Cost of Capital and the Role of Institutional Ownership

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Abstract

We examine the relationship between the institutional ownership and the cost of capital. Using firm-level data for the period from 1990 to 2006, we find that changes in dedicated (transient) ownership generally lower (increase) the investee's cost of capital. Dividing the data into high- versus low-leverage investees, we find that highly levered investees benefit the most from an increase in dedicated ownership. Overall, the results suggest that ownership changes made by dedicated institutional investors can lower the investee's cost of financing. We used different methods to check the robustness of our results.

1. Introduction

Prior literature examined the effect of institutional ownership on various aspects of corporate decisions. For example, several studies have shown a general effect of institutional ownership on firm investment decisions (Bhojraj and Sengupta, 2003; Chen et al., 2007), value (Bloom and Van Reenen, 2002; Cho and Pucik, 2005; McConnell and Servaes, 1990; Morck, Shliefer and Vishny, 1988), cost of capital (Demsetz and Lehn, 1985), governance structure, (Gordon and Pound, 1993; Jensen, 1993; Shleifer and Vishny, 1997), CEO compensation (David, Kochhar, and Levitas, 1998), performance (Kor and Mahoney, 2005), and innovation activities (Graves, 1988; Kochhar and David, 1996; Zahra, 1996). These studies document institutional investors as large market players that have a pivotal role in the capital market as well as in influencing corporate decisions in both the short- and long-run. Additionally, Foerster and Karolyi (1999) argue that non-US firms can reduce their cost of equity by widening their investor base by cross-listing their stocks in US stock exchanges by issuing American Depositary Receipts (ADRs), which are usually owned by institutional investors.[1] This implies that changes in the firm ownership structure could lead to changes in the cost of capital.

[1] ADRs refer to an investment security "for investors to register and earn dividends on non-U.S. stock without direct access to the overseas market itself" Foerster and Karolyi (1999:983). ADRs are usually owned by institutional investors.

In this paper, we build on a myriad of literatures: the institutional theory and institutional ownership. We attempt to explain the relationship between the changes in institutional ownership and in the investee's cost of capital. In other words, we argue that ownership changes of certain types of institutional investors could favorably affect the investee's cost of capital by providing the investee the needed *legitimacy* (in the lenders' eyes) that could help lower investees financing cost.

A recent stream of literature has focused on the relationship between institutional ownership and capital structure (e.g., Bhojraj and Sengupta (2003) and Ashbaugh-Skaife, Collins, and LaFond (2006)). Bhojraj and Sengupta (2003) document an effect of institutional ownership on investees' bond yields and ratings. They show that yields on low-rated bonds benefit the most from institutional ownership. They contribute this finding to the active role that institutional investors play in monitoring investees. A similar finding was also documented by Ashbaugh-Skaife, et al. (2006). Also, Foerster and Karolyi (1999) show that as non-US firms enlarge their shareholders base through cross-listing in US stock exchanges by issuing American Depositary Receipts (ADRs) their cost of capital will decrease. These findings imply that changes in composition of the ownership structure could result in subsequent changes in the cost of capital.

Another stream of literature has argued for the reverse relationship as they focus on the effect of cost of capital on institutional investment. For example, Ferreira and Matos (2008) imply that the cost of capital may affect institutional ownership

as long-term institutional investors are more concerned with the investee's financial flexibility and cost of capital. Also, some institutional investors prefer to invest in a more financially flexible firm (Ashraf and Jayaraman, 2007) and in one that is more active in repurchasing its stock (Grinstein and Michaely, 2005).

These studies, however, show mixed results about the direction of the relationship between institutional investment and the cost of capital. One possible explanation for this disagreement can be attributed to the fact that they did not consider the different types of institutional investors. For example, Chen et al. (2007) indicate that long-term institutional investors specialize in monitoring the investee's investment activities as they prefer to invest in firms that have long-term investment goals.

Therefore, one of the main contributions of this study is the attempt to explain the relationship between institutional ownership and financial constraints where legitimacy can contribute to the easing of such constraints. The role of institutional ownership will add to the other documented roles that institutional investors play in corporation.

2. Related Literature and Hypothesis Development

2.1. Institutional Investment

Institutional investors refer to those institutions that own and manage investment funds in the capital market with the objective to optimize the wealth of their clients. Institutional ownership of common stocks has increased

significantly over the past 50 years (Chen, Harford, and Li, 2007). In fact, more than 60 percent of the voting equity in US public companies is owned by institutions (Brancato, 2005; Flow of Funds Account of the United States, 2004).

Moreover, institutional investors differ in their investment strategies. Generally, there are five types of institutional investors: (1) Pension funds; (2) Asset managers; (3) Insurance companies; (4) Banks; and (5) Mutual funds. Each type has been classified in the literature based on different criteria. For example, Brickely et al. (1988) classified institutional investors based on the ability of the institution to resist pressure exerted by the investee's management to make (amend) favorable (unfavorable) investment decisions. This classification has been broadly used in predicating the effect of institutional investors on various corporate outcomes. However, mixed results have been found using this classification in examining the consequences of institutional ownership (e.g. Kochhar and David, 1996; Hoskisson et al, 2002; Neubaum and Zahra, 2006).

