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The Distribution of Target Ownership and the Division of Gains in Successful Takeovers

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ABSTRACT

This paper presents evidence that the distribution of target ownership is related to the division of the takeover gain between the target and the bidder for a sample of successful tender offers. In the whole sample, the target's gain is negatively related to bidder and institutional ownership. In the sample of multiple-bidder contests, the target's gain increases with managerial ownership and falls with institutional ownership.

RECENT PAPERS EMPHASIZE THE importance of the distribution of target share ownership in takeover contests.[1] Although these papers differ in the issues they address, they share the common idea that large blockholders use their voting rights to further their own interests by influencing the likelihood and outcomes of takeover attempts. This literature suggests that management and non-management blockholders have different incentives in the presence of a takeover attempt. On one hand, managers who value incumbency can use their voting rights to decrease the likelihood of a takeover and increase its cost for the bidder. On the other hand, non-management blockholders are likely to use their voting rights to facilitate takeovers that, if successful, increase the value of their holdings. Blockholders who use their stake to increase the bidder's cost increase the target's share of the takeover gain if the takeover succeeds, whereas those who use their stake to decrease the bidder's cost decrease the target's share. In this paper, we present evidence that the distribution of target ownership is related to the division of the takeover gain (defined as the increase in the combined value of the target and the bidder) for a sample of successful tender bids.

The value of managerial incumbency varies widely across firms. Consequently, so does target management's incentive to use its ownership position to resist acquisition attempts. Unopposed offers often occur because management believes the offer to be in the shareholders' best interests or because of retirement plans. Management may also choose not to resist because it has conceded defeat or

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[1] See Jensen and Warner (1988) for a review of these papers.

because it has been assured of the continuation of most of its perquisites. In other cases, managers' perquisites are threatened and they use their ownership stake to increase the bidder's acquisition cost and/or to generate additional bids.

To segregate firms where the value of managerial incumbency is high, we follow Morck, Shleifer, and Vishny (1988) and consider separately single- and multiple-bidder takeovers.[2] Multiple-bidder contests, where several bidders expect to benefit from the acquisition, are more likely to be disciplinary takeovers of firms where target management derives rents from incumbency. We find that the effect of target managerial ownership on the sharing of gains in successful bids is associated with multiple-bidder contests. We show no significant empirical relation between the target's share of the takeover gain and target managerial ownership for single-bidder takeovers.

After discussing the theoretical determinants of the division of gains in takeovers, we present our data in Section II. In Section III, we show how the target's gain depends on the distribution of ownership of the target. Concluding remarks are provided in Section IV.

I. The Distribution of Target Ownership and the Market for Corporate Control

Early research on the market for corporate control assumed target shareholders to be atomistic. Such shareholders have no incentive to consider the impact of their tendering decision on the probability of tender offer success. More recently, researchers have emphasized the incentives of large shareholders to act strategically. These researchers have focused mainly on managerial and bidder holdings of target shares.[3] There has also, however, been some analysis of the effect of target ownership by institutional shareholders.[4] In this section, we motivate hypotheses about the effect of managerial, bidder, and institutional ownership of the division of gains in successful takeovers. Other shareholders are assumed to be atomistic, and we discuss their role first.

A. Atomistic Shareholders

An atomistic shareholder tenders if the expected value of tendering exceeds the expected value of not tendering. If the bid fails and no shares are bought, the atomistic shareholder's wealth is the same whether he or she tendered or not. Consequently, the shareholders' decision to tender is made by comparing the payoffs of tendering with those of not tendering assuming that the offer succeeds. Some shareholders may avoid tendering because it forces the realization of

[2] As discussed in Section III, we also investigated offers opposed by management.

[3] See, for instance, Harris and Raviv (1988) and Stulz (1988) for managerial holdings and Shleifer and Vishny (1986a) for bidder holdings. In an earlier version of this paper we considered the role of large shareholders not related to target management and not related to the bidder. However, relatively few firms in our sample had such shareholders prior to the first bid. We do not consider the role of arbitrageurs in this paper since they mostly acquire significant stakes after the stare of takeover activity and hence do not affect the division of target ownership observed by the bidder before making a bid.

[4] See, for instance, Brickley, Lease, and Smith (1988).

taxable capital gains. Further, shareholders are likely to have different beliefs about the value of shares not tendered if the offer succeeds. As a result of heterogeneity in beliefs and differences in tax status, the supply curve of shares tendered is an increasing function of the price per share offered by the bidder. This supply curve is represented in Figure 1. We assume that the supply curve for atomistic investors is the same irrespective of the fraction of target shares they hold as a group. Since a shareholder can always sell shares at the market price, this supply curve must intersect the vertical axis at or above the market price. Assuming that the bidder can capture most of the takeover gains not paid

