# AN EXAMINATION OF THE MOTIVATION
# FOR LEVERAGED BUYOUT PROPOSALS

By

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## INTRODUCTION

The corporation has long been recognized as an efficient form of business organization. With this organizational form, owners of the firm delegate to the managers the right to manage corporate resources. This separation between ownership and management has motivated the question of whether managers' actions actually maximize shareholder's wealth. Modern corporate finance theory pays considerable attention to cases where divergence from wealth maximization may occur i. It is well recognized, however, that common stockholders are not left alone at the mercy of their managers. Financial theory paints out a few mechanisms to control the conflict interest between managers and stockholders. In particular, special emphasis is given to the market in which alternative managerial teams compete for the rights to manage corporate resources (see Jensen and Ruback, (1983)). The market for corporate control, known also as the takeover market, spurs competition among managerial teams for the right to manage resources.

1. See Amihud and Lev (1981), Levy (Î983), Masuiis (1983), DeAngeio, DeAngelo and Rice (1984 a), DeAngelo and DeAngelo (1985), Fama and Jensen (1985), Lewellen, Loderer and Rosenfeld (1985) and Tehranian, Travlos and Waegelein (1985) for just a few of these studies.

This competition limits managers' divergent actions, and «provides the mechanism through which economies of scale or other synergies available from combining or reorganizing control and management of corporate resources are realized» (Mayers and Smith, (1984)).

Changes in control can occur through mergers, tender offers, proxy contests and leveraged buyouts. Leveraged buyouts, however, are unique as a method of changing control in the following way. Leveraged buyouts lead to a change in the ownership structure of the firm. That is, ownership is concentrated in the hands of a few stockholders, who are either managers of the firm or third party purchasers. Therefore, leveraged buyouts abolish the separation between managers and stockholders, thus, minimizing the agency costs associated with such a separation. This implies that the leveraged buyout provides a strong test to assess the economic value of controlling the firm. That is, abnormal common stock returns at the announcement of a leveraged buyout might be attributed to the economic value of the right to control resources of the firm 2. Earlier empirical findings, (DeAngelo, DeAngelo and Rice (1984a)) document large positive abnormal returns to the common stockholders when it is announced that a public firm is going to become private. The gains are attributed to two factors : i) savings of registration and other public ownership expenses and ii) savings due to improved incentives for corporate decision makers under private ownership. No explicit test of these factors is performed, however. In addition to transaction costs and agency factors, it might also be argued that any abnormal returns found reflect financial benefits (i.e., additional tax credits, wealth transfers from bondholders to stockholders and positive debt level information effect) associated with the additional debt raised in order to finance the leveraged buyout. That is, leveraged buyouts increase the value of the firm through capital structure induced effects (Hite and Owers (1984)).

In view of the above considerations we utilize leveraged buyouts [3] occurring between 1975 and 1983 to investigate their valuation effects on common stockholders' returns, and to identify possible determinants of these returns. Three possible sources for abnormal returns are analyzed : i) savings of registration

2. Hite and Owers (1984) also allude to this relationship. They write that the corporate restructuring involved with leveraged buyouts and the large premiums to corporate stockholders when such a restructuring takes place, suggests that «the loss of value arising from the separation of ownership and control in the public corporation may be significant».

3. We include both management buyouts (going private transactions) and third party buyouts in our sample of leveraged buyouts.                    .

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and other public ownership expenses (hereafter, transaction costs), ii) the capital structure change induced effects, and iii) the elimination of agency costs effects associated with the separation between managers and owners when a public firm goes private.

Our results indicate that leveraged buyouts are associated with significant positive announcement period abnormal returns. In addition, the abnormal returns or the expected change of their capital structure. We interpret our results as supporting the view that announcement period returns accruing to the stockholders of firms going private capture the expected agency costs savings associated with the change of the organizational form.

The rest of the paper is organized as follows. Section 1 describes the predictable hypotheses which are analyzed in this paper. Section 2 identifies the data and methodology used. Section 3 presents the results of our analysis. Section 4 discusses implications of our results and Section 5 concludes our study.

## 1. PREDICTABLE HYPOTHESES :

### 1.1. Transaction Costs Effect

One possible source of abnormal returns to. common stockholders is the savings experienced by a reduction in transaction casts of public ownership (DeAngelo, DeAngelo and Rice, (!984a)). These include savings in registration, listing and other stockholder servicing costs which arc unique to the public corporation. The announcement that a firm intends to go private and the resulting elimination of the costs associated with public ownership produce an increase in the firm's value by an amount equal to the capitalized cost of public ownership. The potential percentage gain to existing stockholders from going private is equal to the capitalized cost of public ownership divided by the market value of thefirrn's common stock. Given that the cost of public ownership is a fixed cost[4], (i.e., this cost is idependent of firm rize) it may be argued taat the capitalized cost of public ownership

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4. Although the nature of the cost function is an empirical issue, many sutdies lend support to a fized cost nature of public ownership, i.e., Schneider, Manko and Kant (1981) and DeAngelo, DeAngelo and Rice (1984a).

is also constant across our sample [5]. If this is true, then the potential percentage gains from going private should be lower for larger firms andvice versa. Such **a** proposition can be tested by examining the relationship between the size of the firms going private and the magnitude of their announcement period abnormal returns. If we find a negative relationship between size and abnormal returns, it can be argued that the elimination of transaction costs of public ownership is a determinant of any abnormal returns found at the announcement of a leveraged buyout. The absence of such a negative relationship leads to the conclusion that transaction cost reduction is not a dominant factor explaining the documented announcement period abnormal returns.


