In contrast to the negative average abnormal returns accompanying the announcement of a public offering of securities, the announcement of a private sale of equity is accompanied by a 4.5% average abnormal return. Cross-sectional analysis indicates that the change in firm value at the announcement of a private sale is strongly correlated with the resulting change in ownership concentration. This relation depends on the level of ownership concentration after the sale and the purchaser's current or anticipated future relationship with the firm.

1. Introduction

Private and public sales of equity send opposite signals to the market about firm value. The announcement of a private sale is associated with a 4.5% increase in nonparticipating shareholder wealth. In sharp contrast, previous studies show that shareholder wealth falls by 3% on average at the announcement of a public offering of equity. Public offerings of other types of securities are also associated with a decline in shareholder wealth.

In a private sale of equity the firm sells a block of securities to a single or small group of investors (usually fewer than five). New York (NYSE) and American Stock Exchange (AMEX) firms raised an average of $31.5 million per sale in a sample of private sales running from mid-1979 through 1985. This is only about $5 million per sale less than the average proceeds in samples of public equity offerings [Asquith and Mullins (1986)].

Sample private sales do not generally involve a complete change in control, but the block of securities sold is significant, carrying an average of over 19% of the firm’s equity voting rights. Underwritten public offerings increase shares outstanding by 13% on average [Masulis and Korwar (1986)], but they are sold

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to a much larger group of purchasers. Hence, private sales provide an opportunity to examine the effect on firm value of changes in equity ownership concentration.

Throughout this study, ownership concentration is based on the share ownership of managers, directors, and 5% or greater beneficial owners as reported in the proxy statements. As a result of the private sale, the total holdings of these investors increases from an average of 31% to an average of 37% of the firm's voting securities. This average increase in ownership concentration results from private sales to nonmanagement-controlled purchasers. Average management-controlled holdings fall by 1.5% around the time of the sale. Coupled with the positive average abnormal return at announcement, this evidence indicates that even though managers have an opportunity to construct a self-serving deal that damages shareholders, the decision to sell a block of securities to nonmanagement investors increases shareholder wealth.

Further evidence on when, and whether, the increased ownership concentration promotes entrenchment or serves to align manager and shareholder interests is provided by a cross-sectional analysis of the change in firm value at the announcement of a private equity sale. The change in firm value is strongly correlated with the change in ownership concentration resulting from the sale, with the relation depending on the resulting level of ownership concentration, and the purchaser's current or anticipated relationship with the firm.

When the level of ownership concentration after the sale is low (0% to 5%) or high (≥ 25%), the relation between changes in firm value at announcement and changes in ownership concentration is positive. In a middle range of ownership concentration (5% to 25%), however, this relation is negative. In this range, apparently, the ability of incumbent shareholders to become entrenched outweighs any benefits of having a blockholder in place.

When managers agree to a sale that gives the purchaser a controlling relationship with the firm, or puts the purchaser on the board of directors, the marginal effect on firm value is negative. Agreeing to a change in control or a new board member without shareholder approval makes shareholders worse off. A private sale to a management-controlled purchaser also makes shareholders worse off.

The paper is organized as follows. Section 2 describes the sample collection procedure and presents sample characteristics. The changes in nonparticipating shareholder wealth and equity ownership associated with private sales of equity are examined in section 3. In section 4, cross-sectional analysis of the relation between value changes and ownership changes is conducted. Section 5 presents conclusions and suggests directions for future work.

1 In this sample there is a maximum of six investors per firm whose holdings are disclosed. Qualitatively, results are the same when ownership concentration is based only on the ownership of the five largest shareholders.
2. Description and structure of private equity sales

A sample of private sales of equity is collected using the Dow Jones Information Retrieval Service Data Base. From a small preliminary sample of Wall Street Journal articles, the words and phrases most commonly used to describe private sales are selected as keys for a data base search routine. In addition to using synonyms for private sales such as private placement and private offering, the financial press often reports the transaction as a stock purchase agreement or the purchase of a stake in the firm. The text and headlines of Dow Jones Data Base articles are searched for these phrases in conjunction with synonyms for equity, such as common and treasury stock or shares.

The search selects press releases dated from July 1, 1979 through December 31, 1985 – from the earliest date in the data base through the latest date for which return data are available in the Center for Research in Securities Prices (CRSP) Data Base. Over 1,000 news reports are generated. Reports that do not involve a private sale of equity or concern a private sale by a firm not listed on the NYSE or AMEX are excluded from the sample. A reading of each report yields a sample of 128 private sales of equity; 65 by NYSE and 63 by AMEX firms. Characteristics of the sales and of the firms making them are obtained by reading Wall Street Journal Index from two years before through one year after the sale for each sample firm. A precise announcement date and the details of each sale are collected by reading each Wall Street Journal article concerning a sale.

Ninety-two press reports announce a sale and its completion simultaneously. This could occur because there is little time between initiation and completion, or because little information about private sales is reported. For the 36 firms announcing a sale and its completion separately, the median number of days between announcement and completion is 63. Shareholder approval is required in 28 sales, generally because the stock exchange refuses to list the firm's shares without such approval. Shareholder approval is also necessary when the sale requires the issuance of more shares than are currently authorized in the corporate charter. Typically in these instances, the firm

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2 This data base contains the full text of selected Wall Street Journal articles, Barron's articles, and press releases coming over the Dow Jones News Wire from July 1, 1979 to the present. The criteria used by Dow Jones to decide whether to include or exclude information from the data base are unknown.

3 For the remaining private sales, the announcement occurs on the issuance date. Therefore, it is impossible to determine when negotiations for the sale began, and hence whether private sales are executed more quickly than public offerings. For underwritten public offerings of common stock, Masulis and Korwar (1986) find an average of 140 days between the announcement and issuance dates, and Mikkelson and Partch (1986) find a median of 18 days.

4 Both the NYSE and the AMEX require shareholder approval for issues that 'significantly' increase the number of voting securities outstanding. Neither exchange adheres to specific criteria, however; each case is reviewed individually.
partially completes the sale by issuing the maximum allowable number of shares. It then asks the shareholders to authorize more shares. Sales requiring approval take longer to complete than others; the median number of days between announcement and shareholder approval is 84.

The package of securities offered in a private sale of equity varies across the 128 private sales (see table 1). The majority of total proceeds come from the sale of common stock in 101 cases, from preferred stock in 16 cases, and from convertible preferred in 11 cases. In addition, 17 of the sales include warrants or options to purchase common stock, and 10 involve the private sale of small amounts of other types of securities. In seven sales securities are sold to the public at the same time that equity securities are sold privately.

Sample sale characteristics are presented in table 2. At the median, a block of securities representing 12.3% of the voting rights is sold in a private sale of equity; the average is 19.6%. Block size ranges from 1.3% to 79.8% of the voting securities. According to proxy statement information, the postpurchase stake of the buyer is 18.0% at the median and 25.9% on average. The average dollar proceeds in sample sales are $31.5 million, ranging from $0.44 million to $400 million. As in public offerings, the distribution of dollar proceeds is skewed, median proceeds being much smaller than mean proceeds. Median proceeds in a private sale are $11 million. Public offerings raise $8.5 million more ($19.5 million) at the median [Masulis and Korwar (1986)].

The smaller dollar offering size is consistent with the relatively small size of firms selling equity privately. The market value of equity averages $234 million for sample firms, whereas for all CRSP firms the average market value is $910 million. For firms making public offerings, the average value of total assets is $949 million (Masulis and Korwar). Industrial classification of sample firms by three-digit SIC code suggests no unusual concentration of firms in a particular industry. The common stock of firms making private sales of equity, however, has higher than average nondiversifiable risk. The average beta across sample firms is 1.12 and is significantly different from one (t-value = 2.12). (Firms making underwritten public offerings of common stock have an average beta of 1.23, which is also significantly different from one [Healy and Palepu (1988)].)