Alternatively, investors can differ based on investment strategies. Gaspar, Massa, and Matos (2005) show that the institutional investment horizon has an effect on corporate decisions. There are two major types of investment strategies based on investment horizon: Short-term vs. long-term investment strategies. Short-term investors usually do not elaborate in analyzing investments to find opportunities; instead, they depend on fundamental analysis that provide "snap-shot" information about the state of the firm under consideration (Bodie, Kane, and Marcus, 2005). Such strategies mean that investors can focus on information

gathering and trading, choosing not to extensively and elaborately collect and analyze public and/or private data (Chen et al., 2007). [2] Therefore, such investors are generally driven by short-term profit-maximization goals. Another issue that pertains to short-term investment horizon is the reward system used to evaluate fund managers. For example, some mutual funds and investment banks managers are evaluated quarterly and are rewarded or penalized based on short-term performance (Neubaum and Zahra, 2006). Consequently, they are pressured to invest in rapidly rising stocks for a short period of time.

Long-term investors, on the other hand, usually conduct extensive data analyses to identify stocks that show the opportunity to earn greater return than the opportunity cost of capital (Brealey and Myers, 2003). In other words, investors with a long-term investment horizon try to identify companies with significant growth potential and are willing to bear frequent price fluctuations that are common to such types of stocks over extended period of time. The long-term orientation of such investors might be attributed to the fact that some fund managers are compensated differently (i.e., salaried) in a way that is not closely tied, at least in the short term, to the performance of their portfolios (Neubaum and Zahra, 2006; Zahra, 1996). Therefore, long-term institutional investors usually favor long-term investment decisions made by the investees that convey positive future cash flows.

[2] Also known as technical analysis.

2.2. *Financial Constraints*

A financially constrained firm is a firm that faces significant costs of raising external financing. Capital market imperfections affect investment and financial policies for some firms. Myers and Majluf (1984) and Greenwald, et al. (1984) argue that capital market frictions increase the costs of obtaining external finance, which increase the overall cost of external capital relative to internally generated funds for financially constrained firms. Some of these constrained firms with attractive growth opportunities thus invest less than the first-best optimum, which reduces their future growth and destroys firm value. To mitigate these adverse effects and fund the necessary expenditures for future projects, firms would use available internal financial resources: cash flow and cash holdings.

2.3. *Institutional Ownership and Financial Constraints*

We use the updated "Institutional Investor Classification Data" for Dedicated/Transient institutional investors from Bushee (1998) to partition institutional investors into two groups based on their investment strategies.[3] The first group includes all institutional investors that had been initially classified as *dedicated* in the database. This group of investors is known for their long-term investment orientation and for their activism and monitoring role they may exert on the investee (Bushee, 1998). The second group includes all institutional investors that had been initially classified as *transient*. Transient investors are

[3] Bushee's classification is based on the institutions' past investment patterns using cluster analysis in the areas of portfolio turnover, momentum, and diversification.

known for their short-term investment horizon with frequent trading (Bushee, 1998).

From an institutional theory perspective (e.g., Myers and Rowan (1977) and DiMaggio and Powell (1991)), the ownership of some types of institutional investors could add legitimacy to the investees[4]. We therefore argue that legitimacy can be acquired in the form of an increase in institutional ownership in financially constrained investees. In the case of investing in financially constrained firms, the increase in ownership by some institutional investors can be attributed to the investors' expectation about the investee's long-term growth potential. In other words, for long-term (i.e., dedicated) institutional investors to increase the stake of ownership in a financially constrained firm is akin to certifying the investee to meet their higher standards for which they are known. Therefore, we expect that an increase in ownership by dedicated institutional investors would add legitimacy to the investee such that lenders would view such an ownership as a positive signal about the investee's current governance structure and future cash flows. Put formally:

Hypothesis 1: Increase in ownership by dedicated institutional investors is expected to lower the investee's cost of capital.

[4] Institutional theory (e.g., Myers and Rowan (1977) and DiMaggio and Powell (1991)) emphasizes legitimacy, which is defined as "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995: 573). Myers and Rowan (1977) imply that legitimacy is a resource for which firms compete.

Gaspar, Massa, and Matos (2005) show that short-term (i.e., transient) institutional investors in the acquiring firm provide more leeway for management to overbid and carry out value-destroying acquisition deals. Therefore, since short-term investors are expected to be less effective in monitoring investees (Chen et al., 2007), we expect that an increase in transient institutional ownership will not add the legitimacy necessary to ease financial constraints and therefore do not contribute to lowering the cost of capital for the investee. In fact, an increase in transient ownership may send an unfavorable signal to the lenders as less activism and monitoring are being exerted on the investee. Put formally:

Hypothesis 2: Increase in ownership by transient institutional investors is not expected to lower the investee's cost of capital.

3. Methodology

3.1. The Sample and Data Description

The focus will be on US institutional investors investing in US publically traded companies. Institutional ownership data are obtained from Thomson-Reuters Institutional (13F) Holdings database. For institutional investors' classification, data are obtained from Brian Bushee's website, on which he publishes and updates institutional investors' classification as either dedicated or

transient. Investees' accounting and financial data are obtained from Compustat, CRSP, and I/B/E/S. The total sample is size is 17124 firm-year observations. All tests are estimated for the entire universe of non-financial and non-utility Compustat firms over the period from 1990 to 2006. The standard errors in the regression analyses are robust to heteroskedasticity and autocorrelation. Table 1 shows the definition and source for each variable used in the analyses.

