

# Firm Size, Insider Ownership, and Accounting-Based Debt Covenants

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## Abstract

*The objective of this study is to investigate the separate and joint effects of firm size and insider ownership on the types of debt covenants required by creditors. An economic argument is developed to predict the types of covenants that will be required by creditors of firms of different sizes and with differing levels of insider ownership. The main finding is that creditors of small, high-insider-ownership firms demand liquidity covenants as protection against wealth transfers. An additional finding is that creditors of large firms demand covenants based on tangible assets, regardless of the level of insider ownership. The main conclusion is that the specific types of debt covenants required by creditors depend on creditors' expectations concerning the effects of size and insider ownership on management actions.*

## Introduction

### *Background and Motivation*

There is a large body of literature addressing conflicts of interest among various corporate stakeholders. Special attention has been devoted to the conflicts between shareholders and managers, and shareholders and bondholders. The conflict between shareholders and managers arises from the separation of ownership and control. Professional managers who own less than one-hundred percent of the firm have incentives and opportunities to take actions that benefit themselves at the expense of outside shareholders. The conflict of interest between shareholders and bondholders arises from the fact that shareholders have ultimate control over corporate matters and may attempt to transfer wealth away from bondholders.

Research dealing with the conflict of interest between shareholders and managers has shown that ownership of shares and options by insiders (officers and directors) tends to align the incentives of managers with the interest of other shareholders. Research dealing with the conflict between shareholders and bondholders has shown that bondholders protect themselves against wealth transfers by relying on accounting-based debt covenants. Research to date has not identified a conflict between managers and bondholders, except to the extent that managers are aligned with shareholders. It seems reasonable to expect that the alignment of shareholders and managers resulting

from high levels of insider ownership will lead bondholders to demand greater protection against wealth transfers. It also seems reasonable to expect that high levels of insider ownership will lead bondholders to place greater reliance on covenants based on assets that are readily observable and that can produce cash for creditors. Moreover, because firm size is related to business risk, it is reasonable to expect differences in types of debt covenants as a function of firm size. The objective of this study is to empirically investigate the separate and joint effects of insider ownership and firm size on the types of covenants required by creditors.

### *Overview: Methods and Findings*

The study employs a subset of the sample firms used by Duke and Hunt (1990). For each of the 77 firms in the sample, size data are taken from COMPUSTAT, insider ownership data are obtained from proxy statements on NAARS, and debt covenant data are obtained from Moody's Industrial Manual. Debt covenants are placed in four categories. For each covenant category, each sample firm is placed into one of two groups, based on whether or not the firm has the covenant in question. A Mann-Whitney/Wilcoxon analysis is conducted to test the two groups of firms for differences in size and level of insider ownership. Contingency tables are constructed to control for size and to isolate the incremental effect of insider ownership.

The central hypotheses of the study are: (1) firms with liquidity covenants are smaller than firms without liquidity covenants, (2) firms with tangible asset covenants are larger than firms without tangible asset covenants, (3) firms with liquidity covenants have higher levels of insider ownership than firms without liquidity covenants, and (4) firms with tangible asset covenants have higher levels of insider ownership than firms without tangible asset covenants. Strong support is found for the first three hypotheses. The test of the fourth hypothesis reveals that firms with tangible asset covenants have lower levels of insider ownership than firms without tangible asset covenants. A contingency table analysis indicates that this finding is due to an inverse association between size and insider ownership for firms with tangible asset covenants. The two main findings are that creditors of small, high-insider-ownership firms demand liquidity covenants, and that creditors of large firms demand tangible asset covenants regardless of the level of insider ownership.

#### *Organization of the Document*

The following sections develop the hypotheses and describe the empirical procedures. Later sections present and discuss the results, summarize the study, and offer suggestions for future research.