In 46 sales the reason for purchase is reported; in only 12 of these (26%) does the purchaser report buying the securities strictly as an investment. The purchaser reports intending to gain control of the selling firm in 12 sales and obtains the right to elect or nominate directors in 22 sales. In eight cases the issuing firm is a takeover target and sells shares to an investor other than the bidding firm.

As in public offerings of equity, the number of private sales is not evenly distributed over time. For example, the hypothesis that the number of sales is equal across years is rejected at the 0.05 level ($\chi^2 = 15.40$). Due to the limited overlapping time periods in samples of public and private sales, it is not feasible to determine whether the clustering in time is similar or dissimilar for these transactions.
Table 1
Combinations of securities sold in private sales of equity.
Sample of 128 sales by NYSE and AMEX firms making private sales of equity between 7/1/79 and 12/31/85.

<table>
<thead>
<tr>
<th>Security raising the majority of total proceeds</th>
<th>Number of sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferred stock</td>
<td>16</td>
</tr>
<tr>
<td>Convertible preferred</td>
<td>11</td>
</tr>
<tr>
<td>Common stock(^b)</td>
<td>101</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>128</strong></td>
</tr>
</tbody>
</table>

**Additional types of securities sold\(^c\)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warrants or options sold privately</td>
<td>17</td>
</tr>
<tr>
<td>Other securities sold privately</td>
<td>27</td>
</tr>
<tr>
<td>Other securities sold to the public</td>
<td>7</td>
</tr>
</tbody>
</table>

\(^a\) This is the type of security sold privately, or when more than one type of security is sold, the type of security raising the largest dollar amount. For all sales in this sample, one type of security raises the overwhelming majority of total proceeds.

\(^b\) Three of the 101 sales of common stock involve restrictions on voting.

\(^c\) Sales categorized below are not mutually exclusive.

Table 2
Sample characteristics of private sales of equity securities.\(^a\)
Sample of 128 sales by NYSE and AMEX firms making private sales of equity between 7/1/79 and 12/31/85.

<table>
<thead>
<tr>
<th>Sale characteristic</th>
<th>Minimum</th>
<th>Median</th>
<th>Mean</th>
<th>Maximum</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block size(^b)</td>
<td>1.27%</td>
<td>12.28%</td>
<td>19.57%</td>
<td>79.80%</td>
<td>95</td>
</tr>
<tr>
<td>Postpurchase stake(^c)</td>
<td>1.80%</td>
<td>18.00%</td>
<td>25.90%</td>
<td>84.00%</td>
<td>104</td>
</tr>
<tr>
<td>Dollar proceeds (millions)</td>
<td>$4.4</td>
<td>$11.00</td>
<td>$31.46</td>
<td>$400.00</td>
<td>101</td>
</tr>
<tr>
<td>Market value of equity(^d) (millions)</td>
<td>$2.16</td>
<td>$48.70</td>
<td>$233.70</td>
<td>$6,198.84</td>
<td>98</td>
</tr>
</tbody>
</table>

\(^a\) Data are collected from *Standards and Poor's Stock Reports* and the *Wall Street Journal*. All dollar amounts are reported in thousands. All data were not available for all sales; the number of data points available is shown in the last column.

\(^b\) Block size is measured in relation to total shares outstanding after the sale and is defined as $\text{Shares offered} / (\text{Shares offered} + \text{Shares outstanding})$, where *Share outstanding* is measured as total shares reported outstanding at announcement, or if not reported, as total shares outstanding at the end of the quarter prior to the sale.

\(^c\) Postpurchase stake is the reported stake of purchasers after the sale, taking into account the purchasers' stockholdings prior to the sale.

\(^d\) Market value of equity is measured 20 days prior to announcement.
3. Stock-price response to private equity financing

3.1. Empirical methods

The stock-price response to the announcement of a private sale of equity provides a measure of the change in wealth experienced by nonparticipating shareholders as a result of the sale. Examining stock-price performance before the sale is announced provides insight into the circumstances under which managers choose to finance with private equity. Analysis of stock-price performance after the sale reveals whether changes in shareholder value are permanent or transitory.

A standard event-study procedure is used to measure changes in shareholder wealth around the announcement of a private sale. To obtain an estimate of the wealth effect of private sales of equity, I eliminate 29 sales involving simultaneous public offerings or private offerings of debt securities from the analysis, leaving a sample of 99 private sales.

To measure abnormal performance, I estimate the market model for each firm using daily stock returns obtained from the CRSP files. With the announcement day defined as day 0, the estimation period for market model coefficients runs from day -200 through day -60. Prediction errors from the market model measure the abnormal return to common stock. Abnormal returns are calculated from day -59 through day +20, and are then averaged across firms for each of these 80 event days. A standardized test statistic is constructed to determine whether the mean abnormal return is significantly different from zero.6

3.2. Changes in shareholder wealth at announcement

Table 3 presents average abnormal returns for 80 days around the announcement of a private sale of equity. On average, shareholder wealth increases at the announcement. Between day -3 and day 0 firms announcing private sales experience a positive abnormal return of 0.0441. The two-day average abnormal return on days -3 to -2 is 0.0252 (Z = 4.71), and on days -1 to 0 the average abnormal return is 0.0189 (Z = 1.91).7

Sample firms have a significantly positive abnormal return for several months prior to announcement. Over days -59 through -4 the cumulative abnormal return is 0.0597 (Z = 2.72). Cumulative abnormal performance over days 1 to 20 is -0.0143, but is not significant (Z = -0.56). So, while

6See Dodd and Warner (1983) for a detailed description of event-study procedures and statistical tests.
7Neither eliminating all sales in which common stock did not account for the majority of total proceeds, nor eliminating all sales in which a security other than common stock was sold yields any qualitative differences in the results.
Table 3

Two-day average abnormal returns and cumulative average abnormal returns for 80 days around the public announcement of a private sale of equity securities.

Sample of 99 sales by NYSE and AMEX firms making private sales of equity without simultaneous public offerings of securities or private sales of debt securities between 7/1/79 and 12/31/85.

<table>
<thead>
<tr>
<th>Event days</th>
<th>Average abnormal return</th>
<th>Cumulative average abnormal return</th>
</tr>
</thead>
<tbody>
<tr>
<td>-59 to -22</td>
<td>0.0248</td>
<td>0.0248</td>
</tr>
<tr>
<td>-21 to -18</td>
<td>0.0024</td>
<td>0.0272</td>
</tr>
<tr>
<td>-17 to -16</td>
<td>-0.0031</td>
<td>0.0362</td>
</tr>
<tr>
<td>-15 to -14</td>
<td>-0.0094c</td>
<td>0.0331</td>
</tr>
<tr>
<td>-13 to -12</td>
<td>-0.0005</td>
<td>0.0425c</td>
</tr>
<tr>
<td>-11 to -10</td>
<td>0.0070c</td>
<td>0.0420d</td>
</tr>
<tr>
<td>-9 to -8</td>
<td>0.0082c</td>
<td>0.0490c</td>
</tr>
<tr>
<td>-7 to -6</td>
<td>0.0024</td>
<td>0.0572c</td>
</tr>
<tr>
<td>-5 to -4</td>
<td>0.0001</td>
<td>0.0596c</td>
</tr>
<tr>
<td>-3 to -2</td>
<td>0.0252c</td>
<td>0.0597c</td>
</tr>
<tr>
<td>1 to 0</td>
<td>0.0189d</td>
<td>0.0849c</td>
</tr>
<tr>
<td>1 to 2</td>
<td>-0.0010</td>
<td>0.1028c</td>
</tr>
<tr>
<td>3 to 4</td>
<td>0.0002</td>
<td>0.1030c</td>
</tr>
<tr>
<td>5 to 6</td>
<td>-0.0020</td>
<td>0.1010c</td>
</tr>
<tr>
<td>7 to 8</td>
<td>-0.0061</td>
<td>0.0949c</td>
</tr>
<tr>
<td>9 to 10</td>
<td>0.0003</td>
<td>0.0952c</td>
</tr>
<tr>
<td>11 to 12</td>
<td>0.0011</td>
<td>0.0963c</td>
</tr>
<tr>
<td>13 to 14</td>
<td>-0.0013</td>
<td>0.0950c</td>
</tr>
<tr>
<td>15 to 16</td>
<td>-0.0019</td>
<td>0.0931c</td>
</tr>
<tr>
<td>17 to 18</td>
<td>-0.0018</td>
<td>0.0913c</td>
</tr>
<tr>
<td>19 to 20</td>
<td>-0.0018</td>
<td>0.0895c</td>
</tr>
</tbody>
</table>

a The null hypothesis that the average abnormal return or cumulative abnormal return is equal to zero is tested by calculating a Z-statistic from the standardized squared abnormal returns.

b The day of the public announcement is day 0.

c Significant at the 0.05 level (two-tailed test).

d Significant at the 0.10 level (two-tailed test).

cumulative performance remains significant through day 20, its significance is driven by performance up to and including announcement. Because there is no postannouncement drift in stock prices, the increase in shareholder value at announcement appears to be permanent.