## 1.2. **Capital Structure Change Iuduced** Effects


Another possible source of abnormal common stock returns at the announcement of a leveraged buyout might be the valuation effects caused by the change in capital structure of the firm. Capital structure change induced effects have been attributed to three factors : a tax effect, a wealth transfer effect and an information effect (See Masulis, (1980, 1983)). First, leveraged buyouts are typically financed with large amounts of debt[6] which are used two buy the firm's publicly held com. mon stock. The large increase in debt increases the firm's tax shield which should, in turn, increase the value of the firm by an amount equal to the capitalized **tax** shield multiplied by the corporate tax rate.

Second, increasing leverage might cause transfers of wealth from bondholders to stockholders. The bondholders can be harmed if the protective bond covenants fail to fully protect the bondholders' rights, or if the courts fail to strictly adhere to the «absolute priority rule» in satisfying the senior securityholders' claims[7].

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5. In section 3.2 we relax this assumption and allow for variability in the cost structure.

6. The firms are capable of supporting higher level of debt for the following two reasons. First, going private through a leveraged buyout can reduce the marginal agency costs of debt financing because the new equity investors have closer links with the lending institutions (DeAngelo, DeAngelo and Rice (1984 a)). Second, since in the case of financial distress the renegotiation process between firm and lenders is usually much smoother in the new organizational form relative to the form, the bankruptcy costs will be smaller (Jensen, (1984)).

7. Warner (1977)) indicates that bankruptcy courts in the United States reorganize such priority arrangements only in a limited sense. That is, it is not always guaranteed that senior claim holders are paid prior to a class of claimants junior to them.

Third, it is very likely that the proposal to take the firm private reveals good news about the firm's profitability as a public company. That is, the proposal to take the firm private might signal that the current market value is below its intrinsic value.

Accordingly, these three factors suggest that capital structure changes might be associated with valuation effects on the common stock of the going private firm. In particular, the larger the percentage increase in debt associated with the leveraged buyout, the greater should be the resulting percentage increase in firm's value. That is, abnormal returns found at the announcement of a leveraged buyout should be larger when the change in debt financing resulting from the transaction is larger. This hypothesis can be examined by testing the relationship between change in capital structure and announcement period abnormal returns. A positive relationship between abnormal returns and increase in debt caused by the transaction would lead us to conclude that part of the abnormal returns is due to the change in capital structure. On the other hand, no relationship between announcement period abnormal returns and dramatic increases in debt (as in the case of leveraged buyouts) leads us to conclude that capital structure change induced effects are not dominant in explaining the existence of such abnormal returns.

## 1.3. Agency Cost Effects

An alternative motivation for taking the firm private considers the firm's ownership structure and, specifically, the elimination of conflicts between relatively uninformed outside stockholders and insider-manager stockholders. The literature provides two arguments. First, managers have an incentive to take the firm private in order to eliminate the costs incurred when information about managerial performance and/or investment opportunities is transmitted to outside" stockholders [8]. The existence of such an asymmetry of information between different groups of stockholders (i.e. insider-managers and outside stockholders) might generate expensive contests which at the extreme case could lead to the mistaken replacement of incumbent managers with a less productive group (Alchian

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8. In a similar manner, DeAngelo and DeAngelo (1985) state that «one factor that encourages managers to hold votes is the costs incurred because information about managerial performance and/or investment opportunities is difficult to communicate to outsiders».

and Demsetz, (1972)). The possibility of such actions might force insider-managers to waste productive resources to defend their actions to potential proxy fight organizers and to outside stockholders who vote against the managers. By taking the firm private, managers are protected from the actions of less informed outside stockholders who insist on taking investment projects (i.e. a merger proposal) «which, although less profitable than other opportunities, have payoffs that are more easily observed by oustiders». Similarly taking the firm private, «provides managers with greater influence over the composition of the board of directors and thus reduces the likelihood that difficult-to-eva!uate proposals will be resisted or vetoed by relatively uninformed outside directors». (DeAngelo and De Angelo (1985)).

Second, managers have an incentive to take the firm private in order to enhance the efficiency of the mechanism for writing managerial compensation contracts- Indeed, some profitable investment proposals call for a disproportionate effort on the part of managers. Such proposals, then, will be pursued only if managers are entitled to receive a correspondingly disproportionate share of the proposal's outcome (Easterbrook and Fischel, (1982)). Nevertheless, proposals which carry provisions for disproportionate sharing of investment outcome among insider-managers and outside stockholders are expected to increase the overall value of the firm. However, such provisions in the managerial compensation contracts might be viewed as «overly generous» to managers, and can lead to expensive legal contests betwen insider-managers and outside stockholders[9]. Therefore, as noticed by DeAngelo, DeAngelo and Rice (1984b), «going private can generate productive gains to the extent that private ownership facilitates compensation arragements that induce managers to undertake more of these profitable projects».

