LEVERAGE AND THE WEALTH GAINS FROM ACQUISITION PROGRAM ANNOUNCEMENTS

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Abstract

We examine the market reaction to announcements of an intention to pursue a program of external acquisitions. Although the mean gain is positive, only firms with high Tobin's *q* and low leverage experience significant abnormal returns. For firms with low *q* or high leverage, abnormal returns are zero. Moreover, the stock price reaction is an increasing function of *q* only for firms with low leverage. These results are consistent with the view that high leverage reduces the ability of a firm to take full advantage of profitable investment opportunities.

Keywords: Acquisition programs; Tobin's *q*; Leverage

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1. Introduction

The wealth effects associated with corporate takeovers have received considerable attention in the literature. This research has established that target firm shareholders generally benefit from successful takeovers.[1] Moreover, although the mean return to bidding firm shareholders is effectively zero, there is considerable inter-firm variation: bidding firms with high Tobin's *q* that undertake friendly, cash-financed takeovers of low-*q* targets have higher returns than other bidders.[2]

For most of these events, the first time the market becomes explicitly aware of the acquisition is when a bidder announces its intention to acquire a specific target. However, some firms announce in advance their intention to undertake a *program* of external acquisitions.[3] For such firms, the stock price should react at the program announcement date; subsequent individual acquisitions that are part of this program then reflect the surprise associated with the identity of the specific target and the terms of the acquisition. But, in contrast to the work on individual acquisitions, the wealth effects associated with program announcements have received little attention. This is surprising considering that the intended programs typically constitute economically significant events.[4]

The principal study of firms making acquisition program announcements is that by Schipper and Thompson (1983). They find that program announcements yield positive abnormal returns on average and conclude that acquisition programs are positive net present value projects with the expected benefits of future acquisitions impounded in the stock price at the time of announcement. However, because

1 See, for example, Jensen and Ruback (1983) and Jarrell, Brickley and Netter (1988).

2 See Lang, Stulz and Walkling (1989) and Servaes (1991).

3 Although beyond the scope of this paper, it would also be interesting to analyze what motivates firms to make such announcements. Our reading of the media reports for the firms in our sample suggest two possible factors. First, by signalling an intention to acquire, the announcement alerts potential targets and can therefore reduce search costs. Second, a public announcement of the details of an acquisition program may make it easier to obtain any necessary credit lines, all else equal.

4 Announcing firms are generally large and active. In our sample, these firms have mean total assets of $6.5 billion and undertake an average of 1.8 acquisitions each in the three years following the initial announcement. In the Schipper and Thompson (1983) sample, size information is not reported, but the mean number of acquisitions in the 10 year period following the program announcement is 24.

they are unable to exactly identify many of the announcement dates in their sample, their conclusion is open to question, particularly as a more recent study by Singh (1994) finds no evidence of abnormal returns. Thus, whether the announcement of a growth strategy based on external acquisitions increases or decreases shareholder wealth is not clear. In this paper, we use a sample of 65 firms for which the program announcement date (i) can be explicitly identified and (ii) is uncontaminated by other firm-specific events. Consistent with the evidence of Schipper and Thompson, we find significantly positive mean and median abnormal returns during the announcement period.

Our main focus is on the cross-sectional variation in abnormal returns during the program announcement period, an issue not previously addressed. Firms with (i) more valuable investment and growth opportunities and (ii) management groups that have superior ability in identifying appropriate targets should experience greater wealth gains than firms with lower quality management and less valuable opportunities. As in Lang, Stulz and Walkling (1989) and Servaes (1991), we use Tobin's *q* as a measure of management quality and firm investment opportunities. Although announcement period wealth gains are greater on average for high-*q* firms, we find no systematic relationship between wealth gains and *q*.

One of the core issues in finance is the effect of leverage on firm investment and value. On the one hand, authors such as Myers (1977) and Myers and Majluf (1984) argue that high debt levels may inhibit a firm's ability to finance profitable investment projects. According to this view, high leverage can be an impediment to a successful acquisition program, so high-leverage firms should have announcement period wealth gains that are lower, and more weakly related to *q*, than low-leverage firms. However, other authors such as Jensen (1986) and Stulz (1990) emphasize the disciplinary role of debt. High leverage (i) directly limits managerial discretion by committing cashflows to the repayment of creditors and (ii) encourages active and diligent monitoring by creditors who wish to ensure that they will be repaid. According to this view, high leverage discourages management from undertaking wasteful investment, so high-leverage firms should have announcement period wealth gains that are higher, and more strongly related to *q*, than low-leverage firms. In this paper, we examine the effect of leverage on the relationship between wealth gains and *q*.

Categorizing firms according to *q* and leverage, we find that the announcement of an external acquisition program is associated with a positive stock price reaction only for the group of firms that have high *q and* low leverage. Firms with low *q* or high leverage have zero mean and median abnormal returns. This result holds for different measures and classifications of leverage and *q*. We also find that announcement period abnormal returns are an increasing function of *q* for low-leverage firms, but not for high-leverage firms. For example, the mean abnormal return difference between high- and low-*q* firms is 1.54 percentage points if leverage is low, but zero if leverage is high. These results are consistent with the view that high leverage can reduce the ability of a firm to take full advantage of profitable investment opportunities.

