Institutional Holdings and Seasoned Equity Offerings

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Abstract:

We examine the monitoring benefits of institutional ownership on seasoned equity offerings (SEO) from both theoretical and empirical perspectives. We first provide a model in which institutional investors monitor managers, mitigate agency costs, and influence corporate decisions on the SEO plans. Our theory generates some new testable predictions that firms with larger institutional holdings (1) have better SEO outcomes, (2) tend to issue a smaller size of equity, and (3) are more likely to complete announced SEO deals. We then test these predictions based on a large US SEO sample from 1980 to 2004, and find strong supportive evidence.

JEL Classification: G32; G34

Keywords: Institutional Ownership; Seasoned Equity Offering; Monitoring

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1. Introduction

Institutional investors are one of the major investor groups in the United States. By the end of 2004, they owned more than 50% of U.S. equities (Chen et al. (2007)). How institutional investors affect corporate financial policies and, consequently, corporate value has become an important question for both academics and practitioners. Although previous studies have examined this question from various aspects such as acquisitions, executive compensation and payout policy[1], the importance of institutional holding in monitoring corporate management is still inconclusive. In this paper, we investigate another aspect of this interesting question: the relation between institutional holding and seasoned equity offerings (SEO) decisions.

This article investigates the monitoring role of institutional investors on SEO. In our theoretical framework, a firm is managed by an executive with empire-building preference, and it is owned by one large shareholder as well as a number of diffused small investors. When facing an investment opportunity, the manager can make a SEO deal to raise capital. Due to her empire-building preference, she tends to issue more equity than the optimal level that maximizes shareholders value. Investors could exert costly monitoring efforts to assure that the manager makes the optimal financing and investment decisions. Each of the firm's shareholders faces a free-rider problem because the monitoring shareholder bears the costs of monitoring alone, whereas all the shareholders benefit from her effort. When every shareholder is just holding a small amount of shares, the benefit from improving firm performance cannot outweigh the cost of monitoring. In this case, no one will make the monitoring effort. The monitoring may occur only when a certain investor is holding a large stake in the firm's equity.

[1] See Shleifer and Vishny (1986), Chen et al. (2007), Hartzell and Starks (2003), and Grinstein and Michaely (2005).

In equilibrium, the ownership of large shareholders shapes the SEO characteristics by mitigating agency problems. In particular, our model predicts that the ownership of large shareholders is associated with (1) strong SEO outcomes, (2) small size of equity offerings, and (3) high likelihood of completing announced SEO plans.

Based on a large set of US SEO data from 1980 to 2004, we provide strong empirical evidence supporting the above predictions. First of all, we examine the impact of institutional ownership on SEO outcomes. Consistent with our prediction, SEO firms with higher institutional ownership experience higher abnormal returns at SEO announcements, and higher stock and accounting performance during three years following the SEO deals. We then examine the relation between the size of the SEO and institutional ownership. Consistent with our model, institutional ownership is negatively related with the size of the SEO. This evidence suggests that firms, which benefit from strong monitoring carried out by institutional investors, successfully reduce agency costs and avoid raising too much money from SEO transactions. Finally, providing further support to our model, we find that the likelihood of completing SEO plans increases with institutional ownership.

SEOs are a very visible and important activity in the life of a firm and are a powerful way of examining shareholder control. In the SEO process, shareholder approval is necessary before an offering can occur. It is essential to get prior shareholder authorization of any shares that will be issued. This article sheds lights on the SEO decisions from a new angle: agency problem. Our examination on SEO characteristics is based on managerial agency conflicts. Existing explanations on SEO decisions are mainly based on adverse selection models (e.g. Myers and Majluf (1984) and Lucas and McDonald (1990)) or "windows-of-opportunity" models (e.g.

Daniel et al. (1998) and Bayless and Chaplinsky (1996)). Very few papers have investigated how manager-shareholder agency problem influences equity issuance decisions. Our paper identifies strong shareholder control as an important determinant for SEO features. Moreover, this article also helps to better understand the role of institutional investors in influencing corporate policies by diminishing the agency cost of shareholder-manager conflicts.

The remainder of this article proceeds as follows. In Section 2, we introduce the related studies and locate where our paper stands among the existing literature. Section 3 presents the model and provides empirical implications. In Section 4, we describe the data source and sample selection. Section 5 reports the empirical results. In Section 6, we check the robustness of our study and discuss some alternative explanation. Finally, Section 7 concludes. Proofs of the propositions are included in the appendix.

2. Related Literature

This paper relates primarily to two major areas of corporate finance literature: the role of institutional investors and corporate SEO decisions.

Numerous studies such as Carleton et al. (1998), Hartzell and Starks (2003), and Gillan and Starks (2000), have suggested that institutional investors play an effective and vital role in corporate governance. Institutional ownership in the firm improves shareholders value by reducing agency conflicts through either a direct mechanism such as public targeting, through filing of shareholders proposals, or indirectly without coming to the shareholders vote. Consistent with this literature, our model and empirical results provide a systematic view on

how monitoring by institutional investors could decrease agency costs and benefit shareholders in an important corporate event such as a SEO deal.

We also relate to the literature on SEO decisions. Studies such as Asquith and Mullins (1986), Masulis and Korwar (1986), Mikkelson and Partch (1986), Bayless and Chaplinsky (1996), Eckbo et al. (2006) and Ritter (2003) all report negative announcement abnormal returns relative to the market benchmark. Moreover, Ritter (2003) reports five-year post-issuance abnormal returns of about -30% relative to the market benchmark. McLaughlin et al. (1996) and Lee (1997) suggest that free cash flow problems after issues may play an important role in explaining the underperformance of issuing firms. Supporting the latter results, our model and empirical findings show that reducing the agency costs of managerial conflicts through shareholder monitoring, would result in stronger short-run and long-run performance for the issuing firms.

Clarke et al. (2001), Mikkelson and Partch (1988), and Giammarino et al. (2004) provide some empirical examination on withdrawn security offerings. These papers focus on information asymmetry between investors and managers, and insider trading. However, they are silent about the manager-shareholder agency problems. Our paper provides an alternative explanation to what determines SEO withdrawal, based on agency theory and the monitoring role of institutional investors.

Other studies such as Gibson et al. (2004) and Chemmanur et al. (2006) examine the trading behavior of institutional investors around SEO deals. These papers explore how SEO decisions influence institutional investors' trading behavior. Unlike our paper, their objective is to understand the trading behavior and stock-picking ability of institutional investors, rather than

the monitoring role. We also differentiate from D'Mello et al. (2007) which investigates the influence of monitoring effects of institutional ownership on post SEO performances. The latter empirical study focuses on the consequence of institutional investors' monitoring by only analyzing the post-issuance performance without providing a rigorous explanation of how monitoring would cause the favorable results. However, our paper presents a possible explanation of how the monitoring is able to assure the optimal financing and investment decision.