These results stand in sharp contrast to the market's average reaction to announcements of underwritten public offerings of securities. The announcement of an underwritten offering of common stock is associated with a -0.03 abnormal return on average [Asquith and Mullins (1986), Korwar (1982), Masulis and Korwar (1986), and Mikkelsen and Partch (1986)]. The announcement of a public issue of convertible or straight debt is associated with a mean abnormal return of -0.023 and -0.004, respectively [Dann and Mikkelsen (1984)]. The abnormal return of 0.0447 from day -3 to day 0 is
statistically different from zero and is certainly different from $-0.03$, which is more likely the relevant benchmark.  

3.3. Release of information and changes in ownership concentration

One potential explanation for the differing stock-price reactions to private and public sales is that announcements of these sales send the market opposite signals about firm value. Myers and Majluf (1984) show how a public offering leads to a negative stock-price reaction when managers have better information about firm value than the public. In their model, the market views a public offering of equity as a signal that managers believe the market price is high in relation to true value. By allowing managers the opportunity to negotiate directly with the buyer, a private sale can mitigate this problem.

Because far fewer buyers participate in a private sale than a public offering, a private sale can make it easier for managers to address concerns about their own abilities and the firm's prospects. Though SEC regulations allow up to 30 purchasers in a private sale, in 74 sales (58%) there is only one purchaser, and in only six sales (5%) are there six or more purchasers. The type or identity of the purchaser is disclosed in 108 sales (84%). Table 4 presents purchasers divided into three categories: management-controlled, unaffiliated, and blockholder purchasers. About 58% of these purchasers (representing 74 sales) were not previously affiliated with the firm: in other words they were not managers or shareholders before the sale. Most of these unaffiliated purchasers are corporate and individual investors. In 24 of the sales (19%) the purchaser was previously a 5% or greater beneficial owner of voting securities. Most

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8 The spread of stock-price reaction across days $-3$ to $0$, rather than just days $-1$ to $0$, might be explained by the fact that many firms do not report the sale until it is near or at completion. Hence, some leakage of information prior to announcement is likely. A reading of the Wall Street Journal Index for each sample firm indicates no systematic announcement of any kind on days $-3$ to $-2$.

9 Smith (1986) summarizes the evidence supporting five hypotheses posed by researchers to explain the market reaction to corporate financing decisions. These hypotheses provide a framework to examine the difference in the market reaction to public and private sales of equity. The first hypothesis concerns changes in capital structure. Because both private and public sales are leverage-decreasing transactions, leverage changes are unlikely to explain the difference. The second is differences in the degree to which the market anticipates the event. Although this may explain why the market reaction is spread over four days for private sales and only two for public sales, it does not explain the difference in the direction of the reaction. The remaining three hypotheses are considered here: (i) implied cash flow changes, (ii) information asymmetries, and (iii) ownership changes.

10 As the dollar amount to be raised increases, the cost of finding a small number of purchasers to buy the whole offering also increases, making a public offering a more attractive alternative. However, the difference between the mean or median dollar size of private and public sales indicates this is not an insurmountable problem even for large dollar transactions.

11 The management-controlled and unaffiliated categories are mutually exclusive, as are the unaffiliated and blockholder categories. The blockholder purchaser category contains management-controlled blockholder purchasers.
Table 4

Profile of purchasers in private sales of equity securities as reported by the Dow Jones News Service.a

Sample of 128 sales by NYSE and AMEX firms making private sales of equity between 7/1/79 and 12/31/85.

<table>
<thead>
<tr>
<th>Classification of purchasers</th>
<th>Number of private sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management-controlled purchaser&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
</tr>
<tr>
<td>Managers</td>
<td>6</td>
</tr>
<tr>
<td>Corporation</td>
<td>4</td>
</tr>
<tr>
<td>Employee stock ownership plan</td>
<td>3</td>
</tr>
<tr>
<td>Limited partnership</td>
<td>2</td>
</tr>
<tr>
<td>Trust</td>
<td>1</td>
</tr>
<tr>
<td>Unaffiliated purchaser&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>74</td>
</tr>
<tr>
<td>Corporation</td>
<td>40</td>
</tr>
<tr>
<td>Financial institution/Trust&lt;sup&gt;d&lt;/sup&gt;</td>
<td>31</td>
</tr>
<tr>
<td>Individual</td>
<td>14</td>
</tr>
<tr>
<td>Lender</td>
<td>4</td>
</tr>
<tr>
<td>Blockholder purchaser&lt;sup&gt;e&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
</tr>
<tr>
<td>Management-controlled</td>
<td>6</td>
</tr>
<tr>
<td>Nonmanagement-controlled</td>
<td></td>
</tr>
<tr>
<td>Corporation</td>
<td>13</td>
</tr>
<tr>
<td>Financial institution/Trust&lt;sup&gt;d&lt;/sup&gt;</td>
<td>3</td>
</tr>
<tr>
<td>Individual</td>
<td>2</td>
</tr>
<tr>
<td>Purchaser not disclosed</td>
<td>12</td>
</tr>
</tbody>
</table>

---

<sup>a</sup>Up to three types of purchasers participate in a single sale, so categories of purchaser identity are not exhaustive or mutually exclusive. The reported purchasers span 108 sales.

<sup>b</sup>A management-controlled purchaser is a purchaser who is, according to the Wall Street Journal and/or proxy statements before the sale, a manager or an organization controlled by the firm's managers.

<sup>c</sup>An unaffiliated purchaser is a purchaser who is neither a manager nor a blockholder.

<sup>d</sup>The financial institutions and trusts category includes purchasers that are financial and investment trusts, insurance companies, and mutual funds. In addition, unidentified purchasers described only as financial institutions, institutional investors, or insurance companies in the news release are included.

<sup>e</sup>A blockholder purchaser is a purchaser who is, according to the Wall Street Journal and/or proxy statements before the sale, a management shareholder or a 5% or greater beneficial owner of the firm's securities.

Blockholder purchasers (13 of 24) are nonmanagement-controlled corporations. Few (3 of 24) are financial institutions and trusts.

It appears that in only a few cases do managers sell shares to themselves or parties they control. In 16 sales the purchaser is controlled by management, but in only six of these do managers buy the shares themselves. In four sales, for example, securities are sold to a corporation that is revealed in the proxy
statements to be controlled by managers. If efforts are made to hide the identity of the purchaser, however, analysis based on publicly available data can understate the proportion of sales made to management-controlled investors.

A well-informed nonmanagement investor buying a block of securities is expected to send the market a positive signal about firm value, whereas, as Myers and Majluf assert, a public offering is expected to send a negative signal. This is consistent with the observed positive average stock-price reaction to private offerings of equity and negative reaction to public offerings.

Since a private sale is made to a small number of investors, the positive stock-price reaction could be associated with a change in ownership concentration. A shift in the distribution of voting equity among investors affects stock prices if it changes the market's assessment of firm value. Such a shift in assessment can come about if the sale resolves an asymmetric information problem, signals new information to the market, or changes the allocation of corporate resources.