Firms can also use internal funds to finance part or all of an acquisition program. Consequently, a negative relationship between announcement period wealth gains and leverage could arise because firms with high leverage have low cashflow. However, we find that (i) wealth gains are unrelated to cashflow and (ii) after controlling for variations in firm cashflow, wealth gains are still an increasing function of *q* for low-leverage firms but not for high-leverage firms.

Firms with high leverage have an incentive to acquire low-leverage firms in order to reduce their tax liability. Thus, the market's reaction to acquisition program announcements by high-leverage firms may partially reflect its assessment of the potential tax benefits. Consequently, our finding that announcement period wealth gains for high leverage firms are unrelated to firm *q* could be due to to tax considerations rather than financing constraints. For example, a firm with high leverage and low *q* could experience the same stock price reaction as a firm with high leverage and high *q* because the acquisition tax benefits of the former offset the greater investment opportunities of the latter. However, in separate regressions for the group of high-leverage firms, we find that (i) wealth gains are unrelated to intra-group variations in leverage and (ii) wealth gains remain unrelated to *q* after controlling for intra-group variations in leverage. Neither result is consistent with the tax benefit hypothesis.

Our paper adds to the growing body of research that examines the effect of high leverage on the scale of a firm's activities. For example, Whited (1992), Lang, Ofek and Stulz (1996), and Hanka (1998) find that leverage is negatively related to investment, future growth, and future employee numbers respectively. Similarly, Opler and Titman (1994) and Sharpe (1994) show that high leverage can have adverse consequences for sales growth and employment. We show that high leverage can also reduce the expected benefits from an external acquisition program.

In the next section, we describe our data and provide some preliminary statistics. In section 3, we first develop and explain our hypotheses concerning the role of leverage. We then present the results of our empirical analysis and discuss their implications and robustness. Section 4 contains a summary and a few concluding remarks.

2. Data and Preliminary Statistics

Our primary data sources are the Dow Jones News Retrieval Service (DJNRS) and the Wall Street Journal Index (WSJI). We used the DJNRS to identify acquisition program announcements by searching for key phrases such as "plans", "starts", "embarks", and "announces" in conjunction with "acquisition programs". This yielded a total of 127 firms making such announcements during the 1977-92 period, all of which were listed on the New York Stock Exchange or the American Stock Exchange.[5] From this initial sample, firms were excluded if (i) they did not have a clearly identifiable announcement date available on either DJNRS or WSJI, or (ii) they had announcement dates that were contaminated by the simultaneous release of other firm-specific news with the potential to affect stock prices, or (iii) they had insufficient data on the COMPUSTAT or CRSP databases. Our final sample contains 65 firms. Although this relatively small sample size means that we must exercise caution in interpreting our results, it is nevertheless considerably larger than the Schipper and Thompson (1983) sample of 30 firms from the period between 1952 and 1968. A full list of the firms in our sample, together with their announcement years and subsequent acquisition activity, appears in the appendix.

Panel A of Table 1 provides a time series distribution of the acquisition program announcements. The majority of announcements are concentrated in the years 1981 through 1988, a period coinciding with a general increase in the level of merger and acquisition activity. For example, Weston, Chung and Hoag (1990) report merger activity increasing from 1889 transactions in 1980 to 3336 transactions in 1986. In a similar fashion, Servaes' (1991) sample is characterized by a general increase in the number of announced takeover bids after 1977. Panel B of Table 1 shows that firms announcing acquisition programs appear to be concentrated in two asset-intensive industry groups: Food and Chemicals, and Machinery and Manufacturing. Panel C indicates that firms making acquisition program announcements are approximately evenly split between high and low leverage: 30 (35) firms have a debt ratio higher (lower) than their industry average.[6] Finally, Panel D shows that over two-thirds of the firms in our sample had Tobin's *q* ratios below unity, with an average *q* ratio for all firms of 0.914.[7] A similar *q* distribution appears in the Lang, Stulz and Walkling (1989) sample of firms undertaking tender offers, and also in the Lang, Ofek and Stulz (1996) sample of large industrial firms.

[Insert Table 1 about here]

In Table 2, we calculate announcement period cumulative abnormal returns (CARs) using the standard event study methodology. We estimate the market model parameters using a period from day -147 to day -21, where day 0 is the announcement date as reported in the DJNRS or the WSJI, whichever is applicable, and compute CARs for periods (-1, 0) and (-1, +1). We use the equally-weighted index on CRSP as a proxy for the market portfolio and calculate abnormal return significance levels using the heteroskedasticity-adjusted procedure described by Linn and Pinegar (1988). Consistent with the earlier evidence of Schipper and Thompson (1983), acquisition program announcements are associated with significantly positive returns to firm shareholders: for the full sample of 65 firms, the mean CAR over the three-day (-1, +1) window is 0.73% (p-value = 0.04) while its analogue for the two-day (-1,0) window is 0.64% (p = 0.05). Similar results hold for the median CARs. These results support the Schipper and Thompson contention that the capitalized value of potential future acquisitions is reflected in the stock price during the announcement period.[8]

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5 Most of the 1977-87 announcement data come from Singh (1994). We are grateful to Vijay Singh for making these data available to us.