Ideally, a test of the impact of the agency cost effects (described) above on announcement period common stock returns calls for a measure which would take into consideration such parameters as the existing communication mechanism (mail, lobbyist, annual meetings, proxu contests, etc.), the congeniality between insider-managers and outside stockholders, the cohesiveness of the two groups the ability of outside stockholders to understand intelligent business techniques, the number of outside stockholders, and the fractional ownership of outside versus insider-managers stockholders. Lack of such a measure precludes an explicit test to capture the impact of a change in ownership structure (the elimination of

9. See Jones (1980 a, b) for evidence of the frequency and size of stockholders' suits.

separation between managers and outside stockholders) on announcement period returns.

In summary, we discuss three alternative sources of announcement period abnormal returns to the stockholders of leveraged buyout firms. We explicity test the transaction costs effect and the capital structure change induced effects. Lack of support for these two hypotheses allows us to draw implicit conclusions concerning agency cost effects.

## 2. DATA AND METHODOLOGY

### 2.1. Data

The data analyzed in this study consist of a sample of public announcements of leveraged buyout proposals, for the period of 1975- 1983. All firms undertaking the transactions are listed on the New York Stock Exchange (NYSE) or on the American Stock Exchange (AMEX). The sample was identified through a search of the W a l l  S t r e e t  J o u r n a l  I n d e x. The announcement date of the proposed transaction is taken to be the date when the offer was first published in the W a l l  S t r e e t  J o u r n a l. To ensure that this date was the first date that information about the transaction became public, the details of the, announcement of these bids were confirmed or corrected from the F u n k  a n d S c o t t  I n d e x. In order to determine accurately event dates and to insulate the bid announcements from announcements of other major corporate events around the same period, the corporate history, contained in the W a l l  S t r e e t J o u r n a l  I n d e x,  M o o d y' s  I n d u s t r i a l s,  and Funk and Scott Index was reviewed for all five included in the tentative sample, for the six month pe" riod prior to the event date. As a result of this screening process, those firms which experienced concurrent major corporate events prior to, or on the event day were not included in ₃he final sample. Finally, firms selected for this study had available daily common stock returns in the Center of Research in Security Prices (CRSP) daily return file.

The final sample contains 61 firms undertaking leveraged buyout transactions^ Information describing the sample's characteristics is listed in Table 1. The values for Total Assets, Market Value of Equity, Long-Term Debt and Total Debt are taken from each firm's financial statement for the year prior to the announce-

## TABLE 1

INFORMATION ON THE SAMPLE OF 61 LEVERAGED BUYOUT **TRANSACTIONS**

| | Leveraged Buyouts | |
|---|---|---|
| | Mean | Stand. Dev. |
| Total Assets[a] (millions of $) | 136.64 | 215.92 |
| Market Values of Equity (millions of $) | 54.12 | 78.62 |
| Long-term Dept[a] (millions of $) | 42.03 | 105.65 |
| Total Debt[a] (millions of $) | 77.85 | 154.53 |
| Value of Transaction (millions of $) | 80.62 | 130.74 |
| Value of Transaction — Market Value of Equity ( %) | 165.50 | 126.10 |
| Value of Transaction — Total Assets ( %) | 56.30 | 46.80 |
| Value of Transactions — Total Debt ( %) | 147.10 | 148.70 |

[a] These items reflect book value

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ment of the transaction, as contained in the Compustat tapes. The value of each transaction was obtained from the W a l l   S t r e e t   J o u r n a l article announcing the transaction.

## 2.2. Methodology

The research hypotheses examined in this study are tested by applying an event-study methodology and by runing cross sectional reyressions. The event-study methodology is similar to that described in detail in Dodd and Warner (1983). For each security, i, we use the market model[10] to calculate a prediction error, (PE), for event day, t, as follows :

$$PE_{it} = R_{it} - (\hat{a}_i + \hat{b}_i R_{mt}) \tag{1}$$

where $R_{it}$ is the rate of return on security i for event day t and $R_{mt}$ is the rate of return on the CRSP equally-weighted index on event day t. The coefficients $\hat{a}_i$ and $\hat{b}_i$ are the ordinary least square estimates of the intercept and slope, respectively, of the market model re6ression. The estimation period is from $t = -136$ to $t = -16$ relative to the initial date of announcement in the W a l l   S t r e e t   J o u r n a l, day $t = 0$. Prediction errors are calculated for each security ove-the interval $t = -15$ to $t = +15$. For a sample of N securities an average pre diction error (APE) for each day t is defined as :

$$APE_t = \frac{1}{N} \sum_{i=1}^{N} PE_{it} \tag{2}$$

The average cumulative prediction error (ACPE) from event day T1 to event day T2 is also defined as :

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10. Our choice is justified by Brown and Warner's (1980) conclusion that a simple methodology based on the market model is both well specified and relatively powerful under a wide variety of conditions. This conclusion based on monthly returns, was reinforced by Brown and Warner (1985) when daily data were employed as well.

$$ACPE_{T1}^{T2} = \frac{1}{N} \sum_{i=1}^{N} \sum_{t=T1_i}^{T2_i} PE_{iit} \tag{3}$$