3.2. The Variables

Measures of Cost of Capital. We measure the two primary parts of the cost of capital: Cost of debt and cost of equity. For the cost of debt, we calculate it as the ratio of total interest expenses and capitalized expenses to average of the total debt during the year. For the cost of equity, it is the average of four measures of the implied cost of equity as detailed in Hail and Leuz (2006).

Measures of Institutional Ownership. Pruitt and Wei (1989) document that a significant change in institutional ownership is between 0.50 percent and 1.5 percent. Therefore, we construct our measure for the change in institutional ownership as a binary variable using the threshold of 1 percent for the change in ownership such that an increase of at least 1 percent in institutional ownership will equal to 1, otherwise it will equal to zero.[5]

Control Variables. We control for those variables that were found to explain firm cost of capital. Namely, we control for leverage, firm size, book-to-market, stock beta, sales growth, and lending (prime) rate.

[5] We also used different ownership change thresholds, namely 2, 3, 4, and 5 percent, and the results largely remain the same.

Leverage. Firms with higher levels of leverage are expected to be riskier. Therefore, we expect a positive relationship between leverage and cost of capital.

Firm size. With the assumption that smaller firms are younger and less well known, they should be more vulnerable to capital market imperfections. Therefore, we expect a negative relationship between firm size and cost of capital.

Book-to-market. Firms with lower book-to-market ratios can be perceived as riskier because they represent higher growth firms. Therefore, we expect a negative relationship between book-to-market and cost of capital.

Beta. Firm beta represents the systematic risk of the firm. Therefore, we expect a positive relationship between beta and the cost of equity.

Sales growth. It could indicate future growth opportunities, which in turn can be interpreted by lenders as an indication for higher risk. Therefore, we expect a positive relationship between sales growth and the cost of capital.

Prime rate. There is a high positive correlation between the prime rate at which banks lend each other and the lending rate that banks charge their clients. Therefore, we expect a positive relationship between the prime rate and the cost of debt. Table 2. presents the summary statistics for all variables used in this study. Table 3. presents the correlation matrix for all variables used in this study.

4. Results and Discussion

4.1. Effect of Institutional Ownership on Cost of Capital

Our analyses tested the hypothesis that institutional ownership would have a significant effect on the investee cost of capital. That is, the relationship represents the cost of capital as a function of institutional ownership and firm characteristics.

Cost of Capital = f (institutional ownership components, firm characteristics)

To test the abovementioned relationship, we estimate models using the changes regression method used in similar studies (e.g., Klock, Mansi, and Maxwell, 2005) to alleviate the endogeneity issue in the relationship between institutional ownership and cost of capital[6]. Our specification is

$$(1)\ COC_{i,t} = \beta_0 + \beta_1 (\Delta INST_{OWN})_{i,t-1} + \beta_2(\Delta LVRG)_{i,t-1} + \beta_3 (\Delta SIZE)_{i,t-1} + \beta_4(\Delta BM)_{i,t-1} + \beta_5(\Delta BETA)_{i,t-1} + \beta_6(\Delta SALES\_G)_{i,t-1} + \beta_7(\Delta INT\_RATE)_{i,t-1} + \beta_8(TIME\_DUM)_{i,t} + \beta_9(IND\_DUM)_{i,t} + \varepsilon_{i,t}\ ,$$

Model 1 in Table 4. reports the full model, where we run the cost of debt on the lagged change of the aggregate institutional ownership (i.e., regardless of type) along with the lagged change of other firm-specific characteristics. Model 1 does not show a significant coefficient such that the lagged change in all-type institutional ownership does not predict the cost of debt.

In model 2, the result indicates a negative and statistically significant (at the 1 percent level) association between the lagged change of dedicated ownership and the cost of debt suggesting a favorable effect of dedicated ownership in

[6] We ran the same models, with the exclusion of the lagged cost of debt and cost of equity (*t*-2), using the lag of each variable, and got qualitatively similar results. Similar findings were also found in the subsequent tests when we employed logit regression for the financing activities.

lowering the investee's cost of debt. In other words, as dedicated institutional investors increase their ownership, the investee would get cheaper debt financing in the following year. This result supports hypothesis 1. In model 3, however, the result suggests an adverse effect of the change in transient ownership. The coefficient is positive and statistically significant at the 5 percent level, which supports hypothesis 2. The *t*-test rejects the equality of the coefficients for the two groups (i.e., dedicated *vs.* transient) at the 1 percent level. We should note that we tested the cost of debt hypothesis using the change in the firm's bond ratings as a proxy for the cost of debt (using the ordered probit method), which both, the measure and the method, are used by Bhojraj and Sengupta (2003). We get qualitatively similar results. One of the main reasons that kept us from using this measure for the cost of debt is the possibility of selection effect as most of small firms do not have their debt rated, which will decrease the sample size significantly by about 32%. Another reason, yet related, is that certain types of institutional investors are more likely to invest in small firms, especially transient investors, which also prevent a number of them from being included in our sample, which will tilt the sample towards dedicated investors. The same issues apply to the use of bond yields as another proxy for the cost of debt.