3. The Model

3.1. Model Setting

A fraction α of shares is held by a single large investor, while $1-\alpha$ is dispersed among small shareholders. All of the agents are risk-neutral. The risk-free rate is normalized to be zero. To ignore the case when large investors exploit small shareholders, we assume that all shareholders have identical objectives.

At time $t=0$, the firm faces an investment project. The project requires an investment of I and generates a gross return of $f(I)$, where $f(I)$ is an increasing concave function (i.e., $f'(I)>0$ and $f''(I)<0$). The first-best investment I^{FB} is simply calculated by maximizing the NPV of the project by choosing the size of the required financing (i.e., $f'(I^{FB})=1$).

The manager's objective function is $f(I)-I+\lambda I$, where $\lambda>0$. The term λI captures the manager's private benefit associated with the new equity. This assumption can be justified by the fact that the manager's reputation, compensation and discretion are usually positively related to the firm size. The term λI can also be interpreted as the manager's empire-building

preference. This objective function suggests that the manager is concerned about not only shareholders' value but also her own private benefits. In this model, agency problem arises because of λ.

At time $t=1$, each shareholder can exert a monitoring/intervening effort $e \in [0,1]$ at a cost of $e^2/2$. If the shareholder's intervening is successful, shareholders decide the investment policy by setting the amount of investment. If the shareholder fails to intervene then the manager sets the amount of investment by herself. After the investment level is settled, the manager announces the plan of issuing equity to finance the new project.

At time $t=2$, shareholders receive an exogenous cash flow shock ε about the project's return, where ε is a random variable with $E(\varepsilon)=0$ and a density function of $g(\varepsilon)$. The density function $g(\varepsilon)$ is known at *t=0*; however, ε is only realized at *t=2*. Based on the new information, the perceived gross return of the project becomes $f(I)+\varepsilon$. Shareholders accept the equity issuance plan if $f(I)-I+\varepsilon >= 0$, and reject it otherwise. In this setting, shareholders have an unbiased estimation of the project, and they accept it when the perceived net present value (NPV) is positive. The manager goes ahead to issue the equity when shareholders approve the plan, and withdraw when shareholders reject it. Figure 1 summarizes the timeline of the model.

3.2. Analysis of the model

The probability that the shareholder accepts the project is given by

$$Pr[f(I)-I+\varepsilon>0] = Pr[\varepsilon > I-f(I)] = \int_{I-f(I)}^{+\infty} g(\varepsilon)d\varepsilon \qquad (1)$$

When the shareholder fails to intervene, the manager's problem is given by

$$\underset{I}{Max}\ [f(I)-I+\lambda I]\int_{I-f(I)}^{+\infty} g(\varepsilon)d\varepsilon \tag{2}$$

When the shareholder succeeds to intervene, she faces the problem given by

$$\underset{I}{Max}\ [f(I)-I]\int_{I-f(I)}^{+\infty} g(\varepsilon)d\varepsilon \tag{3}$$

Obviously, I^{FB} is the solution for Equation (3). In other words, the shareholder will choose the first-best investment when they intervene successfully. We define the second-best investment I^{SB} as the solution to Equation (2).

Lemma 1. *Always the second-best investment is larger than the first-best investment;* $I^{SB} > I^{FB}$. *This means when the shareholder fails to intervene the manager tends to raise too much capital.*

Proof: See the Appendix.

Shareholders' decision on whether to intervene is given by

$$\underset{e}{Max}\ e\alpha[f(I^{FB})-I^{FB}][\int_{I^{FB}-f(I^{FB})}^{+\infty} g(\varepsilon)d\varepsilon]+(1-e)\alpha[f(I^{SB})-I^{SB}][\int_{I^{SB}-f(I^{SB})}^{+\infty} g(\varepsilon)d\varepsilon]-e^2/2 \tag{4}$$

Probability of successful interference by the shareholder, *e*, is equal to the shareholder's effort. Therefore, with probability *e* she successfully intervenes and makes the first-best investment (the first term of Equation (4)). With probability $1-e$, she fails to intervene and the manager makes the second-best investment (the second term). The shareholder herself bears the cost of intervening (the third terms). The cost of intervening is convex in effort *e*. The first-order condition implies

$$e=\alpha\left([f(I^{FB})-I^{FB}][\int_{I^{FB}-f(I^{FB})}^{+\infty} g(\varepsilon)d\varepsilon]-[f(I^{SB})-I^{SB}][\int_{I^{SB}-f(I^{SB})}^{+\infty} g(\varepsilon)d\varepsilon]\right) \tag{5}$$

The economic intuition obtained from Equation (5) is straightforward. The shareholder will exert more effort to intervene when she is holding a large proportion of the firm's shares (when α is large) or when deviating from first-best investment is considerably costly (when the difference between $[f(I^{FB}) - I^{FB}]$ and $[f(I^{SB}) - I^{SB}]$ is large).

The analysis above yields the three propositions below.

Proposition 1. *A firm with larger institutional ownership, α, is more likely to make the first-best investment decision.*

Proof: See the Appendix.

Proposition 2. *A firm with larger institutional ownership, α, is more likely to complete announced SEO decisions.*

Proof: See the Appendix.

Proposition 3. *Larger institutional ownership leads to better outcomes from the SEO deals.*

Proof: See the Appendix.

The economic intuition behind the above three propositions is as follows. The empire-building manager receives private benefits by over-raising capital. The SEO proceeds, which the manager would like to raise (second-best investment level), is always more than the first-best investment level that maximizes shareholders value. When investors are able to monitor/intervene managerial decisions, the probability of a successful intervene increases with institutional ownership, leading to more realized states of the world where the first best investments are implemented. In short, the monitoring would affect the SEO decisions by assuring the first-best amount of capital to be raised. In the end, higher institutional ownership leads to better outcomes for SEO deals.

Note that the first-best investment is characterized with a smaller size and better outcome relative to the second-best investment. The propositions above immediately result in three testable implications.

