Spillover Effects of SEO Announcements in Institutional Blockholding Networks

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Abstract

We examine whether a firm's equity financing decision (SEO) affects the value of non-SEO firms that share its largest institutional blockholder. We find that non-SEO firms experience negative returns around other portfolio firms' SEO announcements. This spillover effect is more pronounced when issuers and non-issuers have high information asymmetry, are overvalued prior to SEOs, or share similar firm characteristics. The effect is also more evident when non-issuers plan to issue equity or when issuers engage in market timing. These results suggest that institutional blockholding network increases investors' adverse selection concerns for issuers as well as non-issuers in the same portfolio.

Keywords: Seasoned equity offering, Spillover effect, Institutional blockholder, Adverse selection, Information asymmetry, Market timing, Agency problem

JEL Classification: G14, G30, G32

In recent years, multiple blockholdings by institutional investors have become a common and important feature of the ownership structure for publicly listed firms in the U.S. For example, using institutional ownership data from CDA/Spectrum Institutional (13F) Holdings for the period 1991 to 2009, we find that a firm's largest institutional investor on average serves as the largest institutional blockholder for six different firms at the same time. These multiple blockholdings by institutions can create important information networks among firms in the same portfolio, with large institutional investors collecting and distributing value-relevant information about their portfolio member firms. Such information networks created by the same institutional blockholding (hereafter, blockholding networks) may allow firms and their shareholders to share and react to new information with respect to other firms in the same portfolio. Blockholding networks may also create significant operating and financial interdependence across firms in the same portfolio since institutional blockholders can influence their portfolio firms through their stylistic investment strategies (Barberis and Shleifer (2003), Teo and Woo (2004), Froot and Teo (2008)), or by monitoring their portfolio firms' major corporate decisions (Holderness (2003), Kang, Luo, and Na (2012), Massa and Žaldokas (2012)).[1] The potential information sharing and corporate policy interdependence within the blockholding network suggest that a firm's financing and investment decisions impact the value of both the firm and other firms in the same portfolio through information spillovers.

In this paper we examine this unexplored question of information spillover effects among firms belonging to the same blockholding network using seasoned equity offerings (SEOs) as our experiment. To test the importance of blockholding networks in transmitting information from one firm to another, we focus on firms' largest institutional blockholder. First, these blockholders are more likely to move the

[1] Massa and Žaldokas (2012) show that block ownership in multiple firms (coownership) creates financial links among member firms because an increase in the credit risk of peer firms raises the focal firm's credit risk. Consistent with this result, we find evidence of operating and financial interdependence among member firms in the same blockholding network. Specifically, we find that increases in peer firms' leverage, cash holdings, and investments lead to increases in the focal firm's leverage, cash holdings, and investments, suggesting that blockholding networks created by common largest institutional blockholders lead to policy interdependence among otherwise independent firms. See Section IV.C for a detailed discussion of these results.

stock prices of their portfolio firms through their large trading and active monitoring.[2] Second, focusing on a single largest institutional blockholder (instead of all institutional blockholders) allows us to investigate how institution characteristics affect the spillover effects of SEO announcements on non-issuers in the same blockholding network in a clean and unambiguous way.

We use SEOs as our experiment because they are among the most important financial decisions that firms make, significantly impacting firms' investment policy and capital structure as well as major shareholders' ownership stakes due to their dilution effects. As a consequence, stock offers by firms in the blockholding network are likely to reveal information about the value of institutional investors' stock portfolios, their stock-picking styles and characteristics, and monitoring incentives and abilities, and hence are likely to have significant effects on the value of non-SEO firms in the portfolio. Furthermore, SEO announcements are largely unanticipated and typically associated with negative valuation effects due to adverse selection concerns (Myers and Majluf (1984)).

We propose the adverse selection concern hypothesis in explaining the importance of blockholding networks in transmitting SEO information across portfolio firms and creating interdependent valuation effects. Previous studies show that the announcement of new public equity issues is associated with a decrease in the announcing firm's stock price.[3] The most widely accepted interpretation for this result is that SEOs convey information about issuers' adverse selection problems (Myers and Majluf (1984)). Since managers have insider information about current assets in place and future investment opportunities that outside investors do not have, they will issue equity only when the payoff to old shareholders from taking positive NPV projects outweighs the cost of issuing shares at a bargain price. New investors, knowing their informational disadvantage, will ask for a price discount to minimize the risk associated with buying overvalued stocks, resulting in a negative stock price reaction to new equity offerings. The adverse selection concern hypothesis is based on this argument and institutional style investing, and posits

[2] On average our sample firms have two institutional blockholders that own at least 5% of the firm's outstanding shares and 42% of our sample firms have only one institutional investor as their large blockholders. The median equity ownership held by the largest institutional blockholder is 9.2% and that held by the second largest institutional blockholder is 5.7%.

[3] See Eckbo and Masulis (1995) for a review of the evidence.

that blockholding network increases investors' adverse selection concerns for issuers as well as non-issuers in the same portfolio, leading to negative stock returns for non-issuers around issuers' SEO announcements.

As is well documented in the literature, fund managers tend to engage in style investing, holding stocks that share similar characteristics. Brown and Goetzmann (1997, 2003) show that mutual funds and hedge funds follow distinct investment and management styles. Chan, Chen, and Lakonishok (2002) document that mutual fund styles remain consistent over time although some funds with poor past performance are likely to change their styles. Froot and Teo (2008) find that institutions allocate funds across style groups more intensively than across random stock groups. Harford, Jenter, and Li (2011) further show that institutional blockholders apply characteristic-based selection screens (e.g., size, market-to-book, and prior stock return characteristics) when choosing stocks, ending up with portfolios consisting of large stakes in stocks with similar characteristics. They also show that the cross-sectional determinants of institutional cross-holdings do not change much over time.

In addition, recent studies suggest that commonality in misvaluation exists among firms within the same style. Barberis and Shleifer (2003) build a theoretical model to show that style investing generates common factors in the returns of assets that happen to be grouped into the same style. They argue that these return factors can be unrelated to common factors in cash flows and accompanied by higher average returns for reasons that have nothing to do with risk, suggesting that style investing increases the correlation between assets in the same style. Consistent with this argument, using Morningstar styles for mutual funds, Teo and Woo (2004) find strong evidence of style-level reversals and momentum even after controlling for the variation in the fundamental risk and stock-level reversals and momentum. Pirinsky and Wang (2004), Sun (2008), and Faias et al. (2011) also show that institutions' style investing contributes to excessive comovement in stock prices.

These arguments and findings on institutional style investing and its impact on firm value suggest that stocks held by the same large institutional investor tend to share similar characteristics and thus have high comovement in their prices. Therefore, stock offerings by firms with the largest institutional blockholder

can convey value-relevant information not only for issuers but also for non-issuers in the same blockholding network. If investors perceive that an issuer's stock is overvalued, they may infer that non-issuers' stocks in the same blockholding network are also overvalued due to institutional style investing and common characteristics that these stocks shares, resulting in a spillover effect. In other words, outside investors' information asymmetry and institutional style investing increase adverse selection concerns for both SEO issuers and non-issuers in the same blockholding network, leading to negative stock price externalities from SEO issuers to non-issuers.

The adverse selection concern hypothesis leads to several testable implications. First, it predicts that the spillover effects are more evident when informative asymmetry between outside investors and SEO issuers (non-issuers) is greater since information asymmetry exacerbates adverse selection effects in the new issue market. Second, it predicts that the adverse effects of SEOs on the market value of non-issuers are more severe when issuer and non-issuer stocks are more overvalued (Myers and Majluf (1984)) or when issuers engage in market timing. Third, it predicts that the spillover effects are more pronounced when non-issuers plan to issue equity in the near future since the market's ex-ante valuation of adverse selection will be stronger for firms that are expected to sell information-sensitive securities in the near term. Fourth, the adverse selection concern hypothesis predicts that the spillover effects are stronger when the issuers and non-issuers in the same network share similar characteristics or similar corporate policies. Finally, it predicts that the spillover effects are higher when the fund size managed by issuers' largest institutional blockholders or the number of their stock holdings as the largest institutional blockholder is small. To the extent that the firm characteristics in a blockholding network owned by a small institution or those in a blockholding network that consists of a small number of stocks tend to be relatively homogeneous (Indro et al. (1999), Chen et al. (2004), Pollet and Wilson (2008)), outside investors' concerns about overvaluation of all firms in the portfolio are likely to be particularly strong for the portfolios with these characteristics.

Using a large sample of SEOs from 1991 to 2009 by firms that have a largest institutional blockholder, we find that, consistent with previous studies, issuers experience a large and significant negative

cumulative abnormal return (CAR) around SEO announcement dates. More important, consistent with the adverse selection concern hypothesis, we find that SEO announcements lead to a significant negative market reaction for non-SEO firms in the same blockholding network: both value- (equally-) weighted portfolios of non-SEO firms and individual non-SEO firms in the same network experience significantly negative mean and median CARs around SEO announcements made by member portfolio firms. In terms of economic magnitudes, the CAR (-1, 1) for portfolios of non-SEO firms (individual non-SEO firms) on average is 0.4% (0.3%) lower when issuers experience a negative CAR (-1, 1) than when issuers experience a positive CAR (-1, 1). In terms of dollar values, these numbers suggest that during the three days around the SEO announcement, portfolios of non-SEO firms (individual non-SEO firms) in the same blockholding network as the issuer on average lose 122 (4.2) million more when the issuer's CAR (-1, 1) is negative than when the issuer's CAR (-1, 1) is positive.[4] These spillover effects of SEO announcements across a blockholding network remain significant even after controlling for intra- and inter-industry information externalities (Szewcyk (1992), Johnson et al. (2011)).

Multivariate regressions of the abnormal returns for value-weighted portfolios of non-SEO firms further show that the sensitivity of these abnormal returns to the abnormal returns for SEO firms is higher when issuing firms have greater information asymmetry, or when they have a higher pre-SEO stock price run-up. We also find that the spillover effects are stronger when the largest institutional blockholders has small fund size, or when they serve as the largest institutional blockholder for a small number of firms. These results are consistent with the predictions of the adverse selection concern hypothesis.

To further test the adverse selection concern hypothesis, we investigate whether the spillover effects as captured using portfolio returns are more pronounced when issuing firms time the market. We construct three market timing indicators: 1) an indicator that takes the value of one if the SEO firm has an above-median pre-SEO three-year market-adjusted abnormal stock return and a negative CAR (-1, 1), and zero otherwise; 2) an indicator that takes the value of one if the SEO firm has an above-median pre-SEO one-year market-adjusted abnormal stock return and a negative CAR (-1, 1), and zero otherwise; and 3)

[4] The average size of largest blockholding portfolio for the sample institutional investor is $30.5 billion.

an indicator that takes the value of one if the SEO firm has an above-median pre-SEO three-year market-adjusted abnormal stock return, a negative CAR (-1, 1), and a below-median post-SEO one-year market-adjusted abnormal stock return, and zero otherwise. Consistent with the adverse selection concern hypothesis, we find significant negative externalities for non-SEO firms when the offering firms time the market, particularly when the largest institutional blockholders are small, or when they serve as the largest institutional blockholder for a small number of firms.

The results from multivariate regressions of abnormal returns for individual non-SEO firms corroborate those from multivariate regressions of abnormal returns for value-weighted portfolios of non-SEO firms. Specifically, we find that the spillover effects for non-issuing firms are especially strong when non-issuing firms have a high level of information asymmetry, when they are more likely to be overvalued, or when they plan to issue equity in the near future following the issuer's SEO. The spillover effects are also strong when SEO firm and non-SEO firms in the same blockholoding network share similar characteristics (e.g., book-to-market, price momentum) or similar policies (e.g., leverage policy). We also find that the adverse effects of SEO firms' market timing on the market value of non-SEO firms are stronger for informationally opaque non-SEO firms.