4.2. *Is Institutional Ownership More Important in Lowering the Cost of Debt for Highly Leveraged Firms?*

The results discussed above indicate that the changes in institutional ownership do play a role in determining the cost of capital. Specifically, the effect on the cost of capital by the change in ownership is partially dependent on the type of the institutional investor, especially in the case of the cost of debt. This, therefore, raises the question of the effect of the change in ownership would have a different impact on the cost of debt when the investee is highly levered.

To test this hypothesis, we partition the sample of each type of institutional investors by leverage (below and above sample median). The results are presented in Table 5. In model 1, we find that the highly levered investees benefit the most from the lagged change in dedicated ownership as the coefficient is negative and statistically significant at the 1 percent level. In model 2, on the other hand, the coefficient for the less levered investees is negative and insignificant. The t-test rejects the equality of the coefficients for the two groups (i.e., high vs. low leverage) at the 5 percent level indicating a significant favorable effect of the ownership change of dedicated institutional investors on the cost of debt for highly levered firms.

As for the effect of the lagged change of transient's ownership on the cost of debt, the results show an adverse effect such that a change in the transient ownership actually increases the cost of debt for the investee regardless of the level of leverage. The *t*-test dose not reject the equality of the coefficients for the two

groups. We further test the possibility that the lagged ownership changes for both types of institutional investors are equal for highly levered investees. The *t*-test rejects the equality of the coefficients for the two groups (high vs. high leverage) at the 1 percent level, indicating that the change in dedicated ownership in highly levered investees is significantly more favorable than is the change in transient ownership for the same group of investees. In all models tested thus far, all control variables have their predicted sign when they are statistically significant.

4.3. Effect of Institutional Ownership on Financing Activities

There might be a question that is lingering: Do firms actually take advantage of lowering their cost of capital? In other words, additional financing activities are usually a result of positive indication that the borrowers are expected to generate enough cash flows that should surpass the initial financing plus interest and any other types of promissory cash out flows. Therefore, we want to examine the issuance of new long-term debt as the institutional ownership changes.

The results in Table 6. show qualitatively similar patterns to the previous results for the cost of capital (i.e., Table 4.). The logit change regressions presented in Table 6. examine the effect of the lagged change in institutional ownership on the issuance of long-term debt. The issuance of new debt was

measured as a dummy variable where it is equal to 1 when the new debt issued is at least 1 percent of the lagged total long-term debt, zero otherwise.[7]

The results in table 6., model 2, indicate that the lagged change in dedicated ownership positively predict issuing more debt, the coefficient is significant at the 1 percent level. This result is consistent with our prediction. The result in model 3, on the other hand, examined the same effect by the lagged transient ownership change, which does not predict the issuance of new debt. The *t*-test rejects the equality of the coefficients for the two groups (i.e., dedicated *vs.* transient) at the 1 percent level.

4.4. Is Institutional Ownership More Important for Highly Leveraged Firms in Issuing Additional Debt?

For robustness check, we want to test whether the change in ownership would have an impact on the issuance of additional debt when the investee is highly levered. To test this hypothesis, we partition the sample by leverage (i.e., below and above sample median) for each type of institutional investors. The results of the logit regressions are presented in Table 7. In model 1, we find that highly levered investees benefit from the change in dedicated ownership as the coefficient is positive and statistically significant at the 1 percent level. In model 2, the coefficient for the less levered investees is also positive and significant. The

[7] In an untabulated analysis, we examined the same models shown in table 6 with only positive issuers of debt and the results remain qualitatively very similar.

t-test does not reject the equality of the coefficients for the two groups (i.e., high *vs.* low leverage).

As for the effect of the lagged change of transient's ownership on the issuance of additional debt, the results show an adverse effect, yet not statistically significant, such that the lagged change in the transient ownership show no association with the investee's issuance of additional debt regardless of the level of leverage. The *t*-test dose not reject the equality of the coefficients for the two groups.

We further test the possibility that the lagged changes in ownership of both types of institutional investors are equal in predicting issuance of long-term debt for highly levered investees. The *t*-test rejects the equality of the coefficients for the two groups (high vs. high leverage) at the 5 percent level, indicating that the change in dedicated ownership in highly levered investees is significantly more favorable than is the change in transient ownership in predicting additional debt issuance.

5. Additional Analyses

5.1. Institutional Ownership and Endogeneity of Cost of Capital and Financing Activities

So far, our results are supporting the hypothesis that ownership changes made by dedicated institutional investors help improve the investee's cost of capital and enhance financing activities. More specifically, an increase in the dedicated ownership can help reduce the cost of capital for the investee because

dedicated institutional investors are known for their long-term investment horizon that is based on value creation as well as their investment research and due diligence practices for which it is known. Therefore, lenders will perceive the increase of ownership by such careful and supposedly more diligent investors as a positive sign that can be used in favor of providing the investee with better credit terms.