The expected values of $APE_t$ and ACPE are zero in the absence of abnormal performance. The test statistics are the average standardized prediction error (ASPE) and the average standardized cumulative prediction error (ASCPE), respectively. To compute this statistics the prediction error $PE_{it}$ is standardized by its estimated standard deviation $S_{it}$, [11], i.e.

$$SPE_{it} = \frac{PE_{it}}{S_{it}} \tag{4}$$

The $ASPE_t$ is defined as :

$$ASPE_t = \frac{1}{N} \sum_{i=1}^{N} SPE_{it} \tag{5}$$

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11. Where :

$$S_{it} = \left[ S_i^2 \left( 1 + \frac{1}{N} + \frac{(R_{mt} - \overline{R}_m)^2)}{\sum_{K=1}^{N} (R_{mk} - \overline{R}_m)^2} \right) \right]^{1/2}$$

$S_i^2$ = residual variance for security i from the market model regression

N = number of observations during the estimation period

$R_{mk}$ = Return on the market portfolio for the kth d ay of the estimation period

$R_{mt}$ = Return on the market portfolio for day t

$\overline{R}_m$ = Average Return of the market portfolio for the estimation period.

Assuming cross-sectional independence, ASPE$_t$ is approximately distributed according to a normal distribuiton with zero mean and variance $1/N$. Therefore, the statistic :

$$Z_t = \sqrt{N} * ASPE_t \qquad (6)$$

is a unit normal distribution. The ASCPE is defined as :

$$ASCPE_{T1}^{T2} = \sum_{T1}^{T2} ASPE_t \qquad (7)$$

Assuming serial independence, the statistic :

$$Z = \frac{\sqrt{N}}{\sqrt{T2 - T1 + 1}} \sum_{t = T1}^{T2} ASPE_t \qquad (8)$$

is also distributed as a standard unit normal distribution. The two statistics, Zt and Z, are used to test the significance of average and cumulative average prediction errors, respectively.

Using the above methodology we can determine whether the announcement period prediction error (hereafter abnormal return) is, on the average, significantly different from zero for the overall sample of leveraged buyouts.

Subsequently, we split the overall sample into sub-groups according to various characteristics (i.e., size and expected increase in debt ratio). We derive portfolio abnormal returns for each sub-group, which allows us to identify patterns off abnormal returns pertinent to the characteristics noted above. This portfolio

approach is based on the assumption that any possible non-systematic effects (not related to the event under analysis) are diversified away when we form portfolios of securities at a common event time. Therefore, this approach ensures that the portfolios abnormal returns capture the relevant event-related impact only. This methodology though, has the drawback that grouping the overall sample into two, or four, or any other number of sub-groups is a quite arbitrary process. In order to confirm our results derived by the portfolio approach, we also run cross-sectional regressions of the cumulative abnormal returns on the variables under investigation.

More specifically, we run the following regressions :

(1)    $CAR_i = a + b(S_i)$        $i = 1, 2, 3, \ldots 61$        Leveraged Buyouts

(2)    $CAR_i = a + b(DR_{ji})$       $j = 1, 2, 3$         Alternative Debt Ratio

$i = 1, 2, 3, \ldots 58$ [12]    Leveraged Buyouts

Where :  $S_i$ = Size as measured by market value of common equity.

$DR_{ji}$ = Debt ratio measuring the expected change in capital structure

We use three alternative ratios :

$$DR_{1i} = \frac{\text{Value of Transaction}}{\text{Total Assets}}$$

$$DR_{2i} = \frac{\text{Value of Transaction}}{\text{Total Debt}}$$

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12. We use 58 rather than 61 leveraged buyouts in this regression due to missing financial data for three leveraged buyout firms.

$$DR_{3i} = \frac{\text{Value of Transaction}}{\text{Market Value of Common Equity}}$$

With respect to the debt ratios used in this study, $DR_{1i}$ captures the expected change in debt-asset ratio caused by the transaction. $DR_{2i}$ captures the percentage change in the debt-asset ratio, and $DR_{3i}$ is used as a market value-related proxy of DR1i. The usual tests are used in regressions (1) and (2) to determine the significance of the regression coefficients.

## 3. RESULTS :

### 3.1. Overall Sample of Leveraged Buyouts

Table 2 presents the results for the behavior of the daily portfolio abnormal returns and the cumulative daily portfolio abnormal returns for firms subject to a leveraged buyout proposal, for each day in the period of —15 to +15 days relative to the announcement day (t = 0). Column 1 lists the event time relative to the announcement day, in terms of trading day. Column 2 presents the daily average abnormal returns (AR's) for each event day. Column 3 shows the Z-statistic for the daily average abnormal returns. Finally, column 0 contains the cumulative daily portfolios abnormal returns for each day. These statistics indicate whether the null hypothesis of zero standardized portfolio abnormal returns on a given day can be rejected or not.