Implication 1. *A firm with larger institutional holding tends to experience better outcomes from SEO.*

Implication 2. *A firm with larger institutional holding tends to issue a smaller size of equity.*

Implication 3. *A firm with larger institutional holding is more likely to complete announced SEO decisions.*

4. Sample Selection and Data Description

We obtain data from multiple sources. Data on SEO deals are obtained from the Thompson Financial's SDC database. The SEO sample includes both completed and withdrawn deals announced between 1980 and 2004. Data on institutional holding are retrieved from Thomson Financial (previously known as CDA Spectrum), which contains quarterly information on institutional ownership of stocks listed in NYSE, AMEX, and NASDAQ. Those institutions usually include bank trusts, insurance companies, mutual funds, brokerage firms, pension fund and endowments. Individual blockholders are not covered. We further require that the SEO firms have available stock price data from the Center for Research in Security Prices (CRSP) and accounting data from Compustat. Our final sample consists of 7365 deals, in which 6950 deals are completed.

Like Grinstein and Michaely (2005) and Hartzell and Starks (2003), our key independent variable is *Top5holding*, which is the proportion of the institutional ownership by the top five

institutional investors in the firm (i.e. the summation of the shares owned by the top five institutional investors deflated by the firm's total shares outstanding). As robustness check, we also measure institutional ownership using the stock ownership by all the institutional investors or using the Herfindahl index of institutional ownership concentration or using the ownership of the largest reporting institutional investor. Our results are not sensitive to these alternative measures.[2]

We measure book value of equity as the sum of the common equity value (Item 60) and deferred tax (Item 74). Market value of equity is defined as common shares outstanding (Item 25) times fiscal year closing price (Item 199). Firm size is computed as the natural logarithm of firms' sales (Item 12). Return on equity (*ROE*) is measured as the ratio of operation income before depreciation (Item 13) over book value of equity. We compute *Leverage* as the ratio of long-term debt (Item 9) and current debt (Item 34) over total assets. *Asset-Liquidity* is measured as the ratio of cash and short-term investment (Item 1) plus receivables (Item 2) over total assets. We measure *M/B* ratio as the ratio of market value of equity over book equity value. *Capital Expenditure* is the firm's capital expenditure (Item 128) normalized by total assets. All of the variables are measured at the fiscal yearend prior to the SEO announcements.

To measure the SEO outcomes, we adopt three different variables. The first measure is the issuer's abnormal return over days (-1,1), where day 0 is the SEO announcement day (CAR3). Daily abnormal returns are computed using the market model and the value-weighted CRSP index. The estimation window includes days (-200, -60) prior to the announcement date. We further complement the stock price reaction with the post-SEO accounting performance. We

[2] The empirical results based on these alternative measures are available upon request.

compute the average industry-adjusted *ROE* over three years after SEO. In particular, we calculate the median industry-level *ROE* of each Fama-French 48 industries, and subtract those industry-level *ROE* from the SEO firms' *ROE*.

As the third measure for SEO outcome, we calculate the post-SEO long-run stock performance. Following Barber and Lyon (1997) and Barber et al. (1999), we use control firms on size, book-to-market ratio, and prior-year stock return as the benchmark for post-SEO stock performance. Barber and Lyon (1997) report that the control firm approach eliminates the skewness bias associated with the long-term buy-and-hold abnormal returns (*BHAR*) and yields well-specified statistics. Using Barber et al. (1999)'s method, we sort the population of NYSE/NASDAQ/AMEX firms into 14 size groups and 10 book-to-market groups. After determining which of the 140 groups the SEO firm is in at the month-end prior to the issuance date, we choose from the group the control firm that is the closest match on prior-year stock return and is not involved in any SEO events. Then, three-year buy-and-hold returns (starting from the month after the equity issuance) are computed for the sample firms and control firms. At last, the three-year buy-and-hold abnormal returns are the difference between sample firm returns and corresponding contemporaneous returns of control firms (*BHAR3*). All of the dollar-value variables in our sample are measured in 2000-constant dollars. To ensure some outliers in the data are not driving our results, we winsorize all the continuous variables at one percent tails.

[Insert Table 1 Here]

Table 1 presents descriptive statistic of our sample of 7365 SEO deals. Panel A reveals that SEO deals tend to be cyclical as both the number and average proceeds of the issuance closely

follow the business cycle expansion over the 1990s. In the full sample, around 94% of the announced deals are completed.

Panel B reports the characteristics of SEO firms at the fiscal yearend prior to the issuances. The median firm is quite large; its market capitalization of equity is $277 million. The sample firms are performing well with median market-to-book ratio (*M/B*) of 2.25, past-year stock return of 25%, and *ROE* of 12%. Those firms are moderately levered with the median leverage ratio of 24%, have sizeable liquid asset with a median *Asset-liquidity* of 0.29, and make considerable capital expenditure with a median *Capital Expenditure* value of 0.06. The SEO deals seem to destroy firm value, as the median *CAR3* is -1.3%. Those SEO firms keep performing poorly over three years after the issuance with the median *BHAR3* of -9.7%. The industry-adjusted *ROE* is slightly positive with the median to be 0.77%. Institutional investors are holding a sizeable amount of equity, with a median *Top5holding* of 15%.

5. Empirical Results

5.1. Institutional Holding and SEO Outcome

Our tests on the relation between institutional ownership and SEO outcomes are based on the following equation, using the following cross-sectional OLS regression model:

$$\begin{aligned} Outcome_i &= \alpha_0 + \alpha_1 Top5holding_i + \alpha_2 FirmSize_i + \alpha_3 Pastreturn_i \\ &+ \alpha_4 ROE_i + \alpha_5 M/B_i + \alpha_6 Leverage_i + \alpha_7 Assetliquidity_i \\ &+ \alpha_8 CapitialExpenditure_i + YearDummies + IndustryDummies + \varepsilon_i \end{aligned}$$

where *i* indexes firms. The dependent variable is the SEO outcome, measured by *CAR3*, *BHAR3* and *ROE3*. The sample for this regression analysis consists of only those completed SEO deals. To control for industry and time variation in SEO activities, in each regression we include the

Fama-French 48 industry dummies and year dummies. Throughout the entire empirical test, p-values are computed based on robust standard errors clustered at the firm level. Estimating positive coefficients for α_1 would be consistent with the prediction that institutional ownership increases SEO outcomes.

