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MANAGERIAL PERFORMANCE, TOBIN'S *Q*, AND THE GAINS FROM SUCCESSFUL TENDER OFFERS*

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For a sample of successful tender offers, we find that the shareholders of high q bidders gain significantly more than the shareholders of low q bidders. In general, the shareholders of low q targets benefit more from takeovers than the shareholders of high q targets. Typical bidders have persistently low q ratios prior to the acquisition announcement while target q ratios decline significantly over the five years before the tender offer. Our results are consistent with the view that takeovers of poorly managed targets by well-managed bidders have higher bidder, target, and total gains.

1. Introduction

Previous research on the market for corporate control establishes that successful takeovers typically increase the value of target common stock.[1] Whether successful takeovers increase or decrease the value of bidder common stock, however, is not clear. Moreover, little has been done to explain the cross-sectional variation of bidder and target abnormal returns.[2] This variation is especially puzzling for bidder returns, which are often negative. A tender offer accompanied by a fall in bidder equity value suggests that bidder shareholders would have been better off without the tender offer.

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[1]See Jensen and Ruback (1983), Roll (1986), and Jarrell, Brickley, and Netter (1988) for reviews of this literature.

[2]See, however, Bradley, Desai, and Kim (1988) for evidence on the effect of bidder competition and the bidder's acquiring percentage, and Stulz, Walkling, and Song (1988) for evidence on the effect of the distribution of target ownership between management, bidder, and institutions on the division of the gains from tender offers. Travlos (1987) and Huang and Walkling (1987) relate bid characteristics to, respectively, bidder and target abnormal returns.

We demonstrate that bidder abnormal returns, target abnormal returns, and the abnormal returns of a value-weighted portfolio of the bidder and the target are related to the bidder's and the target's Tobin's q, measured as the ratio of the firm's market value to its replacement value.[3] Tobin's q is an increasing function of the quality of a firm's current and anticipated projects under existing management. If management's performance is a major determinant of a firm's q ratio, our results show that the target, bidder, and total gains from takeovers are related to the performance of both target and bidder management.[4] We use q ratios in two ways. First, we divide our sample between high q firms (those with a q ratio in excess of one) and low q firms. Although we could have used a different value of q to separate firms, under some assumptions firms with q ratios below one have marginal investment projects with negative net present value.[5] This classification also enables us to capture in a simple way the interaction between bidder and target q ratios and its impact on the bidder, target, and total takeover gains. For instance, we can estimate how the gain of a high q bidder depends on whether the target has a low or a high q ratio. Second, we use the q ratios directly, assuming that bidder, target, and total takeover gains depend linearly on the bidder and target q ratios. Although both approaches typically lead to similar conclusions, the results using the high and low q classification are more significant, possibly because the relation between abnormal returns and q ratios is not linear.

In our sample of successful tender offers, the typical bidder has been a low q firm over several years before the acquisition attempt. The typical target's q ratio has recently declined. The shareholders of high q bidders earn significant abnormal returns in successful tender offers while the shareholders of low q bidders lose (the 5.2% difference between high q and low q bidder abnormal returns is significant at the 0.05 level). Our results suggest that tender offers

[3]After submitting this paper, we received a copy of Servaes (1988), who also explores the relation between abnormal target and bidder returns and q measures. In regressions that include only the target q ratio, he finds that target and bidder abnormal returns are unrelated to the target's q ratios. When he controls for means of payment, he finds that target and bidder abnormal returns are negatively related to the target q and unrelated to the bidder q. Although his results generally support our conclusions, his study differs substantially from ours because (a) his q measures are computed from book values without adjustments, (b) his sample includes all takeovers in the sample period rather than just tender offers, and (c) he measures abnormal returns on a per-day basis.

[4]The performance of a firm's existing management is obviously not the sole determinant of its q ratio. If a change in control is expected, Tobin's q also measures the expected change in the quality of a firm's projects resulting from the change in control. Further, management's ability to affect a firm's q ratio depends on, among other things, the production technology and the costs of trading real assets.

[5]This is true in the absence of taxes and adjustment costs for firms with declining or constant marginal efficiency of capital. The effect of taxes and adjustment costs is discussed extensively in Summers (1981) and Hayashi (1982). If the market value of target equity includes a takeover premium, a target whose marginal investment opportunity under current management has a negative net present value could have a q ratio in excess of one.

associated with the largest increase in the combined value of bidder and target equity, called henceforth the total takeover gain, are undertaken by high q bidders for low q targets. Tender offers that have the smallest total takeover gain are made by low q bidders for high q targets. Whereas bidders, on average, lose in excess of 4% for the latter offers, they gain in excess of 10% for the former.