A greater level of ownership concentration increases firm value if the blockholder uses his votes to see that corporate resources are managed more efficiently, or if the existence of the block increases the probability of a value-increasing takeover. Greater ownership concentration decreases firm value if the block entrenches managers, insulating them from market discipline or reducing the probability of a takeover. Assuming no other changes in share ownership, a private sale puts a block in place and dilutes the voting power of existing blocks. In contrast, a public sale to a large group of dispersed purchasers simply dilutes the voting power of existing blocks. These differences in resulting share ownership provide another possible explanation for the difference between the stock-price reaction to private and public sales of equity.

Proxy-statement data allow an actual measurement of the change in ownership concentration associated with a private sale. For the proxy statement preceding and the one following the sale, each 5% or greater beneficial owner and all managers' and directors' holdings are recorded as reported. Where

12 An employee stock ownership plan is classified as a management-controlled purchaser.

13 Although information signaled to the market and ownership changes can be thought of as competing hypotheses, there is no way to distinguish between them empirically in this context. Hence, no attempt is made to do so here.

14 As it is not possible to obtain information on ownership concentration immediately before and directly after announcement, the proxy statements closest to announcement are used. Such a large time frame allows other potentially confounding factors to contaminate the measures of ownership concentration. On the other hand, if, for example, an intended by product of the private sale is to remove another blockholder, then widening the time frame is preferable to an immediate measurement of ownership concentration changes. The size of the block sold can also be used as a proxy for changes in ownership. This measure, however, implicitly assumes a homogeneous distribution of ownership across firms by ignoring information on holdings of other shareholders.
Table 5
Ownership concentration of firms making private sales of equity securities.
Sample of 128 sales by NYSE and AMEX firms making private sales of equity between 7/1/79 and 12/31/85.

<table>
<thead>
<tr>
<th>Holdings of largest shareholders</th>
<th>Percent holdings before (N=110)</th>
<th>Percent holdings after (N=107)</th>
<th>Change in holdings (N=97)</th>
<th>Z-statistic for Wilcoxon signed-ranks test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>30.7</td>
<td>36.5</td>
<td>7.7</td>
<td>4.38d</td>
</tr>
<tr>
<td>Median</td>
<td>24.3</td>
<td>32.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>13.1</td>
<td>11.6</td>
<td>-1.5</td>
<td>-2.26d</td>
</tr>
<tr>
<td>Median</td>
<td>7.1</td>
<td>7.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonmanagement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>15.6</td>
<td>24.6</td>
<td>9.1</td>
<td>4.65d</td>
</tr>
<tr>
<td>Median</td>
<td>8.4</td>
<td>19.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Proxy statements report beneficial ownership of all managers and directors, and nonmanagement holdings greater than 5%. The number of firms without any management or major shareholders is nine before and eight after the private sale. Before the sale, 26 firms have no management shareholders, while 56 have no reported nonmanagement shareholders. After the sale, 31 firms have no management shareholders, while 46 have no reported nonmanagement shareholders.

bMean change in holdings is the average of (% holdings before - % holdings after) across firms with ownership data both before and after the sale (N = 97).

The Wilcoxon signed-rank test is a nonparametric test of the hypothesis that the change in blockholdings is not different from zero. Analysis includes only sample firms with proxy statements available both before and after the sale (N = 97).

dSignificant at the .5 level (two-tailed test).

beneficial ownership is reported on a fully diluted basis, ownership figures are adjusted to reflect actual holdings. Footnotes to the proxy statements are studied to determine whether or not each beneficial holding is controlled by management.

Table 5 describes the ownership concentration of sample firms before and after the private sale. According to proxy statements preceding announcement, the largest shareholders control 30.7% of the voting rights on average and 24.3% at the median. Managers control 13.1% of the voting rights on average and 7.1% at the median. Consolidated holdings by nonmanagers are 15.6% on average and 8.4% at the median.

These data are consistent with ownership data reported in other studies. Demsetz and Lehn (1985) report that mean holdings by the top 25 shareholders in Fortune 500 companies are 24.8% and 37.7%, respectively. Ownership

15 When ownership is reported on a fully diluted basis the conversion of convertible securities and exercise of options to purchase securities is assumed and reflected in reported ownership. To compute actual holdings the effect of such assumptions is undone.
here is somewhat more concentrated, supporting their evidence that ownership is more concentrated in smaller firms. More, Shleifer, and Vishny (1988) document the skewness of the ownership distribution, reporting board ownership in Fortune 500 companies is 10.6% on average, but only 3.4% at the median.

Sample private sales coincide with an increase in ownership concentration, a reduction in management-controlled holdings, and an increase in nonmanagement holdings. Total holdings increase by 7.7%, while management holdings decline by 1.5% on average. Average nonmanagement ownership increases by 9.1%, from 15.6% to 24.6%. Median changes support the direction of mean changes in holdings, with the exception of management holdings, where the median is positive and close to zero.

A Wilcoxon signed-ranks test is used to test the hypothesis that the change in ownership concentration around a private sale is zero. The increase in total and nonmanagement holdings is highly significant, with a Z-statistic over 4 for both categories. The decrease in management ownership is also significant, though not so strongly, with a Z-statistic around -2.

Evidence of an increase in shareholder wealth at announcement indicates that the shift to more concentrated holdings by nonmanagers generally increases firm value. In fact, the average abnormal return from day -3 to day 0 for private sales, excluding sales to management-controlled purchasers, is a statistically significant 0.0493. This is consistent with Holderness and Sheehan (1985) and with Mikkelson and Ruback (1985), who find a 2.9% average abnormal return to the stock of the target firm at the announcement of a 13d filing. The range of announcement-period abnormal returns in response to a private sale is large, however, running from 105% to -34% on days -3 to 0. More can be learned about the relation between firm value and ownership from a cross-sectional analysis.

4. The relation between changes in firm value and changes in ownership

The effect of a change in ownership concentration on firm value depends on the market's assessment of its effect on resource allocation within the firm, and the probability of a takeover. For a particular firm, value increases if the

16 An increase in nonmanagement holdings does not necessarily imply a decrease in management holdings, or vice versa. Because there are dispersed shareholders whose holding are not reported in proxy statements, the sum of management and nonmanagement holdings as classified here does not equal 100%.

17 This nonparametric test statistic is constructed by ranking the absolute value of the change in ownership for each sample firm, then signing the ranks according to the sign of the difference. An approximately normal test statistic is calculated for each category of ownership presented in table 5.

18 The average abnormal return for private sales to management-controlled purchasers is a statistically insignificant 0.0067.
change in ownership more closely aligns manager and shareholder interests [Jensen and Meckling (1976)]. Firm value falls if the private sale allows entrenchment, creating a concentrated ownership structure that fosters the misallocation of resources and effectively blocks attempted takeovers [Fama and Jensen (1983)].

In examining the relation between changes in ownership and changes in firm value, I hypothesize that both changes in ownership and resulting ownership levels are important. For example, the sale of a 7% block can give a small group of investors veto power in a takeover if it increases their holdings from 45% to 52% and voting is by a simple majority. If a sale establishes only a 7% voting block, however, its effect on the probability of a takeover is much smaller.19

A high concentration of ownership can block takeovers or make them extremely costly. Alternatively, a high concentration can put more pressure on managers to make value-maximizing decisions. A low concentration will have similar, but weaker, effects on management decision-making, but is much less likely to enable the holder to block takeovers. It follows that for low levels of ownership concentration, an increase in concentration will be associated with an increase in firm value. For higher levels of ownership, it is not possible to predict the direction of the relation between changes in ownership and changes in firm value.

For a sample of Fortune 500 firms from 1980, Morck, Shleifer, and Vishny (1988) study the relation between the level of firm value and the level of board ownership.20 They find that firm value increases as board ownership increases to 5%, falls as board ownership increase from 5% to 25%, and then increases for ownership levels beyond 25%. In the range between 5% and 25%, the entrenchment effect dominates the alignment of incentives. Data from the analysis of private sales of equity allow direct examination of the change in firm value that accompanies a change in ownership concentration.