[Insert Table 2 Here]

Table 2 reports the regression results. The coefficients on *Top5holding* are both economically and statistically significant in all of the three regressions. In the first regression, we use *CAR3* to proxy the SEO outcome. The coefficient α_1 is 4.2, and is significant at the 1% level. An increase in *Top5holding* by one standard deviation will increase *CAR3* by 0.46 percentage points, relative to the sample median of -1.3%. In Column (2), we further use *BHAR3* as an alternative measure of SEO outcome. The coefficient in front of *Top5holding* is 37.88 and is statistically and economically significant. This coefficient indicates when *Top5holding* increases by one standard deviation, *BHAR3* will increase by 4.15 percentage points. Given the median *BHAR3* of -9.7%, the impact of institutional ownership on the firms' post-SEO stock performance is quite big. In Column (3), we measure SEO outcome from the aspect of accounting performance, using *ROE3*. Similar to the results in Columns (1) and (2), *Top5holding* attracts a significantly positive coefficient. The coefficient is 5.58 and its p-value is 0.005. The economic magnitude is clearly sizeable, as a one-standard-deviation increase in *Top5holding* implies an increase of *ROE3* by 0.61 percentage points relative to the sample median of 0.77%.[3]

[3] In Table 2, the sample size for *BHAR3* and *ROE3* is slightly smaller than that for *CAR3*, because some firms fail to survive over three years following SEOs and the non-survivors are excluded from regressions.

5.2. Institutional Holding and SEO Size

In this section, we investigate the association between institutional ownership and the size of equity issuance. As predicted by our model, firms with large shareholders make small-size issuance. To examine this relation empirically, we apply the following cross-sectional OLS regression model

$$IssuanceSize_i = \beta_0 + \beta_1 Top5holding_i + \beta_2 FirmSize_i + \beta_3 Pastreturn_i + \beta_4 ROE_i + \beta_5 M/B_i + \beta_6 Leverage_i + \beta_7 Assetliquidity_i + \beta_8 CapitialExpenditure_i + YearDummies + IndustryDummies + \varepsilon_i$$

According to Prediction 2, we expect the coefficient β_1 to be negative.

[Insert Table 3]

The sample for this regression analysis consists of only those completed SEO deals. Table 3 highlights that *Top5holding* is significantly negatively associated with the SEO size. The dependent variables in this table are three different measures of the size of equity issuance. The independent variables include the measure of institutional ownership, as well as control variables. In Model (1), the explained variable is the proceeds raised in the SEO deal (in millions). The coefficient of *Top5holding* is -60.8 and is significant at the 1% level. This result implies $6.7 million reduction in proceeds when *Top5holding* increases by one standard deviation, comparing to the median proceeds of $53 million.

We normalize proceeds by the firm's total asset (measured in percentage) in Regression (2). The variable *Top5holding* has a negative coefficient of -6.92 which is significant at the 5% level. As another alternative specification, we deflate proceeds by the firm's market value of equity (measured in percentage) in Regression (3). The coefficient of *Top5holding* is -23.94 and significant at the 1% level. The economical significance is remarkable; the

one-standard-deviation increase in *Top5holding* is associated with 0.76% decrease in *Proceeds/Total Asset* and 2.63% decrease in *Proceeds/MV Equity*.

Of the controls, some firm characteristics, like *PastReturn*, *FirmSize* and *M/B*, have strong explanatory power towards the size of equity issuance. Overall, the result in this table supports our model's prediction that firms with large shareholders tend to raise less money from SEO transactions.

5.3. Institutional Holding and the Likelihood of SEO Completion

We use logit regression to test whether firms with high institutional ownership are more likely to complete the SEO deals. Specifically, we estimate the following model:

$$Pr(Completion_i) = F(Top5holding_i, CAR3_i, FirmSize_i, ROE_i, M/B_i, Leverage_i, Assetliquidity_i, CapitalExpenditure_i, YearDummies, IndustryDummies)$$

The dependent variable, *Completion*, takes a value of one if the SEO deal is finally completed and zero otherwise. The variable *F* denotes the logit cumulative distribution function. The sample for this regression is the full sample, including both successful and unsuccessful deals. Based on Prediction 3, the coefficient on *Top5holding* is expected to be positive.

[Insert Table 4 Here]

The regression results are reported in Table 4, where the coefficients are estimates of the marginal effect on the probability when all of the other independent variables are at their mean value. Table 4 indicates that the probability of deal completion increases with institutional ownership.

In Model (1), we include *Top5holding* as well as industry and year dummies as the independent variables. The coefficient on *Top5holding* is 0.082 and is significant at the 1%

level. This result implies that an increase of *Top5holding* from mean by one standard deviation is expected to increase the probability of deal completion by about 0.88 percentage points.

In Model (2), we include *CAR3*, *FirmSize*, *PastReturn*, *ROE*, *M/B*, *Asset-liquidity*, and *Capital Expenditure* as additional control variables. The coefficient of *Top5holding* is 0.053 and is significant at the 1% level. The variable *CAR3* also attracts a significantly positive coefficient, indicating that the deal is more likely to be completed if the market favors it. In Model (3), we add an interaction term, *Top5holding*×*CAR3*. The coefficient on this interaction is significantly positive, indicating that firms with high institutional ownership are more likely complete the SEO deals that the market is in favor of.

6. Robustness Check and Alternative Explanation

While our results suggest that institutional investors actively monitor management and enhance corporate performance through SEO decisions, it is still possible that these results are due to endogeneity or other causes for a spurious relation between institutional holding and SEO characteristics. To investigate this possibility, we replace *Top5holding* with $Top5holding_{Q-1}$, $Top5holding_{Q-2}$, $Top5holding_{Q-3}$ and $Top5holding_{Q-4}$ where the four variables are the top five institutional holding at the 1st, 2nd, 3rd and 4th quarters prior to SEO announcements, respectively. Our results remain almost unchanged under the four alternative measures.

The most likely competing explanation is that institutional investors are good at picking and investing in better-managed firms, leading to the observed relation without much active monitoring. To rule out this alternative story, we further examine the relation between the

change in institutional ownership and SEO characteristics. If this stock-picking explanation is true, we will expect an increase (decrease) of institutional holding for good-performing (bad-performing) SEO firms prior to the events. We first define *Holdchange* as $Top5holding_{Q-1}$ - $Top5holding_{Q-4}$, which measures the change in institutional ownership during the four quarters prior to SEO. We then re-run the regression analysis in Tables 2-4 by replacing *Top5holding* with *Holdchange*.

[Insert Table 5 Here]

Table 5 reports the regression coefficients on *Holdchange*. We do not report the coefficients for other controls, as these coefficients are quite similar to those in Tables 2-4. Unlike *Top5holding*, *Holdchange* plays quite a different role in explaining SEO features. Panel A shows an ambiguous relation between *Holdchange* and SEO outcomes. In the first column where *CAR3* is the dependent variable, *Holdchange* attracts an insignificant coefficient of 0.027. When replacing *CAR3* with *BHAR3* in Column (2), the coefficient in front of *Holdchange* is -49.08 with the p-value of 0.17. This result indicates that SEO firms with larger increase in institutional holding have poorer stock performance after the deals. The variable *Holdchange* has a significant positive coefficient only in Column (3), where *ROE3* is the left-side variable. Overall, SEO firms with bigger increase in institutional ownership do not necessarily perform better.