6 The debt ratio is calculated as the book value of long-term debt divided by the book value of total assets for the fiscal year prior to that in which the announcement is made. As discussed by Lang, Ofek and Stulz (1996), a market value measure of leverage would be sensitive to recent changes in equity values that may have no impact on firms' abilities to raise funds.

7 Using data for the fiscal year immediately preceding the program announcement, we calculate the Tobin's *q* ratio as follows:

q = (price*number of shares outstanding + book value of long-term debt + short- term liabilities net of short-term assets + book value of preferred shares) / total assets

Chung and Pruitt (1994) show that this measure explains 97 percent of the variation in *q* computed using the Lindenberg and Ross (1981) algorithm. The use of most-recent-fiscal-year *q* does not seem to introduce any classification bias. For the group of firms with $q > 1$ during the most recent fiscal year, the mean *q* also exceeds one during each year of the surrounding 10-year period. Similarly, for the group of firms with $q < 1$ during the most recent fiscal year, the mean *q* is also less than one during each year of the surrounding 10-year period.

8 Further support for this view is provided by analysis of the 46 firms that launch at least one bid in the three year period following the announcement date. As for the full sample, mean and median announcement period CARs for these firms are significantly positive. However, as in previous work on bidding firms, their

[Insert Table 2 about here]

This finding raises the question of whether or not acquisition program announcements uniformly yield positive abnormal returns regardless of firm characteristics that are observable at the time the announcement is made. Lang, Stulz and Walkling (1989) and Servaes (1991) have shown that the wealth gains accruing to shareholders of firms making individual acquisitions depend on the financial characteristics of the target, the target's attitude to the takeover, the terms of the offer, and Tobin's *q*. Of these, only *q* is generally known at the time of an acquisition program announcement. To test whether *q* is also an important determinant of abnormal returns to acquisition program announcements, we first calculate mean and median CARs for $q > 1$ and $q < 1$ firms respectively and report these in panel A of Table 2.[9] For both event windows, the mean and median CARs are significantly positive for the $q > 1$ firms, with abnormal returns ranging from 1.1% to 2.3%, but are insignificantly different from zero for the $q < 1$ firms. Moreover, the differences between the two *q* sub-groups are significant at standard levels.

These results suggest that announcement period wealth gains are positively related to *q*. To examine this matter further, we regress abnormal returns on *q* and report the results in panel B of Table 2. We find, at best, only a weak relationship. For the (-1, 0) window, the *q* coefficient is positive but insignificant while for the (-1, +1) window it is significant but only at the 8% level. Both equations also have low explanatory power. Thus, although firms with quality management and valuable investment opportunities earn higher rewards on average, the effect of these attributes on announcement period wealth gains does not appear to be uniform. In the next section, we examine the role of leverage in further explaining the cross-sectional variation in abnormal returns.

3. Leverage and wealth gains

3.1 Hypotheses

As has often been noted, "talk is cheap", so the market should react to the announcement of an intention to pursue an external acquisition program if and only if the announcement is credible. In particular, the market may disregard or discount an acquisition program announcement if it believes that financing of the program is likely to be difficult and/or expensive, regardless of firm *q*. Funding difficulties may occur if the firm already has substantial commitments to creditors. For example, Myers (1977) and Myers and Majluf (1984) both show that high debt can lead to the rejection of profitable investments, the former attributing this under-investment problem to shareholder-debtholder agency problems and the latter to asymmetric information about firm value. For our purposes, this suggests that shareholder gains from an external acquisition program announcement may also depend on firm debt levels; high debt may have adverse implications for the cost of capital, or it may reduce the potential scale and scope of an acquisition program by lowering borrowing capacity, or, in the worst case, it may prevent the acquisition program from proceeding at all. Thus, for given *q*, high-debt firms should have lower announcement period abnormal returns than low-debt firms. Moreover, because high-debt firms are less likely to be able to take full advantage of whatever investment opportunities they have, the relationship between abnormal returns and *q* should be weaker for these firms than for low-debt firms.

However, leverage can also have positive implications for acquisition program returns. Jensen (1986) and Stulz (1990) emphasize the role of debt in disciplining management and hence in reducing the agency costs of managerial discretion. For example, if debt is high, then creditors are more likely to closely monitor management expenditure. Similarly, managers of high debt firms are less able to undertake wasteful expenditure because of the need to use cashflows to repay creditors. For our purposes, this suggests that the intended acquisition programs of low-debt firms are more likely to include waste. Thus, for given *q*, low-debt firms should have lower announcement period abnormal returns than high-debt firms. Moreover, the wastage tendencies of low-debt firms mean that they are more likely to undertake unprofitable acquisitions regardless of their *q*, so the relationship between abnormal returns and *q* should be weaker for these firms than for high-debt firms.

We therefore have two alternative hypotheses concerning the effect of leverage on the relationship between *q* and the wealth gains associated with acquisition program announcements. The first, based on financing constraint costs, predicts that (i) after controlling for *q*, wealth gains are higher for low-debt firms than for high-debt firms and (ii) the positive relationship between wealth gains and *q* is weaker for high-debt firms. The second, based on the agency costs of managerial discretion, predicts exactly the opposite pattern. In the remainder of this section, we use our sample of 65 firms to test these hypotheses.