In addition to changes in ownership concentration, two factors are hypothesized to be strongly related to changes in firm value: (i) whether the purchaser intends to take control of the firm and (ii) whether the purchaser is controlled by management. An announcement that the purchaser will take control of the firm or sit on the board of directors signals that the purchaser is more closely tied to the firm than the change in ownership alone might indicate. An increase in the number of shares controlled by management increases the

19Stulz (1988) demonstrates that the effect on firm value of changes in management share ownership depends on the level of ownership. In his model, increases in management share ownership increase firm value when the level of management ownership is low, but decrease firm value when the level is high.

20As a proxy for the market's valuation of the firm, they use Tobin's Q, which equals the market value of the firm over the replacement cost of the firm's assets.
likelyhood of entrenchment. Categorizing management-controlled purchasers as those most likely to expropriate wealth from other shareholders undoubtedly involves some error. At some level of holdings the distinction between insiders and outsiders becomes blurred. For example, nonmanagement blockholders can have strong incentives to divert resources in ways that make them better off at the expense of other shareholders. This potentially confounds attempts to explain the variation in changes in firm value across sample firms.

4.1. Measuring the change in firm value

To measure the change in firm value associated with a change in ownership concentration, I separate the announcement-period abnormal return into two components: (i) the abnormal return resulting from new information or an anticipated reallocation of resources that changes the market's assessment of the firm's net present value and (ii) the abnormal return representing any compensation to the purchaser for contributions to firm value or for promoting entrenchment.

If a purchaser demands and receives compensation, the total abnormal return systematically misstates the true change in value associated with the change in ownership. For example, if a purchaser is compensated for aligning interests, the economic effect of the change in ownership is greater than the abnormal return by an amount reflecting the compensation. If a purchaser is compensated for entrenching managers, the economic effect of the change in ownership is less negative than the abnormal return by an amount reflecting the compensation. Hence, analysis of the relation between ownership concentration and firm value requires isolating the compensation portion of the abnormal return to nonparticipating shareholders. Unfortunately, the compensation can take many forms and so is not directly observable. However, an examination of the details of sample sales indicates that part of the compensation appears in the sale price.

Pricing in private sales of equity is described in table 6. Unregistered securities are sold in 83 sales (65%). Registered securities are sold in the remaining 45 sales (35%); two-thirds of these are newly registered shares and

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21 Supporting this, Brickley, Lease, and Smith (1988) find that inside blockholders are more likely to vote with managers on antitakeover amendment proposals, independent of the effect of the proposals on firm value.

22 The purchaser wants to internalize all increases in value attributable to his services. Relative bargaining power between managers and the buyer determines how gains are divided between the buyer and old security holders or the buyer and managers. The party to the transaction with the more specialized resource has an advantage in negotiations. For example, competition among purchasers for a block of securities puts managers in a strong position, and a purchaser bringing a unique skill or service to the firm is in a relatively strong position.
Table 6

Ratio of offer price to market price in private sales of equity securities.a
Sample of 128 sales by NYSE and AMEX firms making private sales of equity between 7/1/79 and 12/31/85.

<table>
<thead>
<tr>
<th>Offer price/Market price</th>
<th>Minimum</th>
<th>Median</th>
<th>Mean</th>
<th>Maximum</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unregistered sales</td>
<td>0.050</td>
<td>0.878</td>
<td>0.865</td>
<td>1.482</td>
<td>37</td>
</tr>
<tr>
<td>Registered sales</td>
<td>0.480</td>
<td>0.982</td>
<td>1.041</td>
<td>2.051</td>
<td>36</td>
</tr>
</tbody>
</table>

a The ratio of offer price to market price is measured one trading day before announcement. In 73 sales, information about the offer price is released to the public. There are, in total, 83 unregistered and 45 registered sales in the sample.

one-third are previously registered treasury shares.23 Because unregistered shares carry resale restrictions, they are expected to be offered at a discount from the open market price. Registered shares are closer substitutes for shares currently trading and are expected to be offered at a price closer to the open market price.24 By purchasing unregistered shares the buyer commits to a minimum legal holding period of two years, or three years if he has a controlling relationship with the firm.25 During this period the purchaser's wealth is tied to the value of the firm, and hence the purchaser has strong incentives to try to increase share value.

In relation to the market price one day before announcement, the offer price is set, on average, at 86.5% of the market price in unregistered sales and 104% of market in registered sales. The median value is similar to the mean for unregistered sales (87.8% of market), but for registered sales the offer price is 98.2% of market at the median. Pricing ranges widely across sales, from 5% of market in one unregistered sale to 205% of market in one registered sale. A

23 In 45 sales the Wall Street Journal reports whether registered or unregistered securities are sold. For the remaining sales the Registered Offerings of Securities Data Base made available by the Securities and Exchange Commission (SEC) is used to collect registration information. The Registered Offerings of Securities Data Base contains detailed information on all offerings of securities registered with the SEC between January 1971 and December 1986. For each sample firm all registration statements filed are examined. If no registration statement is filed within 12 months on either side of announcement for the type of security sold privately, the sale is classified as unregistered. When a registration statement is filed within 12 months, the filings are cross-checked with public security offerings reported in the Wall Street Journal. Filings corresponding to these sales are eliminated from consideration. The details of remaining filings are compared with the details of the private sale. If they match reasonably well the sale is classified as registered. Otherwise, the sale is classified as unregistered. Although this method of classification has a subjective element, it is not possible to be more precise without going through the costly process of reading a number of each firm's registration statements.

24 To the extent registered shares sold privately carry special provisions such as voting restrictions or the right to nominate directors, they are not perfect substitutes for open market shares.

25 A thorough presentation of securities laws governing private sales can be found in Ratner (1982).
A test of the hypothesis that the expected value of the ratio of offer price to market price equals one can only be rejected in the case of unregistered shares. Wide variation the pricing of private sales has been documented previously by Johnson and Racette (1981). They examine pricing in sales of unregistered common stock to investment companies and find the offer price is set at 76% of the market price, on average, and ranges from 10% to 100% of market.

A difference between offer and market price in private sales of equity does not indicate an inefficiency; rather it indicates that the transaction is unique and cannot be replicated in the market or at market prices. Barring ignorance, a purchaser will not pay more than market price for a block of securities that could be assembled at current market prices. A firm will not sell securities at less than market price unless it is not possible to sell the block at current prices or it receives something of value in addition to the dollar proceeds of the sale in return.

In comparing pricing in unregistered and registered private sales, the hypothesis that pricing is equal is also rejected ($t = 2.40$). This is consistent with the purchaser’s demanding compensation, in the form of a reduced price, for holding shares with restricted resale provisions. Registration status, however, does not explain the majority of the variation in pricing. Apparently, the pricing reflects compensation to the purchaser for factors other than reduced liquidity. A simple model is developed in the appendix that adjusts abnormal returns for pricing. The dependent variable in subsequent analysis ($AR_{\Delta NPV}$) is the portion of the abnormal return resulting from changes in the market’s assessment of the net present value of the firm as measured by this model.

4.2. Regression models

Cross-sectional analysis is conducted by running a series of regression models. The explanatory variables are ownership concentration levels ($Ownership$) and changes in ownership concentration ($\Delta Ownership$), as defined in section 3, and two dummy variables. The first equals one if the purchaser intends to take control of the firm or sit on the board of directors and zero otherwise. The second equals one if the purchaser is management-controlled and zero otherwise.