### **Conceptual Development and Hypotheses**

#### *Agency Problems Among Shareholders, Bondholders, and Managers*

As noted by Jensen and Meckling (1976), the conflicts between shareholders and managers have been of interest to researchers since the time of Adam Smith. According to the agency-based rationale provided by Jensen and Meckling (1976), a fundamental conflict of interest exists between shareholders and professional managers who own less than one-hundred percent of the equity of the firm. The conflict results from a divergence of preference between managers and shareholders, coupled with the inability of outside shareholders to observe all actions taken by management. Shareholders only value cash flows, whereas managers also value non-pecuniary perquisites. Managers who own less than one-hundred percent of the equity of the firm have incentives to consume a greater amount of perquisites than that which would maximize shareholder wealth. Over-consumption of perquisites is allowed to take place because shareholders cannot costlessly monitor all consumption-related actions taken by management.

Shareholders and bondholders also are in conflict (Smith and Warner 1979; Kalay 1982). Shareholders are

assumed to have ultimate control of the firm and "could, if permitted, attempt to transfer wealth from bondholders" (Kalay 1982, p. 211). Shareholders can employ three different methods of using dividends to transfer wealth from bondholders to themselves (Kalay 1982, p. 212). One wealth-transfer strategy is for shareholders to disinvest in existing assets and use the proceeds to pay dividends. A second, related strategy is for shareholders to reduce the level of planned new investment and pay out the "savings" as a dividend. The third strategy is for shareholders to issue new senior debt and pay out dividends with the proceeds. All three strategies transfer wealth from bondholders to shareholders to the extent that the actions were not anticipated by bondholders at the time the bonds were purchased.

#### *Debt Covenants*

The primary function of debt covenants is to reduce the conflict of interest between shareholders and bondholders. This is accomplished largely through the use of contracts based on accounting numbers. Observation of accounting numbers offers many of the same control features as direct observation of management actions, but is much less costly.

An extensive literature has developed in the debt covenant area since the seminal studies of Smith and Warner (1979) and Kalay (1982). Duke and Hunt (1990) and Press and Weintrop (1990) offered evidence that debt ratios serve as valid proxies for the existence of (and closeness to) debt covenants. Healy and Palepu (1990) found that firms facing violation of their dividend covenants tended to remain in compliance by reducing dividends rather than by changing accounting principles. Frost and Bernard (1989) found that there were no economic consequences resulting from technical violations of debt covenants in the oil and gas industry. Several recent studies (Chen and Wei 1993; Beneish and Press 1993; El-Gazzar 1993; Mohrman 1993; Smith 1993) have further investigated the costs associated with violations of debt covenants. The debt covenant literature confirms that accounting-based debt covenants are an important means for reducing conflicts of interest between shareholders and bondholders.

#### *Effect of Firm Size on Types of Covenants*

Business risk is related to firm size. Small firms are more likely to experience financial distress and liquidity problems, and distressed small firms are less likely to successfully reorganize (Casey et al 1986). Also, small firms do not have the ready access to financial markets that large firms enjoy. The greater business risks of small

firms, along with their weaker liquidity positions, suggest that creditors of small firms are more likely to require liquidity covenants.

Firm size also affects the ability of creditors to observe managers' use of firm assets. Larger firms are less transparent due to geographic dispersion of operations, size and diversity of assets, and dispersion of ownership. Therefore, creditors of large firms are more likely to require covenants based on observable (tangible) assets.

#### *Effect of Insider Ownership on Types of Covenants*

The extant debt covenant literature has not considered the possibility that the types of covenants required by bondholders may depend upon the extent to which the firms' managers are also shareholders. Insider ownership tends to align managers with shareholders. Therefore, a conflict between bondholders and managers arises from managers acting as the faithful servants of shareholders, with whom bondholders are in conflict. As noted by Begley (1990), the extant debt covenant research is based on "the assumption that managers act in the best interest of the firm's shareholders. Conflicts of interest between managers and shareholders are assumed away" (Begley 1990, p. 127).