Nonetheless, OLS regressions may be biased and may in fact infer a causality that does not necessarily exist. That is, some of the observed relationships between the cost of capital and changes in institutional ownership could simply be attributed to the possibility that some institutional ownership prefer to invest in firms with lower cost of capital. To alleviate this possibility, we use a simultaneous equations system using the three-stage least square (3SLS) procedure with the cost of capital and change in institutional ownership as the two endogenous variables.[8] Our 3SLS specification allows for the time effect to take place as all explanatory variables are one-year lagged. The two equations we estimated simultaneously are as follows

[8] This follows a similar procedure used by other studies (e.g., Bhojraj and Sengupta (2003); Elyasiani, Jia, and Mao (2010)).

$$(2)\ COC_{i,t} = \beta_1 (\Delta INST\_OWN)_{i,t-1} + \beta_2 (LVRG)_{i,t-1} + \beta_3 (SIZE)_{i,t-1} + \beta_4 (BM)_{i,t-1} + \beta_5 (BETA)_{i,t-1} + \beta_6 (SALES\_G)_{i,t-1} + \beta_7 (INT\_RATE)_{i,t-1} + \beta_8 (TIME\_DUM)_{i,t} + \beta_9 (IND\_DUM)_{i,t} + \varepsilon_{i,t},$$

$$(3)\ \Delta INST\_OWN_{i,t} = \gamma_1 (\Delta COC)_{i,t-1} + \gamma_2 (VOLT)_{i,t-1} + \gamma_3 (CUM\_RET)_{i,t-1} + \gamma_4 (ANALYST)_{i,t-1} + \gamma_5 (SHARES\_OS)_{i,t-1} + \gamma_6 (ROA)_{i,t-1} + \gamma_7 (TIME\_DUM)_{i,t} + \gamma_8 (IND\_DUM)_{i,t} + \varepsilon_{i,t},$$

The control variables used in equation (3) are drawn from the existing literature of the determinants of the institutional ownership (e.g., Bhojraj and Sengupta (2003); Elyasiani, et al. (2010); O'Brien and Bhushan, (1990)). Specifically, we control for the volatility of stock returns, cumulative daily stock return, analyst coverage, the log of the total number of shares outstanding, and the return on assets. Again, all these variables are defined in Table 1.

In these tests, we include the cost of equity to see if the relationship observed in the prior analyses would also exist for the cost of equity. The 3SLS results in Table 8. indicate that the cost of capital is in fact influenced by the ownership changes made by dedicated institutional investors. At the same time, they also show that the ownership change made by dedicated institutional investors is not influenced by the investee's cost of capital. In an unreported test, we ran the 3SLS procedure for the financing activities (for issuing both debt and equity) and

they indicate that financing activities are positively influenced by ownership changes made by dedicated institutional investors. Again, at the same time, the results also indicate that the investee's ex ante financing activities do not influence the ownership change for dedicated institutional investors. As for ownership changes made by transient institutional investors, such changes appear to have no influence on either the cost of capital or financing activities. It should be noted that the 3SLS procedure assumes that the dependent variable is a continuous variable. The variable we use for the change of institutional ownership is binary. However, according to Aldrich and Nelson (1984), this issue should not pose a serious problem. As a robustness check for this concern, we estimated the same system of equations with the change in ownership as a continuous variable. The estimations give similar results.

6. Conclusion

In this study, we examined the effect of the change in institutional ownership on the investee cost of capital. We emphasized on the idea that the cost of capital is influenced by the change in ownership of certain group of institutional investors. We demonstrated that increases in dedicated (transient) institutional ownership are associated with a lower (higher) cost of debt. This evidence comes after controlling for various variables over an extended period using different techniques to alleviate the endogeneity and causality issues that are present in such studies.

Our findings partially support the findings documented in Bhojraj and Sengupta (2003) in that institutional ownership has an effect on the investee's cost of capital. However, our findings put Bhojraj and Sengupta's study into doubt as we demonstrated that not all types of institutional ownership would have the same effect on the investee cost of capital. This finding has an important practical implication. For example, managers who try to alleviate financing frictions can try to pursue additional dedicated institutional ownership because an increase in dedicated ownership could be perceived positively by lenders who, in turn, offer the investee access to financing at better terms.

Table 1
Variables Definition[9]

Variable		Definition	Source
Cost of debt	COD	Ratio of total interest expenses and capitalized expenses to total debt	Compustat
Cost of equity	COE	The average of four measures of the implied cost of equity (Hail and Leuz, 2006)	I/B/E/S
New Debt Issue	NEW_DEBT	Long-term debt issuance during year *t*	Compustat
New Equity Issue	NEW_EQUT	Common shares issued during year *t*	Compustat
Institutional ownership	OWN	Ratio of the number of shares owned to the total shares outstanding	Thomson-Reuters 13F
Δ Institutional ownership	INST_OWN	The difference in ownership between year *t* and year *t*-1	Thomson-Reuters 13F
Volatility of stock returns	VOLT	Standard deviation of monthly stock returns over year *t*	CRSP
Cumulative annual return	CUM_RET	The cumulative daily stock return over year *t*	CRSP
Analyst coverage	ANALYST	The number of analysts covering a firm	I/B/E/S
Total number of shares outstanding (log)	SHARES_OS	Log of the total number of share outstanding	Compustat
Return-on-assets	ROA	Ratio of net income to average total assets	Compustat
Cash holdings	CASH	Ratio of cash holdings and short-term investments to total assets	Compustat
R&D (log)	R&D	Log of research and development	Compustat
Leverage	LVRG	Ratio of total debt to total assets	Compustat
Size	SIZE	Natural log of total assets	Compustat
Book-to-market	BM	Book value of equity divided by market value of equity	Compustat
Beta	BETA	The equity beta calculated based on daily stock returns and daily market returns over year *t*	CRSP
Sales growth	SALES_G	The percentage increase/decrease in sales from year *t*-1 to year *t*	Compustat
Lending (prime) rate	INT_RATE	Bank Prime Loan interest rate	Federal Reserve, H15 Report
Institutional investor classifications	DED TRA	Dedicated institutional investors are long-term-oriented. Transient institutional investors are short-term-oriented.	Brian Bushee's institutional classification scheme data

[9] All applicable variables have been winsorized at the 1st and 99th percentiles to mitigate the effect of extreme values.