In addition, piecewise linear regressions, where the constants $Olevel_1$ and $Olevel_2$ are the turning points of the estimated function, are run:

$$AR_{\Delta NPV} = \beta_1 \Delta Ownership_1 + \beta_2 \Delta Ownership_2 + \beta_3 \Delta Ownership_3 + e.$$  

26A $t$-test for comparing means of distributions (with unknown but equal variances) is used to test the hypothesis.
where

\[ Ownership_1 = \begin{cases} 
Ownership & \text{if } Ownership < Olevel_1, \\
Olevel_1 & \text{if } Ownership \geq Olevel_1,
\end{cases} \]

\[ Ownership_2 = \begin{cases} 
Ownership & \text{if } Ownership < Olevel_1, \\
Ownership - Olevel_1 & \text{if } Olevel_1 < Ownership < Olevel_2, \\
Olevel_2 - Olevel_1 & \text{if } Ownership \geq Olevel_2,
\end{cases} \]

\[ Ownership_3 = \begin{cases} 
Ownership & \text{if } Ownership < Olevel_2, \\
Ownership - Olevel_2 & \text{if } Ownership \geq Olevel_2.
\end{cases} \]

The sum of the ownership variables equals the total ownership concentration (percentage ownership of voting securities by managers, directors, and 5% or greater beneficial owners) at a point in time: \( \sum_{i=1}^{3} Ownership_i = Ownership \). The change in ownership variables, \( \Delta Ownership_i \), are calculated as \( Ownership_i^{\text{After}} - Ownership_i^{\text{Before}} \). The sum of the change in ownership variables equals the total change in ownership concentration associated with the private sale: \( \sum_{i=1}^{3} \Delta Ownership_i = \Delta Ownership \). Because the turning points are not apparent ex ante, alternative specifications are estimated.

The piecewise linear specification is the same as that used by Morck, Shleifer, and Vishny, but their regression is run on levels of, as opposed to changes in, firm value and ownership. They analyze a cross-section of firms at a given point in chronological time. I analyze a sample of firms that experience a change in ownership. This difference provides an opportunity to test the strength and consistency of their results.

4.3. Results

Table 7 presents the estimated coefficients from regressions of the change in firm value, \( \Delta AR_{\Delta NPV} \), on ownership concentration, changes in ownership concentration, and the two dummy variables. In the basic regression model, the percentage change in ownership (\( \Delta Ownership \)) is the single most significant variable. Its estimated coefficient is 0.009 with a t-value of 5.15. Ownership concentration before the sale (\( Ownership Level \)) has a positive, but insignificant coefficient of 0.002 (t-value = 1.20). Together, these coefficients indicate that firm value increases with increases in ownership concentration and may increase slightly more when the firm has more concentrated ownership before the sale.

\[ \text{Firm value} = \text{Control variables} + \beta_1 Ownership_1 + \beta_2 Ownership_2 + \beta_3 Ownership_3. \]

Differencing this equation with respect to Ownership yields the models estimated here. In theory, the estimated regression coefficients are the same for both models.

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27 They run the following model: \( \text{Firm value} = \text{Control variables} + \beta_0 Ownership_1 + \beta_1 Ownership_2 + \beta_2 Ownership_3. \) Differencing this equation with respect to Ownership yields the models estimated here. In theory, the estimated regression coefficients are the same for both models.
Table 7

Regressions of change in firm value on ownership and dummy variable (t-values in parentheses). 48 observations from sample of NYSE and AMEX firms making private sales of equity between 7/1/79 and 12/31/85.

<table>
<thead>
<tr>
<th>Linear regression model</th>
<th>Explanatory variables</th>
<th>Estimated coefficients</th>
<th>Piecewise linear regression model</th>
<th>Explanatory variables</th>
<th>Estimated coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.027</td>
<td>0.034</td>
<td>ΔBoard Ownership&lt;sub&gt;1&lt;/sub&gt;</td>
<td>0.062&lt;sup&gt;d&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Ownership Level</td>
<td>0.022</td>
<td>-0.010&lt;sup&gt;d&lt;/sup&gt;</td>
<td>ΔBoard Ownership&lt;sub&gt;2&lt;/sub&gt;</td>
<td>-0.016&lt;sup&gt;d&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>ΔOwnership</td>
<td>0.009&lt;sup&gt;d&lt;/sup&gt;</td>
<td>0.013&lt;sup&gt;d&lt;/sup&gt;</td>
<td>ΔBoard Ownership&lt;sub&gt;3&lt;/sub&gt;</td>
<td>0.008&lt;sup&gt;e&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Purchaser Control dummy</td>
<td>-0.220&lt;sup&gt;d&lt;/sup&gt;</td>
<td>-0.192&lt;sup&gt;d&lt;/sup&gt;</td>
<td>Contorl variables</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Management Purchaser dummy</td>
<td>-0.157</td>
<td>-0.045</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-value&lt;sup&gt;e&lt;/sup&gt;</td>
<td>7.20</td>
<td>11.82</td>
<td>Unadjusted R&lt;sup&gt;2&lt;/sup&gt;</td>
<td>59.5%</td>
<td></td>
</tr>
<tr>
<td>(significance level)</td>
<td>(0.0002)</td>
<td>(0.0001)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R&lt;sup&gt;2&lt;/sup&gt;</td>
<td>34.6%</td>
<td>53.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>From Morek, Shleifer, and Vishny (1988), table 2, column 2 regression of firm value (Tobin's Q) on board ownership. They include in their regression variables to control for intangible assets that affect Tobin's Q.

<sup>b</sup>Ownership Level and ΔOwnership are defined here as the total holdings and changes in holdings of the six largest blockholders. In piecewise regressions, the ΔOwnership and ΔBoard Ownership variables split the total change in ownership or board ownership into the portion moving the ownership level between 0 and 5%, 5% and 25%, and 25% and greater.

<sup>c</sup>Tests the joint hypothesis that all regression coefficients equal zero.

<sup>d</sup>Significant at the 0.05 level (two-tailed test).

<sup>e</sup>Significant at the 0.10 level (two-tailed test).

The Purchaser Control and Management Purchaser dummy variables isolate the sales most likely to involve entrenchment. In sales where the purchaser gains a controlling position, managers have conveyed control without shareholder approval and perhaps at shareholder expense. Consistent with entrenchment, the Purchaser Control dummy has a significant negative coefficient of -0.220 (<it>t-value</it> = -3.08). Evidence supporting entrenchment must be interpreted with caution, however. The sale may convey negative information to the market even when managers are acting in shareholder interests if, for example, through no fault of the managers the market overestimates the probability of a high-valued takeover, and this probability is revised down-
ward as a result of the private sale. Evidence against management-controlled purchasers is weaker. The Management Purchaser dummy has a negative, but insignificant, coefficient.

A piecewise linear model with turning points of 5% and 25% and the Morek, Shleifer, and Vishny model with these same turning points are presented in the second and third columns of table 7. The coefficients are similar for both models. For \( \Delta Ownership_1 \), the coefficient is 0.034 for the model estimated here. The coefficient is not significant however, with a \( t \)-value of 0.90. In the Morek, Shleifer, and Vishny model \( \Delta Board Ownership_1 \) has a coefficient of 0.062 that is highly significant. For \( \Delta Ownership_2 \), the coefficient is -0.010 (\( t \)-value = -2.03). For the corresponding variable, Morck, Shleifer, and Vishny estimate a coefficient of -0.016 that has about the same level of significance. Finally, for \( \Delta Ownership_3 \), the estimated coefficient is 0.013 with a \( t \)-value around seven; the Morck et al. model has a coefficient of about 0.008 that is significant at the 0.10 level. The coefficients of the two dummy variables estimated in the piecewise model are similar to those of the linear regression model.

The coefficient on \( \Delta Ownership \) from the basic regression model (0.009) is smaller than the positive coefficients estimated in the piecewise model (0.034 and 0.013), probably because of the offsetting negative effect of increases in ownership in the middle range. Results here indicate that a simple linear model of the relation between changes in ownership and changes in firm value does not describe the data as well as a piecewise linear model. While both models are highly significant, the linear regression model explains only 34.6% of the variation in changes in firm value, whereas the piecewise model explains 53.0%.

Table 8 presents a summary of estimated piecewise regression models. The first turning point (\( Olevel_1 \)) is allowed to take on values of 2.5%, 5%, or 7.5%, while the second turning point (\( Olevel_2 \)) ranges from 10% to 50% in 5% intervals. Each combination of turning points yields a model to be estimated. Across the models, results are fairly consistent. Models with relatively high explanatory power are presented.