Panel B reports the impact of *Holdchange* on the SEO size. Just opposite to *Top5holding*, *Holdchange* is positively associated with SEO size. Taking Column (1) for example, the coefficient on *Holdchange* is 23.32 and is significant at the 5% level. Clearly, this regression result indicates that SEO firms with bigger increase in institutional ownership tend to make

larger issuance. In Panel C, we also examine how *Holdchange* influences the deal completion probability; the coefficient on *Holdchange* is not statistically significant in any of the three regression models.

We have also tried different horizons to compute the change of institutional holding. Instead of the current measure, we use the change of *Top5holding* from the 3rd quarter to the 1st quarter, and the change from the 2nd and to the 1st quarters prior to the SEO, respectively. The results are insensitive to the alternative measures. In summary, the stock-picking explanation is not valid.

The relation between good SEO performance and high institutional ownership may be caused by other firm characteristics. To examine this possibility of endogeneity, we conduct a two-stage least squares analysis. Bennett et al. (2003) and Gompers and Metrick (2001) suggest that share turnover and return volatility are reasonable instrumental variables for the institutional ownership. Accordingly, in the first stage, we regress *Top5holding* on share turnover, stock return volatility (stock return standard deviation from past 36 months), firm size, industry dummies and year dummies. In the second stage, we run an OLS analysis of the SEO outcomes using the fitted values from the first stage regressions as our instrument for *Top5holding*. The results, provided in Table 6, are consistent with our earlier results, suggesting that SEO performance is increasing in institutional ownership.

7. Conclusion

This paper examines the SEO decisions under the monitoring of institutional investors. Rather than the adverse selection or "window-of-opportunity" perspectives commonly used in the SEO literature, we investigate the valuation effects of SEO issuance from the agency theory

standpoint. The driving force behind our theoretical analysis is that shareholders with large equity ownership tend to monitor management, prevent empire-building managers from raising too much capital, and improve corporate decisions related to SEOs.

Our theory predicts that larger institutional holding is associated with better performance of those SEO firms, smaller size of equity offerings, and higher likelihood of completing announced SEO deals. Based on a large US SEO dataset, we provide strong empirical evidence supporting these predictions. By examining the relation between the change of institutional ownership and SEO characteristics, we rule out the competing explanation that institutional investors are just good at picking better-managed firms rather than improving corporate decisions by monitoring.

Appendix: Proofs

Proof of Lemma 1:

First order condition of $[f(I)-I+\lambda I]\int_{I-f(I)}^{+\infty} g(\varepsilon)d\varepsilon$ with respect to *I* implies:

$$[f'(I)-1+\lambda]\int_{I-f(I)}^{+\infty} g(\varepsilon)d\varepsilon+[f(I)-I+\lambda I][f'(I)-1]g[I-f(I)]=0 \qquad \text{(A1)}$$

Denote that I^{SB} is the solution for Equation (A1). We already know I^{FB} is the solution to shareholder's maximization problem (i.e., Equation (3)). Substituting I^{FB} into Equation (A1) yields $\lambda\int_{I-f(I)}^{+\infty} g(\varepsilon)d\varepsilon>0$. We also know the second-order condition of Equation (2) can be written as

$$\begin{aligned}&[f''(I)]\int_{I-f(I)}^{+\infty} g(\varepsilon)d\varepsilon+2[f'(I)-1+\lambda][f'(I)-1]g[I-f(I)]+\\&[f(I)-I+\lambda I][f''(I)]g[I-f(I)]+[f(I)-I+\lambda I][f'(I)-1][1-f'(I)]g'[I-f(I)]\end{aligned} \qquad \text{(A2)}$$

Equation (A2) evaluated at I^{FB} is equal to

$$[f''(I^{SB})]\int_{I^{SB}-f(I^{SB})}^{+\infty} g(\varepsilon)d\varepsilon+[f(I^{SB})-I^{SB}+\lambda I^{SB}][f''(I^{SB})]g[I^{SB}-f(I^{SB})]<0$$

This will always be negative since $\int_{I-f(I)}^{+\infty} g(\varepsilon)d\varepsilon>0$ and $f''(.)<0$. Therefore, $I^{SB}>I^{FB}$.

Proof of Proposition 1:

The proof is straightforward. Based on Equation (5), probability of successful intervene, *e*, is positively related to institutional ownership α. Hence, large shareholders have strong incentive to intervene, and thus have higher chance to implement the first-best investment.

Proof of Proposition 2:

A direct implication of Equation (5) is that

$$[f(I^{FB})-I^{FB}][\int_{I^{FB}-f(I^{FB})}^{+\infty} g(\varepsilon)d\varepsilon] > [f(I^{SB})-I^{SB}][\int_{I^{SB}-f(I^{SB})}^{+\infty} g(\varepsilon)d\varepsilon] \ .$$

This is due to the fact that *e>0* and $\alpha > 0$. Therefore, either of the following cases has to hold:

a) $\int_{I^{FB}-f(I^{FB})}^{+\infty} g(\varepsilon)d\varepsilon > \int_{I^{SB}-f(I^{SB})}^{+\infty} g(\varepsilon)d\varepsilon$, or b) $f(I^{FB})-I^{FB} > f(I^{SB})-I^{SB}$.

However, $f(I^{FB})-I^{FB} > f(I^{SB})-I^{SB}$ implies that $\int_{I^{FB}-f(I^{FB})}^{+\infty} g(\varepsilon)d\varepsilon > \int_{I^{SB}-f(I^{SB})}^{+\infty} g(\varepsilon)d\varepsilon$.

Thus, (a) and (b) are equivalent and hold at the same time.

Proof of Proposition 3:

The outcome of the SEO can be written as follows:

$$\text{Outcome=Pr(first-best)}[f(I^{FB})-I^{FB}]+\text{Pr(second-best)}[f(I^{SB})-I^{SB}]$$

The proof follows directly from the fact that $f(I^{FB})-I^{FB} > f(I^{SB})-I^{SB}$ and for large institutional ownership Pr(first-best) is greater than Pr(second-best).

Reference

Asquith, P., and D. Mullins, 1986, Equity issues and offering dilution, *Journal of Financial Economics* 15, 61-89.