Table 2
Summary Statistics

Variable	Mean	Median	Std. Dev.	Min.	Max.	*N*
Cost of debt	0.228	0.151	0.388	0.017	3.131	17124
Cost of equity	0.194	0.110	0.244	0	1	17124
New Debt Issue	48.20	0	255.38	0	3000	17124
New Equity Issue	45.12	6.77	128.07	0	952.99	17124
Total institutional ownership	0.371	0.372	0.210	0	0.834	17124
Dedicated (LT) institutional ownership	0.076	0.053	0.079	0	0.330	17124
Transient (ST) institutional ownership	0.088	0.061	0.089	0	0.362	17124
Δ Institutional ownership (All institutions)	1.703	1.264	11.580	-81.893	80.589	17124
Δ Institutional ownership (Dedicated (LT))	0.310	0	5.264	-33.005	33.005	17124
Δ Institutional ownership (Transient (ST))	0.096	0	7.135	-36.249	36.249	17124
Volatility of stock return	0.154	0.129	0.102	0.002	2.743	17124
Cumulative annual return	0.214	0.063	0.964	-0.994	32	17124
Analyst coverage	6.403	4.167	6.390	1	45.583	17124
Total number of shares outstanding (log)	3.322	3.179	1.257	-6.908	9.293	17124
ROA	-0.0189	0.038	0.218	-1.164	0.259	17124
Cash holdings (scaled by total assets)	0.180	0.082	0.218	0	0.993	17124
Size (log of total assets)	5.878	5.780	1.781	-2.103	13.528	17124
Book-to-market	0.537	0.424	0.531	-0.911	2.871	17124
Beta	0.888	0.798	0.551	-0.083	2.495	17124
Sales growth	12.706	6.204	29.892	-50.856	158.020	17124
Lending (prime) rate	6.974	7.750	1.906	4	9.500	17124

Table 3
Correlation Matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	COD	1.00																					
2	COE	0.03***	1.00																				
3	New Debt Issue	-0.09***	0.02***	1.00																			
4	New Equity Issue	-0.06***	-0.01	0.39***	1.00																		
5	Ownership All	-0.05***	-0.08***	0.06***	0.03***	1.00																	
6	Ownership Dedicated	-0.04***	-0.03***	0.09***	0.08***	0.55***	1.00																
7	Ownership Transient	0.01*	-0.04***	-0.02***	-0.08***	0.61***	0.08***	1.00															
8	Δ Ownership All	0.00	-0.01	0.00	0.00	0.32***	0.13***	0.28***	1.00														
9	Δ Ownership Dedicated	-0.01*	0.00	0.01	0.01*	0.13***	0.36***	-0.03***	0.36***	1.00													
10	Δ Ownership Transient	0.02***	0.02***	-0.01**	-0.02***	0.13***	-0.05***	0.39***	0.56***	-0.10***	1.00												
11	Stock return Volatility	0.13***	0.16***	-0.12***	-0.11***	-0.23***	-0.18***	0.01	-0.06***	-0.03***	0.00	1.00											
12	Cumulative return	0.04***	0.01*	-0.01	-0.02***	0.06***	-0.01**	0.23***	0.20***	-0.02***	0.35***	0.09***	1.00										
13	Analyst Coverage	-0.09***	-0.05***	0.31***	0.56***	0.21***	0.17***	0.08***	-0.01*	0.01	-0.06***	-0.20***	-0.01*	1.00									
14	Shares O/S (log)	-0.07***	0.01***	0.40***	0.69***	0.19***	0.16***	0.06***	0.01	0.01*	-0.03***	-0.13***	0.00	0.73***	1.00								
15	ROA	-0.10***	-0.25***	0.07***	0.09***	0.25***	0.13***	0.14***	0.10***	0.03***	0.04***	-0.41***	0.18***	0.19***	0.09***	1.00							
16	Cash	0.16***	0.16***	-0.18***	-0.06***	-0.03***	-0.04***	0.12***	0.05***	0.01	0.03***	0.28***	0.09***	-0.07***	-0.02***	-0.28***	1.00						
17	R&D (log)	-0.01	0.03***	0.07***	0.32***	0.12***	0.09***	0.07***	0.01	0.00	-0.01	0.02***	0.00	0.36***	0.43***	-0.05***	0.29***	1.00					
18	Leverage	-0.22***	0.08***	0.27***	0.03***	0.03***	0.05***	-0.02***	-0.02***	0.00	-0.01	-0.07***	-0.04***	0.02***	0.09***	-0.03***	-0.36***	-0.17***	1.00				
19	Size	-0.17***	-0.05***	0.47***	0.55***	0.35***	0.26***	0.09***	0.01	0.01	-0.03***	-0.35***	-0.01	0.67***	0.80***	0.35***	-0.34***	0.28***	0.29***	1.00			
20	B/M	-0.02***	0.03***	-0.05***	-0.13***	-0.08***	-0.03***	-0.17***	-0.10***	-0.02***	-0.09***	0.00	-0.29***	-0.20***	-0.27***	0.04***	-0.18***	-0.20***	-0.04***	-0.07***	1.00		
21	Beta	0.04***	0.06***	0.00	0.12***	0.18***	0.04***	0.27***	0.02**	0.00	-0.05***	0.25***	0.00	0.26***	0.35***	-0.11***	0.38***	0.39***	-0.15***	0.13***	-0.21***	1.00	
22	Sales growth	-0.02**	-0.05***	0.04***	-0.01	0.07***	0.00	0.17***	0.05***	0.00	0.03***	0.01	0.16***	0.08***	0.04***	0.10***	0.07***	0.02***	0.03***	0.03***	-0.15***	0.11***	1.00
23	Prime rate (interest rate)	-0.01	-0.09***	-0.03***	-0.16***	-0.16***	-0.09***	-0.10***	-0.04***	-0.03***	-0.02***	0.01	-0.05***	-0.01**	-0.19***	0.07***	-0.12***	-0.08***	0.04***	-0.11***	0.05***	-0.14***	0.08***