Our results support the view that financial markets reward well-managed firms, namely, high q firms, taking over poorly managed firms, but not poorly managed firms taking over well-managed firms. The gains to shareholders of well-managed firms from takeovers of badly managed firms are due to an increase in the combined value of the target and the bidder. In contrast, for takeovers of well-managed firms by poorly managed firms, part or all of the target's gain comes from a redistribution of wealth from the bidder to the target. Our results are consistent with the view that some takeovers create wealth by leading to a better use of target resources. Since one would expect poorly performing firms to make poor investments, our results support Jensen's view that firms with free cash flows may waste them in unprofitable investments rather than pay them out to shareholders, and that acquisitions that force a target to make better use of these cash flows benefit both target and bidder shareholders.[6] Those who view q as a measure of how the market may overvalue or undervalue a firm can argue, however, that the results are also consistent with the view that takeovers that increase the combined value of the target and the bidder are those in which an undervalued target is acquired.[7]

An alternative interpretation of our results is that, when a low q bidder announces a tender offer, it is signaling that its internal investment opportunities are less valuable than previously thought because it has to invest outside the firm. Although it seems reasonable that the announcement of a tender offer conveys information about a firm's internal investment opportunities, it is not clear why the announcement would lead the market to believe that the opportunities of high q firms are better than previously thought and those of low q firms worse. Since q is known before the tender offer is made, the information effect argument would have to be developed further to insure that high q firms cannot increase the value of their equity by engaging in negative net present value takeovers. We cannot, however, exclude the possibility that the announcement effects are due in part to information conveyed by the tender offer about the value of the bidder's and the target's internal investment opportunities.

[6]See Jensen (1986a, b).

[7]If, as some practitioners seem to believe, the combined firm (the undervalued target and the bidder) inherits the bidder's price–earnings (P/E) ratio, the takeovers that create the most wealth are made by high P/E bidders for low P/E targets. Since q is positively correlated with the P/E ratio, this argument implies that the takeovers that create the most wealth are those by high q bidders for low q bidders, which is what we observe.

In section 2, we describe the takeover data we use in our study. Section 3 describes the method we use to construct q ratios and discusses our evidence on the q ratios of bidders and targets. Section 4 shows how the target and bidder gains are related to q ratio measures, and section 5 shows how the total takeover gain is related to these measures. Concluding remarks are provided in section 6.

2. Estimates of the total takeover gain, the target gain, and the bidder gain

The starting point for our sample is lists of tender offers obtained from two sources: (a) the Rochester Merc Database on tender offers, which lists tender offers for the period from October 1968 through September 1980, and (b) the Austin Tenderbase, which covers the period from September 1980 through December 1986. To belong to our sample, tender offers must be listed on the Rochester or Austin lists and meet the following criteria:

1. Both the target and bidding firms must be available on the Center for Research in Security Prices (CRSP) daily returns tape for 300 days before the first takeover announcement.
2. The tender offer must be successful,[8] in the Bradley, Desai, and Kim (1988) sense that the bidder acquired some shares.
3. The tender offer occurs after October 1968.

Two hundred and nine tender offers satisfy these criteria (125 from the Rochester list and 84 from the Austin list).

Further, we require that data be available to compute Tobin's q for the firms in the sample. The usable sample of tender offers for which we have data on Tobin's q includes 105 targets and 106 bidders. The sample has 87 matched bidder and target pairs for which both q ratios are available. The matched sample includes 27 opposed offers. For a tender offer to be classified as opposed, we require the *Wall Street Journal* to state that target management opposes the bidder at some point during the takeover contest. Opposed offers are more likely to occur in disciplinary takeovers and hence constitute a subset in which managerial performance may play a more important role.

The estimation of the target and bidder gains and of the total takeover gain follows closely the method developed by Bradley, Desai, and Kim (1988). We refer the reader to their extensive discussion of the costs and benefits of the method. Market-model parameters are estimated for a period from 300 to 60 days before the first announcement of takeover activity for the target firm. For single-bid, unrevised offers, these parameters are used to estimate the cumula-

[8]Like Bradley, Desai, and Kim (1988) and Morck, Shleifer, and Vishny (1988b), we focus on successful tender offers to have a sample that is homogeneous in the probability of success.

tive abnormal return for a period of 11 days centered on the *Wall Street Journal* announcement of takeover activity. For multiple-bid and revised offers, the cumulative abnormal return is estimated from 5 days before the first takeover announcement to 5 days after the last revision of terms by the successful bidder.

The total portfolio gain is measured as the abnormal return of a value-weighted portfolio of the target and the bidder. For this portfolio, the dollar value of target equity is obtained by multiplying the preoffer market price of a target share, defined as the closing market price for the last trading day of the month prior to the initial acquisition announcement, by the number of shares outstanding but not held by the bidder. The dollar value of bidder equity is computed in the same way, except that we use all of the bidder's shares. In most cases, the number of shares outstanding and the market price are obtained from the CRSP tapes. Where necessary, we supplement the CRSP data with figures from the *Standard and Poor's Stock Guide*.