We test several alternative explanations for our findings, including agency problems of firms in the same blockholoding network, the changes in their investment opportunities, and institutions' portfolio rebalancing. We find little evidence that supports these alternative explanations.

Our paper contributes to existing literature in several ways. First, to the best of our knowledge, our study is the first to examine how equity offering announcement effects spill over to independent firms that share the same largest institutional blockholder as the issuer, and whether these spillover effects are affected by institution characteristics. Matvos and Ostrovsky (2007) and Harford, Jenter, and Li (2011) study how indirect cross-ownerships formed by institutions' large stakes facilitate bidder-target relationships between portfolio firms and affect bidder returns around acquisition announcements. Azar (2011) examines the voting of common institutional shareholders in the setting of product–market collusion and Jung (2012) investigates how a firm's change in voluntary disclosure behavior is

subsequently emulated by other firms in the industry that share common institutional investors with the first-mover firm. Massa and Žaldokas (2012) show that coownership creates indirect financial links between coowned firms. Our paper is distinct from these studies in that we investigate how a common largest institutional blockholder creates interdependent valuation effects for member firms in the institution's portfolio when one firm in the portfolio makes important financing decisions.

Second, our paper extends the literature on the potential horizontal or vertical industry spillover effects of SEO announcements. Szewczyk (1992) documents significant negative abnormal returns for non-announcing firms operating in the same industry as SEO-announcing firms, while Slovin, Sushka, and Polonchek (1992) do not find such intra-industry effects for industrial firms. Johnson et al. (2011) examine equity offering spillover effects along the supply chain and find significant negative customer announcement returns around suppliers' stock offer announcements. We extend these studies by examining how a firm's stock offer affects other firms in the same blockholding network that are not the issuer's rivals or trading partners.

Third, our study extends the literature on the relation between institutional ownership and stock price comovement. Pirinsky and Wang (2004), Sun (2008), and Faias et al. (2011) show that institutional ownership (or institutional clientele) increases excessive comovement in stock prices either through institutions' style investing or wealth constraints. Unlike these studies, we examine the effect of a firm's financing decisions on stock return comovement of portfolio firms that share the same largest institutional blockholder, and show that stock return comovement around equity offering announcements occurs mainly through investors' adverse selection concerns and information revelation about firm value along the blockholding network.

This paper proceeds as follows. Section I describes the data and sample characteristics. Section II discusses the measures of abnormal returns and presents univariate results. In Sections III and IV, we provide multivariate regression results using portfolio returns of non-issuing firms in the same portfolio and the returns of individual non-issuing firms, respectively. In Section V, we present results from tests of

several alternative explanations for our empirical findings and various robustness tests. Section VI summarizes and concludes the paper.

I. Data

A. Sample

Our initial sample begins with all SEOs reported in Thomson's SDC new issues database during the 1991 to 2009 period. We require that offering firms be covered in the Compustat, CRSP, and Thomson Reuters CDA/Spectrum Institutional (13F) Holdings databases.[5] We next require that offering firms not belong to financial (SIC 6000-6999) and utility (SIC 4910-4940) industries. Sample SEO firms must also have a largest institutional blockholder that serves as the largest institutional blockholder for at least one non-SEO firm, be listed on the NYSE, Nasdaq, or Amex, and have a CRSP share code of 10 or 11 (ordinary common shares). We delete pure secondary offers, rights offerings, private placements, and offers with a missing filing date or an offer price lower than $5. In addition, using the SEO's filing date provided by SDC as its initial announcement date (Jegadeesh, Weinstein, and Welch (1993), Denis (1994), Clarke, Dunbar, and Kahle (2001), Datta, Iskandar-Datta, and Raman (2005), Purnanandam and Swaminathan (2006), Kim and Purnanandam (2011)),[6] we search the Compustat, CRSP event tapes, and Thomson's SDC databases for issuer and non-issuers' major confounding corporate news events (e.g., M&As, dividend and earnings announcements, company name changes, delistings, and other types of

[5] The CDA/Spectrum data are based on the SEC's Form 13F filings. Institutional investors with investment discretion over $100 million or more in equity securities are required to file a quarterly report of all their equity holdings greater than 10,000 shares or $200,000 in market value.

[6] Purnanandam and Swaminathan (2006) examine the actual SEO announcement dates for a subsample of approximately 300 firms during the 1993 to 2000 period and find that 90% of these firms made their SEO announcements on the same day as their filing dates, with the majority of the remaining firms making announcements one day before the filing date. Kim and Purnanandam (2011) conduct a manual search of SEO announcement dates over the 1993 to 2006 period using *Factiva* and find that only 28 cases (about 5% of the sample) have an announcement date that precedes the filing date. In 16 of these 28 cases, the announcement date does not precede the filing date by more than two days.

securities offerings) within one trading day before and after the SEO filing date and exclude deals with such events from the sample.[7]

Taken together, the above sample selection criteria yield a final sample of 2,240 SEOs by 1,374 industrial firms and 201,895 non-SEO firms that share the same largest institutional blockholder as the issuing firms. Our sample issuers and non-issuers share 333 largest institutional blockholders.

B. Summary Statistics

Table I Panel A reports the distribution of the 2,240 SEO firms by year and the corresponding mean and median numbers of non-SEO firms that share the same largest institutional blockholder as the SEO firm. The panel shows a significant increase in the frequency of offers during the late 1990s and a decline during the late 2000s. The annual mean (median) number of non-issuers that share the same largest institutional blockholder as the issuer is 93 (28).

Table I Panel B presents the distribution of the sample SEO firms by industry and the corresponding mean and median percentages of non-SEO firms that operate in the same two-digit SIC industry as the SEO firm. The frequency of equity offerings is highest in manufacturing industries (1,068 (47.6%)), followed by the service (458 (20.4%)), wholesale and retail trade (254 (11.3%)), mining and construction (248 (11.1%)), and agriculture, forestry, and fishing (10 (0.4%)) industries. The mean (median) percentage of non-SEO firms that operate in the same industry as the SEO firm is highest in manufacturing industries (11.25% (6.67%)), followed by the mining and construction (11.09% (2.93%)), services (9.49% (3.85%)), and transportation (6.23% (1.67%)) industries. The median SEO firm in the agriculture, forestry, and fishing industry and that in the wholesale and retail trade industry do not have corresponding non-SEO firms that operate in the same industry and share the same largest institutional blockholder as the issuer.

[7] To be precise, when calculating the CAR for portfolios of non-SEO firms (an individual non-SEO firm) over a certain event window, we delete observations with major confounding events during the corresponding event window.

Table II presents summary statistics for issue-, institution-, issuer-, and non-issuer-specific characteristics. Detailed definitions for the variables in Table II are provided in the Appendix. Panel A reports on issue-specific characteristics. Mean (median) offer proceeds equal $118.18 ($64.9) million and the mean (median) percent of primary shares sold in the offering is 91% (100%). About half of the issues are underwritten by investment banks with a high reputation rank and 32% of the issues are Rule 415 shelf registrations.[8]

Panel B reports on the characteristics of institutions that serve as the largest institutional blockholder for issuing firms. The mean (median) fund size is $106.74 ($25.75) billion. The mean (median) quarterly portfolio turnover, portfolio return, and portfolio weight are 11.19% (9.91%), 6.01% (5.68%), and 1.27% (0.17%), respectively. The average (median) institution serves as the largest institutional blockholder for 138 (40) firms.[9] Mutual funds and investment advisors account for 29% and 54% of the sample institutions, respectively.

Panel C compares the characteristics of SEO firm and non-SEO firms in the same blockholding network. Several findings are worth noting. Compared to non-SEO firms, SEO firms are younger and have higher Tobin's *q*, higher return volatility, higher R&D intensity, and higher discretionary accruals. SEO firms also experience a higher three- (one-) year stock price run-up prior to the SEO filing date and earn a lower post-issue one-year market-adjusted abnormal stock return. These results suggest that among firms in the same blockholding network, those that exhibit higher information asymmetry or those that are more overvalued are more likely to issue stock, all else being equal. Further, SEO firms have higher leverage and higher total institutional ownership than non-SEO firms. We also find that on average, 9.84% of non-SEO firms issue equity within two years after the issuer's SEO. About 5.94% of non-SEO firms

[8] The underwriter is regarded as having a high reputation if it has a ranking of 9 on a 9-point scale based on Jay Ritter's underwriter rankings.

[9] In untabulated tests, we find that the mean (median) holding period by the largest institutional blockholder in issuing firms is 6.87 (5) quarters prior to the offering and 6.5 (4) quarters after the offering. Controlling for pre-SEO blockholding periods in the regressions does not change the results reported in the paper.

operate in the same two-digit SIC industry as the SEO firm and only 0.02% of non-SEO firms maintain a major customer-supplier relationship with SEO firms.[10]

II. Univariate Results

A. Measures of Abnormal Returns

We employ a standard event study methodology to examine the valuation effect of equity issuance announcements. Using 150 days of return data, beginning 160 trading days and ending 11 trading days before the SEO announcement date, we estimate a one-factor market model in which the CRSP value-weighted index is used as the market portfolio. Abnormal returns are computed as the difference between realized returns and estimated returns from the market model. We sum the daily abnormal returns to compute the CAR.

To examine the spillover effects of SEO announcements in the same blockholding network, we use both portfolio and individual firm approaches to calculate the CARs around SEO announcement dates. An important advantage of using the portfolio approach is that it allows us to diversify away the cross-sectional dependence of returns for individual non-SEO firms that arises when using the individual firm approach to estimate abnormal returns. In other words, since we employ the market-model approach to estimate abnormal returns for non-SEO firms in the same blockholding network, the estimation periods and event windows used to compute their abnormal returns perfectly overlap when individual returns are used in the analysis. As a result, the *t*-statistics in the analyses of individual returns are biased upwards. However, the portfolio returns do not allow us to examine the effect of non-SEO firms' financial characteristics on the information spillover in the blockholding network. We therefore also conduct analyses using individual firm returns and their financial characteristics to examine the spillover effect of equity issuance announcements.

[10] We use the COMPUSTAT Segment Customer database to identify whether non-SEO firms maintain a major customer-supplier relationship with SEO firms. Major customers are those that account for 10% or more of sales of the SEO firms.

B. Univariate Results

Table III reports the mean and median CARs for SEO firms, portfolios of non-SEO firms, and individual non-SEO firms over several different event windows. Panel A presents the CARs using the CRSP value-weighted return as the market return. The CARs for the portfolios of non-SEO firms that share the same largest institutional blockholder as the SEO firm are obtained by combining non-SEO firm returns into a single value-weighted portfolio and estimating the market model for each SEO event. We use the market capitalization of each individual non-SEO firm as the portfolio weight. Consistent with prior literature, we find that our sample SEO firms earn statistically significant negative mean and median CARs over all event windows considered (Eckbo (1986), Masulis and Korwar (1986), Mikkelson and Partch (1986)). Although the mean and median CAR (-1, 1) and CAR (-2, 2) for value-weighted portfolios of non-SEO firms are not significant, the mean and median CAR (-3, 3) and CAR (-5, 5) are negative and significant. In untabulated tests, we also investigate whether the value-weighted portfolios of all non-SEO firms covered in the Compustat, CRSP, and 13F databases that do not share the same largest institutional blockholder as the issuing firm show any significant response to the SEO announcement. We find that their mean and median CARs over all event windows we consider are small, ranging from -0.01% to 0.01%, and insignificant. These results suggest that the blockholding network does indeed create spillover effects among firms in the same portfolio by transmitting financing announcement effects from one firm to another.