Table 4
Institutional Ownership Change and Cost of Financing

	OLS			
Dependent variable:	Cost of Debt			
	Types of institutions			
	All	Dedicated	Transient	P-value (Ded vs. Tra)
Model	(1)	(2)	(3)	
Δ Institutional ownership (*t*-1)	-0.002	-0.028***	0.018**	**0.00**
	(-0.256)	(-3.093)	(2.021)	
Cost of debt (t-2)	0.287***	0.286***	0.287***	
	(6.320)	(6.294)	(6.329)	
Δ Cash holdings (*t*-1)	-0.001	-0.001	0.001	
	(-0.166)	(-0.584)	(0.425)	
Δ R&D (log) (*t*-1)	-0.001	-0.001	-0.001	
	(-0.262)	(-0.342)	(-0.281)	
Δ Leverage (*t*-1)	-0.001	-0.001	-0.001	
	(-1.149)	(-1.113)	(-1.162)	
Δ Size (*t*-1)	-0.001***	-0.001***	-0.001***	
	(-2.833)	(-2.912)	(-2.923)	
Δ Book-to-market (*t*-1)	-0.001***	-0.001***	-0.001***	
	(-4.572)	(-4.261)	(-4.404)	
Δ Beta (*t*-1)				
Δ Sales growth (*t*-1)	0.001	0.001	0.001	
	(1.073)	(1.049)	(1.046)	
Δ Lending (prime) rate (*t*-1)	0.001	0.001	0.001	
	(1.315)	(1.376)	(1.261)	
Constant	0.098***	0.109***	0.083***	
	(4.227)	(4.846)	(3.467)	
Observations	17124	17124	17124	
Adj R^2	0.06	0.06	0.06	
Year FE	Yes	Yes	Yes	
Industry FE	Yes	Yes	Yes	

Table 5

Institutional Ownership Change and Cost of Financing with Low and High Leverage Level

	OLS						
Type of institution	**Dedicated**			**Transient**			
Dependent variable	Cost of Debt		P-value	Cost of Debt		P-value	P-value
Leverage level	High	Low	Low vs. Hi	High	Low	Low vs. Hi	Hi vs. Hi
Model	(1)	(2)		(3)	(4)		
Δ Institutional ownership (*t*-1)	-0.010***	-0.003	**0.03**	0.005**	0.035*	0.16	**0.00**
	(-3.864)	(-1.553)		(2.193)	(1.656)		
Cost of debt (*t*-2)	0.060***	0.303***		0.061***	0.303***		
	(3.54)	(6.38)		(3.57)	(6.38)		
Δ Leverage (*t*-1)	-0.000	-0.000		-0.000	-0.000		
	(-0.585)	(-1.035)		(-0.606)	(-0.911)		
Δ Size (*t*-1)	-0.000	0.000		-0.000	0.000		
	(-1.228)	(0.250)		(-1.306)	(0.269)		
Δ Book-to-market (*t*-1)	-0.000**	-0.000***		-0.000**	-0.000***		
	(-2.045)	(-2.759)		(-2.063)	(-2.787)		
Δ Sales growth (*t*-1)	0.000***	0.000		0.000***	0.000		
	(3.922)	(0.347)		(3.423)	(0.401)		
Δ Lending (prime) rate (*t*-1)	0.000***	0.000		0.000***	0.000		
	(5.690)	(0.193)		(5.593)	(0.112)		
Constant	0.134***	0.109		0.127***	0.081		
	(12.46)	(1.226)		(12.14)	(0.823)		
Observations	9761	7363		9761	7363		
Adj R^2	0.12	0.07		0.12	0.07		
Year FE	Yes	Yes		Yes	Yes		
Industry FE	Yes	Yes		Yes	Yes		