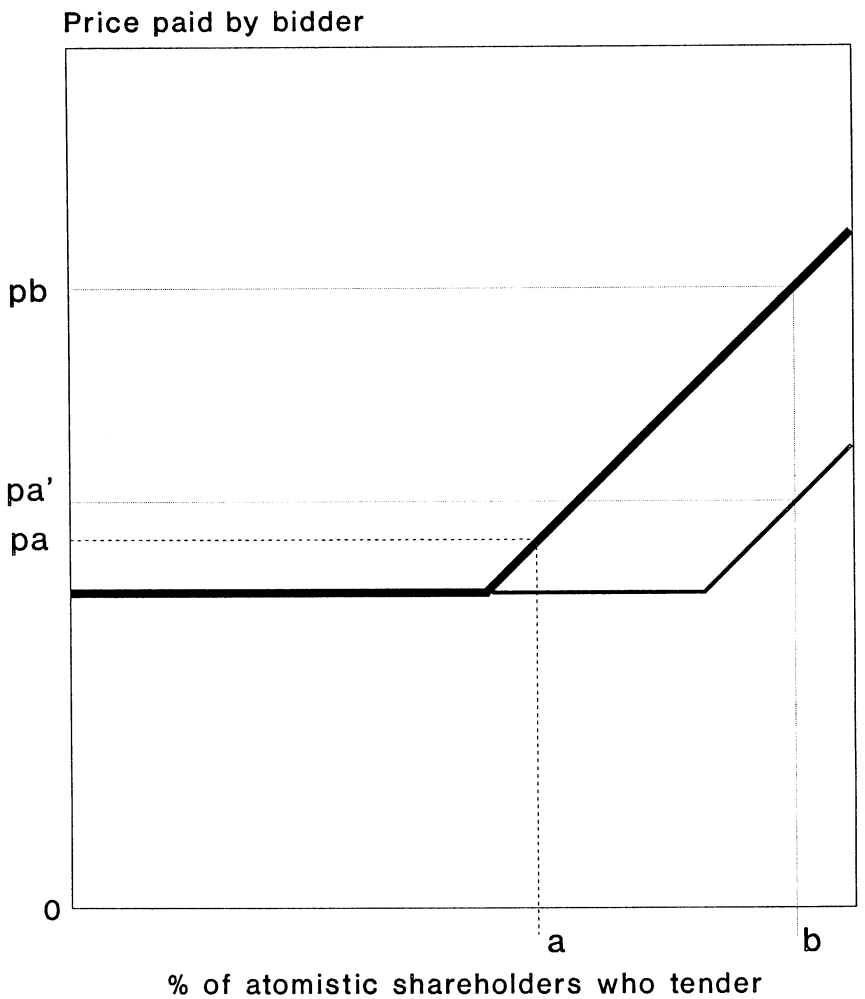

Figure 1. The supply curve of shares as a function of the price paid by the bidder. An increase in managerial ownership increases the required fraction of shares to be tendered by atomistic shareholders from *a* to *b* for the bidder to succeed. It therefore forces the bidder to increase the price paid from *pa* to *pb*. An increase in ownership by shareholders that do not pay taxes shifts the supply curve to the right, so that, for high institutional ownerships, a fraction *b* of the shares can be acquired for a price *pa'* instead of *pa*.

out to tendering shareholders, there are shareholders who pay no taxes and are willing to tender for a small premium.[5] An increase in the fraction of shares held by such shareholders pushes the supply curve of shares to the right, as shown in Figure 1.

B. The Bidder

The bidder offers target shareholders a package that consists of a premium for the shares tendered and rights to a fraction of the cash flow resulting from the combination of the bidder and the target for shares not tendered. The bidder chooses this package to maximize the net present value of acquiring a given number of target shares. Since the true supply curve of shares is not known, the bidder chooses a premium based on its knowledge of the distribution of the true supply curve. For a given premium, the bid may fail because the supply of shares tendered turns out to be lower than the minimum number of shares tendered required by the bidder. The opportunity cost of losing the bid increases with the bidder's estimate of the total takeover gain. Hence, we assume that the bidder is willing to pay more as the expected total takeover gain increases.[6]

Bidders often own a fraction of the target's shares prior to an offer. Large bidder holdings of target shares mean that fewer shares must be tendered for the bidder to succeed. In Figure 1, this means that the pivotal shareholder, i.e., the marginal shareholder who must tender for the offer to succeed, is lower on the supply curve. Hence, the premium offered to target shareholders falls with the fraction of shares owned by the bidder, and the bidder gets to keep a larger fraction of the total takeover gain. This suggests the following hypothesis:

H1: For a given total takeover gain, the target's gain is a decreasing function of the fraction of target shares held by the bidder prior to the offer.

C. Target Management

At the time the bid is made, target management holdings of target shares are fixed. Target management has to decide the price at which it is willing to tender. If management's holdings are not trivial, its tendering decision will affect the probability of bid success. If management tenders, the bidder has to acquire fewer shares from atomistic shareholders and hence offers a smaller premium. By not tendering or by tendering only for a high premium, management forces the bidder to pay to target shareholders a larger fraction of the takeover gain. In Figure 1, larger ownership by non-tendering managers means that the pivotal shareholder is higher on the supply curve. However, by tendering only for high premia, management risks not receiving any takeover premium. That is, the bid may succeed without its shares or not succeed at all.