It is possible, however, that the negative value-weighted portfolio returns observed in Table III Panel A simply reflect negative industry information shocks around SEO announcements (Szewczyk (1992)). To exclude the possibility that industry spillover effects drive our results, we divide non-SEO firms into those in the same versus different industries as the SEO firm (using two-digit SIC codes) and examine whether our results on portfolio returns in Panel A are mainly attributable to non-SEO firms in the same industry as the SEO firm. We find that the mean and median CAR (-3, 3) and CAR (-5, 5) for value-weighted portfolios of non-SEO firms in different industries are negative and significant. However, the corresponding returns for value-weighted portfolios of non-SEO firms in the same industries are not

significant except for the median CAR (-5, 5), which is negative and significant at the 1% level. These results suggest that the negative horizontal industry shocks in the SEO issuers' industries are unlikely to drive the negative announcement returns for non-SEO firms in the same blockholding network.

The last column of Table III Panel A shows that the CARs for individual non-SEO firms are more negative and significant than the CARs for the portfolios of non-SEO firms. Their mean (median) CAR (-1, 1), CAR (-2, 2), CAR (-3, 3), and CAR (-5, 5) are -0.05% (-0.23%), -0.10% (-0.32%), -0.15% (-0.37%), and -0.30% (-0.53%), respectively, all of which are significant at the 1% level. In untabulated tests, we divide non-SEO firms into those in the same versus different industries as the SEO firm and estimate the abnormal returns separately for these two subgroups. We find that the mean and median CARs for individual non-issuers whose industries are different from those of the issuers are negative and significant at the 1% level for all event windows considered. However, the corresponding CARs for individual non-issuers in the same industries as the issuers are not significant. These results further confirm that negative industry information shocks around SEO announcements are not the main reason for the negative announcement returns of non-SEO firms in the same portfolio.

Table III Panel B presents the CARs using the CRSP equally-weighted return as the market return. Portfolio returns of non-SEO firms are estimated by combining non-SEO firm returns into a single equally-weighted portfolio and estimating the market model for each SEO event. We find that the results echo those in Panel A, but are larger in magnitude and show higher significance. In particular, the median CAR (-1, 1) and CAR (-2, 2) for both portfolios of non-SEO firms and individual non-SEO firms are negative and significant. These results indicate that the spillover effects of SEO announcements in the same blockholding network are more pronounced for small non-SEO firms than large non-SEO firms.

Negative and positive SEO announcement effects might convey different information about SEOs and thus offset each other. To unambiguously investigate the relation between the returns of issuers and non-issuers in the same blockholding network, we divide our sample SEO firms into two groups according to whether their CARs are positive or negative and estimate the abnormal returns for issuers and non-issuers separately for these two groups. The results are reported in Table III Panels C and D,

respectively. We find that when issuers experience significant negative (positive) abnormal returns, both value-weighted portfolios of non-issuers (regardless of whether they are in the same industry as the issuer) and individual non-SEO firms experience significant negative (positive) abnormal returns. However, the spillover effects of SEO announcements on the CARs of value-weighted portfolios of non-issuers tend to be stronger when the issuers have negative announcement returns than when they have positive announcement returns, suggesting that such spillover effects are stronger when offer announcements convey bad news.

III. Multivariate Analyses: Using Abnormal Returns for Portfolios of Non-Issuers

To examine whether the spillover effects of SEO announcements in the same blockholding network can be explained by investors' adverse selection concerns, we conduct multivariate regressions of the CARs for the portfolios of non-SEO firms on issue-, issuer-, and institution-specific characteristics.

A. Spillover Effects after controlling for Issue and Issuer Characteristics

Table IV presents the estimates from ordinary least squares (OLS) regressions of CAR (-1, 1) for value-weighted portfolios of non-SEO firms on issue and issuer characteristics.[11] Our key explanatory variables are the issuer CAR (-1, 1), an indicator for a negative issuer CAR (-1, 1) that takes the value of one if the issuer CAR (-1, 1) is negative and zero otherwise, and interaction terms between the issuer CAR (-1, 1) and issuer characteristics. Following previous research, we use the following issue and issuer characteristics measured at the pre-offer year-end as control variables: offer proceeds, percent of primary shares sold, high reputation underwriter indicator, NYSE listed indicator, Rule 415 shelf registration indicator, log of total assets, leverage, Tobin's *q*, total institutional ownership, pre-SEO three-year stock price run-up, and pre-SEO three-year stock return volatility (Jung, Kim, and Stulz (1996), Lee and Masulis (2009), Kim and Purnanandam (2011)). We also control for the largest institutional blockholder's

[11] In untabulated tests, we also experiment with CAR (-3, 3) for the value-weighted portfolios of non-SEO firms as the dependent variable. We find that the results are almost identical to those reported in the paper.

fund size, portfolio return, portfolio turnover, and portfolio weight in each SEO firm, all of which are measured as of the calendar quarter-end that immediately precedes the SEO announcement date. In addition, we include year, industry, and institution fixed effects to control for potential time trends, industry effects, and unobservable institution heterogeneity, respectively.

In regressions (1) through (6), we use all non-SEO firms in estimating portfolio returns. The coefficient estimate on the issuer CAR (-1, 1) is 0.032 in regression (1), which is significant at the 1% level. The coefficient estimate on the indicator for a negative issuer CAR (-1, 1) is -0.004 in regression (2), which is significant at the 1% level. This result suggests that the abnormal return for the portfolio of non-SEO firms is on average 0.4% lower when the issuer experiences a negative SEO announcement return than when it experiences a positive SEO announcement return. In regressions (3) and (4), we add institution characteristics to regressions (1) and (2), respectively. We find that the results do not change.

Overall, these results show that the spillover effects of SEO announcements on the market value of non-SEO firms in the same blockholding network are statistically and economically significant.

In unreported tests, we divide SEO firms into those with positive and negative CARs (-1, 1) and reestimate regression (3) separately for these two subsamples. We find that the relation between the issuer CARs and the CARs for the value-weighted portfolios of non-issuers is positive and significant only for issuers with a negative CAR (-1, 1). This result suggests that the spillover effect is particularly pronounced when SEO announcements convey bad news to the market.

In regressions (5) and (6), we include interaction terms between the issuer CAR (-1, 1) and issuer characteristics. In regression (5), we include interaction term between the issuer CAR (-1, 1) and the indicator for high discretionary accruals, which takes the value of one if an issuer's discretionary accruals are larger than the sample median and zero otherwise. Lee and Masulis (2009) show that discretionary accruals can serve as a good proxy for offering firms' information uncertainty. We find that the coefficient estimate on the interaction term is positive and significant at the 5% level. This result suggests that higher issuer information asymmetry exacerbates the spillover effects in the blockholding network.

To examine whether an issuer's market timing behavior can explain the spillover effects observed in regressions (1) through (4), in regression (6) we follow prior literature and replace the indicator for high discretionary accruals in regression (5) with the pre-SEO three-year stock price run-up (Loughran and Ritter (1995, 1997), DeAngelo, DeAngelo, and Stulz (2010)). We find that the coefficient estimate on the interaction term between the issuer CAR and the pre-SEO three-year stock price run-up is positive and significant at the 5% level. Thus, the sensitivity of the abnormal return for the portfolio of non-SEO firms to the abnormal return for SEO firms is particularly high when issuers are likely to engage in market timing. Overall, these results support the adverse selection concern hypothesis.

To alleviate the concern that the spillover effects we document in Table IV are driven by negative industry information shocks around SEO announcements, we divide non-SEO firms into those in different industries than and those in the same industry as the SEO firm and calculate the CAR (-1, 1) for the value-weighted portfolios of non-SEO firms separately for these two groups. We then reestimate regressions (3) and (4) separately using these portfolio CARs (-1, 1) as the dependent variable. In regressions (7) and (8), we use the CAR (-1, 1) for the value-weighted portfolio of non-SEO firms in different industries than the SEO firm as the dependent variable. The results are similar to those reported in regressions (3) and (4), suggesting that our spillover effects are not driven by negative industry shocks documented in previous studies. In regressions (9) and (10), we use the CAR (-1, 1) for the value-weighted portfolio of non-SEO firms in the same industry as the SEO firm as the dependent variable. Although the coefficient estimate on the issuer CAR (-1, 1) is not significant, the coefficient estimate on the indicator for a negative issuer CAR (-1, 1) is negative and significant at the 5% level. This result is consistent with the intra-industry spillover effects of equity offerings documented by Szewczyk (1992).

B. Spillover Effects and Largest Institutional Blockholder Characteristics

To investigate how largest institutional blockholder characteristics affect the spillover effect of equity offerings in the blockholding network, we estimate a battery of regressions by adding largest institutional blockholder characteristics to the Table IV regressions. The results are reported in Table V.

In regressions (1) and (2), we include the indicator for issuing firms' largest institutional investors holding a small number of largest blockholdings, which takes the value of one if the number of largest institutional blockholdings by a firm's largest institutional blockholder is lower than the sample median and zero otherwise. We find that the coefficient estimate on the interaction between this indicator and the issuer CAR (-1, 1) (the indicator for a negative issuer CAR (-1, 1)) is significantly positive (negative) at the 5% level, indicating that the spillover effect of equity offerings is stronger when the blockholding network is made up of a small number of portfolio firms.

In regressions (3) and (4), we include an indicator for small funds, which takes the value of one if the total market value of equity holdings managed by a firm's largest institutional blockholder is lower than the sample median and zero otherwise. The interaction between this indicator and the issuer CAR (-1, 1) (the indicator for a negative issuer CAR (-1, 1)) is significantly positively (negatively) related to the CAR (-1, 1) for the value-weighted portfolio of non-SEO firms. To the extent that small institutions hold more homogeneous stocks than large institutions because they can buy and sell stocks at low transaction costs with a small price impact (Indro et al. (1999), Chen, et al. (2004), Pollet and Wilson (2008)),[12] these results suggest that the homogeneity of stock characteristics in the portfolio creates adverse selection concerns for non-issuing firms as well as for the SEO firm. These results therefore provide additional support for the adverse selection concern hypothesis.

[12] Indro et al. (1999), Chen et al. (2004), and Pollet and Wilson (2008) find that a large asset base erodes fund performance because the large transaction costs associated with a high bid-ask spread and the large price impact induced by trading a large number of shares force a large fund to invest in its inferior investment ideas, whereas a small fund can easily put all of its money in its best investment strategy. They also argue that unlike large funds with hierarchies in which managers may expend too much research effort generating hard information to convince others to implement their ideas, small funds with low hierarchy costs allow effective communication of soft information among fewer investment managers. These results suggest that small funds with few investment strategies hold more homogeneous stocks than large funds.

In regressions (5) and (6), we include the indicator for a high portfolio weight in the issuing firm, which takes the value of one if the largest institutional blockholder's portfolio weight in the issuing firm is higher than the sample median and zero otherwise. We find that the interaction between this indicator and the issuer CAR (-1, 1) (the indicator for a negative issuer CAR (-1, 1)) has a significantly positive (negative) coefficient. This result suggests that spillover effects in a blockholding network are stronger when institutional investors put more wealth into the issuing firm and thus investors have greater adverse selection concerns, supporting the adverse selection concern hypothesis. Overall, the results in Table V indicate that when issuing firms' largest institutional investors maintain a small number of largest block holdings, when they manage small funds, or when their portfolio weights in the issuing firms are larger, outside investors' concerns about issuers' adverse selection problems are more likely to spill over to other non-issuers in the same blockholding network, intensifying the negative market reactions to other non-issuers.