Barber, B.M., and J.D. Lyon, 1997, Detecting long-run abnormal stock returns: The empirical power and specification of test statistics, *Journal of Financial Economics* 43, 341-372.

Barber, Brad M., Chih-ling Tsai, John D. Lyon, 1999, Improved methods for tests of long-run abnormal stock returns, *Journal of Finance* 54, 165-201.

Bayless, Mark, and Susan Chaplinsky, 1996, Is there a window of opportunity for seasoned equity issuance?, *Journal of Finance* 51, 253-278.

Bennett, James, Richard Sias, and Laura T. Starks, 2003, Greener pastures and the impact of dynamic institutional preferences, *Review of Financial Studies* 16, 1199-1234.

Carleton, W., J. Nelson, and M. Weisbach, 1998, The influence of institutions on corporate governance through private negotiations: Evidence from TIAA-CREF, *Journal of Finance* 53, 1335-1362.

Chemmanur, Thomas J., Shan He, and Gang Hu, 2006, The role of institutional investors in seasoned equity offerings, Boston College working paper.

Chen, Xia, Jarrad Harford, and Kai Li, 2007, Monitoring: Which institutions matter?, *Journal of Financial Economics*, 86, 279-305.

Clarke, Jonathan, Craig Dunbar, and Kathleen M. Kahle, 2001, Long-run performance and insider trading in completed and canceled seasoned equity offerings, *Journal of Financial and Quantitative Analysis* 36, 415-430.

D'Mello, R., F. Schlingemann, and V. Subramaniam, 2007, Are there monitoring benefits to institutional ownership? Evidence from seasoned equity offerings, University of Pittsburgh working Paper.

Daniel, Kent, David Hirsleifer, and Avanidhar Subrahmanyam, 1998, Investor psychology and security market under- and overreactions, *Journal of Finance* 53, 1839-1885.

Eckbo, E., R. Masulis and O. Norli, 2006, Security Offerings, Handbook of Corporate Finance: Empirical Corporate Finance, E. Eckbo (ed.), North-Holland/Elsevier, Chapter 13.

Giammarino, R., R. Heinkel, B. Hollifield, and Kai Li, 2004, Corporate decisions, information and prices: Do managers move prices or do prices move managers?, *Economic Notes* 33, 83-110.

Gibson, Scott, Assem Safieddine, and Ramana Sonti, 2004, Smart investments by smart money: Evidence from seasoned equity offerings, *Journal of Financial Economics* 72, 581-604.

Gillan, S., and L. Starks, 2000, Corporate governance proposals and shareholder activism: The role of institutional investors, *Journal of Financial Economics* 57, 275-305.

Grinstein, Yaniv, and Roni Michaely, 2005, Institutional holdings and payout policy, *Journal of Finance* 60, 1389-1426.

Gompers, Paul A., and Andrew Metrick, 2001, Institutional investors and equity prices, *Quarterly Journal of Economics* 116, 229–259.

Hartzell, Jay C., and Laura T. Starks, 2003, Institutional investors and executive compensation, *Journal of Finance* 58, 2351-2374.

Lee, Inmoo, 1997, Do firms knowingly sell overvalued equity?, *Journal of Finance* 52, 1439-1466.

Lucas, Deborah J., and Robert L. McDonald, 1990, Equity issues and stock price dynamics, *Journal of Finance* 45, 1019-1043.

Masulis, R., and A. Korwar, 1986, Seasoned equity offers: An empirical investigation, *Journal of Financial Economics* 15, 91-118.

Mc Laughlin, R., A. Safieddine, and G. Vasudevan, 1996, The operating performance of seasoned equity issuers: Free cash flow and post-issue performance, *Financial Management* 25, 41-53.

Mikkelson, Wayne H., and M. Megan Partch, 1988, Withdrawn security offerings, *Journal of Financial and Quantitative Analysis* 23, 119-133.

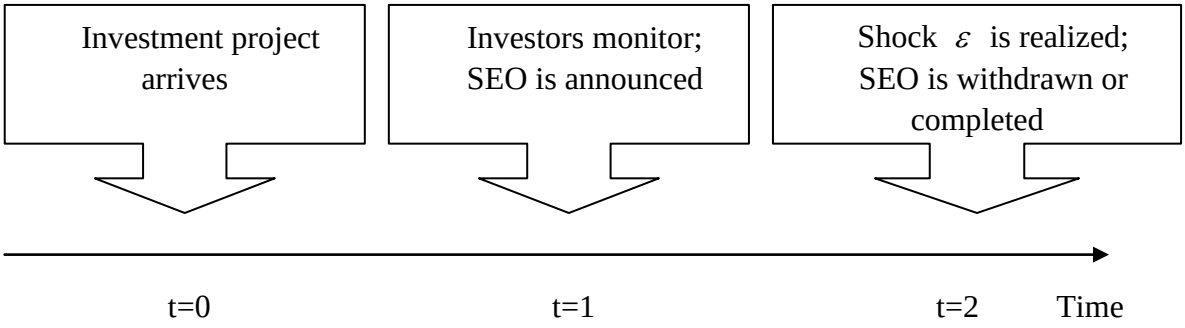
Myers, Stewart C., and Nicholas S. Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, 187-221.

Ritter, J., 2003, Investment banking and securities issuance, in G. Constantanides et al., eds.: Handbook of the Economics of Finance (Elsevier Science).

Shleifer, Andrei, and Robert Vishny, 1986, Large shareholders and corporate control, *Journal of Political Economy* 94, 461-488.

Titman, Sheridan, K. C. John Wei, and Feixue Xie, 2004, Capital investments and stock returns, *Journal of Financial and Quantitative Analysis* 39, 677-700.

Figure 1: The Sequence of Events



This figure summarizes the sequence of corporate events in the model. At time t=0, the investment project arrives at the firm. At time t=1, investors exert the monitoring effort and SEO is announced. At time t=2, investors receive an exogenous cash flow shock ε and decide whether to complete or withdraw the SEO deal.

Table 1 Descriptive Statistics of Sample Firms

Panel A: Distribution of SEOs by Year

The full sample consists of 7365 SEO deals from January 1, 1980, to December 31, 2004; 6950 of the deals are finally completed. We obtain SEO data in SDC database, stock price data in CRSP, accounting data in Compustat, and institutional holding data from Thomson Financial. Proceeds Value is measured in 2000-constant dollars.