If management earns rents in its position, it is likely to lose them if the bid

[5] If the bidder cannot capture most of the gains not paid out to tendering shareholders, shareholders may refrain from tendering since their shares will appreciate as part of the takeover gain accrues to them. See Grossman and Hart (1980).

[6] See Stulz (1988) for assumptions that lead to this result.

succeeds. Consequently, we would expect management to tender for a given premium only if the present value of the benefits from remaining the incumbent are less than the takeover premium management would receive. Clearly, management's reluctance to tender is a mixed blessing for target shareholders. On one hand, this reluctance increases the premium offered, but, on the other hand, it makes it less likely that the offer will succeed and hence that a premium will be paid. Alternatively, if incumbent management wants to sell out, there may be cases where management does not act strategically to increase the target's gain but instead uses its holdings to facilitate the takeover. This leads to our second hypothesis:

> H2: When the value of incumbency is high, the target's gain conditional on the total takeover gains is an increasing function of target management's stake.[7]

To the extent that multiple-bidder offers are disciplinary offers, one would expect the value of incumbency to be high for firms that attract multiple offers. This is because the takeover gains in such cases partly result from eliminating the rents that accrue to incumbents. Alternatively, one could view offers opposed by management to be cases where incumbency has value. Although in this paper we generally assume that firms that receive multiple offers are those where the value of incumbency is high, we also consider the case of offers opposed by management in our analysis.

D. Institutional Investors

Investors with low marginal capital gains tax rates are more likely to tender for a given premium. Consequently, the larger the fraction of low-tax shareholders, the lower the premium offered by the bidder and the smaller the target's share of the takeover gain for a given total takeover gain. While no data are directly available on the shape and location of the supply curve of shares, data are available on the fraction of shares held by institutional investors. The number of different institutional investors is also available for each firm, and generally this number is large. It seems reasonable to assume that the typical institutional investor ignores the effect of tendering on the probability of bid success and can therefore be treated as an atomistic investor. Since institutional investors are generally in low tax brackets, the target's share of the takeover gain should be inversely related to the fraction of target equity held by institutions. This assumes, however, that institutional investors cannot collude. On Figure 1, this means that the pivotal investor is lower on the supply curve if the fraction of shares held by institutional shareholders is large. This leads us to our third and last hypothesis:

> H3: For a given total takeover gain, the target's gain is a decreasing function of the fraction of target shares held by institutional investors.

[7] See also Stulz (1988).

II. Data Sources

A. Estimates of the Target, Bidder and Total Gains

The initial sample of tender offers comes from two sources: (a) the Rochester Merc Data Base on tender offers for the period from October 1968 through September 1980 and (b) the Austin Database on tender offers for the period from September 1980 through 1986.[8] To belong to our sample, tender offers must meet the following criteria:

1. Both the target and bidding firms are on the CRSP daily returns tape for 300 days before the first takeover announcement.
2. The bidder acquires some shares in the offer.
3. The tender offer occurs after October 1968.

Two hundred nine tender offers satisfy these criteria (125 from the Rochester list and 84 from the Austin list). As in Bradley, Desai, and Kim (1988), an offer where the bidder acquired some shares is defined to be successful. We focus on successful offers to insure that our estimates of the target and bidder gains are not biased downward because of the attenuation effect resulting from a probability of success that is less than one. This bias could lead us to believe that higher managerial ownership decreases the target's gain if, as argued in Stulz (1988), the probability of success of a bid falls with target managerial ownership.

To conduct our study, we need data on ownership. Consequently, we retain only those firms for which we have ownership data. This restricts the usable sample to 104 takeovers.[9] These takeovers are classified as single-bidder takeovers and multiple-bidder takeovers. There are 40 multiple-bidder takeovers in the sample.

The estimation of the target and bidder gains follows closely the method developed by Bradley, Desai, and Kim (1988). We refer the interested reader to their extensive discussion of their method. Market model parameters are estimated on a period from 300 to 60 days before the first announcement of takeover activity for the target firm. For single-bidder unrevised offers, these market model parameters are used to estimate the cumulative abnormal return for a period of 11 days centered on the first announcement date of takeover activity by the bidder. For multiple-bidder and revised offers, the cumulative abnormal return is estimated from 5 days before the first takeover announcement to 5 days after the last revision in terms by the successful bidder.

Table I reports summary statistics on bidder and target cumulative abnormal returns. The statistics for the complete sample are similar to those of Bradley, Desai, and Kim (1988), although our estimate for target cumulative returns (39%) is somewhat higher than theirs. In their sample, the target abnormal return from

[8] See Tenderbase, Version 1.03, Douglas Austin & Associates, Inc., 1987. The Tenderbase provides machine readable information on all tender offers registered with the SEC.

[9] As explained later, our managerial ownership data are obtained from *Value Line*. *Value Line* started to report ownership in 1968, so that our use of *Value Line* precludes consideration of offers made before 1968. Of the 125 firms obtained from the Rochester data base, 40 were not in *Value Line* and 20 other firms had missing data on one or more independent variables. For the 84 firms obtained from the Austin list, 31 were not in *Value Line* and 14 had data missing on some independent variable.