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mean and median *bid* period CARs are insignificantly different from zero (regardless of whether we use only first bids or all subsequent bids).

9 The use of $q = 1$ as the critical *q* value follows from the Lang and Litzenberger (1989) propositions, which in turn are derived from the standard neoclassical investment rule that investment is warranted if and only if marginal *q* exceeds one. Lang, Stulz and Walkling (1989) and Servaes (1991) also set the critical value of *q* equal to one.

3.2 The effect of leverage on mean and median CARs

We begin by splitting our sample into four sub-groups corresponding to different combinations of high/low *q* (*q* greater/less than unity) and high/low leverage (debt ratio greater/less than industry average). Table 3 presents mean and median CARs for each sub-group. The most striking feature of these statistics is that only firms with high *q and* low leverage exhibit significantly positive abnormal returns. For these firms, the mean abnormal return during the (-1, 0) announcement period is 1.81%; during the (-1, +1) period, the corresponding figure is 2.56%. The returns to other groups are not only smaller, but also statistically insignificant.

[Insert Table 3 about here]

In Table 4, we examine the difference in abnormal returns between, on the one hand, low-*q* firms, and on the other hand, high-*q* firms with low and high leverage respectively. For the (-1, +1) announcement period, high-*q* firms with low leverage experience mean returns 2.485 percentage points higher than do the full group of low-*q* firms. By contrast, high-*q* firms with high leverage experience returns that are no different, on average, to those of low-*q* firms.

[Insert Table 4 about here]

The overall picture drawn by Tables 3 and 4 is clear. On average, the stock prices of firms with valuable investment opportunities and low leverage react positively to the announcement of an external acquisition program; the stock prices of other types of firms do not. This is consistent with the view that high leverage can impose significant financing costs on an intended acquisition program. However, some caution is appropriate here: the small number of firms with $q > 1$ means that any leverage-based differences may simply be idiosyncratic.[10] Unfortunately, given our available sample size, there is little that can be done about this. Nevertheless, we consider some procedures that may shed some light on the robustness of our results. First, in case our results are driven by outliers, we experiment with critical *q* values lower than unity so that more firms appear in the high-*q* sub-groups. Second, we define high-(low-)*q* firms to be those with $q >(<)$ the industry average. Third, in case our results are driven by measurement error in Tobin's *q*, we use the simple market-to-book ratio as an alternative proxy for *q*. Fourth, in case our results are driven by misclassification of leverage, we use the ratio of total debt to total assets as an alternative measure of leverage. However, these adjustments have little effect on the results of Tables 3 and 4: in unreported results, we find that, regardless of the adjustment made, only firms with high *q* and low leverage have abnormal returns that are significantly positive.

3.3 The effect of leverage on the general relationship between CAR and q

To determine the effect of leverage on the general relationship between *q* and announcement period wealth gains, we regress CAR on *q* for high- and low-leverage firms respectively.[11] The results appear in Table 5. For low-leverage firms, the estimated *q* coefficients are significantly positive, so the abnormal returns for these firms are increasing in perceived managerial quality and investment opportunities. By contrast, the coefficients are negative and insignificant for high-leverage firms. Moreover, the explanatory power of the regressions is 100-150 times greater for the low-leverage firms.

[Insert Table 5 about here]

Some idea of the economic significance of these regressions can be obtained in the following manner. Recall from panel D of Table 1 that the mean *q* for $q < 1$ firms is 0.677; for $q > 1$ firms it is 1.412. The regression results in Table 5 indicate that this difference in *q* is associated with a 0.96 percentage point difference in abnormal return during the (-1, 0) announcement period if leverage is low; for the (-1, +1) window, the corresponding difference is 1.54 percentage points. By contrast, the abnormal return differences are essentially zero if leverage is high.

To summarize, Table 5 indicates that there is a positive relation between acquisition program wealth gains and *q* for low-leverage firms, but not for high-leverage firms. Again, this is consistent with the view that high leverage is perceived as an impediment to a successful acquisition program even when the potential benefits from this program are significant.

3.4 Internal funds, wealth gains and leverage

Our focus on high leverage as a possible source of finance constraints implicitly assumes that acquisition programs require new external funding. In our sample, 24 firms include in their program

10 One illustration of this is that the mean and median CAR differences between $q > 1$ firms with low and high leverage respectively are statistically insignificant.

11 Standard tests indicate that the two leverage sub-groups have significantly different error structures, so we estimate separate regressions rather than employ a dummy variable approach.

announcement a statement concerning either their intended method of financing or the intended size of the program. Of these, 13 explicitly mention the use of external funding while another seven indicate a program size that exceeds their available cashflow. Nevertheless, firms can use internal funds to finance acquisition programs, in full or in part. To check that our results are not due to specification error, we again regress CAR on *q* for high- and low-leverage firms respectively, but this time control for variations in available cashflow.[12] The results appear in Table 6, where internal cashflow is measured by the ratio of cash plus marketable securities to total assets for the fiscal year prior to that in which the program announcement is made. Inclusion of this variable in the regressions has no effect on our previous results: wealth gains are positively and significantly related to *q* for low leverage firms, but not for high leverage firms.