C. Effects of Issuers' Market Timing on Returns for Portfolio of Non-issuers

One important prediction of the adverse selection concern hypothesis is that the spillover effects of SEO announcements on non-issuing firms in the same blockholding network, if they exist, should be more pronounced when issuers exploit windows of opportunity by timing their stock offering (i.e., issue equity when their stocks are overvalued).[13] We examine this prediction using issuer stock price run-up prior to a SEO announcement and whether the issuer announcement effect is negative to measure the issuer's market timing motive (Loughran and Ritter (1995, 1997), DeAngelo, DeAngelo, and Stulz (2010)). We also use the extent of unfavorable post-SEO stock price changes to further identify the issuer's market timing motive since DeAngelo, DeAngelo, and Stulz (2010) argue that a firm with higher past stock returns and lower future stock returns is more successful in timing the issuance of its stocks.

[13] In their adverse selection model, Myers and Majluf (1984) show that investors react negatively to SEO announcements since equity issuance signals information about the overvaluation of the issuing firms. Extending the Myers and Majluf (1984) model, Lucas and McDonald (1990) further show that managers delay equity offerings until their stock price rises to or above its true value.

Specifically, we use the following three indicators as proxies for an issuing firm's market timing motives: 1) an indicator that takes the value of one if the SEO firm has an above-median pre-SEO three-year market-adjusted abnormal stock return and a negative CAR (-1, 1), and zero otherwise; 2) an indicator that takes the value of one if the SEO firm has an above-median pre-SEO one-year market-adjusted abnormal stock return and a negative CAR (-1, 1), and zero otherwise; and 3) an indicator that takes the value of one if the SEO firm has an above-median pre-SEO three-year market-adjusted abnormal stock return, a negative CAR (-1, 1), and a below-median post-SEO one-year market-adjusted abnormal stock return, and zero otherwise. Prior studies also use the market-to-book ratio to measure a firm's market timing motive (Baker and Wurgler (2002)). However, the market-to-book ratio can also proxy for a firm's investment opportunities, which makes it difficult to draw meaningful conclusions about the adverse selection concern hypothesis, and thus we do not use this variable in measuring SEO firms' market timing opportunities.

Table VI presents estimates from OLS regressions in which the dependent variable is the CAR (-1, 1) for the value-weighted portfolio of non-SEO firms in the same blockholding network as the issuing firm. Our key variables of interest are the market timing indicators and their interactions with institution characteristics. We use the same control variables as those used in the Table IV regressions.

In regression (1), the coefficient estimate on the indicator for a high pre-SEO three-year price run-up and a negative CAR is negative and significant at the 1% level. The coefficient estimate suggests that the value-weighted portfolio return for non-SEO firms is on average 0.4% lower if other portfolio firms in the same blockholding network engage in market timing by issuing equity when their stocks are overvalued. The results do not change when we use the indicator for a high pre-SEO one-year price run-up and a negative CAR as the market timing variable (regression (2)).

In regression (3), we capture marketing timing using the indicator for a high pre-SEO three-year stock price run-up, a negative CAR (-1, 1), and a low post-SEO one-year market-adjusted abnormal stock return. The significantly negative coefficient estimate on this variable confirms that spillover effects are more pronounced when SEO firms engage in market timing.

In regression (4), we find that the coefficient estimate on the interaction term between the market timing indicator for a high pre-SEO three-year price run-up and a negative CAR (-1, 1) and the indicator for a small number of largest blockholdings is negative and significant at the 5% level and in regression (5), the coefficient estimate on the interaction term between this market timing indicator and the indicator for small funds is negative and significant at the 1% level. Thus, the negative effects of an issuer's market timing on the value of other firms in the same blockholding network observed in previous regressions are particularly severe when member firms in the network are relatively homogeneous and share similar style.

IV. Multivariate Analyses: Using Abnormal Returns for Individual Non-Issuers

To investigate whether controlling for non-SEO firms' financial characteristics has any impact on the spillover effects of equity offering announcements in the blockholding network, in this section we conduct regression analyses in which we use the CAR (-1, 1) for individual non-SEO firms in the same blockholding network as the dependent variable. To alleviate the potential concern about the cross-sectional dependence of returns for individual non-SEO firms belonging to the same portfolio, we follow Froot's (1989) procedure and cluster the standard errors at the event level and use unbiased *t*-statistics to evaluate the statistical significance of each explanatory variable.

A. Spillover Effects after Controlling for Issuer and Non-Issuer Characteristics

The results are reported in Table VII. In regression (1), we control for the same set of financial characteristics for both the SEO firm and the non-SEO firms: log (total assets), leverage, Tobin's *q*, total institutional ownership, portfolio weight, pre-SEO three-year stock price run-up, and pre-SEO three-year stock return volatility. In addition, we include year, industry, and institution fixed effects. Our key variable of interest is the issuer CAR (-1, 1). The coefficient estimate on the issuer CAR (-1, 1) is 0.035, which is significant at the 1% level. In regression (2), we replace the issuer CAR (-1, 1) with the indicator for a negative issuer CAR (-1, 1). The coefficient estimate on this indicator is -0.003, which is significant

at the 1% level, suggesting that non-issuers in the same portfolio group as the issuer on average observe 0.3% lower abnormal returns if the SEO announcement is unfavorably received by the market.

In regressions (3) and (4), to control for potential horizontal industry spillover effects (Szewcyk (1992)), we include the indicator for whether the SEO firm and non-SEO firms operate in the same two-digit SIC industry. We also include the indicator for whether the SEO firm and non-SEO firms have a customer-supplier relationship to control for potential vertical industry spillover effects (Johnson et al. (2011)). We further control for institutional blockholder characteristics (fund size, portfolio return, and portfolio turnover) in the regressions. We find results that are similar to those in regressions (1) and (2).

Overall, the results in Table VII show that the spillover effects of SEO announcements in the same blockholding network are both statistically and economically significant, not only at the portfolio level but also at the individual firm level.

To examine whether the spillover effects we document in Table VII are different depending on non-issuers' information asymmetry, overvaluation, or planned future SEOs, we estimate the regressions by including the interaction terms between the indicator for a negative issuer CAR (-1, 1) and a variety of measures of non-SEO firms' information asymmetry (overvaluation and intended future SEO activity). Table VIII reports the results. In regressions (1) through (7), we use the following seven information asymmetry variables as the key explanatory variables, respectively: indicator for a small firm, indicator for a young firm, indicator for a volatile firm, indicator for a high R&D firm, indicator for a small number of analysts following, indicator for high analyst forecast dispersion, and indicator for high discretionary accruals. We find that the coefficient estimate on the indicator for a negative issuer CAR (-1, 1) is negative and significant at the 1% level in all seven regressions. More important, consistent with the adverse selection concern hypothesis, the coefficient estimates on the interaction terms involving these information asymmetry variables are all negative and significant. These results suggest that when the issuer realizes a negative abnormal return around the offering announcement date, other non-issuers in the same blockholding network observe a more negative market reaction if the market perceives that they have high information asymmetry.

In regressions (8) and (9), we include the measure of non-issuers' overvaluation. We find that the coefficient estimates on the interaction term between the pre-SEO three-year stock price run-up for non-SEO firms and the indicator for a negative issuer CAR (-1,1) as well as the interaction term between the indicator for a low post-SEO one-year market-adjusted abnormal stock return for non-SEO firms and the indicator for a negative issuer CAR (-1, 1) are both negative and significant, which indicates that when issuers' announcement returns are negative, non-issuers in the same portfolio that are more overvalued experience stronger negative announcement effects.

Likewise, in regression (10), when we include the indicator for a non-SEO firm's equity issuance in the two years after the issuer's SEO, we find that the coefficient estimate on the interaction term between this indicator and the indicator for a negative issuer CAR (-1, 1) is negative and significant at the 5% level. This result suggests that the spillover effects of SEO announcements on non-issuers in the same blockholding network are particularly severe when non-issuers plan to make equity issuance in the near term. Since investors' adverse selection concerns are likely to be stronger if non-issuers also engage in equity issuance in the near future, this result is consistent with the adverse selection concern hypothesis. Overall, these results provide strong support for the adverse selection concern hypothesis. When investors have adverse selection concerns about equity issuance by firms in the blockholding network, they will update their value-relevant information about other firms in the same portfolio. To the extent that investors' extrapolation about non-issuers' misvaluation is particularly severe when non-issuers have high information asymmetry, when they are overvalued, or when they are expected to engage in equity offerings in the near term to presumably exploit opportunities to time the market, investors will react more negatively when non-issuers possess these characteristics.

B. Effects of Issuers' Market Timing on Individual Non-Issuer Returns

To further test the validity of the adverse selection concern hypothesis, we examine whether the abnormal returns for individual non-SEO firms are related to issuers' market timing motives and their interactions with non-issuers' information asymmetry. The results are presented in Table IX. The

dependent variable is the CAR (-1, 1) for individual non-SEO firms and our key variables of interest are the three market timing indicators used in Table VI and the interaction terms between the market timing indicators and non-issuers' information asymmetry measures. The other control variables are the same as those used in Table VII.

In regressions (1) through (3), we separately employ the three market timing indicators used in Table VI as the key explanatory variable. We find that the coefficient estimates on all three of these indicators are negative and significant at the 1% level. These results echo those using portfolio returns as the dependent variable and suggest that spillover effects of market timers' SEO announcements in the same blockholding network exist for both portfolios of non-issuers and individual non-issuers.

In regressions (4) through (7), we include the interaction term between the market timing indicator used in regression (1) and the indicator for, respectively, small non-issuers, young non-issuers, volatile non-issuers, and non-issuers with a small number of analysts following. We find that the coefficient estimates on all these interaction terms are negative and significant, suggesting that the negative effects of issuers' market timing on the value of non-issuers in the sample portfolio is particularly pronounced when non-issuers are perceived to have greater information asymmetry. Since investors' adverse selection concerns about firms' stock offerings are higher when the firms engage in market timing and overvaluation concerns for non-issuers in the same blockholding network are more pronounced when non-issuers have greater information asymmetry, these results support the adverse selection concern hypothesis.

C. Spillover Effects for Firms Sharing Similar Characteristics and Corporate Policies

The adverse selection concern hypothesis predicts that the spillover effects documented above should be more pronounced when firms in the same blockholding network share similar characteristics or policies. To test this prediction, we first create indicators for similarity in firm characteristics between the issuer and the non-issuer in the same network. We then include these variables in regression (4) of Table VII as well as their interactions with the indicator for negative issuer CAR (-1, 1). More specifically,

following Daniel et al. (1997) we construct characteristic-based rankings for the universe of stocks listed on NYSE, AMEX, and Nasdaq from a quarterly triple sort on size (market equity value), B/M (book-to-market ratio), and price momentum (past 12-month compounded stock return), resulting in a ranking on each dimension for each firm that ranges from 1 to 5. We then define an indicator for similar size (B/M, price momentum) that takes the value of one if the squared difference in the ranking of size (B/M, price momentum) between the issuer and non-issuer is lower than the sample median and zero otherwise.

The results are reported in Table X. We find that the coefficient estimate on the interaction term between the indicator for a negative issuer CAR (-1, 1) and the indicator for similar B/M (price momentum) is significantly negative in regression (1) ((2)). These results suggest that investors discount non-issuers' valuation more heavily if non-issuers share similar B/M or price momentum characteristics as those of the issuer, supporting the adverse selection concern hypothesis. However, the coefficient estimate on the interaction term between the indicator for a negative issuer CAR (-1, 1) and the indicator for similar size is statistically insignificant (not reported).