Table 1 reports summary statistics on the bidder and target cumulative abnormal returns as well as on the total portfolio takeover gain. The bidder, target, and portfolio gain statistics for the complete sample are similar to those of Bradley, Desai, and Kim (1988) and Stulz, Walkling, and Song (1988), although the target and the portfolio gain is higher here than in either of the two previous studies.[9] The target gain, the bidder gain, and total portfolio gain are higher for the sample of unopposed offers than for the whole sample.

3. Tobin's *q*

As discussed in more detail in the appendix, we follow the method used in Lang and Litzenberger (1989), who build on Lindenberg and Ross (1981), to compute Tobin's *q* for the firms in our sample. Table 2 reports our *q* measures for bidders and targets for the fiscal year just prior to the takeover announcement. Because we are restricted to using yearly data, the *q* averages reported in table 2 include ratios that use data that precede the takeover by up to 12 months.

The average Tobin's *q* for targets for the whole sample as well as for the opposed and unopposed subsamples is below one. While the average *q* for all targets is 0.845, it is interesting to note that Hasbrouck (1985) finds it to be

[9]A possible 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 rather than the first announcement date of a tender offer. 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).

Table 1

Gain data for targets and bidders.

Cumulative market-model prediction errors for the target, the bidder, and a value-weighted portfolio of the target and the bidder for a sample of 87 successful tender offers from 1968 to 1986.[a] The cumulative abnormal returns are estimated for a period that starts five days before the first *Wall Street Journal* rumor or announcement to five days after the final revision in terms by the successful bidder.

Gain measure	All offers[c] $N = 87$	Unopposed offers[c] $N = 60$	Opposed offers[c] $N = 27$
Average abnormal return for target firms	0.403	0.434	0.334
t-statistic (H_0: mean equal to zero)	16.91***	16.44***	7.00***
t-statistic (H_0: means of subgroups are equal)[b]		1.93*	
Median abnormal return for target firms	0.389	0.432	0.300
Average abnormal return for bidder firms	0.001	0.008	−0.014
t-statistic (H_0: mean equal to zero)	0.09	0.52	−0.48
t-statistic (H_0: means of subgroups are equal)		0.73	
Median abnormal return for bidder firms	−0.009	−0.002	−0.024
Average total portfolio gain	0.1131	0.1210	0.0955
t-statistic (H_0: mean equal to zero)	7.39***	6.03***	4.51***
t-statistic (H_0: means of subgroups are equal)		0.87*	
Median total portfolio takeover gain	0.076	0.065	0.087

[a]An offer is classified as successful if the bidder acquires some shares and as opposed if the *Wall Street Journal* specifies that management opposes the successful bidder at some point during the tender offer period. The parameters of the market model are estimated for a period from 300 to 60 days prior to the first announcement of takeover activity. For the total portfolio gain, the market value of target equity is obtained by multiplying the number of shares outstanding but not held by the bidder by the closing market price for the month end prior to the initial acquisition announcement. The bidder market value is obtained by multiplying the number of shares outstanding by the closing market price for the month end prior to the initial acquisition announcement.

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

[c]One asterisk (*) denotes significance at the 0.10 level, ** at the 0.05 level, and *** at the 0.01 level for a two-tailed test.

0.91 for a sample of 86 targets from 1976 to 1981.[10] Hasbrouck compares the q ratios of targets and a control sample, and finds that the target's q is significantly lower. Finally, the average q for bidders is about the same as the one for targets.

In both the target and the bidder sample, the average q of firms participating in opposed offers is smaller than for firms participating in unopposed offers. Further, the q of firms participating in opposed offers is significantly below one, but not for the other firms. Morck, Shleifer, and Vishny (1988a)

[10]See also Morck, Shleifer, and Vishny (1988b) and Servaes (1988) for similar evidence. Servaes's (1988) q estimates are higher because he does not use replacement cost data and makes no inflation adjustment.

Table 2

Tobin's q estimates for targets and bidders.

Target and bidder q ratios for the year before the tender offer for a sample of 87 successful tender offers from 1968 to 1986. An offer is classified as successful if the bidder acquires some shares and as opposed if the *Wall Street Journal* specifies that management opposes the successful bidder at some point during the tender offer period. Except for minor differences, we follow Lindenberg and Ross (1981) in computing q ratios.