[Insert Table 6 about here]

One interesting feature of Table 6 is that, for the (-1, +1) event window, abnormal returns are negatively related to cashflow at the 6% level for low-leverage firms, consistent with the view that high cashflow increases the agency costs of managerial discretion. Taken in conjunction with our previous findings, this suggests that financial slack is perceived to be beneficial to an intended acquisition program, but only up to a point. For firms with low leverage, and therefore few financial commitments, high cashflow encourages the belief that parts of the acquisition program will be unprofitable. By contrast, the level of cashflow is less important for high-leverage firms because these firms are already constrained by the need to repay existing creditors and are therefore less able to undertake wasteful acquisitions.

We also consider the possibility that the availability of internal funds is a more important constraint on acquisition activity than the degree of leverage. If high-leverage firms in our sample also have low internal funds (as would be suggested by the pecking order theory), then our categorization of firms into high- and low-leverage groups may simply be approximating a more fundamental distinction between low and high internal funds. In that case, the correct interpretation of our results would be that they are consistent with the view that firm investment activity is primarily driven by the availability of internal funding, as in Chirinko and Schaller (1995), Fazzari, Hubbard and Petersen (1988), and Hoshi, Kashyap and Scharfstein (1991). To address this issue, we repeat the Table 5 regressions, but split our sample according to internal funds position rather than leverage. A firm is characterized as having low (high) internal funds availability if its ratio of cash plus marketable securities to total assets is less (greater) than the sample median.[13] If internal funds are more important than external funds for financing acquisitions, then this categorization should better explain the cross sectional variation in announcement date abnormal returns. However, our data do not support this alternative hypothesis. In unreported regressions, the liquidity sub-group abnormal returns are independent of *q* and the R^2 values are very low. Thus, to the extent that the market is concerned about the effect of financing constraints on acquisition activity, this concern appears to be primarily focused on the availability of external funds, rather than internal funds.

3.5 Tax benefits to acquisition programs

We have argued that our results are consistent with the view that high leverage reduces a firm's ability to access external investment opportunities. However, another possible interpretation is that they reflect the types of tax benefits considered by Kaplan (1989). Firms with high leverage are more constrained in the extent to which they can use additional interest payments to reduce their tax liability. Thus, particularly if they have little in the way of non-debt tax shields, such firms can potentially reduce their tax liability by acquiring firms with lower leverage. If acquisition programs are partially motivated by tax considerations, then wealth gains for high-leverage firms could be largely independent of *q*, as in Table 5, but for reasons unrelated to financing constraints. However, if this is the mechanism driving our results, then (i) after controlling for *q*, abnormal returns should be an increasing function of leverage and (ii) abnormal returns to high-leverage firms should be increasing in *q* after controlling for intra-group variations in leverage. In fact, as can be seen in Table 6, neither of these features are present in our data. In multivariate regressions of CAR on *q* and leverage, we find that (i) abnormal returns are unrelated to intra-group variations in leverage and that (ii) as before, abnormal returns to high-leverage firms are unrelated to *q*.

Finally, if our results are due to tax considerations of the kind described above, then acquisition program announcements by high-leverage firms should be associated with positive abnormal

12 Cashflow data were unavailable for nine firms, so our sample size is reduced to 56 for this analysis.

13 We also used (i) the ratio of operating cashflow to total assets and (ii) the ratio of cash plus marketable securities plus receivables to total assets to split the sample. These alternative categorizations generate similar results.

returns. Although we do not report the results, the mean (-1, 0) CAR for the sub-sample of high leverage firms is a statistically insignificant 0.415% (p-value = 0.40); for the (-1, +1) period, the corresponding figure is 0.421% (p-value = 0.38). Thus, the leverage-dependent market reaction to acquisition program announcements does not seem to be driven by tax considerations.[14]

4. Concluding Remarks

A central issue in finance is the effect of leverage on firm investment and value. According to one view, high debt levels may hinder a firm's ability to finance profitable investment projects. But, according to another view, high debt can reduce the agency costs of managerial discretion by discouraging wasteful investment. In this paper, we consider these issues by examining the role of leverage in determining the wealth gains accruing to shareholders of firms that make acquisition program announcements. Analysis of these gains is also important in their own right, as most previous empirical research has concentrated on the wealth effects of individual acquisitions, notwithstanding the fact that theory implies that the expected benefits from acquisitions that are part of a previously-announced program should be incorporated in the stock price at the program announcement date.

Our principal results are as follows. First, only firms with high q and low leverage have significantly positive wealth gains. Firms with low q or high leverage do not experience wealth gains. Second, wealth gains are an increasing function of q for low-leverage firms, but not for high-leverage firms. These results imply that superior management quality and investment opportunities are not sufficient for the market to react positively to the announcement of an acquisition program; the balance sheet fundamentals must be sound as well.

Our results are consistent with the view that high leverage imposes significant financing costs on firm investment; they do not support the view that high leverage reduces the costs of managerial discretion. Some caution must be attached to this conclusion, however, as our sample size is relatively small, particularly for the demands we place upon it. Nevertheless, our paper adds to the growing body of evidence that high leverage can constrain the scale of a firm's activities.