Table I

Abnormal Returns and Significance Tests for Data for Targets and Bidders

The sample comprises 104 successful takeovers from 1968 to 1986. The abnormal returns are estimated using the market model. The parameters of the market model are estimated on a period from 300 to 60 days prior to the first announcement of takeover activity. The cumulative abnormal returns are estimated on a period that starts 5 days before the first announcement by a bidder to 5 days after the final revision in terms by the successful bidder. The value-weighted portfolio of the bidder and the target uses as the value of the target the value of the shares not held by the bidder to avoid double-counting of these shares.

(Number of Offers)	All (104)	Single Bidder (64)		Multiple Bidders (40)
Panel A: Target Abnormal Returns				
Average abnormal return	0.3934	0.3545		0.4558
t-Statistic (H0: mean equal to zero)[a]	18.73***	13.26***		14.27***
t-Statistic (H0: means of subgroups are equal)[b]			−2.40**	
Median abnormal return	0.3793	0.3250		0.4594
Standard deviation of the abnormal return	0.2142	0.2139		0.2020
Panel B: Bidder Abnormal Returns				
Average abnormal return	−0.0083	0.0129		−0.0421
t-Statistic (H0: mean equal to zero)	−0.49	0.94		−1.11
t-Statistic (H0: means of subgroups are equal)			1.59	
Median abnormal return	−0.0026	−0.0043		0.0040
Standard deviation of the abnormal return	0.1726	0.1094		0.2396
Panel C: Value-Weighted Portfolio Abnormal Returns				
Average abnormal return	0.1091	0.0966		0.1290
t-Statistic (H0: mean equal to zero)	6.89**	5.55**		4.26***
t-Statistic (H0: means of subgroups are equal)			−0.93	
Median abnormal return	0.0941	0.0732		0.1470
Standard deviation of the abnormal return	0.1614	0.1393		0.1917

[a] * denotes significance at the 0.10 level, ** at the 0.05 level, and *** at the 0.01 level.

[b] The t-statistics assume equal variances for the two subgroups.

1968 to 1984 is slightly more than 35%. The difference seems to be explained by the period from 1968 to 1980. For that period, the average target abnormal return in their study is equal to 35.29% while here it is 41.2%.[10] It is possible that this difference is caused by the firms that are in the Bradley, Desai, and Kim (1988) sample but are eliminated from this one because we do not have ownership data for them.[11] Finally, the average cumulative abnormal return is significantly lower for single-bidder takeovers than for multiple-bidder takeovers.

The mean cumulative abnormal return for bidders is negative for the whole sample but not significantly different from zero. The average bidder return is negative for multiple-bidder contests and positive otherwise. The difference of about 5.5 percentage points between bidder abnormal returns for multiple- and single-bidder contests has a t-statistic of 1.59. The high standard deviation of bidder returns for multiple-bidder takeovers shows that there is substantial variation in the bidder gain in such contests and explains why such a large return difference is not significant at the 0.10 level.

Finally, Panel C of Table I reports statistics on the abnormal return for a value-weighted portfolio of the target and the bidder.[12] To compute the portfolio weights, the market value of target equity is defined as the closing market price for the month end prior to the initial acquisition announcement times the number of shares outstanding not held by the bidder. Double-counting of the gains that accrue to the bidder through its holdings of target shares is avoided by using the number of target shares not held by the bidder. All of the bidder's shares are used to compute its market value of equity. In most cases, these data are obtained from the CRSP tapes. Where necessary, we supplement the CRSP data with figures from the *Standard and Poor's Stock Guide.* Although the point estimate of the gain to the value-weighted portfolio is larger in the case of multiple-bidder takeovers, the difference from the single-bidder case is not statistically significant.

B. Ownership Variables

The cross-sectional regressions reported in this study use *Value Line* ownership data from the appropriate issue immediately preceding the initial takeover announcement. *Value Line* reports ownership of officers, directors, and other insiders.[13] In this study, the fraction of target shares held by officers, directors,

[10] This implies that in our sample the target returns are lower in the 1980's than in the 1970's. Jarrell and Poulsen (1987) also find lower target returns in the 1980's.

[11] An alternative explanation for this difference is the choice of announcement dates. We define the first announcement to be any acquisition-related news concerning the target preceding the tender offer such that there is no other acquisition-related news for the previous three-month period. Examples include the announcement that a firm is a possible target, that a large block of shares has been acquired, or that an actual bid has been made. Thus, we are more likely to include anticipatory price increases than Bradley, Desai, and Kim (1988).

[12] The portfolio gain is larger than the one reported by Bradley, Desai, and Kim (1988). This is likely to be due to different criteria for sample selection.

