table 2 describes the results for interactions. Bonferroni confidence intervals were used to make *post hoc* pairwise comparisons of means among treatments. All Bonferroni tests were conducted at the .10 level for the total experimentwise error rate. Note that a *post hoc* test is not necessary when there are only two treatments, as the test for significance of the main effect also tests for the difference in the means

purchases of convertibles, however, which was not anticipated. Warrants, options, and rights are all options of various maturities; their life is generally limited. It may be that the purchase of these securities sends a signal to the market not only about the purchaser's intentions but also about the timeframe during which these intentions may be implemented.

Purchase by a frequent versus a less frequent purchaser has no significant main effect on returns. This result is in agreement with Mikkelsen and Ruback (who found no difference in returns), but at variance with Holderness and Sheehan (1985), who found higher returns for raiders than nonraiders (average returns of 1.8 percent associated with purchases by raiders versus 0.4 percent associated with purchases by a random sample of nonraiders). The dissimilarity in results among the three studies may be due to differences in the criterion used in determining frequent/infrequent purchaser. This research's criterion (one purchase/year) is somewhat less restrictive than Mikkelsen and Ruback's (two purchases/year), but is much less restrictive than Holderness and Sheehan's (one of six known raiders).

The size of the target firm is also an important determinant of the returns associated with a purchase. Returns are largest when the target firm is among the smallest third of the sample. Returns from a purchase of this group are significantly greater than when the target is in the largest or middle thirds.

The in-play/not in-play factor was not found to be a significant determinant of returns; however, this may be due to the way in which this factor was defined or to the sample bias in this particular test. (See footnotes 4 and 13.)

INTERACTIONS AT PURCHASE EVENT DATE

Only two of the 15 two way interactions were statistically significant at the .90 confidence level.¹⁹ Table 2 presents results for these significant interactions.

The most meaningful of the significant interactions is between the size of the target firm and frequent/not frequent buyer. The main effect of target size (largest returns for the smallest targets) occurs whether the buyer purchases frequently or infrequently. When a frequent buyer purchases an interest in a small firm, however, returns are significantly larger than when the purchase is made by a less frequent purchaser. That is, the larger returns for purchases by frequent purchasers observed by Holderness and Sheehan may be limited to purchases of relatively small target firms.

The second significant interaction, between type of security and frequent/not frequent buyer, is an unfortunate statistical fluke. While purchases by infrequent purchasers result in the same statistical relationships among the three types of securities as the main effect of security type, this relationship cannot be manifest for frequent purchasers because there is only one purchase in the *warrants, options, and rights* category.

¹⁹ The only interactions incorporated in the factorial ANOVA model are two way interactions. Although two way interactions are important, interactions of orders higher than this are difficult to interpret. Also, given the number of factors tested and the sample size, three way and higher level interactions result in very small sample sizes in many cells. Only significant results are presented here; results for insignificant two way interactions are not presented in the interests of space.

Table 2—Results of Factorial Analysis of Variance and *Post Hoc* Tests: Significant Interactions*

Panel A

Significant Two Way Interactions (at .10 significance or less)

Interaction	F	Significance of F
Frequent/Not Frequent Buyer X Size of Target	4.16	0.016
Frequent/Not Frequent Buyer X Type of Security	2.46	0.086

Panel B

Means and *Post Hoc* Comparisons: Significant Two Way Interactions

Frequent/Not Frequent Buyer X Size of Target			
	Frequent Buyers	Not Frequent Buyers	<i>Post Hoc</i> Comparison
Size of Target			
1—Smallest Third	8.09 (29)	3.72 (207)	Sig.
2—Middle Third	0.93 (56)	2.68 (180)	NS
3—Largest Third	0.63 (71)	1.11 (166)	NS
<i>Post hoc</i> comparison	1,2; 1,3	1,3	
Frequent/Not Frequent Buyer X Type of Security			
	Frequent Buyers	Not Frequent Buyers	<i>Post Hoc</i> Comparison
Type of Security			
1—Common, Capital, Ordinary, Class A	2.40 (136)	2.49 (496)	NS
2—Convertible Preferred or Debt	0.96 (19)	-0.01 (30)	NS
3—Warrants, Options, Rights	-12.13 (1)	7.48 (27)	NS
<i>Post hoc</i> comparison	NS	1,3; 2,3	

*The sample size is 709. F statistics are based on a multiple analysis of variance of the main effects and two way interactions. This table describes the results for interactions in this analysis of variance; Table 1 describes the results for main effects. A confidence level of .90 was used to distinguish significant and insignificant interactions; see footnote 17. Bonferroni confidence intervals were used to make *post hoc* pairwise comparisons of means among treatments. All Bonferroni tests were conducted at the .10 level for the total experimentwise error rate. Entries in the bodies of the table are mean returns in percent followed by sample sizes in parentheses. The notes at the margins of the tables indicate the treatment numbers for which means were significantly different, with "NS" indicating no significant differences and "Sig." indicating a significant difference where only one pairwise comparison was made.