Even if institutional investors do not invest in similar stocks in the first place, they can create financial and operational interdependence among their portfolio firms over time (Massa and Žaldokas (2012)). In untabulated tests, we find that a firm's leverage, cash holding, and investment policies are significantly positively correlated with the average leverage, cash holding, and investment policies of other firms in the same blockholding network.[14] Hence, we repeat the above analyses by replacing the similarity ranking in firm characteristics with the similarity ranking in firm policies. More specifically, we construct policy-based rankings for all the firms covered in CRSP and COMPUSTAT by sorting them into five quintiles according to their respective corporate policies (i.e., leverage, cash holding, and investment policies). We then define a similar policy indicator that takes the value of one if the squared

[14] Leverage policy is measured as the book value of short-term debt plus the book value of long-term debt divided by the book value of total assets; cash holding policy is measured as cash plus short-term investments divided by the book value of total assets; and investment policy is measured as capital expenditures divided by the book value of total assets.

difference in policy ranking between the issuer and the non-issuer is lower than the sample median and zero otherwise. We find that the coefficient estimate on the interaction that pertains to the indicator for a similar leverage policy is negative and significant (regression (3)) but the coefficient estimate on the interaction that pertains to the indicator for a similar cash holding (investment) policy is insignificant (not reported). Since leverage is an important determinant of stock value (Harris and Raviv (1991), Masulis (1983)), stock returns of firms with similar leverage policies tend to be correlated with each other. Thus, investors are more likely to infer value-relevant information from the issuer to non-issuers in the same network if they share similar leverage policies.

Overall, these results indicate that outside investors are more likely to extrapolate issuers' misvaluation to non-issuers in the same blockholding network if issuers and non-issuers conform to a particular style, consistent with the adverse selection concern hypothesis.

V. Alternative Explanations and Robustness Tests

To examine whether alternative explanations can explain our results, in this section we conduct a series of additional tests using both the CAR (-1, 1) for the value-weighted portfolio of non-SEO firms and the CAR (-1, 1) for individual non-SEO firms as the dependent variable. Below, we briefly summarize the results of these tests.

A. Agency Problem Explanation

A potential alternative explanation for the spillover effects observed above is that an SEO announcement signals unfavorable information to the market about the quality of the overall governance structures that the largest institutional blockholders adopt for their portfolio firms. SEOs produce a large cash inflow for firms that issue primary shares. Jensen (1986) argues that managers with large free cash flows have incentives to overinvest beyond the optimal level even though this investment is not profitable. If the firm issues equity not because of attractive future investment opportunities but because of managers' incentives to engage in value-destroying empire building (Pilotte (1992), Denis (1994), Jung, Kim, and

Stulz (1996), Kim and Purnanadam (2011)), then to the extent that an SEO announcement signals unfavorable information to the market about the quality of the overall governance structures that the institutional blockholders adopt for their portfolio firms, it could negatively impact the value of both the issuing firm and non-issuing firms in the same blockholding network.[15] Thus, if the market is able to infer the largest institutional investor's monitoring incentives and abilities from equity offering announcements by one of its portfolio firms, this inference will have a value impact for non-issuing firms in the same portfolio.

Although most of results in the previous sections generally support the adverse selection concern hypothesis, some results are also consistent with the agency problem explanation. For example, in regression (10) of Table VIII, we find that the coefficient estimate on the interaction term between the indicator for a non-SEO firm's equity issuance in the two years after the issuer's SEO and the indicator for a negative issuer CAR (-1, 1) is negative and significant at the 5% level. If equity issuance by non-issuers increases their free cash flows, this result is consistent with the agency problem explanation.

To further examine whether the agency problem can explain our results, we perform two additional tests. The agency problem explanation suggests that the spillover effects of SEO announcements on non-issuing firms are more pronounced when the issuers (non-issuers) have greater agency problems or have poor investment opportunities. Thus, we first follow Lang, Stulz, and Walkling (1991) and include an agency problem indicator that takes the value of one if an issuer's Tobin's *q* is lower than the two-digit SIC industry median Tobin's *q* and its ratio of free cash flows to total assets exceeds the industry median ratio and zero otherwise. We find that neither the coefficient estimate on this agency problem indicator nor that on its interaction with the issuer CAR (-1, 1) is significant in regressions that use the CAR (-1, 1) for the portfolio of non-issuers (individual non-issuers) as the dependent variable. These results do not support Jensen's (1986) free cash flow argument.

[15] Demsetz and Lehn (1985) and Shleifer and Vishny (1986) argue that large institutional blockholders have strong incentives to monitor corporate managers.

Second, we include G-index (Gompers, Ishii, and Metrick (2003)), CEO-chairman duality (Core, Holthausen, and Larcker (1999), Goyal and Park (2002)), and the proportion of independent directors on the board (Weisbach (1988)) as measures of a firm's corporate governance quality.[16] We find that neither these variables nor their interactions with the issuer CAR (-1, 1) are significantly related to the CAR (-1, 1) for the portfolio of non-issuers (individual non-issuers). These results, together with those in Table V, which show that the spillover effects of SEO announcement on non-issuers in the same blockholding network do not exist when institutional investors have weak incentives to monitor the issuers, do not support the agency problem hypothesis.[17]

B. Change in Investment Opportunities

Another potential alternative explanation for our results is that SEOs signal issuers' (non-issuers') future changes in investment opportunities. To test whether changes in firm investment policy drive our results, we follow Pilotte (1992), Denis (1994), and Jung, Kim, and Stulz (1996) and measure investment opportunities using an issuer's (a non-issuer's) Tobin's *q*, annual growth rates in total assets, sales, equity, and net operating income, and average ratio of capital expenditures to total assets subsequent to offerings. We find that the sensitivity of the abnormal returns for portfolios of non-issuers (individual non-issuers) to the abnormal returns for issuers is not significantly related to issuers' (individual non-issuers') investment opportunities.

C. Portfolio Rebalancing

[16] Information on these governance variables comes from RiskMetrics Database.

[17] Another important prediction of the agency problem argument is that the spillover effects of SEO announcements on non-issuing firms are more pronounced when the largest institutional investors have less incentive to monitor, such as when their portfolio weight in the issuer is small. However, in regressions (5) and (6) of Table V, we find that the interaction between the indicator for a high portfolio weight in the issuing firm, which takes the value of one if the largest institutional blockholder's portfolio weight in the issuing firm is higher than the sample median and zero otherwise, and the issuer CAR (-1, 1) (the indicator for a negative issuer CAR (-1, 1)) has a significantly positive (negative) coefficient. This result suggests that spillover effects in a blockholding network are stronger when institutional investors put more wealth into the issuing firm, which is inconsistent with the agency problem explanation.

Our findings may also be driven by the common largest institutional blockholders adding new stocks into their portfolios while selling shares in both the issuer and non-issuers, causing the price comovement between the issuer and non-issuers. We investigate this possibility by including changes in the common largest institutional blockholder's ownership in the issuer and non-issuers from the quarter-end prior to the SEO announcement date to the quarter-end immediately after the SEO announcement date in the regressions. We find that including these variables does not change the spillover effects we document above.

Since an institution's trading behavior can predict portfolio firms' future stock returns (Nofsinger and Sias (1999)), in other untabulated tests, we control for the change in the common largest institutional blockholder's ownership in its portfolio firms during the quarter immediately before the announcement date in the regressions. We obtain similar results. Overall, these results suggest that institutions' portfolio rebalancing is not likely to drive our finding for spillover effects.[18]

D. Other Tests

D.1. Trading of Issuers' Stocks by Institutions around the SEO Announcement Date

If the spillover effects we document are due to investors' concern about non-issuers' misvaluation induced by their perception of an issuer's overvaluation, they should be stronger when the common largest institutional blockholder sells more issuer shares around the SEO announcement. To test this prediction, in untabulated tests, we first divide the sample into three subsamples according to the change in the largest institutional blockholder's ownership in the SEO firm from the quarter-end prior to the

[18] It is also possible that the common largest institutional blockholder purchases shares in an SEO firm and sells shares in non-issuers. However, this portfolio rebalancing strategy predicts that the issuer experiences a positive stock price reaction while non-issuers in the same portfolio experience a negative stock price reaction due to the selling pressure from the common largest institutional blockholder, leading to a negative relation between the issuer CAR and the non-issuer CAR around the SEO announcement. Although the prediction of this negative relation is opposite to results in Table III, we test the effect of this portfolio rebalancing strategy on the CARs for non-issuers by including an indicator that takes the value of one if the common largest institutional blockholder purchases an SEO firm's shares and sells non-issuers' shares from the quarter-end prior to the issuance date to the quarter-end immediately after the issuance date, and zero otherwise, and its interaction with issuer CAR (-1, 1) (negative issuer CAR (-1, 1) indicator) in regression (3) (regression (4)) of Table VII. We find that the coefficient estimates on these two variables are not significant while the coefficient estimate on issuer CAR (-1, 1) (negative issuer CAR (-1, 1) indicator) remains positive (negative) and significant.

announcement date to the quarter-end immediately after the announcement date: a decrease in ownership of more than 1%, an increase in ownership of more than 1%, and the remaining ownership changes. We then reestimate models (3) and (4) in Table IV separately for these three subgroups. Consistent with the adverse selection concern hypothesis, we find that the positive association between the issuer CAR and the CAR for the portfolio of non-issuers in model (3) and the negative association between the negative issuer CAR indicator and the portfolio CAR of non-SEO firms in model (4) are only significant when the largest institutional blockholders' ownership in the issuers decreases by more than 1% around the announcement date.

D.2. Likelihood of SEOs by Non-issuers after Issuers' SEOs

One important implication of the adverse selection concern hypothesis is that if the market infers from issuers' equity offerings that non-issuers in the same blockholding network are overvalued due to institutions' style investing, these non-issuers are also likely to conduct equity offerings shortly after issuers' equity offerings to exploit their overvaluation. To test this implication, using quarterly holdings data for firms in the same blockholding network, in an untabulated test we estimate a logit regression of the likelihood of equity offerings by non-issuers after issuers' equity offerings. The key independent variable of interest is an indicator that takes the value of one if the firm in the network announces an SEO during the past one year (quarter) and zero otherwise. The dependent variable is an indicator (future equity issuance indicator) that takes the value of one if one of the non-issuing firms in the same blockholding network announces an SEO during the year (quarter) immediately after the quarter-end of an issuer's equity offering, and zero otherwise. The regression controls for firm characteristics (size, leverage, Tobin's q, ROA, total institutional ownership, pre-SEO three-year stock price run-up, and pre-SEO three-year stock return volatility) and the largest institutional blockholder's characteristics (fund size, portfolio return, and portfolio turnover). We also include quarter and industry fixed effects and cluster the standard errors by institutions.

We find that the coefficient estimate on the future equity issuance indicator is significantly positive at the 1% level, suggesting that if one firm in the blockholding network engages in an SEO, other firms in the same network are more likely to issue equity in the near future. This result is consistent with the adverse selection concern hypothesis.

D.3. Abnormal Returns Using Fama French-Carhart Four Factor Model

To alleviate the concern that underlying common factors drive the price synchronicity between issuers and non-issuers, in untabulated tests we use the CARs calculated over the same estimation and event windows using the Fama-French-Carhart four-factor model (Carhart, 1997)[19] and reestimate model (3) of Tables IV and VII. We find that the positive associations between the issuer CAR (-1, 1) and the CAR (-1, 1) for the portfolio of non-issuers and between the issuer CAR (-1, 1) and non-issuer CAR (-1, 1) remain statistically significant. Thus, the spillover effects of SEO announcements in the blockholding network are significant even after taking into account nonmarket risk factors in the analysis.

D.4. Daily Stock Price Comovement

Pirinsky and Wang (2004), Sun (2008), and Faias et al. (2011) show that institutional ownership induces excessive comovement in stock prices, suggesting that the positive relation between stock returns for issuer and non-issuers around SEO announcements is simply a manifestation of daily stock price comovement among firms held by the same largest institutional blockholder. To address this concern, we first run a time-series regression of an issuer's daily stock return on the daily return for the value-weighted market portfolio and the daily return for the portfolio of non-issuers (individual non-issuers) in the quarter before the announcement date and use the coefficient estimate on the daily return for the portfolio of non-issuers (individual non-issuers) as the measure of stock price comovement

[19] The four factors are the daily market index (CRSP value-weighted index), SMB (daily return difference between the returns on small and large size portfolios), HML (daily return difference between the returns on high and low book-to-market-ratio portfolios), and UMD (daily return difference between the returns on high and low prior return portfolios), obtained from Kenneth French's website.

between the issuer and the portfolio of non-issuers (individual non-issuers) in the same blockholding network. We then include this measure of stock price comovement in model (3) of Table IV (Table VII). We find that the spillover effects of SEO announcements remain the same, suggesting that our main finding is not driven by daily stock price comovement among member firms.