	All offers[b] $N = 87$	Unopposed offers[b] $N = 60$	Opposed offers[b] $N = 27$
Tobin's q for targets one year before the takeover			
Average	0.845	0.886	0.754
t-statistic (H_0: mean equal to one)	−2.80***	−1.52	−4.02***
t-statistic (H_0: means of subgroups are equal)[a]		1.10	
Median	0.680	0.675	0.690
Tobin's q for bidders one year before the takeover			
Average	0.856	0.890	0.777
t-statistic (H_0: mean equal to one)	−1.98**	−1.12	−2.36**
t-statistic (H_0: means of subgroups are equal)		0.72	
Median	0.680	0.675	0.680

[a]The t-statistics assume equal variances for the two subgroups.
[b]One asterisk (*) denotes significance at the 0.10 level, ** at the 0.05 level, and *** at the 0.01 level.

suggest that managers of low q firms are more likely to be entrenched. Their hypothesis helps to explain why the q ratio of targets that oppose a takeover is lower on average. Entrenchment may also explain why low q bidders are more likely to engage in hostile tender offers. As evidenced in table 1, these offers have, on average, a negative abnormal return for the bidding firm's shareholders. One would expect carefully monitored managers to be penalized for engaging in acquisitions that appear to be negative net present value projects, and hence to refrain from such acquisitions.

Table 3 provides the time series of q ratios of targets and bidders around a tender offer announcement. An upward or downward trend in q could simply result from increases or decreases in the value of the market portfolio and hence might be unrelated to a takeover. In table 3, however, we average q ratios from different calendar times, so that one would expect aggregate effects to cancel out. The sample size varies substantially across years. This is especially true for the targets, since a large number of targets cease to be independent entities.

The most striking result of table 3 is the decrease in target q ratios before the takeover.[11] This decrease is statistically significant; the t-statistic for

[11]While the distribution of target q's is skewed, a similar result holds for the median q.

Table 3

The time series of the average estimated Tobin's q for targets and bidders around a successful takeover.

The q measures are for successful tender offers from 1968 to 1986 where the bidder and the target are on the CRSP tape and where information is available so that the q ratio of the bidder and/or target can be computed. The year of the tender offer is year 0. An offer is classified as successful if the bidder acquires some shares. Except for minor differences, we follow Lindenberg and Ross (1981) in computing q ratios. Changes in the sample size are due to data limitations and delistings following mergers.

	Target firms			Bidder firms		
Event year	q ratio	$\%q > 1$	Sample size	q ratio	$\%q > 1$	Sample size
−5	1.20	37.1	97	0.97	29.1	103
−4	1.30	34.7	101	0.93	26.1	105
−3	1.14	28.4	102	0.90	23.8	105
−2	0.99	32.5	105	0.91	24.5	106
−1	0.89	23.8	105	0.86	24.5	106
0	0.96	21.3	47	0.80	15.9	107
+1	0.87	26.3	19	0.83	16.7	102
+2	1.02	30.8	13	0.75	14.8	88
+3	1.24	36.4	11	0.80	17.3	75
+4	1.17	54.5	11	0.82	18.6	70
+5	1.03	50.0	10	0.80	20.3	59

pairwise comparisons of year −1 and years −5, −4, −3, and −2, are, respectively, 2.19, 2.22, 1.84, and 1.10. The typical target seems to be a firm whose q ratio is not only below one but was significantly higher a few years before the takeover.[12]

Bidder q ratios do not show dramatic changes around a takeover, but only a slow insignificant downward trend. Consequently, the typical bidder is not a firm whose q ratio has suddenly worsened, but rather one whose investment opportunities have been poor for a number of years. The last result in table 3 is that the target's q ratio increases following a takeover. This increase takes place mostly after the year of the takeover. The sample of firms that are still listed after a successful tender offer is extremely small, because most successful tender offers are followed by a merger and a delisting of the target's shares. Although the result is consistent with the view that the bidder's equity stake improves target management and/or creates valuable synergies, the effect of market movements on a small and changing sample cannot be ruled out as an explanation.

[12] Our analysis understates the decline in the target q ratios if tender offers are partially anticipated, since in that case a firm's equity value incorporates a takeover premium.

4. The relation between target and bidder q ratios and tender offer gains

In this section we investigate how the bidder's and the target's announcement period abnormal returns relate to bidder and target q ratios. We use q ratios in two ways. First, we divide our sample between high q (q greater than one) and low q firms. Second, we use the level of q because it is an increasing function of the market's assessment of management's performance.

Table 4 relates the bidder's abnormal returns to two measures of the bidder's and target's q ratios. The first measure classifies a high q firm as one whose q ratio exceeds one in the year preceding the tender offer announcement. The second measure defines a high q firm as one whose average q ratio exceeds one for the three years before the tender offer announcement. The motivation for using this second measure is that our q estimates may be noisy, so that taking an average may lead to a better estimate of a firm's true q ratio. We use a cross-sectional regression with three dummy variables and a constant to relate the bidder's abnormal return to measures of the bidder's and the target's q ratios. The first dummy variable takes a value of one for a tender offer by a low q bidder for a low q target; the second takes a value of one for an offer by a high q bidder for a low q target; and the third takes value one for a high q bidder making an offer for a high q target. Consequently, the constant in the regression corresponds to the average return of a low q bidder making an offer for a high q target. If takeover gains arise from the takeover of a poorly managed firm by a well-managed one, one would expect the constant to be negative, since it corresponds to the bidder gain when a poorly managed bidder takes over a well-managed target. The coefficients of the dummy variables have the interpretation of average bidder excess returns for a particular pair of target and bidder q measures in relation to the low q bidder and high q target case.