RETURNS AT OUTCOME EVENT

Panel A of Table 3 presents cumulative prediction errors for target firms for a three day window around the date of the outcome of the purchase. This outcome date was determined by searching the *Wall Street Journal* following the date of the 13D filing; the outcome types follow Mikkelsen and Ruback. *No outcome* indicates that no resolution was reported in this source within three years after the event date.

Like Mikkelsen and Ruback, the current research finds positive and significant returns during the outcome window from completed takeovers and insignificant returns associated with a simple sale of shares. Targets with an outcome experience significant and positive returns over the entire purchase-resolution period (Panel B of Table 3), and targets without an outcome experience significant negative returns over the three years following the announcement. Unlike Mikkelsen and Ruback, however, it is found that returns associated with a third party takeover are significant and positive during the out

Table 3—Abnormal Returns to Target by Outcome

Resolution	Average Abnormal Return	t-statistic	Significance of t
Panel A Abnormal Returns During the Outcome Window for Targets with an Outcome			
Completed Takeover	4.76 (84)	3.648	.0005
Targeted Repurchase	2.03 (6)	0.695	.5181
Shares Sold	1.34 (13)	1.353	.2009
Third Party Takeover	9.95 (86)	5.526	.0001
All Firms With an Outcome	6.80 (189)	6.601	.0001
Panel B Abnormal Returns From the Initial Announcement Through Resolution			
Average for Targets With an Outcome	17.63 (189)	2.517	.0127
No Outcome Within Three Years*	-33.32 (520)	-3.713	.0002

*In this case, the abnormal return is from the day before the initial announcement through three following years

Note: average abnormal return is in percent and is followed by the sample size in parentheses

come window (Mikkelson and Ruback found positive returns, but these returns were not significantly different from zero).

One of Mikkelson and Ruback's more important findings concerns targeted repurchases. While they found returns on the date of announcement of such repurchases to be significantly negative, overall returns to shareholders from the 13D purchase through the repurchase announcement were significantly positive in their sample. During the early 1980s (the period of the current sample), however, targeted repurchases frequently were viewed as reducing the wealth of nonparticipating shareholders, and there was substantial legal activity to restrict such purchases. This legal activity resulted in the end of targeted repurchases as a takeover defense in the mid-1980s. The data can address the question of whether losses to shareholders of repurchased firms in the early 1980s contributed to this result.²⁰ Positive but insignificant returns on the announcement of a repurchase and insignificant returns (mean return of -2.73 percent, $t = -0.109$) over the entire purchase-repurchase period for this outcome are found. Therefore, although the sample size for this outcome is small, the shareholders of the these repurchased firms did not appear to be hurt by the purchase-repurchase process.

²⁰ The authors wish to thank an anonymous reviewer for pointing out this feature of the study.

DISCUSSION AND SUMMARY

It is useful to contrast these results with Mikkelsen and Ruback's original research. Using data from another time period, a similar level of average returns for a purchase associated with the filing of a 13D is found. The current research confirms that returns on the target's common shares vary with the purpose of the purchase and are largest when the buyer indicates that a takeover or restructuring may occur. However, the current paper's statistical controls allow a stronger statement: This effect is significant and is not due to an association between purpose and the fraction of the target that is purchased. In contrast, it is found that the fraction purchased is a significant factor apart from any link to purpose. (While both of these factors are significant, their interaction is not.)

The size of the target firm is an important determinant of returns, with purchases of firms in the smallest third of the sample resulting in higher returns than purchases of firms in the larger two-thirds of the sample. Perhaps larger firms are more able to utilize takeover defenses (such as poison pills or laws restricting takeovers of home-state firms passed by friendly state legislatures) than are small firms, in which case the increase in the estimated probability of takeover or other control event is less for them than for smaller firms. Alternatively, the larger firms may be undergoing much more scrutiny on an ongoing basis, and the likelihood of a control event and the realizable gains from such a change may be impounded continually in the price of their stock.

The type of security purchased and the type of purchaser have important effects on the returns associated with the purchase. Purchases of options and option-like securities result in higher returns than do purchases of common shares or convertibles; one explanation is that the relatively short life of such instruments makes an immediate control action more likely. In contrast to prior research, this research finds that purchases by purchasers who more frequently take positions in firms are associated with higher returns at purchase only when the target is relatively small.

Returns at the announcement of a completed takeover, whether by the 13D purchaser or by a third party, are positive and significant. Returns from the 13D filing through the three following years are significant and negative for firms where there is no resolution of the initial purchase. This, along with the analysis of returns around the purchase event, lends considerable support to the control transfer hypothesis in explaining valuation and provides evidence against the undervaluation hypothesis.

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