[14] It might be argued that, for the purpose of measuring debt tax shields, the absolute leverage level is a more meaningful concept than the level relative to an industry average. To check this, we redefined high leverage firms to be those with debt ratios exceeding the sample median. This has no effect on our results.

References

1. Chirinko, R.S., and H. Schaller, 1995, Why does liquidity matter in investment equations?, Journal of Money, Credit and Banking 27, 527-548.
2. Chung, K. H., and S.W. Pruitt, 1994, A simple approximation of Tobin's-Q, Financial Management 23, 70-74.
3. Fazzari S., G. Hubbard, and B. Petersen, 1988, Finance constraints and corporate investment, Brookings Papers on Economic Activity 1, 141-195.
4. Hanka, G., 1998, Debt and the terms of employment, Journal of Financial Economics 48, 245-282.
5. Hoshi, T., A. Kashyap, and D. Scharfstein, 1991, Corporate structure, liquidity, and investment: Evidence from Japanese panel data, Quarterly Journal of Economics 106, 33-60.
6. Jarrell, G., J. Brickley and J. Netter, 1988, The market for corporate control: The empirical evidence since 1980, Journal of Economic Perspectives, Winter issue, 49-68.
7. Jensen, M., 1986, Agency costs of free cash flow, corporate finance, and takeovers, American Economic Review 76, 323-329.
8. _____ and R. Ruback, 1983, The market for corporate control, Journal of Financial Economics 11, 5-50.
9. Kaplan, S., 1989, Management buyouts: Evidence on taxes as a source of value, Journal of Finance 44, 611-632
10. Lang, L., and R. Litzenberger, 1989, Dividend announcements: cash flow signalling vs. free cash flow hypothesis?, Journal of Financial Economics 24, 181-191.
11. Lang, L., E. Ofek, and R. Stulz, 1996, Leverage, investment, and firm growth, Journal of Financial Economics 40, 3-29.
12. Lang., L., R. Stulz and R. Walkling, 1989, Managerial performance, Tobin's q and the gains from successful tender offers, Journal of Financial Economics 24, 137-154.
13. Lindenberg, E. and S. Ross, 1981, Tobin's q ratio and industrial organization, Journal of Business (January), 1-32.
14. Linn, S. and J. Pinegar, 1988, The effect of issuing preferred stock on common and preferred
15. stockholder wealth, Journal of Financial Economics 22, 155-184.
16. Myers, S., 1977, Determinants of corporate borrowing, Journal of Financial Economics 5, 147-175.
17. _____ and N. Majluf, 1984, Corporate financing decisions when firms have investment information that investors do not, Journal of Financial Economics 13, 187-220.
18. Opler, T.C. and S. Titman, 1994, Financial distress and corporate performance, Journal of Finance 49, 1015-1040.
19. Schipper, K. and R. Thompson, 1983, Evidence on the capitalized value of merger activity for acquiring firms, Journal of Financial Economics 11, 85-119.
20. Servaes, H., 1991, Tobin's q, agency costs and corporate control: an empirical analysis of firm-specific parameters, Journal of Finance 46, 409-419.
21. Sharpe, S.A., 1994, Financial market imperfections, firm leverage, and the cyclicality of employment, American Economic Review 84, 1060-1074.
22. Singh, V., 1994, Acquisition program announcements, managerial motives, and the returns to stockholders, Working paper, (University of Pittsburgh).
23. Stulz, R., 1990, Managerial discretion and optimal financing policies, Journal of Financial Economics 26, 3-27.
24. Weston, J., K. Chung and S. Hoag, 1990, Mergers, Restructuring and Corporate Control, Prentice Hall, Englewood Cliffs, NJ.
25. Whited, T., 1992, Debt, liquidity constraints, and corporate investment: Evidence from panel data, Journal of Finance 47, 1425-1460.

Appendix. Listing of program announcing firms

Company Name	SIC	Year	Number of Bids in ensuing 3 years
Air Gas Inc	2813	1987	4
A L Labs Inc.	2834	1986	1
Alco Standard Corp.	5090	1979	7
Aluminum Company of America	3353	1985	2
American Brands Inc.	2111	1986	3
American General Corp.	6300	1983	3
Ampco Pittsburgh Corp.	3316	1981	1
Artra Group Inc	3691	1980	0
Avon Products Inc.	2844	1979	2
B C E Inc.	6711	1984	0
B M C Industries Inc MN	3679	1983	1
Bell Atlantic Corp.	6711	1986	3
Bethlehem Steel Corp.	3312	1984	1
Burlington Northern Inc.	4011	1982	1