Table 6
Institutional Ownership Change and Financing Activities

	Logit			
Dependent variable:	New Debt Issue			
	Types of institutions			
Model	All (1)	Dedicated (2)	Transient (3)	P-value (Ded vs. Tra)
Δ Institutional ownership (*t*-1)	0.015	0.253***	-0.050	**0.00**
	(0.301)	(5.030)	(-1.009)	
Δ Leverage (*t*-1)	-0.000	-0.000	-0.000	
	(-0.366)	(-0.504)	(-0.342)	
Δ Size (assets) (*t*-1)	-0.001*	-0.001*	-0.001*	
	(-1.844)	(-1.749)	(-1.796)	
Δ Book-to-market (*t*-1)	0.000	0.000	0.000	
	(1.135)	(1.014)	(1.099)	
Δ Beta (*t*-1)				
Δ Sales growth (*t*-1)	-0.000	-0.000	-0.000	
	(-0.405)	(-0.394)	(-0.399)	
Δ Lending (prime) rate (*t*-1)	0.004**	0.004**	0.004**	
	(2.463)	(2.355)	(2.493)	
Constant	1.249**	1.162**	1.293**	
	(2.477)	(2.334)	(2.571)	
Observations	17124	17124	17124	
Pseudo R^2	0.05	0.05	0.05	
Year FE	Yes	Yes	Yes	
Industry FE	Yes	Yes	Yes	

Table 7
Institutional Ownership Change and Financing Activities with Low and High Leverage Level

	Logit					
Type of institution	**Dedicated**			**Transient**		
Dependent variable	New Debt Issue		P-value	New Debt Issue		P-value	P-value
Leverage level	High	Low	Low vs. Hi	High	Low	Low vs. Hi	Hi vs. Hi
Model	(1)	(2)		(3)	(4)		
Δ Institutional ownership (*t*-1)	0.192***	0.203***	0.92	-0.036	-0.106	0.45	**0.02**
	(2.652)	(2.721)		(-0.478)	(-1.459)		
Δ Leverage (*t*-1)	-0.000	0.000		-0.000	0.000		
	(-1.446)	(0.782)		(-1.555)	(0.747)		
Δ Size (*t*-1)	0.001	-0.002**		0.001	-0.002**		
	(0.983)	(-2.201)		(0.879)	(-2.151)		
Δ Book-to-market (*t*-1)	0.000	-0.001**		0.000	-0.001**		
	(1.153)	(-2.046)		(0.943)	(-2.159)		
Δ Sales growth (*t*-1)	-0.000	0.000*		-0.000	0.000		
	(-1.537)	(1.715)		(-1.567)	(1.624)		
Δ Lending (prime) rate (*t*-1)	0.005**	0.003		0.008***	0.003		
	(2.281)	(1.353)		(3.133)	(1.463)		
Constant	2.005*	0.668		2.228**	0.795		
	(1.882)	(1.064)		(2.072)	(1.253)		
Observations	9076	8048		9076	8048		
Pseudo R^2	0.06	0.04		0.05	0.04		
Year FE	Yes	Yes		Yes	Yes		
Industry FE	Yes	Yes		Yes	Yes		

Table 8
Institutional Ownership Change and Cost of Financing - (3SLS)

	3SLS							
Type of institution	**Dedicated**				**Transient**			
Dependent variable:	Cost of Debt	Dedicated ownership	Cost of Equity	Dedicated ownership	Cost of Debt	Transient ownership	Cost of Equity	Transient ownership
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cost of Equity (*t*-1)				0.121				0.013
				(0.12)				(0.97)
Cost of Debt (*t*-1)		0.006				0.001		
		(0.58)				(0.08)		
Δ Institutional ownership (*t*-1)	**-0.020*** **		**-0.021*** **		**0.013** **		-0.003	
	(-3.73)		(-7.00)		(2.44)		(-1.07)	
Leverage (*t*-1)	-0.234***		0.100***		-0.232***		0.098***	
	(-16.39)		(12.37)		(-16.31)		(12.31)	
Size (*t*-1)	-0.001***		-0.001***		-0.001***		-0.001***	
	(-9.62)		(3.66)		(-10.02)		(-4.53)	
Book-to-market (*t*-1)	-0.019***		0.066***		-0.018***		0.065***	
	(-3.47)		(20.62)		(-3.33)		(20.44)	
Beta (*t*-1)			0.054***				0.054***	
			(19.52)				(19.27)	
Sales growth (*t*-1)	-0.001***		-0.001		-0.001***		-0.001	
	(-3.00)		(-1.45)		(-2.78)		(-1.60)	
Lending (prime) rate (*t*-1)	0.027***				0.026***			
	(4.06)				(3.85)			
Volatility of stock return (*t*-1)		-0.272***		-0.319***		-0.08*		-0.097**
		(-5.61)		(-7.96)		(-1.68)		(-2.30)
Cumulative annual return (*t*-1)		-0.002		0.005		-0.029***		-0.027***
		(-0.37)		(1.42)		(-6.26)		(-7.58)
Analyst coverage (*t*-1)		0.005***		0.006***		-0.002***		-0.003***
		(6.92)		(8.15)		(-2.95)		(-3.61)
Total number of share outstanding (log) (*t*-1)		0.030***		0.030***		-0.010**		-0.010**
		(6.88)		(7.88)		(-2.02)		(-2.52)
ROA (*t*-1)		0.207***		0.193***		-0.141***		-0.139***
		(8.52)		(10.35)		(-5.57)		(-7.12)
Observations	17124	17124	17124	17124	17124	17124	17124	17124
Year & Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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