As shown in Table 2, the announcement that a firm intends to go private produces a significant positive abnormal return to common stockholders. An average abnormal return of 7.69 % is earned the day before the announcement is reported in the W a l l  S t r e e t  J o u r n a l (t =—1) which is significant at the .01 level (Z = 23.73). On the announcement day (t = 0), an average abnormal return of 7.36 % is earned, which is also significant at the .01 level (Z = 27.34). Furthermore, it can be shown that the two-day (—1,0) announcement period CAR is 15.05 % which is significant at the .01 level (Z = 36.12 [13]). In addition, the sixteen

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13. Depending on what time during the trading day the announcement is made, either the publication day or the day before might be the relevant announceday. Since the exact time of the announcement is not known, a two - day period cumulative abnormal return is considered, as well, as announcement period return.

# TABLE 2

## LEVERAGED BUYOUTS (N = 61)

Daily Average Abnormal Returns (AR) and Daily Cumulative Average Abnormal Returns (CAR)
for the Sample of 61 Leveraged Buyouts from 15 Days Before and 15 Days After the Announcemen
(Day Zero) of a Leveraged Buyout Proposal

Years : 1975 - 1983

| Day Relative to Announcement | Daily Average Abnormal Return (AR) | Z Statistic | Cumulative Daily Average Abnormal Return (CAR) |
|---|---|---|---|
| —15 | —0.0050 | —1.2202 | —0.0050 |
| —14 | —0.0070 | —1.3520 | —0.0120 |
| —13 | 0.0012 | —0.1708 | —0.0108 |
| —12 | —0.0029 | —0.4607 | —0.0137 |
| —11 | —0.0004 | —0.0533 | —0.0141 |
| —10 | 0.0071 | 2.0518 | —0.0070 |
| —9 | 0.0021 | 0.5511 | —0.0050 |
| —8 | 0.0045 | 1.3616 | —0.0004 |
| —7 | —0.0014 | 0.2255 | —0.0019 |
| —6 | 0.0012 | 0.7410 | —0.0006 |
| —5 | 0.0061 | 0.8072 | 0.0055 |
| —4 | 0.0069 | 1.7118 | 0.0124 |
| —3 | 0.0046 | 2.3097 | 0.0169 |
| —2 | 0.0138 | 4.2922 | 0.0307 |
| —1 | 0.0769 | 23.7349 | 0.1076 |
| 0 | 0.0736 | 27.3439 | 0.1812 |
| 1 | —0.0049 | —1.0980 | 0.1763 |
| 2 | 0.0058 | 0.4578 | 0.1821 |
| 3 | —0.0009 | —0.2299 | 0.1812 |
| 4 | —0.0019 | —0.1291 | 0.1793 |
| 5 | 0.0044 | 2.4162 | 0.1837 |
| 6 | —0.0039 | —1.3779 | 0.1797 |
| 7 | 0.0017 | 1.0183 | 0.1815 |
| 8 | —0.0018 | —0.3177 | 0.1797 |
| 9 | —0.0008 | —0.6713 | 0.1789 |
| 10 | 0.0063 | 2.1878 | 0.1852 |
| 11 | —0.0030 | —0.7625 | 0.1822 |
| 12 | —0.0013 | —0.5571 | 0.1810 |
| 13 | —0.0008 | —0.5143 | 0.1802 |
| 14 | 0.0003 | 0.3996 | 0.1805 |
| 15 | —0.0031 | —0.7311 | 0.1774 |

day (—15,0) announcement period CAR is 18.12 % with a Z-test of 15.47. Therefore, we conclude that the announcement of a leveraged buyout proposal generates large benefits to the firm's common stockholders. These results are consistent with those reported by DeAngelo, DeAngelo and Rice (1984a), and are on line with all predictable hypothesses in section 1. The following three sub-sections present the results of testing these hypotheses.

## 3.2. Transaction Cost Effects

Table 3 presents selected daily AR's and CAR's for several portfolios of leveraged buyout firms formed according to firm size. For instance, as shown in the bottom part of Table 3, the two-day (—1,0) CAR for the smallest sized firms is 23.94 % (Z = 38.99). Increasing the size of the firms, the second portfolio shows a two-day (—1,0) CAR of 9.61 % (Z = 14.55), the third portfolio shows a two-day (—1,0) CAR of 12.04 % (Z = 20.95) and the fourth portfolio, consisting of the largest firms, shows a two-day (—1,0) CAR of 14.64 % (Z = 27.62). No obvious systematic pattern is demonstrated by these portfolio results.

For further support of this point (i.e., lack of a systematic relationship between abnormal return and size), we present, in Table 4 results of the cross-sectional regressions between size and CAR's. Based on the reported coefficients and the $R^2$, no systematic relationship between CAR's and size[14] can be established. The above results leads us to rule out the transaction cost hypothesis as a dominant factor motivating firms to go private[15].

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14. We also ran regressions using ln (size). Results from these regressions were similar to those reported in Table 4.

15. This conclusion is based on the assumption that registration costs and other ownership expenses are independent of firm size. However, we recognize that some ownership expenses are variable. For instance, annual registration fees increase with the number of shares outstanding, and costs of servicing stockholders depends on the number of the firm's stockholders. Even though the variable component cost is most likely a small fraction of total cost of public ownership, we attempted to incorporate any possible impact of the variable costs on the firms' abnormal returns. In particular, we ran multiple regressions of CAR's versus size, number of shares outstanding and number of stockholders. Consistent with our earlier results, we found no significant relationship between abnormal returns and size.