Chock Full O' Nuts Corp	5812	1984	3
Chrysler Corp.	3711	1985	6
Clorox Co.	2842	1983	0
Coca Cola Co.	2087	1984	6
Cubic Corp.	3723	1983	0
Dow Chemical Co.	2812	1989	0
Dravo Corp.	1629	1985	0
Du Pont E I De Nemours	2892	1988	2
Ethyl Corp.	2899	1984	4
F M C Corp.	3523	1984	1
General Dynamics	3731	1985	1
General Motors	3711	1985	5
Genesco Inc.	2341	1984	0
Gillette Co.	3421	1981	0
Goodyear Tire & Rubber Co.	3011	1983	2
Hanna M A Co.	1011	1983	0
Heinz H J Co.	2032	1977	2
Hercules Inc.	2816	1988	0
Houston Industries Inc.	4931	1985	1
International Business Machines	3573	1982	1
James Rivers Corp.	6711	1983	0
Mickelberry Communications	7311	1979	1
Monsanto Company	2823	1984	1
Nortek Inc.	3569	1983	7
Northern Telecom Ltd.	3662	1977	5
Northern Telecom Ltd.	3662	1986	0
P P G Industries Inc.	3211	1982	1
Pfizer Inc.	2834	1988	1
Placer Dome Inc.	1041	1988	3
Pratt and Lambert United Inc.	2851	1986	2
Premier Industrial Corp.	2842	1981	2
Quaker Oats Co.	2043	1985	6
Quebecor Inc.	2711	1986	2
Ralston Purina	2041	1983	1
Rohm & Haas Co.	2821	1986	1
S L Industries Inc.	3643	1982	0
Santa Fe Pacific Corp.	1311	1984	0
Seagram Ltd.	2085	1980	2
Smucker J M Co.	2033	1983	1
Sundstrand Corp.	3541	1979	2
Texaco Inc.	2992	1981	2
Texaco Inc.	2992	1990	0
Thiokol Corp.	2891	1985	0
Todd Shipyards Corp.	3731	1984	1
Unilever PLC	2079	1985	4
United Technologies	3724	1981	0
Westinghouse Electric Corp.	3613	1983	4
Whirlpool Corp.	3633	1985	4
Whitman Corp.	2086	1982	0
Whitman Corp.	2086	1990	0
Whittaker Corp.	2851	1982	1

Table 1. Distribution of acquisition program announcements

This table presents frequency distributions for firms making acquisition program announcements during the 1977-92 period. The sample of 65 firms is identified from the Wall Street Journal Index and the Dow Jones News Retrieval Service. In panel B, SIC code is the Standard Industrial Classification code used in the COMPUSTAT database. In panel C, the debt ratio is the book value of long-term debt divided by the book value of total assets for the previous fiscal year. In panel D, Tobin's q = {(price*number of shares outstanding + book value of long-term debt plus short term liabilities net of short-term assets + book value of preferred shares) / total assets}, computed using data for the fiscal year immediately prior to the program announcement.

Panel A: Distribution by year

Year of program announcement	Number of announcements
1977-80	8
1981-84	32
1985-88	22
1989-92	3

Panel B: Distribution by industry

Industry	SIC code	Number of announcements
Oil, Coal, Metal mining	1000-2000	4
Food, Chemicals	2000-3000	29
Machinery, Manufacturing	3000-4000	24
Transportation	4000-5000	1
Wholesale Trade	5000-6000	2
Finance, Real Estate	6000-7000	4
Hotels, Entertainment	7000-8000	1

Panel C: Distribution by relative debt level

Leverage	Number of announcements
Debt ratio greater than industry average	30
Debt ratio less than industry average	35

Panel D: Distribution by Tobin's *q*

Tobin's q	Number of announcements	Mean
$q > 1$	21	1.412
$q < 1$	44	0.677
Full sample	65	0.914

Table 2. Cumulative abnormal returns for firms making acquisition program announcements

This table presents percentage cumulative abnormal returns (CARs) for samples of firms making acquisition program announcements during the 1977-92 period. To compute the CARs for periods (-1, 0) and (-1, +1), we estimate the market model parameters using a period starting on day -147 and ending on day -21 where day 0 is the announcement date as reported in the Wall Street Journal Index or the Dow Jones News Retrieval Service, whichever is applicable. We use the equally-weighted index on CRSP as a proxy for the market portfolio. Computation of Tobin's *q* is described in Table 1.

Panel A: Mean and median CARs

P-values are in parentheses and are calculated using the heteroskedasticity-adjusted procedure described by Linn and Pinegar (1988). Significance levels for means are based on the t-test while those for medians are based on the Wilcoxon signed-rank test.

		Event Window			
		(-1, 0)		(-1, +1)	
	N	Mean	Median	Mean	Median
		(%)	(%)	(%)	(%)
Full Sample	65	0.636 (0.05)	0.560 (0.03)	0.734 (0.04)	0.455 (0.04)
$q > 1$	21	1.603 (0.06)	1.110 (0.05)	2.120 (0.02)	2.290 (0.03)
$q < 1$	44	0.175 (0.41)	0.248 (0.34)	0.073 (0.64)	0.170 (0.59)
Difference between $q>1$ and $q<1$		1.428 (0.07)	0.862 (0.09)	2.047 (0.02)	1.950 (0.04)

Panel B: Regressions of CAR on *q*

The dependent variable is the cumulative abnormal return for the corresponding event window. P-values are in parentheses.

	Event Window	
	(-1, 0)	(-1, +1)
Intercept	-0.004 (0.71)	-0.010 (0.36)
Tobin's *q* (0.24)	0.011 (0.08)	0.019
R^2	0.021	0.050
N	65	65

Table 3. Cumulative abnormal returns sorted by Tobin's *q* and leverage

This table presents mean and median cumulative abnormal returns (CARs) for sub-groups sorted by Tobin's *q* and leverage. A firm is defined to have high (low) leverage if its debt ratio is greater (less) than the industry average debt ratio for the fiscal year prior to that in which the announcement is made. Debt ratio is the book value of long-term debt divided by the book value of total assets. Computations of *q* and CARs are described in Tables 1 and 2 respectively. P-values are in parentheses and are calculated using the heteroskedasticity-adjusted procedure described by Linn and Pinegar (1988). Significance levels for means are based on the t-test while those for medians are based on the Wilcoxon signed-rank test.