Regression models explain over 50% of the cross-sectional variation; the adjusted \( R^2 \) ranges from 51.9% to 57.2%. An \( F \)-test is significant at the 0.0001 level for all models. These piecewise models fit the data better than a simple

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28Results reported from Morck, Shleifer, and Vishny (1988) are based on a regression of firm value (Tobin's \( Q \)) on board ownership variables reported in their table 2, column 2. The coefficients are adjusted to reflect the fact that ownership variables here are based on percentages (ranging from 0 to 100%), whereas their ownership variables are proportional (ranging from 0 to 1). In addition to ownership variables, their regression includes variables to control for intangible assets that affect Tobin's \( Q \) and yields a higher (unadjusted) \( R^2 \).

29Similar piecewise regressions of changes in firm value on management ownership variables and nonmanagement ownership variables yield weaker, but similar, results. Briefly, although some estimated coefficients are no longer significant, in no case does a coefficient differ significantly from those presented here.
Table 8
Selected piecewise linear regressions of changes in firm value on changes in ownership variables with two turning points (t-values in parentheses). 48 observations from sample of NYSE and AMEX firms making private sales of equity between 7/1/79 and 2/31/85.

<table>
<thead>
<tr>
<th>Explanatory variables</th>
<th>5.0</th>
<th>7.5</th>
<th>5.0</th>
<th>2.5</th>
<th>2.5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30.0</td>
<td>40.0</td>
<td>40.0</td>
<td>30.0</td>
<td>40.0</td>
</tr>
<tr>
<td>( \Delta Ownership_1 )</td>
<td>0.027</td>
<td>0.002</td>
<td>0.010</td>
<td>0.060</td>
<td>0.033</td>
</tr>
<tr>
<td></td>
<td>(0.75)</td>
<td>(0.09)</td>
<td>(0.27)</td>
<td>(0.98)</td>
<td>(0.54)</td>
</tr>
<tr>
<td>( \Delta Ownership_2 )</td>
<td>-0.005</td>
<td>-0.000</td>
<td>-0.000</td>
<td>-0.005</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(-1.28)</td>
<td>(-0.06)</td>
<td>(-0.13)</td>
<td>(-1.35)</td>
<td>(-0.21)</td>
</tr>
<tr>
<td>( \Delta Ownership_3 )</td>
<td>0.015(^c)</td>
<td>0.017(^c)</td>
<td>0.017(^c)</td>
<td>0.015(^c)</td>
<td>0.017(^c)</td>
</tr>
<tr>
<td></td>
<td>(7.73)</td>
<td>(7.13)</td>
<td>(7.19)</td>
<td>(7.78)</td>
<td>(7.24)</td>
</tr>
</tbody>
</table>

| Purchaser Control dummy | -0.184\(^c\) | -0.171\(^c\) | -0.170\(^c\) | -0.183\(^c\) | -0.169\(^c\) |
|                        | (-3.46) | (-3.14) | (-3.14) | (-3.48) | (-3.13) |

| Management Purchaser dummy | -0.063 | -0.078 | -0.077 | -0.063 | -0.077 |
|                            | (-0.51) | (-0.61) | (-0.61) | (-0.51) | (-0.61) |
| F-value\(^b\) (significance level) | 12.12 | 11.38 | 11.40 | 12.30 | 11.50 |
|                           | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) |
| Adjusted \( R^2 \) | 53.7 | 51.9 | 52.0 | 54.1 | 57.2 |

\(^a\) Ownership is defined here as the total holdings of the six largest blockholders as reported in the proxy statements. The \( \Delta Ownership \) variables split the total change in ownership into the portions moving ownership level between 0 and turning point 1, turning point 1 and turning point 2, and turning point 2 and greater.

\(^b\) Test the joint hypothesis that all regression coefficients equal zero.

\(^c\) Significant at the 0.05 level (two-tailed test).

regression of the change in value on the change in ownership concentration. For the latter regression, the adjusted \( R^2 \) is 24.4% and the model is significant at the 0.0002 level.

Coefficient signs are consistent across regression equations. For all models, the effect of changes in ownership on firm value is positive for low ranges of ownership, negative for intermediate ranges, then positive again for high ownership concentrations; however, only the coefficients on \( \Delta Ownership_3 \) are statistically significant. The coefficients on \( \Delta Ownership_1 \) are positive but insignificant, with a \( t \)-value around one-half. The coefficients on \( \Delta Ownership_2 \) are negative, but close to zero. In fact, the only piecewise model with a significant coefficient on \( \Delta Ownership_2 \) is that with turning points of 5% and 25% reported in table 7. The coefficients on \( \Delta Ownership_3 \) are positive, with \( t \)-values consistently greater than seven.
No model emerges from the analysis as obviously superior to the others, however, it appears that after allowing for a purchaser's controlling relationship with the firm, only very high levels of ownership concentration are important. When the dummy variables are excluded from the regressions \( \Delta \text{Ownership} \) becomes significantly negative for the 5%, 30% and the 2.5%, 30% models. This indicates that the negative effect of the controlling relationship with the purchaser is associated with holdings in the middle range.

5. Conclusions

This analysis of private sales of equity establishes an empirical link between the market response to corporate financing decisions and changes in ownership concentration. Previous work suggests that the announcement of a new equity issue will have a negative effect on shareholder wealth. The announcement of a private sale of equity, however, increases shareholder wealth by 4.5% on average. Even though the type of security being issued is the same, private and public sales of equity send opposite signals to the market about firm value.

The change in ownership concentration associated with a private sale is correlated with the change in firm value at announcement. The evidence from this study is consistent with changes in ownership concentration revealing new information to the market about firm value and/or resulting in a change in the allocation of corporate resources. Generally, a private sale increases ownership concentration, defined here as the percentage holdings of the largest shareholders as reported in the proxy statements. The effect on firm value of this increase is positive on average, but while it appears that blockholders generally serve as catalysts that align manager and shareholder interests, in some cases they serve as impediments to the alignment of interests.

Cross-sectional regression analysis indicates that the change in firm value at announcement is positively associated with the change in ownership concentration when the level of ownership concentration is high or low. In some middle range, however, the change in firm value is negatively associated with the change in ownership concentration. In addition, the marginal effect on firm value of using a private sale to transfer control to the purchaser or put the purchaser on the board of directors is negative. Because the precise range of ownership concentration in which the negative effect becomes dominant appears to be firm-specific, it is not possible to make general predictive statements from estimated models.

This study focuses on how voting rights influence the market's assessment of firm value and the allocation of corporate resources. A more complete understanding of ownership concentration involves analyzing not only voting rights, but also the influence on resource allocation of ownership of other classes of securities. This appears to be a productive area for future research. Results are
applicable to an analysis of private sales of debt, or any situation in which a large portion of a class of securities is held by a small number of investors. Concentrated ownership of a large class of securities can improve efficiency by aligning interests, but also raises the possibility that resources will be diverted at the expense of other classes of security holders. It is unlikely that one of these effects always outweighs the other. Insight into the circumstances under which one effect is dominant will further understanding of incentives and resource allocation within the corporation.

Appendix: Measuring the change in firm value at announcement

The abnormal return to nonparticipating shareholders at the announcement of a private sale of equity can be broken into two components. The first is the abnormal return resulting from the new information that causes the market to reassess firm value. Depending on the nature of the information, firm value can be revised upward or downward. For example, firm value will be revised upward if the private sale further aligns manager and shareholder interests. Firm value will be revised downward if the private sale helps to entrench managers. The second component is the abnormal return representing any compensation to the purchaser for contributions to firm value or for promoting entrenchment. By adjusting the abnormal return for the compensation reflected in the offer price, one can better measure the abnormal return due to changes in the net present value of the firm, $AR_{\Delta NPV}$.