## TABLE 3

### LEVERAGED BUYOUTS (N = 61)

Daily Average Abnormal Returns (AR) and Daily Cumulative Average Abnormal Returns (CAR) for Two and Four Portfolios of Firms Formed According to Firms' Size (Market Value of Common Equity)

(Z tests are given in parentheses)

Years : 1975 - 1983

| Two Portfolios | $AR_{-1}$ | | $AR_0$ | | $CAR_{-1,0}$ | | $CAR_{-15,0}$ | |
|---|---|---|---|---|---|---|---|---|
| 1st (Smallest Size) | 8.28% | (16.47) | 8.50% | (21.38) | 16.78% | (37.85) | 19.39% | (10.69) |
| 2nd (Largest Size) | 7.12% | (17.09) | 6.26% | (17.32) | 13.38% | (34.41) | 16.89% | (11.19) |

| Four Portfolios | $AR_{-1}$ | | $AR_0$ | | $CAR_{-1,0}$ | | $CAR_{-15,0}$ | |
|---|---|---|---|---|---|---|---|---|
| 1st (Smallest Size) | 11.85% | (16.09) | 12.10% | (25.60) | 23.94% | (38.99) | 25.60% | (10.21) |
| 2nd | 4.71% | (7.20) | 4.90% | (7.34) | 9.61% | (14.55) | 13.17% | (4.90) |
| 3rd | 3.89% | (6.95) | 8.15% | (14.00) | 12.04% | (20.95) | 17.59% | (7.44) |
| 4th (Largest Size) | 10.16% | (17.06) | 4.48% | (10.56) | 14.64% | (27.62) | 16.24% | (8.37) |

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TABLE 4

Estimated Coefficients and t-statistics from regressing the Cumulative Abnormal Return for Leveraged Buyouts, over the intervals (—15,0) and (—1,0), on the firms' size (Market Value of Common Equity)

$$CAR_i = a + b \; (Size_i)$$

| Estimation Period (In trading days) | COEFFICIENTS | | |
|---|---|---|---|
| | a | b | |
| (—15,0) | | | |
| Estimated Coefficients | 0.1883 | —0.0001 | $R^2 = 0.0050$ |
| t-statistics | (7.4610) | (—0.5446) | $N = 61$ |
| (—1,0) | | | |
| Estimated Coefficients | 0.1482 | —0.0000 | $R^2 = 0.0008$ |
| t-statistics | (6.9801) | (0.2145) | $N = 61$ |

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## 3.3. Capital Structure Change Induced Effects

Table 5 reports selected daily AR's and CAR's for two and four portfolios of leveraged buyout firms. Portfolios are formed according to expected increase in firms' debt ratio, as measured by the ratio of value of transaction divided by total assets. As shown, in the bottom part of Table 5, the two-day announcement period portfolio CAR is 20.26 % (Z = 21.53) for the group of firms with the smallest expected increase in their debt ratio. As the value of the debt ratio increases, the two-day announcement period CAR becomes 12.89 % (Z = 12.74), 12.74 % (Z = 16.63) and 14.75 % (Z = 19.78), for the second, the third and the largest portfolio (in terms of debt-ratio increase), respectively. These results fail to establish a positive relationship between common stock returns and expected increases in the firms' debt-ratio [16]. In fact, no obvious systematic pattern can be found, and as shown in Tables 6 and 7, these results are robust to using alternative debt ratios $DR_2$, and $DR_3$ ($DR_2$ equals value of transaction divided by total debt and $DR_3$ equals value of transaction divided by market value of Common Equity).

Further support of this point is provided in Table 8 where we run cros-sectional regressions between individual firms' cumulative abnormal returns and the corresponding increase in their debt ratio. The regression coefficients and R2 reported here, using the three alternate measures of debt-ratio and two alternate time periods, suggest that the announcement period abnormal returns are not related to the firms' expected increase in debt.

The above results, based on both porfolio approach and regression analysis, imply that capital structure change induced effects fail to explain the abnormal common stock returns observed at the announcement that a firm intends to go private. To that effect, we view these results as inconsistent with the tax based

16. The existence of a positive relationship between CAR's and increase in debt ratios could also be due to a higher «beta» caused by the firms' increased leverage. In such a case the market model would not be the most appropriate model to use. Instead, other models like the comparison period approach, or the mean adjusted model would be more appropriate. Since our results do **not** show any positive relationship between CAR's and debt - asset ratios, we did not try alternative models. Moreover, DeAngelo, DeAngelo and Rice (1984 a) report that their results under talernative methodologies are qualitatively identical to the equal - weighted market model results.