The results are shown in table 4. The largest bidder gain always occurs for tender offers by high q bidders for low q targets. This suggests that high q bidders are better off in takeovers and that bidders are better off taking over badly managed firms. The negative relation between the bidder's return and the target's q can be seen by comparing the bidder returns when the target has a high and low q for the year before the tender offer. On average, bidders making a tender offer for a high q firm earn 4% less than bidders making an offer for a low q firm.[13] Table 4 shows that the return to a bidder that takes over a low q target is higher if the bidder has a high q ratio. When we use the estimates obtained for the whole sample with three-year averages of q, the shareholders of a low q bidder making an offer for a high q target lose about 5% on average when the offer is announced, whereas the shareholders of a high

[13] This difference is not significant if a pooled t-statistic is used, but is significant at the 0.05 level if the variances are assumed to differ; one can reject the hypothesis that the variances are the same at the 0.01 level.

Table 4

Cross-sectional regressions of the bidder gain on measures of the relation between high and low q bidders and targets.

q is defined to be high if it exceeds one. The sample includes 87 successful tender offers from 1968 to 1986 where the bidder and target are on the CRSP tape and information is available to compute q for both bidder and target. The bidder's gain is the cumulative market model prediction error measured from five days before the first takeover announcement to five days after the last revision in terms by the successful bidder. A tender offer is defined as successful if the bidder acquires some shares and as opposed if the *Wall Street Journal* specifies that management opposes the successful bidder at some point during the tender offer period. Except for minor differences, we follow Lindenberg and Ross (1981) in computing q ratios. The constant in each regression corresponds to the average bidder return for a low q bidder making an offer for a high q target.

	All offers $N = 87$	Unopposed offers $N = 60$	Opposed offers $N = 27$
Average q estimate for the three years preceding the tender offer			
Constant	−0.04926	0.00219	−0.14189
t-statistic	(−1.47)	(0.06)	(−2.29)
Low q bidder/low q target dummy	0.0471	−0.0064	0.1444
t-statistic	(1.25)	(−0.15)	(2.04)
High q bidder/low q target dummy	0.1509	0.0895	0.2703
t-statistic	(2.99)	(1.55)	(2.67)
High q bidder/high q target dummy	0.0267	−0.0205	0.1107
t-statistic	(0.50)	(−0.33)	(1.10)
R-square	0.1047	0.0769	0.2513
q estimates for the year preceding the tender offer			
Constant	−0.03185	−0.02241	−0.13565
t-statistic	(−0.85)	(−0.61)	(−0.92)
Low q bidder/low q target dummy	0.0306	0.0347	0.1120
t-statistic	(0.74)	(0.81)	(0.74)
High q bidder/low q target dummy	0.0825	0.0520	0.2709
t-statistic	(1.64)	(1.02)	(1.59)
High q bidder/high q target dummy	0.0030	0.0153	0.0778
t-statistic	(0.05)	(0.21)	(0.46)
R-square	0.0388	0.0202	0.1516

q bidder making an offer for a low q target gain about 10% on average. Using the estimates obtained with the q for the year before the takeover, the loss and the gain would be, respectively, 3% and 5%. The coefficient on the dummy variable that takes a value of one when the target's q is low and the bidder's q is high is significant at the 0.01 level for the whole sample when the three-year averages of q are used. If the q for the year preceding the takeover is used, the same dummy variable is significant at the 0.10 level.

The results in table 4 are for a sample of tender offer announcements for which both bidder and target q ratios are available. If one does not require the target q to be available, our sample is extended to 106 bidders. In this extended sample, there are 25 high q bidders (i.e., bidders with a three-year average q ratio exceeding one). They have an average abnormal return of 3.89% that is significantly different from zero at the 0.10 level. Low q bidders have an average abnormal return of -1.37% with a t-statistic of -0.89. The difference between the average abnormal return of high and low q bidders is 5.2% which is significant at the 0.05 level.