Sub-group	*q* > 1, low leverage (N = 13)		*q* > 1, high leverage (N = 8)		*q* < 1, low leverage (N = 22)		*q* < 1, high leverage (N = 22)	
Event window	(-1, 0)	(-1, +1)	(-1, 0)	(-1, +1)	(-1, 0)	(-1, +1)	(-1, 0)	(-1, +1)
Mean (%)	1.811 (0.01)	2.556 (0.01)	1.266 (0.51)	1.408 (0.42)	0.246 (0.49)	0.084 (0.82)	0.105 (0.66)	0.061 (0.69)
Median (%)	1.113 (0.01)	1.250 (0.01)	0.729 (0.67)	2.667 (0.40)	0.031 (0.55)	0.405 (0.31)	0.529 (0.39)	0.063 (0.76)

Table 4. CAR differences between high-*q* and low-*q* firms: The role of leverage

This table presents percentage cumulative abnormal return (CAR) differences between, on the one hand, low-*q* firms, and on the other hand, high-*q* firms with low and high leverage respectively. Thus, the first two columns present the mean and median amounts by which announcement period CARs for the 13 firms in our sample with $q > 1$ and low leverage exceed those of the 44 firms with $q < 1$. The third and fourth columns present the mean and median amounts by which announcement period CARs for the eight firms in our sample with $q > 1$ and high leverage exceed those of the 44 firms with $q < 1$. A firm is defined to have high (low) leverage if its debt ratio is greater (less) than its industry average for the fiscal year prior to that in which the announcement is made. The debt ratio is the book value of long-term debt divided by the book value of total assets. Computations of *q* and CARs are described in Tables 1 and 2 respectively. P-values are in parentheses and are calculated using the heteroskedasticity-adjusted procedure described by Linn and Pinegar (1988). Significance levels for means are based on the t-test while those for medians are based on the Wilcoxon signed-rank test.

	Low Leverage		High Leverage	
Event Window	(-1, 0)	(-1, +1)	(-1, 0)	(-1, +1)
Mean (%)	1.635	2.485	1.091	1.335
	(0.03)	(0.01)	(0.32)	(0.26)
Median (%)	0.864	1.075	0.481	2.492
	(0.04)	(0.02)	(0.58)	(0.25)

Table 5. The effect of leverage on the general relationship between wealth gains and *q*: Simple regressions

The dependent variable is the cumulative abnormal return (CAR) for the corresponding event window. Computations of *q* and CARs are described in Tables 1 and 2 respectively. A high (low)-leverage firm is one whose debt ratio is greater (less) than its industry average during the fiscal year prior to that in which the program announcement is made. The debt ratio is the book value of long-term debt divided by the book value of total assets. Estimation is by OLS. P-values are in parentheses.

	Event Window			
	(-1, 0)		(-1, +1)	
	High leverage	Low leverage	High leverage	Low leverage
Intercept	0.009	-0.005	0.007	-0.012
	(0.73)	(0.54)	(0.81)	(0.26)
Tobin's *q*	-0.006	0.013	-0.003	0.021
	(0.84)	(0.07)	(0.92)	(0.02)
R^2	0.001	0.10	0.001	0.15
N	30	35	30	35

Table 6. The effect of leverage on the general relationship between wealth gains and *q*: Multivariate regressions

The dependent variable is the cumulative abnormal return (CAR) for the corresponding event window. Computations of *q* and CARs are described in Tables 1 and 2 respectively. Internal cash flow is the ratio of cash plus marketable securities to total assets. Nine firms did not have internal cash flow data, so the regressions involving this variable have 31 (25) observations for low- (high-) leverage firms. Debt ratio is the book value of long-term debt divided by the book value of total assets. A high (low)-leverage firm is one whose debt ratio is greater (less) than its industry average during the fiscal year prior to that in which the program announcement is made. Estimation is by OLS. P-values are in parentheses.

	Event Window							
	(-1, 0)				(-1, +1)			
	High leverage	Low leverage		High leverage			Low leverage	
Intercept	0.023	0.012	-0.003	-0.007	0.023	0.023	-0.003	-0.012
	(0.85)	(0.74)	(0.75)	(0.55)	(0.43)	(0.54)	(0.79)	(0.46)
Tobin's *q*	-0.018	-0.006	0.015	0.014	-0.020	0.001	0.030	0.022
	(0.59)	(0.86)	(0.07)	(0.08)	(0.56)	(0.99)	(0.01)	(0.04)
Internal cashflow	-0.076	-0.057		-0.044	-0.217			
	(0.51)	(0.53)		(0.71)	(0.06)			
Debt ratio	-0.011	0.014		-0.072	-0.002			
	(0.91)	(0.80)		(0.48)	(0.97)			
R^2	0.04	0.01	0.11	0.10	0.03	0.02	0.25	0.15