[13] *Value Line* obtains its ownership data from proxy statements, corporate news releases, and Forms 3 and 4 filed with the SEC. Form 3 is an initial ownership statement filed by officers, directors, and 10% principal stockholders. The statement must be filed within 10 days after acquiring the security. Form 4 records any changes in ownership. It must be filed within 10 days after the end of

and other insiders is defined as "managerial ownership."[14] Shares held by the bidder obtained from the Rochester and the Austin databases constitute our measure denoted "bidder ownership." Our measure "institutional ownership" is obtained from the *S&P Stock Guide* and corresponds to the fraction of target shares held by institutional investors at the end of the month preceding the initial takeover announcement.[15]

Table II describes our ownership data. Although managerial ownership is lower on average for multiple-bidder takeovers than for single-bidder offers, the difference is not significant. The level of institutional ownership is about the same for multiple-bidder and single-bidder takeovers. The fact that bidder ownership is significantly higher for single- than for multiple-bidder offers suggests that in the case of single-bidder offers the bidder already has a strong position when the first takeover rumor occurs and that this position may deter further bidders. As evidence of the relative bargaining power of management in single- versus multiple-bidder offers, it is useful to note that in single-bidder offers the successful bidder typically has a larger pre-offer stake in the target than management. In multiple-bidder offers, both the first bidder and the successful bidder have a smaller pre-offer stake in the target than management. The difference in the size of bidder ownership relative to managerial ownership in multiple- and single-bidder contests suggests that multiple-bidder contests are more likely to occur when the first bidder has a weak position relative to target management.

III. The Relation Between the Target's Share and Ownership Measures

A. *The Regression Model*

Section I develops hypotheses that relate the target's gain to ownership variables. To summarize the hypotheses of Section I, let t_i and g_i be, respectively, the target and the total takeover dollar gains. It follows from Section I that we

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the month in which the change occurred. *Value Line* treats as insiders those shareholders related to management or board members. Malatesta and Walkling (1988) also use *Value Line* ownership data and discuss some of its properties.

[14] Alternative measures of managerial ownership are available. On a subset of our sample, we used the Spectrum 6 report. This report constructs a measure of managerial ownership using the information published in SEC Forms 3 and 4. We also had proxy statements available for some firms in the sample. The correlation coefficient between the *Value Line* ownership measure and the proxy statement measure is about 0.85. Although the three ownership measures are not perfectly correlated, they yield similar results. In particular, we estimated our cross-sectional regressions on a subsample that uses the Spectrum 6 measure and the proxy measure. This subsample contains 95 successful takeovers, of which 67 are unopposed. These regressions, which led to results similar to those reported in this paper, suggest that the results of this paper are robust to changes in data sources for managerial ownership.

[15] The *S&P Stock Guide* measures institutional holdings as the sum of shares held by investment companies, banks, insurance companies, college endowments, and other 13f institutions and money managers. The 13f filings are required by the SEC since December 31, 1978. All institutions with equity assets exceeding $100 million are required to file on a quarterly basis. *Value Line* also reports institutional holdings but does not do so continuously throughout our sample period.

Table II

Target Ownership Measures

The ownership measures are for a sample of 104 successful takeovers bids from 1968 to 1986. Managerial ownership is the sum of the target stock ownership of officers, directors, and other insiders reported by *Value Line* in the appropriate issue immediately preceding the initial announcement of takeover activity expressed as a fraction of total stock outstanding. Institutional ownership is the fraction of shares held by institutional investors as reported by the *Standard and Poors Stock Guide* for the end of the month preceding the initial announcement of takeover activity. Bidder ownership data are obtained from the Rochester Merc Database and the Austin Database and confirmed through the *Wall Street Journal.*

(Number of Offers)	All (104)	Single Bidder (64)		Multiple Bidders (40)
Panel A: Managerial Ownership				
Average	0.0937	0.1044		0.0767
t-Statistic (H0: mean equal to zero)[a]	7.87**	6.42**		4.60**
t-Statistic (H0: means of subgroups are equal)[b]			1.13	
Median	0.0400	0.0500		0.0250
Standard deviation	0.1215	0.1302		0.1055
Panel B: Institutional Ownership				
Average	0.1906	0.1842		0.2007
t-Statistic (H0: mean equal to zero)	11.52**	8.46**		7.88***
t-Statistic (H0: means of subgroups are equal)			−0.48	
Median	0.1390	0.1218		0.1716
Standard deviation	0.1687	0.1741		0.2007
Panel C: Bidder Ownership				
Average	0.1024	0.1380		0.0454
t-Statistic (H0: mean equal to zero)	6.64**	6.16**		3.23***
t-Statistic (H0: means of subgroups are equal)			3.04***	
Median	0.0235	0.0475		0.0000
Standard deviation	0.1572	0.1772		0.0891

[a] * denotes significance at the 0.10 level, ** at the 0.05 level, and *** at the 0.01 level.

[b] The *t*-statistics assume that the variances of the two subgroups do not differ.

can write

$$t_i = f(\underline{x}_i, \underline{y}_i, g_i), \tag{1}$$

where $\underline{x}$ is a 3×1 vector of ownership variables and $\underline{y}_i$ is an $n \times 1$ vector of variables that affect the target's share of the total takeover gain. The hypotheses of Section I are that $f(\underline{x}_i, \underline{y}_i, g_i)$ is an increasing function of managerial ownership and a decreasing function of institutional and bidder ownership.