Ownership of shares and options provides insiders with incentives to take actions that serve the interest of shareholders. One action that serves the interest of shareholders is for insiders to declare and pay dividends that transfer wealth from bondholders to shareholders. Therefore, *ceteris paribus*, managers who are aligned with shareholders via insider ownership will have greater incentives to take actions that transfer wealth away from bondholders. Given creditors' concerns about cash flows, the need to prevent asset dissipation, and the low observability of intangible assets, bondholders of high-insider-ownership firms are expected to place greater reliance on covenants based on liquidity and tangible assets.<sup>1</sup>

#### *Hypotheses*

The preceding arguments lead to four research hypotheses (stated in alternative form):

- H<sub>1</sub>: Firms with liquidity covenants are smaller than firms without liquidity covenants.
- H<sub>2</sub>: Firms with tangible asset covenants are larger than firms without tangible asset covenants.
- H<sub>3</sub>: Firms with liquidity covenants have higher levels of insider ownership than firms without liquidity covenants.

H<sub>4</sub>: Firms with tangible asset covenants have higher levels of insider ownership than firms without tangible assets covenants.

Small firms tend to have higher levels of insider ownership than large firms. In order to isolate the effects of insider ownership, there is a need to control for firm size. This leads to the following additional hypotheses:

- H<sub>5</sub>: After controlling for size, firms with liquidity covenants have higher levels of insider ownership than firms without liquidity covenants.
- H<sub>6</sub>: After controlling for size, firms with tangible asset covenants have higher levels of insider ownership than firms without tangible asset covenants.

The next section describes the empirical procedures used to test these hypotheses.

### **Empirical Procedures**

#### *Sample Data*

The sample consists of 77 firms taken from the sample of 187 firms used in the study by Duke and Hunt (1990).<sup>2</sup> The Duke and Hunt (1990) sample was for the year 1985, whereas this study is for 1991. The sample size for this study was reduced to 77 because of mergers, acquisitions, and bankruptcies, and because of the need for data items that Duke and Hunt (1990) did not require.

Debt covenant data were obtained from Moody's Industrial Manual. Four categories of covenants are considered: liquidity, tangible assets, net assets, and retained earnings. A covenant is deemed to be based on liquidity if it places restrictions on working capital and/or the current ratio. A covenant is based on tangible assets if it restricts the amount of tangible assets and/or the ratio of debt to tangible assets. Net asset covenants restrict the amount of net assets and/or the ratio of debt to net assets, and retained earnings covenants place restrictions on retained earnings and/or dividends. Firm size is defined as total assets. This variable was obtained from COMPUS-TAT. Insider ownership is defined as the percentage of shares owned by officers and directors as a group, as reported in the annual proxy statement on NAARS.

#### *Statistical Procedures*

Hypotheses H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub>, and H<sub>4</sub> are tested as follows: For each of the four categories of debt covenants, the sample is split into two groups. The first group consists of firms that have the covenant in question. The second group consists of firms that do not have the covenant. For

each covenant, a Mann-Whitney/Wilcoxon test is used to test for a difference in median size and median level of insider ownership. The Mann-Whitney/Wilcoxon test is the non-parametric analog to the t-test for differences in means between two groups. It is more appropriate than the t-test when the data are skewed and/or when the number of observations is relatively small. Hypotheses H5 and H6 are tested by the construction of contingency tables. Each firm in the sample is classified as small or large based on whether it falls below or above the sample median for total assets. Each firm is classified as low or high based on whether it falls below or above the sample median for insider ownership. Then, a contingency table analysis is conducted for firms with liquidity covenants and firms with tangible asset covenants to test for associations among size, insider ownership, and debt covenants, and to isolate the effects of insider ownership after controlling for size.

## Results and Discussion

### *Descriptive Statistics*

Table 1 reports descriptive statistics for firm size and insider ownership by debt covenant category. Among the 29 firms with liquidity covenants, the median total assets is about \$335 million, and the median level of insider ownership is 8.88 percent. For the 48 firms that do not

have liquidity covenants, the median total assets is about \$1.6 billion, and the median level of insider ownership is about four percent. Thus, the descriptive statistics indicate that firms with liquidity covenants tend to be small and to have high levels of insider ownership. Among the 31 firms with tangible asset covenants, the median total assets is about \$900 million, and the median level of insider ownership is 2.65 percent. For the 46 firms without tangible asset covenants, the median total assets is about \$520 million, and the median level of insider ownership is about nine percent. Thus, the descriptive statistics indicate that firms with tangible asset covenants tend to be large and to have low levels of insider ownership. Firms with net asset covenants tend to be larger than firms that do not have net asset covenants, but the difference in insider ownership appears to be minimal (4.82 percent versus 5.74 percent). In contrast, firms with retained earnings covenants appear to be smaller than firms that do not have retained earnings covenants. Again, there is little difference in insider ownership.