It follows from these results that by splitting the sample of tender offer announcements into those with high q bidders and low q bidders, one creates a subsample in which the bidder makes a substantial gain and a subsample in which the bidder makes a loss. Since these subsamples can be identified from information available before the tender offer announcement, the results do not support the view that negative bidder returns occur because bidders are overcome by hubris during the bidding.[14] Since bidders that lose the most when a tender offer is announced have low q ratios, our results support the view that the market valuation of investments made by these bidders is low because of poor managerial performance. The gains made by well-managed bidders suggest that well-managed bidders are not perfect substitutes for each other in takeovers, so that the winning bidder is able to appropriate some of the gain it expects to achieve in improving the performance of the target. The effect of the target's q on the bidder's gain is consistent with the view that a bidder taking over a well-managed firm, namely one with a q ratio greater than one, is unlikely to have many opportunities to implement value-increasing changes in that firm's operations. Alternatively, the fact that the bidder succeeds in acquiring such a high q target may mean that the target is not as valuable as the bidder thought.

The results for the subsamples are interesting because resistance seems to magnify the absolute value of the bidder's gain. For instance, using the three-year average of q estimates for the opposed subsample, it follows that the shareholders of a high q bidder making an offer for a low q target gain almost 13%, whereas the shareholders of a low q bidder making an offer for a high q target lose about 14% on average! Further, the coefficients on the dummy variables are not significant for unopposed offers, whereas two of them are significant at the 0.05 level for opposed offers when the dummy variable based on the three-year average of q estimates is used. These results should be interpreted with care, however, since the average sample size for target q/bidder q pairs is seven for opposed offers. The larger value of the high q bidder gain in opposed offers to low q targets suggests that if one

[14]See Roll (1986) for a discussion of the hubris hypothesis.

interprets q as a measure of managerial performance, better managers also perform better in contested acquisitions, in the sense that they are better able to get a good deal for their shareholders. The higher gain for shareholders of high q bidders in contested offers seems harder to explain as an information effect about the bidder's investment opportunities. It is difficult to understand why being involved in an opposed offer conveys good news about a high q bidder and bad news about a low q bidder.

In cross-sectional regressions not shown here of the bidder's gain on a constant, the bidder's q ratio and the target's q ratio, the bidder's gain falls with the target's q and increases with the bidder's q. For these regressions, the estimated coefficients are significant only for opposed offers, however. For these offers, the target q coefficient is significant irrespective of how q is measured, whereas the bidder q coefficient is significant only if the q ratio for the year before the offer is used. These results suggest that the interaction between bidder and target q ratios, ignored in these regressions, is important. It may also be, however, that low q firms behave differently in corporate control contests than high q firms irrespective of how low their q ratios are. Alternatively, these results reflect noise in the q measures.

Table 5 shows how the target gain relates to whether the bidder's and the target's q ratios are high or low. The results are stronger when using estimates of q for the year before the takeover, whereas with the bidder abnormal returns the results are stronger when estimates of the average q for the three years before the takeover are used. A possible explanation for this difference is that since the target q changes substantially in the five years before the takeover, the measure for the year before the takeover tells more about the value of the improvements a successful bidder can make. Bidder q's do not change systematically before a takeover so that averaging bidder q's may offer a less noisy measure of the quality of bidder management. In table 5, the dummy variables constructed with three-year averages of q estimates are insignificant for either the whole sample or the subsamples, except for the dummy variable that corresponds to high q bidder and high q target offers. Two of the dummy variables that use the q ratio for the year preceding the takeover are significant and positive for the whole sample and the sample of unopposed offers. For the whole sample, shareholders of high q targets taken over by low q bidders earn an average 14% less than shareholders of low q targets taken over by high or low q bidders.

A possible interpretation for the findings in table 5 is that a bidder taking over a target that is performing well is unlikely to be able to make many value-increasing changes in the target's operations. Hence, the total gain associated with the takeover is smaller. A comparison of the target abnormal returns for low and high q targets supports this view; the difference in the average target abnormal return between low and high q targets is 11% and is significant at the 0.05 level when the q ratio for the year before the takeover is used. Since a high q firm is less likely to be a target than a low q firm, it seems

Table 5

Cross-sectional regressions of the target gain on measures of the relation between high and low q bidders and targets.

q is defined to be high if it exceeds one. The sample includes 87 successful tender offers from 1968 to 1986 where the bidder and target are on the CRSP tape and information is available to compute q for both bidder and target. The target's gain is the cumulative market model prediction error measured from five days before the first takeover announcement to five days after the last revision in terms by the successful bidder. A tender offer is defined as successful if the bidder acquires some shares and as opposed if the *Wall Street Journal* specifies that management opposes an offer by the successful bidder at some point during the tender offer period. Except for minor differences, we follow Lindenberg and Ross (1981) in computing q ratios. The constant in each regression corresponds to the average target return for a low q bidder making an offer for a high q target.