VI. Summary and Conclusion

In this paper we examine the effect of SEO announcements on the market value of other firms that share the same largest institutional blockholder as the issuing firm. We find that non-issuers observe a negative market reaction when other portfolio firms in the same blockholding network announce equity offerings. This stock price comovement in the blockholding network holds regardless of whether we use portfolio returns for non-issuers or individual non-issuer returns, and remains significant even after controlling for horizontal and vertical industrial relationships between the issuer and non-issuers.

To identify the source of the spillover effects of SEO announcements in the blockholding network, we propose the adverse selection concern hypothesis, which posits that outside investors' information asymmetry and institutional style investing increase adverse selection concerns for both SEO issuers and non-issuers in the same blockholding network, leading to negative stock price externalities from SEO issuers to non-issuers. Consistent with this hypothesis, we find that the positive association between the abnormal returns for the value-weighted portfolio of non-SEO firms and the abnormal returns for the SEO firms is stronger when the issuing firm has higher information asymmetry or when it experiences a higher stock price run-up prior to its SEO announcement. The positive relation is also stronger when the largest institutional blockholder manages a small fund, when the number of its largest institutional block holdings is small, or when its portfolio weight in the issuing firm is large. Furthermore, the spillover effects of SEO announcements in the blockholding network are more pronounced when non-SEO firms have higher information uncertainty, when they are more overvalued, when they issue equity in the near future after the issuer's SEO, or when they share similar firm characteristics (as measured by book-to-market and price momentum) or a similar firm (leverage) policy as the issuer.

In addition, we find stronger negative stock price externalities from issuers to non-issuers in the same blockholding network when SEO firms engage in market timing. The negative externalities are also stronger when the largest institutional blockholder manages a small fund, when the number of its largest institutional blockholdings is small, or when non-SEO firms in the same blockholding have higher information asymmetry. We examine several alternative explanations for our findings such as SEO firms' (individual non-SEO firms') severity of agency problems, the changes in their investment opportunities, and institutions' portfolio rebalancing strategy, and find little evidence to support them.

Overall, these findings suggest that investors' concerns about the value of non-issuing firms around SEO announcements by other firms in the same blockholding network are particularly severe when the issuer and non-issuers have high information asymmetry, when they are substantially overvalued, or when the firms held by common institutional investors are relatively homogeneous in terms of firm characteristics and corporate policies, consistent with the adverse selection concern hypothesis.

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Table I
Sample Distribution by Year and Industry

The sample consists of 2,240 SEOs by firms reported in the Thomson Financial SDC New Issues database over the 1991 to 2009 period and 201,895 non-SEO firms that share the same largest institutional blockholder as the issuing firms. To be included in the final sample of issuing firms, they must meet the following requirements: have a largest institutional blockholder that also serves as the largest institutional blockholder for at least one non-SEO firm, be covered in the Compustat, CRSP, and Thomson Reuters CDA/Spectrum Institutional (13F) Holdings databases, not belong to the financial (SIC 6000-6999) and utility (SIC 4910-4940) industries, be listed on the NYSE, Nasdaq, or Amex, and have CRSP share code 10 or 11 (ordinary common shares). Panel A presents the distribution of sample SEOs by year and the mean and median numbers of non-SEO firms that share the same largest institutional blockholder as the SEO firm. Panel B presents the distribution of sample SEOs by industry and the mean and median percentages of non-SEO firms that operate in the same industry as the SEO firm.

Panel A. Distribution of SEOs and non-SEO firms by Year

Year	Number of SEOs	Number of non-SEO firms that share the same largest institutional blockholder as the SEO firm	
		Mean	Median
1991	119	43	13
1992	95	68	17
1993	149	104	17
1994	82	131	24
1995	149	117	22
1996	169	74	21
1997	131	105	41
1998	123	90	39
1999	164	73	23
2000	173	74	28
2001	143	50	23
2002	105	93	50
2003	123	85	19
2004	98	94	23
2005	60	102	24
2006	83	150	37
2007	80	89	11
2008	66	120	78
2009	128	112	18

Panel B. Distribution of SEOs and non-SEO firms by Industry

Two-digit SIC industry	Number of SEOs	Percentage of non-SEO firms that operate in the same industry as the SEO firm and share the same largest institutional blockholder as the SEO firm	
		Mean	Median
Agriculture, forestry, and fishing (Two-digit SIC =01-09)	10	0.00%	0.00%
Mining and construction (Two-digit SIC=10-17)	248	11.09%	2.93%
Manufacturing (Two-digit SIC=20-39)	1,068	11.25%	6.67%
Transportation (Two-digit SIC =40-48)	202	6.23%	1.67%
Wholesale and retail trade (Two-digit SIC=50-59)	254	2.87%	0.00%
Services (Two-digit SIC=70-89)	458	9.49%	3.85%

Table II
Issue, Institution, SEO firm, and Non-SEO Firm Characteristics

The sample consists of 2,240 SEOs by firms reported in the Thomson Financial SDC New Issues database over the 1991 to 2009 period and 201,895 non-SEO firms that share the same largest institutional blockholder as the issuing firms. To be included in the final sample of issuing firms, they must meet the following requirements: have a largest institutional blockholder that also serves as the largest institutional blockholder for at least one non-SEO firm, be covered in the Compustat, CRSP, and Thomson Reuters CDA/Spectrum Institutional (13F) Holdings databases, not belong to the financial (SIC 6000-6999) and utility (SIC 4910-4940) industries, be listed on the NYSE, Nasdaq, or Amex, and have CRSP share code 10 or 11 (ordinary common shares). All firm (institution) characteristics are measured as of the fiscal year-end (calendar quarter-end) that immediately precedes the SEO announcement date. Industries are classified using two-digit SIC codes. The Appendix provides a detailed description of the construction of the variables. The numbers in the test-of-difference columns are *p*-values. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Panels A and B present descriptive statistics for issue and institutional blockholder characteristics, respectively. Panel C reports the characteristics of SEO and non-SEO firms that share the same largest institutional blockholder.

Panel A. Issue characteristics

	Mean	Median
Proceeds ($ millions)	118.18	64.90
Percent of primary shares sold	0.91	1.00
High reputation underwriter (indicator)	0.49	0.00
Rule 415 Shelf (indicator)	0.32	0.00

Panel B. Institution characteristics

	Mean	Median
Fund size ($ billions)	106.74	25.75
Portfolio turnover (%)	11.19	9.91
Portfolio return (%)	6.01	5.68
Portfolio weight (%)	1.27	0.17
Number of largest blockholding	137.94	40.00
Mutual funds (indicator)	0.29	0.00
Investment advisors (indicator)	0.54	1.00

Panel C. Characteristics of SEO firm and non-SEO firms in the same blockholding network

	SEO firms (N=2,240): A		Non-SEO firms (N= 20,1895): B		Test of difference (A-B)	
	Mean	Median	Mean	Median	*t*-test	Wilcoxon z-test
Total assets ($ millions)	1441.66	265.26	1384.48	284.96	0.678	0.475
Firm age (years)	13.25	8.00	15.00	11.00	0.000***	0.000***
Tobin's *q*	2.62	1.75	2.28	1.57	0.000***	0.000***
Leverage	0.28	0.26	0.22	0.19	0.000***	0.000***
Total institutional ownership	0.57	0.57	0.54	0.56	0.000***	0.003***
NYSE listed (indicator)	0.35	0.00	0.34	0.00	0.440	0.000***
Pre-SEO three-year stock price run-up	0.90	0.35	0.37	-0.04	0.000***	0.000***
Pre-SEO one-year stock price run-up	0.66	0.34	0.17	-0.01	0.000***	0.000***
Post-SEO one-year market-adjusted stock return	-0.02	-0.10	0.04	-0.05	0.000***	0.000***
Pre-SEO three-year stock return volatility	0.17	0.15	0.16	0.14	0.000***	0.000***
R&D intensity	0.09	0.00	0.06	0.00	0.000***	0.000***
Number of analyst following	7.29	6.00	7.12	6.00	0.231	0.000***
Analyst forecast dispersion	0.20	0.05	0.23	0.05	0.300	0.003***
Discretionary accruals	-0.10	-2.75	-5.55	-10.27	0.198	0.000***

Percent of non-SEO firms that issue equity in next 2 years of an issuer's SEO	NA	NA	9.84%	0.00%	NA	NA
Percent of non-SEO firms in the same industry as the SEO firm	NA	NA	5.94%	0.00%	NA	NA
Percent of non-SEO firms that have the customer-supplier relationship with the SEO firm	NA	NA	0.02%	0.00%	NA	NA

Table III

Cumulative Abnormal Returns (CARs) for SEO and Non-SEO Firms that Share the Same Largest Institutional Blockholders around the SEO Announcement Date

The sample consists of 2,240 SEOs by firms reported in the Thomson Financial SDC New Issues database over the 1991 to 2009 period and 201,895 non-SEO firms that share the same largest institutional blockholder as the issuing firms. To be included in the final sample of issuing firms, they must meet the following requirements: have a largest institutional blockholder that also serves as the largest institutional blockholder for at least one non-SEO firm, be covered in the Compustat, CRSP, and Thomson Reuters CDA/Spectrum Institutional (13F) Holdings databases, not belong to the financial (SIC 6000-6999) and utility (SIC 4910-4940) industries, be listed on the NYSE, Nasdaq, or Amex, and have CRSP share code 10 or 11 (ordinary common shares). The issuer CARs and individual non-issuer CARs are computed as the difference between realized returns and estimated returns using the market model over the pre-event period from day -160 to day -11. We use the CRSP value- (equally-) weighted return as the market return. The CARs for the portfolios of non-SEO firms that share the same largest institutional blockholder as the SEO firm are obtained by combining non-SEO firm returns into a single value- (equally-) weighted portfolio and estimating the market model for each SEO event. For value-weighted portfolio CARs, the market capitalization of each individual non-SEO firm is used as the portfolio weight. Industries are classified using two-digit SIC codes. The Appendix provides a detailed description of the construction of the variables. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Using the value-weighted CRSP returns as the market return: Total sample

Event windows	SEO firms (N = 2,240)		Value-weighted portfolios of non-SEO firms (N = 2,240)		Value-weighted portfolios of non-SEO firms in different industries (N = 2,214)		Value-weighted portfolios of non-SEO firms in same industries (N = 1,513)		Individual non-SEO firms (N = 201,895)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
(-1, 1)	-2.18%***	-2.18%***	0.02%	0.03%	-0.01%	0.02%	0.05%	-0.08%	-0.05%***	-0.23%***
(-2, 2)	-2.44%***	-2.44%***	0.05%	-0.08%	-0.07%	-0.04%	0.02%	-0.13%	-0.10%***	-0.32%***
(-3, 3)	-2.83%***	-2.83%***	-0.17%**	-0.05%*	-0.18%**	-0.07%*	0.04%	-0.23%	-0.15%***	-0.37%***
(-5, 5)	-2.89%***	-2.89%***	-0.39%***	-0.20%***	-0.35%***	-0.21%***	0.01%	-0.52%***	-0.30%***	-0.53%***

Panel B. Using the equally-weighted CRSP returns as the market return: Total sample