To isolate $AR_{\Delta NPV}$, a simple model is developed.\(^3\) Define the following:

- $P_{\text{Before}}$ = market price of shares before announcement,
- $S_{\text{Before}}$ = number of shares outstanding before announcement,
- $P_{\text{Offer}}$ = offer price in the private sale,
- $S_{\text{Offer}}$ = number of shares sold,
- $P_{\text{After}}$ = market price of shares after announcement,
- $P_{\text{Adjusted}}$ = price adjusted for purchaser compensation,
- $V_{\text{Old}}$ = value of old shareholders' claim,
- $\alpha$ = fraction of the firm owned by the purchaser after the sale, $S_{\text{Offer}}/(S_{\text{Before}} + S_{\text{Offer}})$,
- $\Delta NPV$ = dollar net present value of new information released to the market at announcement.

Value generated as a result of the announcement causes the market price before the sale ($P_{\text{Before}}$) to be different from the price adjusted for purchaser compensation ($P_{\text{Adjusted}}$). The net present value of bringing the information to

\(^{3\text{rd}}\)The analysis to follow parallels that developed in Bradley and Wakeman (1983).
market is

\[ \Delta NPV = (P_{\text{Adjusted}} - P_{\text{Before}})S_{\text{Before}}. \]  \hfill (A.1)

It is not necessary that the incremental value, \( \Delta NPV \), result from a new project. The new information can be any kind of information about firm value, such as new information about the value of old projects or increased management efficiency. How this value is split between old and new shareholders depends on the portion of the value created that is paid to the purchaser. This is reflected in how the offer price is set and how many shares are sold. The change in old shareholder wealth resulting from the sale can be expressed as

\[ \Delta V_{\text{Old}} = (P_{\text{After}} - P_{\text{Before}})S_{\text{Before}}. \]  \hfill (A.2)

After the sale the market value of a share is the sum of the old value of the firm, the proceeds from the sale, and the net present value of new information, divided by total shares outstanding:

\[ P_{\text{After}} = \frac{S_{\text{Before}}P_{\text{Before}} + S_{\text{Offer}}P_{\text{Offer}} + \Delta NPV}{S_{\text{Before}} + S_{\text{Offer}}}. \]

\[ = \left( \frac{S_{\text{Before}}P_{\text{Adjusted}} + S_{\text{Offer}}P_{\text{Offer}}}{S_{\text{Before}} + S_{\text{Offer}}}. \right) \]  \hfill (A.3)

Old shareholders trade a 100% claim on the old value of the firm for a \( (1 - \alpha) \) claim on the new firm value. The change in old shareholders' wealth is simply the difference between what they receive in the sale and what they give to the purchaser. Substituting (A.3) into (A.2) and simplifying yields

\[ (P_{\text{After}} - P_{\text{Before}})S_{\text{Before}} = (1 - \alpha)(S_{\text{Offer}}P_{\text{Offer}} + \Delta NPV) \]

\[ - \alpha(S_{\text{Before}}P_{\text{Before}}). \]  \hfill (A.4)

Old shareholders receive a \( (1 - \alpha) \) claim on the proceeds of the sale and the value of new information [the first term of (A.4)]. They give up an \( \alpha \) claim on the old value of the firm [the second term of (A.4)]. The total change in old shareholder wealth is positive if

\[ (1 - \alpha)(S_{\text{Offer}}P_{\text{Offer}} + \Delta NPV) > \alpha(S_{\text{Before}}P_{\text{Before}}), \]

and is negative if

\[ (1 - \alpha)(S_{\text{Offer}}P_{\text{Offer}} + \Delta NPV) < \alpha(S_{\text{Before}}P_{\text{Before}}). \]
Solve (A.4) for $\Delta NPV$ to arrive at

$$\Delta NPV = (P_{\text{After}} - P_{\text{Before}})(S_{\text{Offer}} + S_{\text{Before}}) - (P_{\text{Offer}} - P_{\text{Before}})S_{\text{Offer}}$$

$$= (P_{\text{After}} - P_{\text{Offer}})S_{\text{Offer}} + (P_{\text{After}} - P_{\text{Before}})S_{\text{Before}}.$$  \hfill (A.5)

The net present value of new information is equal to the pricing of the securities sold in relation to $P_{\text{After}}$, plus the change in value of the old shares. Using the gross change in value of the shares as an estimate of the value of information understates that value if the purchaser receives a discount (positive compensation) and overstates it if the purchaser pays a premium (negative compensation). Notice that (A.5) is expressed in terms of observable market prices, so even though $P_{\text{Adjusted}}$ is not directly observable, the value of new information can be calculated using only observable data. Substituting (A.1) for $\Delta NPV$ in (A.5) yields

$$ (P_{\text{Adjusted}} - P_{\text{Before}})S_{\text{Before}} = (P_{\text{After}} - P_{\text{Before}})(S_{\text{Offer}} + S_{\text{Before}})$$

$$= (P_{\text{Offer}} - P_{\text{Before}})S_{\text{Offer}}.$$ \hfill (A.6)

It is convenient to put the information effect into return form. Define $AR_{\Delta NPV}$ as the return to old shareholders due to new information $(P_{\text{Adjusted}} - P_{\text{Before}})/P_{\text{Before}}$, divide (A.6) by $S_{\text{Before}}P_{\text{Before}}$, and simplify to obtain

$$AR_{\Delta NPV} = \left[1/(1 - \alpha)\right]\left[(P_{\text{After}} - P_{\text{Before}})/P_{\text{Before}}\right]$$

$$- \left[\alpha/(1 - \alpha)\right]\left[(P_{\text{Offer}} - P_{\text{Before}})/P_{\text{Before}}\right].$$ \hfill (A.7)

Thus, an increase in old shareholder value does not eliminate the possibility of compensation to the purchaser. But neither does an increase in firm value necessitate an increase in old shareholder value. For example, large compensation to the purchaser can leave old shareholders worse off even if firm value increases as a result of the sale.\(^{31}\)

To compute an empirical estimate of

\(^{31}\)A numerical example helps illustrate the model. Suppose a firm with 100 shares outstanding and a market price of $1 per share sells 50 new shares in a private sale for $40 ($S_{\text{Before}} = 100, P_{\text{Before}} = 1, \alpha = \frac{1}{3}, P_{\text{Offer}} = \frac{2}{3}, S_{\text{Offer}} = 50$). As a result the market increases its assessment of firm value by $100 (\Delta NPV = 60)$. Firm value after the sale equals old firm value plus $\Delta NPV$ plus proceeds of the sale ($100 + 60 + 40 = 200$). Old shareholder value is then $\frac{1}{100}(200) = 1.33\frac{1}{3}$.

Using (A.4) the change in old shareholder value can be calculated:

$$\Delta V_{\text{Old}} = (1 - \frac{1}{3})(40 + 60) - \frac{1}{3}(100) = 33\frac{1}{3}.$$  

The shares have an after-tax value of $1\frac{1}{3}$, so old shareholders earn a return of $\frac{1}{3}, [(1\frac{1}{3} - 1)/1]$. To isolate the part of the return attributable to new information, apply (A.7) and solve for $AR_{\Delta NPV}$:

$$AR_{\Delta NPV} = \left[1/(1 - \frac{1}{3})\right]\left[(1\frac{1}{3} - 1)/1\right] - \left[\frac{1}{3}/(1 - \frac{1}{3})\right]\left[(\frac{1}{3} - 1)/1\right] = \frac{1}{3}.$$  

The $\frac{1}{3}$ return includes a $\frac{1}{3}$ information effect, implying a percentage compensation to the purchaser of $\frac{1}{3}$. This is confirmed by analyzing the purchaser's position. Having paid $40 for a claim worth $\frac{1}{3}(200) = 66\frac{2}{3}$, he gains $26\frac{2}{3}$ at the expense of old shareholders. In this example, the sale leaves old shareholders with higher-valued shares ($P_{\text{Offer}} > P_{\text{Before}}$), even after the purchaser is compensated.
$AR_{ANP}$ from (2.7), the four-day abnormal return at announcement is substituted for $(P_{After} - P_{Before})/P_{Before}$, and the other factors, $\alpha$ and $(P_{Offer} - P_{Before})/P_{Before}$ are computed as defined.

References


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