	All offers $N = 87$	Unopposed offers $N = 60$	Opposed offers $N = 27$
Average q estimate for the three years preceding the tender offer			
Constant	0.31963	0.33904	0.27470
t-statistic	(5.37)	(5.00)	(2.82)
Low q bidder/low q target dummy	0.0980	0.1197	0.0379
t-statistic	(1.47)	(1.58)	(0.33)
High q bidder/low q target dummy	0.0695	0.1363	−0.1255
t-statistic	(0.77)	(1.38)	(−0.76)
High q bidder/high q target dummy	0.1463	0.0256	0.3837
t-statistic	(1.54)	(0.24)	(2.32)
R-square	0.0544	0.0594	0.2731
q estimates for the year preceding the tender offer			
Constant	0.26412	0.27196	0.17794
t-statistic	(4.18)	(4.66)	(0.71)
Low q bidder/low q target dummy	0.1684	0.2017	0.1869
t-statistic	(2.41)	(2.99)	(0.72)
High q bidder/low q target dummy	0.1472	0.2048	−0.0286
t-statistic	(1.74)	(2.53)	(−0.10)
High q bidder/high q target dummy	0.1385	0.1461	0.2040
t-statistic	(1.33)	(1.29)	(0.70)
R-square	0.0655	0.1476	0.0944

unlikely that the lower abnormal return associated with tender offers for high q targets reflects a greater degree of anticipation of these offers.

In cross-sectional regressions (not shown here) that use the level of target and bidder q ratios, the target gain typically falls with the target q, but the results are less strong than with the dummy variables. Using the three-year average of q ratios, the bidder q coefficient is not significant for either the

whole sample or the subsamples, but the target q is significantly negative in the unopposed subsample and significantly positive in the opposed subsample. With the q ratio for the year before the tender offer, the target q coefficient is negative and significant for the whole sample and the unopposed subsample, whereas the bidder q coefficient is never significant. These results are consistent with the view that poorly managed targets offer better opportunities for bidders to introduce value-increasing changes. This view presumes, however, that the high q firms taken over are not simply firms for which the common stock price is high because a takeover is highly likely to occur.

5. The relation between the total takeover gain and measures of the bidder's and the target's q ratios

In this section, we ask whether the total takeover gain depends on the q ratios of the bidder and the target. If takeover gains arise from takeovers of badly performing firms by firms that are performing well, one would expect the highest takeover gains to occur for high q bidders taking over low q targets and the lowest gains to be associated with takeovers of high q targets by low q bidders.

A comparison of the total takeover gain for high q and low q targets (without controlling for the q ratio of the bidder) shows that the gain for low q targets exceeds the gain for high q targets by 5% when the average q for the three years preceding the takeover is used. This difference is not significant at conventional levels, however (the t-statistic is 1.20). The first column of table 6, which provides regression estimates for the whole sample, also shows that the total takeover gain is lower for high q targets. For the whole sample and the unopposed sample, the total gain is highest when a high q bidder makes an offer for a low q target. The regression coefficient for the high q bidder/low q target dummy variable has a significance level of 0.12 using the three-year average of q. Since the three-year q measure works better for bidders and since bidders are typically larger than targets, it is not surprising that the three-year q measure leads to better results than the one-year measure. Because the one-year q measure performs better for targets and the three-year q measure performs better for bidders, however, the level of significance is smaller for the portfolio gain than for the bidder or target gains.

The results for the unopposed sample are similar to those for the complete sample, except that they are much less significant. The strongest results are for the three-year average q measures in the opposed case. As pointed out previously one should be cautious in interpreting these results. Nevertheless, the high q bidder/high q target combination has the highest average abnormal return. This result is inconsistent with the view that low q targets offer the best opportunities for bidders to make value-increasing changes. The high q

Table 6

Cross-sectional regressions of the total portfolio gain on measures of the relation between high and low q bidders and targets.

q is defined to be high if it exceeds one. The sample includes 87 successful tender offers from 1968 to 1986 where the bidder and target are on the CRSP tape and information is available to compute target and bidder q ratios. The total portfolio gain is the cumulative market model prediction error of a value-weighted portfolio of the bidder and the target. The total portfolio gain is measured from five days before the first takeover announcement to five days after the last revision in terms by the successful bidder. A tender offer is defined as successful if the bidder acquires some shares and as opposed if the *Wall Street Journal* reports managerial opposition to the successful bidder during the tender offer period. Except for minor differences, we follow Lindenberg and Ross (1981) in computing q ratios. The constant in each regression corresponds to the average portfolio return for a low q bidder making an offer for a high q target.