Assuming that the target gain depends linearly on the explanatory variables, we can estimate (1) by regressing the target's gain on the constant, the ownership variables, the total gain, and the other explanatory variables. The gain variables are normalized by the size of target equity to avoid heteroscedasticity. (Heteroscedasticity is implied by the positive relation between the variance of the estimation error in the target dollar gain and the size of the target dollar gain.) The normalized target gain is simply the target's abnormal return associated with the takeover. The normalized total gain is in the same units as the normalized target gain, so that, if the target shareholders got all of the total gain irrespective of the other explanatory variables, the regression coefficient on the normalized total gain would be one. We allow for a different effect of positive and negative total gains on the target's abnormal return. The target gain does not have to be positively related to the takeover gain when the total gain is negative. Using circumflexes to denote the estimates of the normalized variables, we therefore estimate the following equation:

$$\hat{t}_i = c + \underline{a}'\underline{x}_i + \underline{b}'\underline{y}_i + d^+\hat{g}_i^+ + d^-\hat{g}_i^- + u_i, \tag{2}$$

where $\hat{g}_i^+$ ($\hat{g}_i^-$) is the normalized total gain if positive (negative). The estimates of the regression coefficients on the ownership variables can be interpreted as the effect of these variables on the target's abnormal return conditional on the total takeover gain. Note, however, that, if the probability of a firm being a target were negatively related to managerial ownership, a firm with high managerial ownership would have a small probability of being a target.[16] Hence, if an offer is made, the firm's value might increase more than if it had low managerial ownership because the element of surprise in the offer is greater. This relation between the probability of being a target and managerial ownership could lead to a positive relation between the target's gain and managerial ownership.[17] By the same argument, one can derive a negative relation between the probability of being taken over and bidder and institutional ownership that could lead to a negative relation between the target's gain. We will discuss later why this issue is not of great concern given our empirical estimates. However, if our results could be partly attributed to the relation between the probability of a takeover and the ownership variables, this would still be supporting evidence for the role

[16] See Stulz (1988). Mikkelson and Partch (1989) provide evidence that lower managerial ownership is associated with higher frequency of control events.

[17] See Lanen and Thompson (1988) for a discussion of how the interaction between the cash flow implications of an event and the probability of the event taking place affect the stock price reaction to an event.

of the distribution of ownership in takeovers, since it would indicate that the distribution of ownership affects the probability that a firm will be a target.

The variables affecting bidder and target gains in takeovers are not well understood. However, to estimate (2) we do not need to know every variable which could affect the target's gain. We want, however, to make sure that we control for those variables that are correlated with ownership variables to insure that the regression coefficients on the ownership variables are not biased. From Demsetz and Lehn (1985), we know that target size is likely to be correlated with managerial ownership and, possibly, with institutional ownership.[18] It also seems plausible that bidder size might be correlated with bidder ownership. Finally, Section I implies that the target's share of the gains should increase with the fraction of the shares acquired by the bidder; bidder ownership and the fraction of target shares the bidder acquires through the tender offer are likely to be negatively correlated. In our regressions, we therefore control for target size, bidder size, and the fraction of target shares acquired by the bidder.

We expect the impact of ownership on the target's gain to be nonlinear; for example, an increase in managerial ownership from 30 to 35% would have a smaller effect than an increase from 0 to 5%. With holdings of, say, 30%, management may be able to block any takeover attempt. Increasing its holdings further would have no effect on takeover contests. The same argument can be made for bidder and institutional ownership. To account for this nonlinear effect, we estimated the ownership effects using both levels and square roots of the ownership measures. Regressions that use square roots of ownership measures have greater explanatory power than regressions that use the levels of ownership measures, but none of the qualitative conclusions of the paper depend on whether regressions are estimated using levels or square roots of ownership measures.[19] In regressions that use both levels and square roots of ownership measures, multicollinearity leads to less significant coefficients for the ownership measures. However, in these regressions, the coefficients of the square root ownership measures are more significant than the coefficients of the level ownership measures.

B. Estimates of the Regression Model

Table III provides estimates of the regression model given by equation (2). The results in Table III show that the target managerial holdings have a significant positive effect on target abnormal returns for the sample of multiple-bidder takeovers. For this sample and the whole sample, institutional holdings have a significant negative effect. Somewhat surprisingly, bidder holdings of the target have a significant negative effect only for the whole sample. The coefficient on bidder holdings has a p-value of 0.16 in the single-bidder sample and 0.24 in the

[18] See Demsetz and Lehn (1985).

[19] Since one might argue that the effects of bidder and institutional ownership do not decrease as bidder and institutional ownership increases, we also estimated regressions where the square root of managerial ownership and the levels of the other ownership measures are the dependent variables. Such regressions have slightly less explanatory power than the regressions reported here but lead to the same qualitative conclusions.