Event windows	SEO firms (N = 2,240)		Equally-weighted portfolios of non-SEO firms (N = 2,240)		Equally-weighted portfolios of non-SEO firms in different industries (N = 2,214)		Equally-weighted portfolios of non-SEO firms in same industries (N = 1,513)		Individual non-SEO firms (N = 201,895)	
	Mean	Medan	Mean	Median	Mean	Median	Mean	Median	Mean	Median
(-1, 1)	-2.25%***	-2.15%***	-0.04%	-0.03%*	-0.06%	-0.06%**	0.03%	-0.16%*	-0.08%***	-0.24%***
(-2, 2)	-2.52%***	-2.55%***	-0.12%*	-0.09%**	-0.14%**	-0.09%**	0.00%	-0.22%	-0.14%***	-0.31%***
(-3, 3)	-2.94%***	-2.90%***	-0.25%***	-0.08%**	-0.26%***	-0.09%**	0.01%	-0.18%	-0.20%***	-0.36%***
(-5, 5)	-3.02%***	-3.14%***	-0.50%***	-0.26%***	-0.47%***	-0.26%***	-0.02%	-0.49%***	-0.32%***	-0.47%***

Panel C. Using the value-weighted CRSP returns as the market return: A subsample of SEO firms with negative CARs

Event windows	SEO firms (N = 1,493)	Value-weighted portfolios of non-SEO firms (N = 1,493)	Value-weighted portfolios of non-SEO firms in different industries (N = 1,476)	Value-weighted portfolios of non-SEO firms in same industries (N = 1,000)	Individual non-SEO firms (N = 133,435)

	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
(-1, 1)	-5.72%***	-4.55%***	-0.10%	-0.05%	-0.09%	-0.07%	-0.19%	-0.30%	-0.17%***	-0.30%***
(-2, 2)	-6.91%***	-5.5%***	-0.27%***	-0.15%***	-0.24%***	-0.12%***	-0.47%**	-0.47%**	-0.26%***	-0.43%***
(-3, 3)	-8.24%***	-6.41%***	-0.39%***	-0.15%***	-0.30%***	-0.15%***	-0.59%**	-0.72%**	-0.31%***	-0.51%***
(-5, 5)	-9.92%***	-7.89%***	-0.64%***	-0.35%***	-0.49%***	-0.34%***	-0.88%***	-0.94%***	-0.55%***	-0.68%***

Panel D. Using the value-weighted CRSP returns as the market return: A subsample of SEO firms with positive CARs

Event windows	SEO firms (N = 747)		Value-weighted portfolios of non-SEO firms (N = 747)		Value-weighted portfolios of non-SEO firms in different industries (N = 738)		Value-weighted portfolios of non-SEO firms in same industries (N = 513)		Individual non-SEO firms (N = 68,460)	
	Mean	Medan	Mean	Median	Mean	Median	Mean	Median	Mean	Median
(-1, 1)	4.89%***	3.19%***	0.26%***	0.17%***	0.16%*	0.17%*	0.51%**	0.47%**	0.18%***	-0.09%***
(-2, 2)	6.27%***	4.19%***	0.42%***	0.27%***	0.27%**	0.18%**	0.96%***	0.68%***	0.19%***	-0.11%***
(-3, 3)	6.88%***	4.35%***	0.21%	0.17%	0.03%	0.11%	1.10%***	0.65%***	0.10%***	-0.15%***
(-5, 5)	8.88%***	5.68%***	0.02%	-0.01%	-0.12%	0.00%	1.45%***	0.58%***	0.08%**	-0.28%**

Table IV
OLS Regression of the Three-day Cumulative Abnormal Returns (CARs) for the Portfolios of Non-SEO Firms on SEO Firms' Financial Characteristics

The sample consists of 2,240 SEOs by firms reported in the Thomson Financial SDC New Issues database over the 1991 to 2009 period and 201,895 non-SEO firms that share the same largest institutional blockholder as the issuing firms. To be included in the final sample of issuing firms, they must meet the following requirements: have a largest institutional blockholder that also serves as the largest institutional blockholder for at least one non-SEO firm, be covered in the Compustat, CRSP, and Thomson Reuters CDA/Spectrum Institutional (13F) Holdings databases, not belong to the financial (SIC 6000-6999) and utility (SIC 4910-4940) industries, be listed on the NYSE, Nasdaq, or Amex, and have CRSP share code 10 or 11 (ordinary common shares). The issuer CARs are computed as the difference between realized returns and estimated returns, using the market model over the pre-event period from day -160 to day -11. The CARs for the portfolios of non-SEO firms that share the same largest institutional blockholder as the SEO firm are obtained by combining non-SEO firm returns into a single value-weighted portfolio and estimating the market model for each SEO event. The market capitalization of each individual non-SEO firm is used as the portfolio weight to calculate value-weighted portfolio CARs. In models (1) through (6), the dependent variable is the CAR (-1, 1) for the portfolio of all non-SEO firms that share the same largest institutional blockholder as the SEO firms. In models (7) and (8), the dependent variable is the CAR (-1, 1) for the portfolio of the subsample of non-SEO firms that are not in the same industry as the SEO firm and share the same largest institutional blockholder as the SEO firms. In models (9) and (10), the dependent variable is the CAR (-1, 1) for the portfolio of the subsample of non-SEO firms that are in the same industry as the SEO firm and share the same largest institutional blockholder as the SEO firms. All firm (institution) characteristics are measured as of the fiscal year-end (calendar quarter-end) that immediately precedes the SEO announcement date. Industries are classified using two-digit SIC codes. The Appendix provides a detailed description of the construction of the variables. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *P*-values are in parentheses.

	Portfolio of all non-SEO firms						Portfolio of non-SEO firms in different industries		Portfolio non-SEO firms in same industries	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Issuer CAR (-1,1): A	0.032***		0.032***		0.017	0.025***	0.024***		0.025	
	(0.000)		(0.000)		(0.111)	(0.002)	(0.001)		(0.199)	
Negative issuer CAR (-1,1) (indicator)		-0.004***		-0.004***				-0.003**		-0.007**
		(0.000)		(0.000)				(0.010)		(0.019)
High discretionary accruals (indicator)					0.002					
					(0.151)					
A * High discretionary accruals (indicator)					0.032**					
					(0.034)					
A * Pre-SEO three-year stock price run-up						0.007**				
						(0.017)				
Log (total assets)	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000	0.001	0.001
	(0.829)	(0.827)	(0.919)	(0.922)	(0.862)	(0.951)	(0.934)	(0.919)	(0.399)	(0.404)
Leverage	0.005**	0.005*	0.005**	0.005*	0.005**	0.005**	0.000	0.000	0.012*	0.012*
	(0.047)	(0.058)	(0.047)	(0.059)	(0.041)	(0.043)	(0.914)	(0.991)	(0.072)	(0.072)
Tobin's q	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	-0.001
	(0.789)	(0.703)	(0.691)	(0.614)	(0.762)	(0.763)	(0.427)	(0.377)	(0.296)	(0.272)
Total institutional ownership	0.000	0.001	0.001	0.001	0.001	0.001	0.004	0.004	-0.017**	-0.016*
	(0.879)	(0.811)	(0.813)	(0.739)	(0.819)	(0.847)	(0.247)	(0.221)	(0.043)	(0.054)
Log (proceeds)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.192)	(0.193)	(0.195)	(0.197)	(0.189)	(0.195)	(0.394)	(0.401)	(0.669)	(0.620)
Percent of primary shares sold	-0.002	-0.002	-0.003	-0.002	-0.003	-0.003	-0.003	-0.003	0.005	0.005
	(0.414)	(0.443)	(0.379)	(0.408)	(0.356)	(0.319)	(0.365)	(0.394)	(0.536)	(0.538)

High reputation underwriter (indicator)	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.001	-0.001
	(0.111)	(0.108)	(0.117)	(0.113)	(0.139)	(0.130)	(0.149)	(0.147)	(0.769)	(0.755)
NYSE listed (indicator)	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.001	-0.003	-0.003
	(0.671)	(0.648)	(0.717)	(0.693)	(0.726)	(0.769)	(0.617)	(0.594)	(0.533)	(0.512)
Rule 415 Shelf (indicator)	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001	-0.001	-0.002
	(0.741)	(0.761)	(0.716)	(0.728)	(0.685)	(0.723)	(0.665)	(0.660)	(0.735)	(0.617)
Pre-SEO three-year stock price run-up	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000
	(0.417)	(0.318)	(0.417)	(0.321)	(0.386)	(0.720)	(0.182)	(0.142)	(0.839)	(0.891)
Pre-SEO three-year stock return volatility	-0.001	-0.001	-0.001	-0.001	-0.001	0.000	-0.002	-0.002	0.006	0.007
	(0.942)	(0.908)	(0.939)	(0.903)	(0.938)	(0.997)	(0.823)	(0.806)	(0.781)	(0.765)
Fund size			-0.003**	-0.003**	-0.003**	-0.003*	-0.004**	-0.004**	-0.006	-0.006
			(0.043)	(0.049)	(0.043)	(0.063)	(0.016)	(0.017)	(0.166)	(0.173)
Portfolio return			-0.002	-0.001	-0.002	-0.002	0.005	0.005	0.006	0.007
			(0.675)	(0.779)	(0.730)	(0.636)	(0.359)	(0.313)	(0.659)	(0.608)
Portfolio turnover			0.003	0.004	0.001	0.003	0.009	0.010	0.031	0.031
			(0.850)	(0.803)	(0.930)	(0.845)	(0.584)	(0.548)	(0.559)	(0.565)
Portfolio weight			0.007	0.006	0.006	0.007	0.020	0.018	0.059	0.051
			(0.757)	(0.802)	(0.798)	(0.779)	(0.415)	(0.448)	(0.619)	(0.665)
Constant	0.007	-0.003	0.054*	0.064*	0.039	0.037	0.063*	0.060*	0.003	0.006
	(0.764)	(0.902)	(0.093)	(0.068)	(0.247)	(0.272)	(0.057)	(0.072)	(0.973)	(0.946)
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Institution fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.0534	0.0511	0.0562	0.0537	0.0589	0.0592	0.0536	0.0517	0.0475	0.0505
No. of observations	2,230	2,230	2,227	2,227	2,227	2,227	2,201	2,201	1,506	1,506

Table V
OLS Regression of the Three-day Cumulative Abnormal Returns (CARs) for the Portfolios of Non-SEO Firms on the Largest Institutional Blockholder's Characteristics