## TABLE 5

### LEVERAGED BUYOUTS (N = 58)

Daily Average Abnormal Returns (AR) and Daily Cumulative Average Abnormal Returns (CAR) for Two and Four Portfolios of Firms Formed According to Firms' Expected Increase in Debt Ratio (as measured by the Ratio $DR_1$ = Value of Transaction/Total Assets)

(Z tests are given in parentheses)

| Two Portfolios | $AR_{-1}$ | | $AR_0$ | | $CAR_{-1,0}$ | | $CAR_{-15,0}$ | |
|---|---|---|---|---|---|---|---|---|
| 1st (smallest change) | 11.40% | (22.48) | 5.30% | (11.93) | 16.70% | (24.33) | 21.17% | (10.95) |
| 2nd (largest change) | 4.72% | (11.73) | 8.99% | (24.62) | 13.71% | (25.71) | 16.49% | (11.02) |

| Four Portfolios | $AR_{-1}$ | | $AR_0$ | | $CAR_{-1,0}$ | | $CAR_{-15,0}$ | |
|---|---|---|---|---|---|---|---|---|
| 1st (smallest change) | 13.87% | (18.98) | 6.39% | (11.46) | 20.26% | (21.53) | 24.04% | (8.68) |
| 2nd | 8.77% | (12.70) | 4.12% | ( 5.31) | 12.89% | (12.74) | 18.09% | ( 6.78) |
| 3rd | 4.37% | ( 6.09) | 8.38% | (17.43) | 12.74% | (16.63) | 12.50% | ( 5.81) |
| 4th (largest change) | 5.10% | (10.58) | 9.65% | (17.39) | 14.75% | (19.78) | 20.76% | ( 9.84) |

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# TABLE 6

## LEVERAGED BUYOUTS (N = 58)

Daily Average Abnormal Returns (AR) and Daily Cumulative Average Abnormal Returns (CAR) for Two and Four Portfolios of Firms Formed According to Firms' Expected Increase in Debt Ratio (captured by the Ratio $DR_2$ = Value of Transaction / Total Debt)

(Z tests are given in parentheses)

| Two Portfolios | $AR_{-1}$ | | $AR_0$ | | $CAR_{-1,0}$ | | $CAR_{-15,0}$ | |
|---|---|---|---|---|---|---|---|---|
| 1st (smallest change) | 8.63% | (17.03) | 7.34% | (17.20) | 15.97% | (24.21) | 19.15% | (10.28) |
| 2nd (largest change) | 7.42% | (17.21) | 6.92% | (19.45) | 14.34% | (25.92) | 18.45% | (11.75) |

| Four Portfolios | $AR_{-1}$ | | $AR_0$ | | $CAR_{-1,0}$ | | $CAR_{-15,0}$ | |
|---|---|---|---|---|---|---|---|---|
| 1st (smallest change) | 12.85% | (16.96) | 7.50% | (12.58) | 20.34% | (20.89) | 26.60% | ( 9.32) |
| 2nd | 4.41% | ( 6.85) | 7.58% | (12.02) | 11.99% | (13.34) | 11.76% | ( 5.09) |
| 3rd | 8.36% | (11.68) | 5.17% | (12.43) | 13.53% | (17.04) | 18.03% | ( 7.75) |
| 4th (largest change) | 6.55% | (12.91) | 8.28% | (14.71) | 14.83% | (19.53) | 18.86% | ( 9.94) |

## TABLE 7

### LEVERAGED BUYOUTS (N = 56)

Daily Average Abnormal Returns (AR) and Daily Cumulative Average Abnormal Returns (CAR) for Two and Four Portfolios of Firms Formed According to Firms' Expected Increase in Debt Ratio (captured by the Ratio $DR_3 = $ Value of Transaction/ Market Value of Common Equity)

(Z tests are given in parentheses)

| Two Portfolios | $AR_{-1}$ | | $AR_0$ | | $CAR_{-1,0}$ | | $CAR_{-15,0}$ | |
|---|---|---|---|---|---|---|---|---|
| 1st (smallest change) | 10.60% | (23.20%) | 5.00% | (13.80%) | 15.60% | (26.16%) | 18.41% | (10.88%) |
| 2nd (largest change) | 5.69% | (11.23%) | 9.14% | (22.61%) | 14.84% | (23.93%) | 19.21% | (11.08%) |

| Four Portfolios | $AR_{-1}$ | | $AR_0$ | | $CAR_{-1,0}$ | | $CAR_{-15,0}$ | |
|---|---|---|---|---|---|---|---|---|
| 1st (smallest change) | 15.25% | (22.21%) | 4.44% | ( 9.29%) | 19.69% | (22.28%) | 19.81% | ( 8.07%) |
| 2nd | 5.96% | (10.59%) | 5.56% | (10.22%) | 11.52% | (14.71%) | 17.02% | ( 7.32%) |
| 3rd | 3.07% | ( 6.40%) | 11.05% | (22.00%) | 14.12% | (20.08%) | 22.12% | (10.52%) |
| 4th (largest change) | 7.99% | ( 9.39%) | 7.48% | (10.38%) | 15.47% | (13.98%) | 1g.60% | ( 5.33%) |

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## TABLE 8

### LEVERAGED BUYOUTS (N = 58)

Estimated Coefficients and $t$-statistics from Regressing the Cumulative Abnormal Return for leveraged Buyout Firms over the Interval $(-15,0)$ and $(-1,0)$, on the Firm's Expected Increase, as measured by the Debt Ratios $DR_1$, and $DR_2$, and $DR_3$