Table III

Cross-Sectional Regressions Using the Target Abnormal Return as the Dependent Variable

The sample contains 104 successful takeovers from 1968 to 1986. To estimate the target and bidder dollar gains, we use market model residuals. The cumulative abnormal returns are estimated on a period that starts 5 days before the first announcement by a bidder to 5 days after the last revision in terms by the successful bidder. The market value of target and bidder equity is obtained by multiplying the number of shares outstanding times the closing market price for the month end prior to the initial acquisition announcement. (The market value is expressed in billions of dollars in the regression.) The bidder acquiring percentage is the percentage acquired by the bidder through the tender offer and is obtained from the Rochester Merc Database or the Austin Tenderbase. The ownership measures are expressed as a fraction of the shares outstanding. The sources for managerial, institutional, and bidder ownership of the target are, respectively, *Value Line*, the *Standard and Poor's Stock Guide*, and the Merc and Austin databases. The total takeover gain is the sum of the target dollar gain and of the bidder dollar gain normalized by the value of target equity. The target dollar gain is computed using the shares not held by the bidder.

Type of Contests (Number of Tender Offers)	All (104)	Single Bidder (64)	Multiple Bidders (40)
Regression coefficient			
Intercept	0.34571	0.28737	0.41695
Market value of target equity	0.0965	0.00687	0.1531
t-Statistic	(1.79)	(0.07)	(2.42)
Market value of bidder equity	0.0096	0.0122	−0.03372
t-Statistic	(0.99)	(1.54)	(−1.39)
Bidder acquiring percentage	0.1068	0.1675	0.0022
t-Statistic	(1.49)	(1.80)	(0.02)
Square root of management ownership	0.1376	0.0176	0.4140
t-Statistic	(1.30)	(0.13)	(2.34)
Square root of institutional ownership	−0.2693	−0.1975	−0.3620
t-Statistic	(−2.37)	(−1.27)	(−2.12)
Square root of bidder ownership	−0.2256	−0.1604	−0.2092
t-Statistic	(−2.57)	(−1.43)	(−1.19)
Total gain if negative	−0.0296	−0.0398	−0.0596
t-Statistic	(−0.91)	(−0.73)	(−0.98)
Total gain if positive	0.1192	0.1132	0.1658
t-Statistic	(3.60)	(2.54)	(2.85)
R-squared	0.2749	0.2734	0.4083

multiple bidder sample. The bidder acquiring percentage, defined as the fraction of target shares acquired by the bidder through the tender offer, has a significant positive coefficient in the single-bidder sample but not in the multiple-bidder sample. The total takeover gain has a significant positive effect on the target's gain for the whole sample and the subsamples if it is positive, but it has no effect if it is negative. Finally, the market value of target equity is significantly positively related to the target's gain for both the whole sample and the multiple-bidder sample.

The coefficients on the ownership measures always have the sign predicted by

our hypotheses, but the level of significance on the coefficients varies dramatically across subsamples. The coefficient on managerial ownership is positive for the whole sample and both subsamples; however, the coefficient is only significantly different from zero in the multiple-bidder sample. For the whole sample, we can reject (at the 0.10 level) the hypothesis that the coefficient is negative. For institutional ownership, the coefficient is negative for the whole sample and all subsamples, but it is insignificantly different from zero in the single-bidder subsample. Finally, the coefficient on bidder ownership is always negative, but it is significant only for the whole sample. From Table II, we know that bidder ownership is small for the multiple-bidder contests and larger for the single-bidder contests. The negative effect of bidder ownership in the whole sample may therefore be caused by the difference in bidder ownership across subsamples, since the single-bidder contests have a lower average target gain than the multiple-bidder contests. Targets with small bidder ownership and large managerial ownership are the most likely to have multiple bidders. There seems, therefore, to exist a relation between the distribution of target ownership and the number of bidders.

The hypotheses tested in this paper are conditional on a successful offer. Rather than performing the difficult task of estimating the target and bidder gains conditional on success, we focus on successful offers. In our sample of successful offers, successful resistance to an offer by target management leads to a multiple-bidder contest since all targets are eventually acquired. Thus, our sample does not contain cases where high managerial ownership prevents a successful takeover and target management retains control of the target. The multiple-bidder contests we consider differ from simple auctions, in the sense that they often take place as a result of managerial resistance to the first bidder.[20] This resistance is made effective by management's strategic use of its holdings of target shares. When we divide the sample further according to target management attitude toward the bid, the size of the subsamples becomes small.[21] Nevertheless, we find that the effect of managerial ownership is strongest for the multiple-bidder contests where target management opposes a bidder.

The use of the total gain as a regressor in Table III could be a cause for concern since it includes a transformation of the dependent variable. However, sensitivity tests using alternate specifications produce similar results. In particular, we estimated the regressions in Table III both excluding the normalized total gain as a dependent variable and using the normalized bidder gain (i.e., the bidder dollar gain divided by the market value of the target) instead of the normalized total gain. These regressions led to similar coefficient estimates for the ownership measures. We also estimated regressions that used the target's share, i.e., the target dollar gain divided by the total takeover gain, as the dependent variable.