The descriptive statistics lend credence to the central hypotheses of the study. Firms with liquidity covenants tend to be small and to have higher levels of insider ownership. Firms with tangible asset covenants tend to be larger than firms without covenants based on tangible assets. To further investigate these issues, statistical tests must be conducted.

**Table 1**  
**Descriptive Statistics**  
**Firm Size and Insider Ownership by Debt Covenant Category**

Debt Covenant Category	Firms with Debt Covenants			Firms without Debt Covenants		
	N	Median Assets (millions)	Median Insider Ownership (%)	N	Median Assets (millions)	Median Insider Ownership (%)
Liquidity	29	\$ 334.94	8.88	48	\$ 1,598.52	3.92
Tangible Assets	31	903.83	2.65	46	519.22	8.96
Net Assets	26	748.96	4.82	51	589.64	5.74
Retained Earnings	32	461.69	4.98	45	880.33	5.45

Note: Firm size is defined as total assets. Insider ownership is defined as the percentage of shares owned by officers and directors as a group

**Table 3**  
**Mann-Whitney/Wilcoxon Test for Differences in Insider Ownership**  
**by Debt Covenant Category**

Debt Covenant Category	Firms With Debt Covenants		Firms Without Debt Covenants		Test Results	
	N	Mean Rank	N	Mean Rank	Z-Value	Two Tailed P-Value
Liquidity	29	44.0	48	36.0	-1.526	.1271
Tangible Assets	31	33.0	46	43.0	-1.928	.0538
Net Assets	26	39.6	51	38.7	-.1779	.8588
Retained Earnings	32	39.9	45	38.3	-.3052	.7602

asset covenants. This indicates that, contrary to our prediction, firms with tangible asset covenants have lower levels of insider ownership than firms without tangible asset covenants. Thus, the null hypothesis of no association is rejected, but so is the alternative H4. The fact that the difference is in the direction opposite from what was predicted indicates the need for additional analysis that considers the possibility of joint effects of size and insider ownership.

#### *Firm Size, Insider Ownership and Debt Covenants.*

The univariate analyses for size and insider ownership reported on in Tables 2 and 3 lead to four conclusions: (1) firms with liquidity covenants are smaller than firms without liquidity covenants, (2) firms with tangible asset covenants are larger than firms without tangible asset covenants, (3) firms with liquidity covenants have higher levels of insider ownership than firms without liquidity covenants, and (4) firms with tangible asset covenants have lower levels of insider ownership than firms without tangible asset covenants. The first three conclusions are consistent with the predictions of the theory. The fourth conclusion appears to contradict the predictions.

A limitation of the univariate analyses is that size and insider ownership are considered separately rather than jointly. This is problematic to the extent that there is an association between size and insider ownership. It seems reasonable to think that small firms will tend to have higher levels of insider ownership than large firms. This indicates the need to investigate the joint effects of size and insider ownership on debt covenants.

Table 4 reports the results of the contingency table analysis. The results in Panel A corroborate the univariate results by confirming that firms with liquidity covenants are smaller and have higher levels of insider ownership

than firms without liquidity covenants. The evidence in support of this argument is the fact that the greatest concentration of firms (15) occurs in the cell for small size/high insider ownership. However, this concentration is not statistically significant. The conclusion is that for firms with liquidity covenants, there is not an association between size and insider ownership. The results in Panel B tell a different story for firms with tangible asset covenants. The greatest concentration of firms (17) occurs in the cell for large size/low insider ownership. The null hypothesis of no association is rejected at the .0043 level. For firms with tangible asset covenants there is a statistically significant association between size and insider ownership. The conclusion is that for firms with tangible asset covenants, the size effect dominates the insider ownership effect. With large firms, creditors' concerns about size-related information asymmetries are great enough to over-ride concerns about the conflicts of interest resulting from high levels of insider ownership.