(t tests are given in parenthesis)

| Regression | Estimated Coefficients | | $R^2$ | N |
|---|---|---|---|---|
| | a | b | | |
| $CARi(_{-15,0}) = a + b(DR_{1i})$ | 0.2102 (6.0465) | −0.0389 (−0.8165) | 0.0118 | 58 |
| $CARi(_{-15,0}) = a + b(DR_{2i})$ | 0.2135 (6.8814) | −0.0172 (−1.1509) | 0.0231 | 58 |
| $CARi(_{-15,0}) = a + b(DR_{3i})$ | 0.1829 (4.9638) | 0.0032 (0.1818) | 0.0006 | 58 |
| $CARi(_{-1,0}) = a + b(DR_{1i})$ | 0.1767 (5.9955) | −0.0438 (−1.0838) | .0205 | 58 |
| $CARi(_{-1,0}) = a + b(DR_{2i})$ | 0.1722 (6.5059) | −0.0137 (−1.0764) | .0203 | 58 |
| $CARi(_{-1,0}) = a + b(DR_{3i})$ | 0.1441 (4.5936) | 0.0048 (0.3175) | .0018 | 58 |

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theories, wealth transfer phenomena, and information effect associated with the firms' change of capital structure [17].

An explanation for the lack of tax-induced results is presented by Hite and Owers (1984) who recognize that debt used to finance a leveraged buyout is immediately removed and, therefore, serves no long-term purpose but «functions primarily as a part of the mechanism to take the company private». In addition, as pointed out in Hite and Owers (1984), the lack of wealth transfer phenomena can be attributed to two factors: i) the existence of extensive restrictive covenants in leveraged buyouts — loan agreements control the conflict of interest between stockholders and creditors, ii) for reasons of self-interest, the leveraged buyout specialist has a strong incentive to be sensitive to lenders interests (to maintain his reputation) and to monitor contracts.

## 4. IMPLICATIONS OF OUR RESULTS : THE VALUE OF CONTROL :

The results reported in section 3 show no relationship between the size of the firms, or the expected increase in their debt - asset ratios, and the announcement period abnormal returns experienced with the leveraged buyout firms examined in this study. These results lead us to rule out the transaction cost hypothesis and the capital structure change induced effects as dominant factors generating the documented abnormal returns. This implies that the motivation to take the firm private might not be to save the transaction costs associated with the public firm and exploit any benefits caused by changing the capital structure.

Therefore, we suggest that our results imply that the abnormal returns found at the announcement of the leveraged buyouts capture the expected economic benefits associated with concentrating the ownership rights of the firms in the hands of a few people; the managers and/or a third party. These benefits stem from improving the mechanism for writing maangerial incentive contracts. In addition, the leveraged buyouts may create value by saving productive resources which are

17. Lack of a positive relationship between debt ratios and abnormal returns may also indicate that other tax shields are more important than interest tax shields. Given that firms undertaking a leveraged buyout are allowed to adjust their depreciation basis to reflect the marke value of the firm's assets, the impact of the interest tax shields might be overshadowed by the depreciation tax shields (DeAngelo and Masulis (1980)). We tested the importance of depreciation tax shields by regressing abnormal returns on the difference between the expected value of assets subsequent to the leveraged buyout and the book value of assets prior to the transaction. Our results fail to support any relationship between abnormal returns and higher depreciation basis.

wasted when managers must defend their actions to asymmetrically informed minority stockholders. It is noteworthy that the recent wave of leveraged buyouts coincides with an era of increased contests among several groups within the public corporation. It is a logical conclusion, then, that the motivation to take the firm private is to exploit, to the fullest extent, benefits stemming from the value of controlling the economic resources of the firm.

Such a conclusion might lend doubt to the efficiency of the public corporation as a form of organization. However, we view our result as support of quite the opposite. In particular, we view the leveraged buyout phenomenon as a corrective mechanism to help the public corporation *to* rewrite the contractual agreements existing within a modern corporation, in such a way that reflects new realities (i.e. new technologies, new management strategies, etc.). Along these lines, we expect the leveraged buyout to be a temporary extraction from the organizational form of public corporation. In other words, we expect most of the going private firms to redesign their relevant contracts in such a way that the public corporation again becomes the most efficient organizational form, and to subsequently reconvert to a public concern. Indeed, this has been observed frequently and has been discussed in the financial newspapers (see W a l l  S t r e e t  J o u r n a l August 12, 1985, page 13). It is our contention that the leveraged buyout is the most efficient vehicle to implement such an adjustment.

## 5. CONCLUSION

In this paper, we measure the economic value associated with the conversion of a public firm to a private firm. We use leveraged buyouts to identify possible determinants of abnormal returns to common stock at the announcement of a leveraged buyout. Three possible sources of this abnormal return are analyzed: i) transaction costs associated with a public corporation, ii) the capital structure change induced effects, and iii) the elimination of agency cost effects associated with the separation between managers and owners when a public firm goes private

We find that no relationship exists between size of the leveraged buyout firms as well as between the expected increase in debt due to the transaction, and their, announcement period abnormal return. Based on these results we rule out transaction costs and capital structure change induced effects as dominant factors explaining announcement period abnormal returns on common stock. Rather, we attribute these returns to the elimination of agency costs when a public firm goes private. These abnormal returns represent the economic value of the right to control the firm.

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