[20] Baron (1983), Giammarino and Heinkel (1986), Shleifer and Vishny (1986b), and Fishman (1988) all discuss the role of target management in facilitating the entry of additional bidders.

[21] We define resistance as the case where target management opposition to a bidder is explicitly noted in the *Wall Street Journal*. Resistance ranges from verbal opposition to lawsuits and defensive restructurings.

Table IV

Cross-Sectional Regressions Using the Abnormal Return of a Value-Weighted Portfolio of the Bidder and the Target as the Dependent Variable

The sample contains 104 successful takeovers from 1968 to 1986. To estimate the target and bidder dollar gains, we use market model residuals. The cumulative abnormal returns are estimated on a period that starts 5 days before the first announcement by a bidder to 5 days after the last revision in terms by the successful bidder. The market value of target and bidder equity is obtained by multiplying the number of shares outstanding times the closing market price for the month end prior to the initial acquisition announcement. (The market value is expressed in billions of dollars in the regression.) The bidder acquiring percentage is the percentage acquired by the bidder through the tender offer and is obtained from the Rochester Merc Database or the Austin Tenderbase. The ownership measures are expressed as a fraction of the shares outstanding. The sources for managerial, institutional, and bidder ownership of the target are, respectively, *Value Line*, the *Standard and Poor's Stock Guide*, and the Merc and Austin databases. The total takeover gain is the sum of the target dollar gain and of the bidder dollar gain normalized by the value of target equity. The target dollar gain is computed using the shares not held by the bidder.

Type of Contests (Number of Tender Offers)	All (104)	Single Bidder (64)	Multiple Bidders (40)
Regression coefficient			
Intercept	0.06344	0.02124	0.15204
Market value of target equity	0.1057	0.05885	0.1161
t-Statistic	(2.39)	(0.87)	(1.68)
Market value of bidder equity	−0.0130	−0.0114	−0.28531
t-Statistic	(−2.26)	(−2.18)	(−1.19)
Bidder acquiring percentage	0.0837	0.1605	−0.0455
t-Statistic	(1.43)	(2.54)	(−0.37)
Square root of management ownership	−0.0637	−0.0999	−0.0459
t-Statistic	(−0.74)	(−1.09)	(−0.24)
Square root of institutional ownership	−0.0246	−0.0316	0.0278
t-Statistic	(−0.27)	(−0.31)	(0.15)
Square root of bidder ownership	0.0327	0.0823	−0.0569
t-Statistic	(0.46)	(1.10)	(−0.37)
R-squared	0.1187	0.1651	0.1385

While statistical inference for such regressions is difficult, the OLS estimates support the conclusions reached using the regressions in Table III.

Table IV provides another check on our results. It shows estimates of regressions using the return to a value-weighted portfolio of the bidder and the target as the dependent variable. If the ownership variables are significant in such a regression, it implies that they affect the size of the total gain. In this case, our previous results could be affected by the potential effect of the ownership variables on the total takeover gain or on the probability of a bid being made. The evidence in Table IV does not support this hypothesis, since it shows that the total takeover gain is not related to the ownership variables. This makes it

more likely that our results can be attributed to the effect of target ownership on the division of gains.[22]

IV. Conclusion

This paper documents that, for a sample of successful tender offers, the target's share of the total takeover gain depends on the distribution of target ownership. We show this with estimates of a regression of target abnormal returns on ownership and other explanatory variables. We demonstrate that, for multiple-bidder offers, the target's gain increases with target managerial ownership and decreases with institutional ownership. Further, bidder and institutional ownership of the target decreases the target's gain for the whole sample. For multiple-bidder contests, bidder ownership seems to be less important. In general, multiple-bidder contests take place when the bidder has a weak ownership position in the target and target management has a strong ownership position. This paper also shows that the gain to a value-weighted portfolio of the bidder and the target does not depend on the distribution of target ownership.

One would expect managerial ownership to matter more when management has strong incentives to use its holdings to increase the bidder's acquisition price. We assumed that these incentives would be strong for multiple-bidder takeovers. The importance of managerial ownership in multiple-bidder contests suggests that it is erroneous to view such contests as simple auctions. If multiple-bidder contests were simple auctions, managerial ownership would have less importance in such contests than in single-bidder contests because competition among bidders drives up the target's gain in such contests. Our results suggest that target management with a large stake is better able to transform a single-bidder contest into a multiple-bidder contest.

[22] Note that a regression that uses the bidder's gain as a dependent variable would not provide useful additional evidence. An ownership variable that increases the target's dollar gain should decrease the bidder's dollar gain. When measured in percentage terms, however, the gains and losses will not be offsetting unless both the bidder and the target dollar gains are expressed in percentage of the target value. Using as the dependent variable the bidder dollar gain divided by the target market value yields regression estimates that contain no new information relative to the regression estimates given in Table III. The sum of regressions that use, respectively, the bidder dollar gain and the target dollar gain divided by the target market value as the dependent variables yields the identity that the total normalized takeover gain equals itself. Consequently, we cannot study the determinants of the bidder's gain to evaluate the robustness of our results.

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