#### **Summary and Conclusions**

The objective of this study has been to investigate the effects of firm size and insider ownership on the types of debt covenants required by creditors. The four categories of covenants considered were liquidity, tangible assets, net assets, and retained earnings. Firm size was defined as the dollar amount of total assets, and insider ownership was defined as the percentage of shares owned by officers and directors as a group. The four main hypotheses were: (1) firms with liquidity covenants are smaller than firms without liquidity covenants, (2) firms with tangible asset covenants are larger than firms without tangible asset restrictions, (3) firms with liquidity covenants have higher levels of insider ownership than firms without liquidity covenants, and (4) firms with tangible asset covenants have higher levels of insider ownership than firms without tangible asset covenants.

**Table 4**  
**Contingency Table Analysis:**  
**Size Versus Insider Ownership by Debt Covenant Category**

**Panel A**  
**29 Firms with Liquidity Covenants**

Insider Ownership	Size		Total
	Small	Large	
Low	8	3	11
High	15	3	18
Total	23	6	29

P-value (Fisher's Exact Test) = .6457

**Panel B**  
**31 Firms with Tangible Asset Covenants**


Insider Ownership	Size		Total
	Small	Large	
Low	3	17	20
High	8	3	11
Total	11	20	31

P-value (Fisher's Exact Test) = .0043

The hypotheses were tested by splitting a sample of 77 observations into groups with or without each of the four categories of debt covenants. For each covenant, the two groups (firms with the covenant versus firms without the covenant) were tested for differences in size and insider ownership by means of a Mann-Whitney/Wilcoxon test. Strong support was found for the first three hypotheses. The test of the fourth hypothesis revealed a statistically significant difference in the direction opposite from our predictions. To further explore this apparent anomaly, contingency tables were constructed to control for size and to isolate the incremental effect of insider ownership. It was found that there is a statistically significant association between size and insider ownership for firms with tangible asset covenants, but there was no evidence of a significant association between size and insider ownership for firms with liquidity covenants.

The results of the study lead to two specific conclusions. First, creditors of small, high-insider-ownership firms protect themselves against wealth transfers by demanding liquidity covenants based on working capital and the current ratio. Second, creditors of large firms protect themselves by demanding covenants based on tangible assets, regardless of the level of insider ownership.

### Suggestions For Future Research

Insider ownership is only one mechanism by which the incentives of managers are aligned with the interests of shareholders. Additional research is needed to investigate the effects of other bonding mechanisms, such as accounting-based and market-based compensation plans. To the extent that compensation schemes are effective in aligning managers with shareholders, it seems likely that bondholders will view such plans as posing threats similar to those resulting from high levels of insider ownership. It also would be interesting to see if the effects of compensation plans are consistent across all covenant categories, and if the effects of compensation plans on different covenants depend upon firm size. 

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*This research was supported by grants from the University of Alabama's Culverhouse School of Accountancy and Georgia State University's College of Business Administration. The authors wish to acknowledge the research assistance provided by Kim Dunn and John Sneed.*

## \*\*\* Footnotes \*\*\*

1. This expectation is consistent with the observed tailoring of GAAP in private financial contracts and the nature of additional covenants following technical violations. El-Gazzar and Pastena (1990) found that most private agreements "exclude goodwill and other intangibles from equity (net worth)" (p. 395) They concluded that such tailorings "address solvency by excluding GAAP assets that cannot produce cash for creditors" (p. 395). Moreover, new covenants added following technical violations are designed to safeguard the asset base (Beneish and Press 1993). Therefore, bondholders of high insider ownership firms are expected to place greater reliance on covenants based on liquidity and tangible assets.
2. We are grateful to Joanne Duke and Herbert Hunt for providing a list of the firms in their sample.

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