Year	Number of SEO	Average Proceeds Value ($ Million)	Completed Deals (%)
1980	155	95.36	100.00%
1981	252	69.51	100.00%
1982	332	69.26	100.00%
1983	537	63.28	100.00%
1984	169	49.76	97.63%
1985	236	80.34	96.19%
1986	310	78.22	92.58%
1987	207	77.88	92.27%
1988	87	73.41	91.95%
1989	149	59.86	97.32%
1990	132	68.82	87.12%
1991	347	87.17	96.25%
1992	346	77.61	92.20%
1993	435	79.63	95.17%
1994	303	73.26	91.09%
1995	404	92.99	93.32%
1996	487	89.04	90.35%
1997	410	105.99	91.95%
1998	299	126.38	88.96%
1999	272	174.06	94.12%
2000	318	236.42	89.31%
2001	260	186.49	93.46%
2002	260	147.77	92.69%
2003	297	132.76	98.65%
2004	361	135.25	95.29%
Full sample	7365	101.22	94.37%

Panel B: Sample Firm Characteristics

Proceeds ($million) is the amount of money raised in the SEO deals. Sales ($million) refers to the annual sale volume. Total Asset ($million) is the firm's book value of total asset. MV Equity ($million) refers to the market capitalization of the equity. ROE is the accounting return of equity obtained as the ratio of operation income before depreciation to book equity value. Leverage is the ratio of total debt over total asset. M/B is the ratio of market value of equity over the book value of equity. PastReturn is the annual stock return of the firm. Asset-liquidity is the ratio of the firm's cash, short-term investment plus receivables over total asset. Capital Expenditure is the firm's capital expenditure normalized by total asset. CAR3 is the three-day accumulative abnormal returns over the event windows (-1, 1) around the issuance date (day 0) based on the market model using CRSP value-weighted index returns. The parameters are estimated within (-200, -60) event window relative to the issuance date. BHAR3 is the three-year buy-and-hold abnormal returns following the SEO. Matching firms are formed based on size, book-to-market ratio and past-year stock return. ROE3 is the industry-adjusted average ROE over three years after the SEO; it is computed by subtracting the median value of ROE for all firms in the same Fama-French 48 industries. We compute CAR3, BHAR3 and ROE3 based on completed SEO deals. Top5holding is the proportion of the firm's common shares owned by the top five institutional investors. All the dollar-value variables are measured in 2000-constant dollars.

	Mean	Std	5^{th} Pct	Median	95^{th} Pct
Proceeds	97	129	8	53	343
Proceeds/Total Asset	47%	71%	0.69%	21%	185%
Proceeds/MV Equity	26%	26%	2.5%	18%	79%
Sales	1390	3444	4	201	6983
Total Asset	3721	19388	15.5	249	13725
MV Equity	1101	2503	25	277	4813
ROE	0.5%	50%	-77%	12%	32%
Leverage	0.26	0.21	0	0.24	0.64
M/B	3.75	5.32	0.58	2.25	12.52
PastReturn	46%	84%	-39%	25%	218%
Asset-liquidity	0.35	0.25	0.05	0.29	0.85
Capital Expenditure	0.087	0.09	0.0054	0.06	0.28
CAR3	-1.6%	6.6%	-13.4%	-1.3%	9%
BHAR3	-12.3%	132%	-220%	-9.7%	187%
ROE3	-0.3%	14.5%	-26.6%	0.77%	18.6%
Top5holding	16%	11%	1.5%	15%	37%

Table 2 Institutional Holding and SEO Outcome

This table reports regression results examining the effect of institutional holding on outcomes of SEO decisions. The sample consists of 6950 completed SEO deals from the period January 1, 1980, to December 31, 2004.The dependent variables are three measures of SEO outcomes. CAR3 is the three-day accumulative abnormal returns over the issuance date. BHAR3 is the buy-and-hold abnormal return over three years after the SEO deal. ROE3 refers to the industry-adjusted average ROE over three years after the SEO. Top5holding is the proportion of the firm's common shares owned by the top five institutional investors. FirmSize is the natural logarithm of sales volume. Industry dummies are based on the 48-industry classification of Fama and French (1997). Corresponding p-values from robust standard errors clustered at the firm level are reported in brackets. The notation ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

	(1) CAR3	(2)BHAR3	(3)ROE3
Top5holding	**4.202*** **	**37.884***	**5.588*** **
	[0.000]	**[0.063]**	**[0.005]**
FirmSize	0.274***	-1.647	1.581***
	[0.000]	[0.206]	[0.000]
PastReturn	-0.181	-2.578	1.276***
	[0.178]	[0.274]	[0.000]
ROE	0.221	3.514	8.948***
	[0.322]	[0.395]	[0.000]
M/B	-0.019	0.120	-1.106***
	[0.745]	[0.885]	[0.000]
Leverage	-0.716	-11.080	-0.481
	[0.213]	[0.330]	[0.330]
Asset-liquidity	-1.122*	-10.936	-11.573***
	[0.064]	[0.354]	[0.000]
Capital Expenditure	1.880	-51.896**	10.590***
	[0.112]	[0.036]	[0.000]
Year&Industry Dummies	Yes	Yes	Yes
Constant	-6.500***	47.982	-16.053***
	[0.000]	[0.168]	[0.000]
N	6286	5931	5880
Adjusted-R2	4%	2%	25%

Table 3 Institutional Holding and SEO Size

This table reports regression results examining the effect of institutional holding on size of SEO deals. The sample consists of 6950 completed SEO deals from the period January 1, 1980, to December 31, 2004. The dependent variables are (1) the proceeds of SEO (in millions), (2) the proceeds deflated by the firm's total asset (in percentage), and (3) the proceeds deflated by firm's market value of equity (in percentage). Industry dummies are based on the 48-industry classification of Fama and French (1997). Corresponding p-values from robust standard errors clustered at the firm level are reported in brackets. The notation ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

	(1) Proceeds	(2) Proceeds/Total Asset	(3) Proceeds/MV Equity
Top5holding	**-60.844*** [0.000]**	**-6.928** [0.046]**	**-23.942*** [0.000]**
FirmSize	54.349*** [0.000]	-10.080*** [0.000]	-12.127*** [0.000]
PastReturn	-3.997** [0.012]	-1.490*** [0.000]	-0.965 [0.395]
ROE	-0.269 [0.907]	-1.654* [0.075]	-8.120*** [0.001]
M/B	0.481 [0.566]	-1.417*** [0.000]	15.904*** [0.000]
Leverage	60.120*** [0.000]	8.459*** [0.000]	-25.116*** [0.000]
Asset-liquidity	4.706 [0.647]	3.625* [0.054]	28.943*** [0.000]
Capital Expenditure	-20.513 [0.232]	-7.549* [0.071]	9.275 [0.267]
Year&Industry Dummies	Yes	Yes	Yes
Constant	-976.431*** [0.000]	222.041*** [0.000]	239.626*** [0.000]
N	6292	6292	6292
Adjusted-R2	48%	44%	60%