	All offers $N = 87$	Unopposed offers $N = 60$	Opposed offers $N = 27$
Average q estimate for the three years preceding the tender offer			
Constant	0.0689	0.0997	0.0134
t-statistic	(1.80)	(1.91)	(0.29)
Low q bidder/low q target dummy	0.0481	0.0276	0.0796
t-statistic	(1.12)	(0.48)	(1.53)
High q bidder/low q target dummy	0.0907	0.0698	0.1196
t-statistic	(1.57)	(0.92)	(1.61)
High q bidder/high q target dummy	0.0333	−0.0503	0.1943
t-statistic	(0.54)	(−0.61)	(2.61)
R-square	0.0302	0.0386	0.2411
q estimates for the year preceding the tender offer			
Constant	0.0637	0.0640	0.0614
t-statistic	(1.54)	(1.36)	(0.53)
Low q bidder/low q target dummy	0.0580	0.0729	0.0354
t-statistic	(1.26)	(1.34)	(0.30)
High q bidder/low q target dummy	0.0683	0.0776	0.0327
t-statistic	(1.23)	(1.19)	(0.24)
High q bidder/high q target dummy	0.0275	0.0207	0.0387
t-statistic	(0.40)	(0.23)	(0.29)
R-square	0.0275	0.0207	0.0387

bidder/low q target variable is marginally significant at the 0.10 level. Results using the one-year q variable are not significant.

We also estimated regressions of the total portfolio gain on the level of the bidder's and the target's q measures, but do not report the estimates here. These regressions have no significant coefficients.

With some exceptions, the results obtained in this section are consistent with the view that well-managed bidders make the most out of acquisitions.

When taking over poorly managed firms, well-managed bidders have better opportunities to implement value-increasing changes. As a result, the tender offers in which the most value is created involve a high q bidder acquiring shares of a low q target.

6. Concluding remarks

To the extent that Tobin's q measures managerial performance, the results of this paper can be interpreted as follows:

1. Well-managed bidders benefit substantially from tender offers, but more so when they take over poorly managed targets.
2. Well-managed targets benefit less from tender offers than poorly managed targets.
3. The total takeover gain is highest for tender offers by well-managed bidders for poorly managed targets.

This paper suggests directions for further research. In particular, it raises the question of whether the shareholder gains from other takeover events are related to q measures. For instance, on the basis of our results, one would expect antitakeover amendments to have a more adverse effect on shareholders of low q targets since shareholders of these targets would benefit the most from a takeover. Since the sample used in this study includes only tender offers, further research should investigate the relation between q measures and the gains from mergers. A sample that includes mergers would be substantially larger than the sample used in this study and would permit the exploration of more complex forms of interaction between bidder and target q ratios than those studied in this paper.

Appendix: Estimation method for Tobin's q

To compute Tobin's q, we follow the methods used by Lang and Litzenberger (1989), who build on Lindenberg and Ross (1981). Tobin's q is defined as the ratio of the firm's market value to the replacement cost of its assets. The firm's market value is taken to be equal to the sum of the value of its common stock, debt, and preferred stock. A firm's common stock and the number of shares outstanding are obtained from the CRSP monthly return file. The book value of preferred stock is used as a surrogate for market value because of its relatively trivial magnitude. When available, the prices of long-term bonds are obtained from *Moody's Bond Record* and *Standard and Poor's Bond Guide*; otherwise, we use book value. If the price of a nonconvertible bond is not reported, the yield to maturity of another bond with a similar maturity and coupon rate issued by the same firm is used to calculate the price of the bond.

Bonds with a remaining maturity of less than one year, short-term bonds, and debt with an unknown coupon and/or maturity date are valued at book value. The denominator of the q ratio is assumed to be equal to total book assets plus the replacement costs of plant and inventories minus the book value of plant and inventories.

Replacement costs of net plant and equipment and inventories are obtained from the FASB regulation 33 tape edited by Columbia University that covers the period 1979–1984. Although these data are unaudited and firms are allowed considerable discretion in their estimates, the data are the best available information on replacement costs. Corporations with net plant valued in excess of $120 million were required to report replacement costs of plant and inventories to FASB from 1979 to 1984. Consequently, no replacement cost data are provided by firms before 1979 or after 1984 or by firms with net plant valued at less than 120 million dollars.

When firms do not report replacement costs, we use the Lindenberg and Ross algorithm to estimate these costs. Plant and equipment are valued by setting up an acquisition schedule and adjusting for price level changes and depreciation as suggested by Lindenberg and Ross (1889). Specifically, for firms listed on the FASB tape, we begin with the plant replacement costs closest to 1979 or 1984 as appropriate in the Lindenberg and Ross formula for that year. We then work backward or forward using the formula to obtain estimates of replacement costs before 1979 or after 1984, respectively. We follow Smirlock, Gilligan, and Marshall (1984) and assume the technological parameter to be zero.

To obtain the replacement costs for smaller firms that do not report these replacement costs at all, we assume that the value of plant at the start (1967) is equal to book value. Following the work by Smirlock, Gilligan, and Marshall (1984), we reduce the value of plant and equipment by 5% each year to compensate for depreciation and then adjust it for the GNP deflator for nonresidential fixed investment. We then use the formula proposed by Lindenberg and Ross. If inventories are not reported in the FASB 33 tape, we use the Lindenberg and Ross (1981) algorithm.

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