Table 4 Institutional Holding and Likelihood of SEO Completion

This table reports logit regression results examining the effect of institutional holding on the likelihood of SEO completion. The sample includes both completed and withdrawn SEO deals (7365 deals) from January 1, 1980 to December 31, 2004. The dependent variable equals to one if the announced deal is completed and zero otherwise. The coefficients are estimates of the marginal effect on the probability when all of the independent variables are at their mean value. Industry dummies are based on the 48-industry classification of Fama and French (1997). Corresponding p-values from robust standard errors clustered at the firm level are reported in brackets. The notation ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

	Model (1)	Model (2)	Model (3)
Top5holding	**0.082*** [0.000]**	**0.053*** [0.008]**	**0.08*** [0.000]**
CAR3		0.093*** [0.000]	-0.013 [0.722]
Top5holding×CAR3			**0.695*** [0.000]**
FirmSize		0.004*** [0.000]	0.004*** [0.000]
PastReturn		-0.001 [0.610]	-0.001 [0.614]
ROE		-0.001 [0.857]	-0.001 [0.842]
M/B		0.001 [0.162]	0.001 [0.185]
Leverage		-0.007 [0.544]	-0.006 [0.571]
Asset-liquidity		0.011 [0.293]	0.011 [0.304]
Capital Expenditure		0.027 [0.201]	0.028 [0.174]
Year&Industry Dummies	Yes	Yes	Yes
N	7633	6839	6839
Pseudo-R2	6.9%	8.5%	8.9%

Table 5 Change in Institutional Holding and SEO Characteristics

Panel A. Change in Institutional Holding and SEO Outcomes

This table reports regression results examining the effect of change in institutional holding on outcomes of SEO deals. The sample and regression specification are the same with those in Table 2, except that we replace *Top5holding* with *Holdchange*. The variable *Holdchange* is defined as $Top5holding_{Q-1} - Top5holding_{Q-4}$, where $Top5holding_{Q-1}$ and $Top5holding_{Q-4}$ are the firm's top five institutional ownership at the 1st quarter and 4th quarter prior to the SEO, respectively. The dependent variables are three measures of SEO outcomes. CAR3 is the three-day accumulative abnormal returns over the issuance date. BHAR3 is the buy-and-hold abnormal return over three years after the SEO deals. ROE3 refers to the industry-adjusted average ROE over three years after the SEO. The table only reports the coefficient of *Holdchange*; all the controls have almost the same coefficients with those in Table 2. Corresponding p-values from robust standard errors clustered at the firm level are reported in brackets. The notation ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

	(1) CAR3	(2)BHAR3	(3)ROE3
Holdchange	**0.027**	**-49.08**	**8.39****
	[0.99]	**[0.17]**	**[0.02]**

Panel B. Change in Institutional Holding and SEO Size

This table reports regression results examining the effect of change in institutional holding on the size of SEO deals. The sample and regression specification are the same with those in Table 3, except that we replace *Top5holding* with *Holdchange*. The dependent variables are (1) the proceeds of SEO, (2) the proceeds deflated by the firm's total asset, and (3) the proceeds deflated by firm's market value of equity. The table only reports the coefficient of *Holdchange*; all the controls have almost the same coefficients with those in Table 3. Corresponding p-values from robust standard errors clustered at the firm level are reported in brackets. The notation ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

	(1) Proceeds	(2) Proceeds/Total Asset	(3) Proceeds/MV Equity
Holdchange	**23.32****	**8.57**	**34.21**
	[0.04]	**[0.12]**	**[0.16]**

Panel C. Change in Institutional Holding and Likelihood of SEO Completion

This table reports results examining the effect of change in institutional holding on the likelihood of SEO completion. The sample and regression specification are the same with those in Table 4, except that we replace *Top5holding* with *Holdchange*. The dependent variable equals to one if the announced deal is completed and zero otherwise. The coefficients are estimates of the marginal effect on the probability when all of the independent variables are at their mean value. The table only reports the coefficient of *Holdchange*; all the controls have almost the same coefficients with those in Table 4. Corresponding p-values from robust standard errors clustered at the firm level are reported in brackets. The notation ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

	Model (1)	Model (2)	Model (3)
Holdchange	**0.033**	**0.034**	**0.045**
	[0.39]	**[0.37]**	**[0.28]**

Table 6 Two-stage Least Square Analysis of SEO Outcome

This table reports the two-stage least square regression results examining the effect of institutional holding on outcomes of SEO decisions. The sample consists of 6950 completed SEO deals from the period January 1, 1980, to December 31, 2004. The dependent variables are three measures of SEO outcomes. CAR3 is the three-day accumulative abnormal returns over the issuance date. BHAR3 is the buy-and-hold abnormal return over three years after the SEO deal. ROE3 refers to the industry-adjusted average ROE over three years after the SEO. Top5holding is the proportion of the firm's common shares owned by the top five institutional investors. Two instrumental variables are applied: share turnover and stock volatility. In the first stage, we regress Top5holding on share turnover, stock volatility, firm size, year dummies and industry dummies. In the second stage, we regress SEO outcomes on the fitted value of Top5holding from the first stage as well as controls. The notation ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

	(1) CAR3	(2)BHAR3	(3)ROE3
Instrument for Top5holding	**12.79** **[0.02]**	**70.01** **[0.57]**	**38.87***** **[0.001]**
FirmSize	0.11 [0.36]	-1.49 [0.54]	1.04*** [0.000]
PastReturn	-0.13 [0.25]	-2.78 [0.27]	1.92*** [0.000]
ROE	0.27 [0.15]	3.65 [0.39]	8.22*** [0.000]
M/B	-0.04 [0.45]	0.58 [0.61]	-1.44*** [0.000]
Leverage	-0.08 [0.88]	-13.12 [0.26]	-0.41 [0.71]
Asset-liquidity	-1.29** [0.03]	-4.71 [0.72]	-10.51*** [0.000]
Capital Expenditure	2.13* [0.08]	-42.19 [0.11]	12.25*** [0.000]
Year&Industry Dummies	Yes	Yes	Yes
Constant	-3.82* [0.09]	60.11 [0.23]	-7.34 [0.11]
N	6286	5931	5880
Adjusted-R2	4%	2%	27%