The sample consists of 2,240 SEOs by firms reported in the Thomson Financial SDC New Issues database over the 1991 to 2009 period and 201,895 non-SEO firms that share the same largest institutional blockholder as the issuing firms. To be included in the final sample of issuing firms, they must meet the following requirements: have a largest institutional blockholder that also serves as the largest institutional blockholder for at least one non-SEO firm, be covered in the Compustat, CRSP, and Thomson Reuters CDA/Spectrum Institutional (13F) Holdings databases, not belong to the financial (SIC 6000-6999) and utility (SIC 4910-4940) industries, be listed on the NYSE, Nasdaq, or Amex, and have CRSP share code 10 or 11 (ordinary common shares). The issuer CARs are computed as the difference between realized returns and estimated returns, using the market model over the pre-event period from day -160 to day -11. The CARs for the portfolios of non-SEO firms that share the same largest institutional blockholder as the SEO firm are obtained by combining non-SEO firm returns into a single value-weighted portfolio and estimating the market model for each SEO event. The market capitalization of each individual non-SEO firm is used as the portfolio weight to calculate value-weighted portfolio CARs. The dependent variable is the CAR (-1, 1) for the portfolio of all non-SEO firms that share the same largest institutional blockholder as the SEO firms. All firm (institution) characteristics are measured as of the fiscal year-end (calendar quarter-end) that immediately precedes the SEO announcement date. Industries are classified using two-digit SIC codes. The Appendix provides a detailed description of the construction of the variables. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *P*-values are in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
Issuer CAR (-1,1): A	0.015		0.013		0.015	
	(0.120)		(0.175)		(0.111)	
Negative issuer CAR (-1,1) (indicator): B		-0.002		-0.002		-0.002
		(0.129)		(0.146)		(0.221)
Small number of largest institutional blockholding (indicator)	-0.001	0.001				
	(0.631)	(0.620)				
Small fund (indicator)			0.004	0.006**		
			(0.113)	(0.031)		
High portfolio weight (indicator)					0.001	0.003
					(0.770)	(0.181)
A * Small number of largest blockholding (indicator)	0.038**					
	(0.011)					
B * Small number of largest blockholding (indicator)		-0.005**				
		(0.040)				
A * Small fund (indicator)			0.046***			
			(0.002)			
B * Small fund (indicator)				-0.005**		
				(0.027)		
A * High portfolio weight (indicator)					0.042***	
					(0.005)	
B * High portfolio weight (indicator)						-0.005**
						(0.017)
Log (total assets)	-0.000	-0.000	-0.000	-0.000	0.000	0.000
	(0.936)	(0.917)	(0.924)	(0.858)	(0.927)	(0.964)
Leverage	0.005**	0.005*	0.005**	0.005*	0.005*	0.005*
	(0.048)	(0.070)	(0.046)	(0.063)	(0.056)	(0.074)
Tobin's *q*	0.000	0.000	0.000	0.000	0.000	0.000
	(0.749)	(0.669)	(0.869)	(0.789)	(0.750)	(0.655)
Total institutional ownership	0.001	0.001	-0.000	0.000	0.001	0.001
	(0.864)	(0.777)	(0.935)	(0.947)	(0.828)	(0.717)
Log (proceeds)	0.001	0.001	0.001	0.001	0.001	0.001
	(0.208)	(0.192)	(0.226)	(0.192)	(0.216)	(0.189)
Percent of primary shares sold	-0.002	-0.002	-0.002	-0.002	-0.003	-0.002
	(0.396)	(0.398)	(0.437)	(0.436)	(0.367)	(0.393)
High reputation underwriter (indicator)	-0.002	-0.002	-0.002	-0.002*	-0.002	-0.002
	(0.137)	(0.119)	(0.105)	(0.091)	(0.131)	(0.105)
NYSE listed (indicator)	0.001	0.001	0.001	0.001	0.001	0.001
	(0.653)	(0.651)	(0.713)	(0.653)	(0.695)	(0.647)
Rule 415 Shelf (indicator)	0.001	0.001	0.001	0.001	0.001	0.001

	(0.670)	(0.688)	(0.707)	(0.723)	(0.721)	(0.725)
Pre-SEO three-year stock price run-up	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.460)	(0.329)	(0.457)	(0.373)	(0.495)	(0.337)
Pre-SEO three-year stock return volatility	-0.001	-0.001	-0.001	-0.002	-0.000	-0.000
	(0.936)	(0.930)	(0.864)	(0.830)	(0.999)	(0.975)
Fund size	-0.004**	-0.003**			-0.003**	-0.003**
	(0.022)	(0.035)			(0.035)	(0.045)
Portfolio return	-0.001	-0.001	-0.003	-0.003	-0.002	-0.001
	(0.790)	(0.852)	(0.559)	(0.617)	(0.710)	(0.809)
Portfolio turnover	0.002	0.004	0.010	0.011	0.002	0.004
	(0.900)	(0.800)	(0.491)	(0.455)	(0.896)	(0.807)
Portfolio weight	0.009	0.007	0.017	0.014		
	(0.687)	(0.750)	(0.463)	(0.557)		
Constant	0.067*	0.057*	-0.007	0.004	0.061*	0.051
	(0.073)	(0.088)	(0.771)	(0.872)	(0.061)	(0.117)
Year fixed effects	YES	YES	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES	YES	YES
Institution fixed effects	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.0599	0.0562	0.0598	0.0550	0.0603	0.0567
No. of observations	2,227	2,227	2,227	2,227	2,227	2,227

Table VI
OLS Regression of the Three-day Cumulative Abnormal Returns (CARs) for the Portfolios of Non-SEO Firms on Market Timing Indicators

The sample consists of 2,240 SEOs made by firms reported in the Thomson Financial SDC New Issues database over the 1991 to 2009 period and 201,895 non-SEO firms that share the same largest institutional blockholder as the issuing firms. To be included in the final sample of issuing firms, they must meet the following requirements: have a largest institutional blockholder that also serves as the largest institutional blockholder for at least one non-SEO firm, be covered in the Compustat, CRSP, and Thomson Reuters CDA/Spectrum Institutional (13F) Holdings databases, not belong to the financial (SIC 6000-6999) and utility (SIC 4910-4940) industries, be listed on the NYSE, Nasdaq, or Amex, and have CRSP share code 10 or 11 (ordinary common shares). The issuer CARs are computed as the difference between realized returns and estimated returns using the market model over the pre-event period from day -160 to day -11. The CARs for the portfolios of non-SEO firms that share the same largest institutional blockholder as the SEO firm are obtained by combining non-SEO firm returns into a single value-weighted portfolio and estimating the market model for each SEO event. The market capitalization of each individual non-SEO firm is used as the portfolio weight to calculate value-weighted portfolio CARs. The dependent variable is the CAR (-1, 1) for the portfolio of all non-SEO firms that share the same largest institutional blockholder as the SEO firms. High pre-SEO three-year price run-up and negative CAR is a market timing indicator that takes the value of one for SEO firms with an above-median pre-SEO three-year market-adjusted abnormal stock return and a negative CAR (-1, 1), and zero otherwise. High pre-SEO one-year price run-up and negative CAR is a market timing indicator that takes the value of one for SEO firms with an above-median pre-SEO one-year market-adjusted abnormal stock return and a negative CAR (-1, 1), and zero otherwise. High pre-SEO three-year price run-up, negative CAR, and low post-SEO one-year market-adjusted return is a market timing indicator that takes the value of one for SEO firms with an above-median pre-SEO three-year market-adjusted abnormal stock return, a negative CAR (-1, 1), and a below-median post-SEO one-year market-adjusted abnormal stock return, and zero otherwise. All firm (institution) characteristics are measured as of the fiscal year-end (calendar quarter-end) that immediately precedes the SEO announcement date. Industries are classified using two-digit SIC codes. The Appendix provides a detailed description of the construction of the variables. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *P*-values are in parentheses.

	(1)	(2)	(3)	(4)	(5)
High pre-SEO three-year price run-up and negative CAR (indicator): A	-0.004***			-0.002	-0.002
	(0.000)			(0.198)	(0.323)
High pre-SEO one-year price run-up and negative CAR (indicator)		-0.003**			
		(0.013)			
High pre-SEO three-year price run-up, negative CAR, and low post-SEO one-year market-adjusted return (indicator)			-0.005***		
			(0.000)		
Small number of largest blockholding (indicator)				0.000	
				(0.968)	
A * Small number of largest blockholding (indicator)				-0.005**	
				(0.023)	
Small fund (indicator)					0.005**
					(0.034)
A * Small fund (indicator)					-0.006***
					(0.006)
Log (total assets)	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.828)	(0.767)	(0.843)	(0.875)	(0.731)
Leverage	0.005*	0.005**	0.005*	0.005*	0.005*
	(0.066)	(0.038)	(0.055)	(0.072)	(0.070)
Tobin's *q*	0.000	0.000	0.000	0.000	0.000
	(0.448)	(0.647)	(0.465)	(0.470)	(0.561)
Total institutional ownership	0.001	0.001	0.001	0.001	0.000
	(0.689)	(0.724)	(0.709)	(0.738)	(0.876)
Log (proceeds)	0.001	0.001	0.001	0.001	0.001
	(0.174)	(0.220)	(0.242)	(0.194)	(0.180)
Percent of primary shares sold	-0.003	-0.002	-0.002	-0.002	-0.002
	(0.381)	(0.440)	(0.404)	(0.391)	(0.395)
High reputation underwriter (indicator)	-0.002*	-0.002	0.001	-0.002*	-0.002*
	(0.090)	(0.109)	(0.553)	(0.094)	(0.077)
NYSE listed (indicator)	0.001	0.001	-0.002	0.001	0.001
	(0.604)	(0.644)	(0.101)	(0.572)	(0.526)
Rule 415 Shelf (indicator)	0.001	0.001	0.001	0.001	0.001
	(0.666)	(0.537)	(0.633)	(0.736)	(0.648)

Pre-SEO three-year stock return volatility	-0.002	-0.001	-0.001	-0.002	-0.003
	(0.835)	(0.910)	(0.909)	(0.823)	(0.719)
Fund size	-0.003**	-0.003*	-0.003**	-0.003**	
	(0.044)	(0.057)	(0.039)	(0.035)	
Portfolio return	-0.002	-0.001	-0.001	-0.001	-0.003
	(0.753)	(0.772)	(0.793)	(0.783)	(0.576)
Portfolio turnover	0.003	0.004	0.004	0.003	0.010
	(0.867)	(0.796)	(0.792)	(0.836)	(0.491)
Portfolio weight	0.007	0.007	0.007	0.011	0.018
	(0.774)	(0.771)	(0.780)	(0.642)	(0.439)
Constant	0.064*	0.047	0.064*	0.056*	0.002
	(0.068)	(0.148)	(0.067)	(0.092)	(0.916)
Year fixed effects	YES	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES	YES
Institution fixed effects	YES	YES	YES	YES	YES
Adjusted R-squared	0.0525	0.0492	0.0539	0.0555	0.0554
No. of observations	2,227	2,227	2,227	2,227	2,227

Table VII
OLS Regression of the Three-day Cumulative Abnormal Returns (CARs) for Individual Non-SEO Firms

The sample consists of 2,240 SEOs by firms reported in the Thomson Financial SDC New Issues database over the 1991 to 2009 period and 201,895 non-SEO firms that share the same largest institutional blockholder as the issuing firms. To be included in the final sample of issuing firms, they must meet the following requirements: have a largest institutional blockholder that also serves as the largest institutional blockholder for at least one non-SEO firm, be covered in the Compustat, CRSP, and Thomson Reuters CDA/Spectrum Institutional (13F) Holdings databases, not belong to the financial (SIC 6000-6999) and utility (SIC 4910-4940) industries, be listed on the NYSE, Nasdaq, or Amex, and have CRSP share code 10 or 11 (ordinary common shares). The issuer CARs and the individual non-issuer CARs are computed as the difference between realized returns and estimated returns, using the market model over the pre-event period from day -160 to day -11. We use the CRSP value-weighted return as the proxy for the market return. The dependent variable is the CAR (-1, 1) for individual non-SEO firms that share the same largest institutional blockholder as the SEO firms. All firm (institution) characteristics are measured as of the fiscal year-end (calendar quarter-end) that immediately precedes the SEO announcement date. Industries are classified using two-digit SIC codes. The Appendix provides a detailed description of the construction of the variables. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *P*-values are in parentheses.

	(1)	(2)	(3)	(4)
Issuer CAR (-1,1)	0.035***		0.034***	
	(0.000)		(0.000)	
Negative issuer CAR (-1,1) (indicator)		-0.003***		-0.003***
		(0.000)		(0.000)
Log (total assets): SEO firms	-0.000	-0.000	-0.000	-0.000
	(0.611)	(0.785)	(0.632)	(0.827)
Log (total assets): Non-SEO firms	0.000**	0.000**	0.000***	0.000***
	(0.013)	(0.013)	(0.005)	(0.005)
Leverage: SEO firms	-0.002	-0.001	-0.002	-0.001
	(0.239)	(0.344)	(0.199)	(0.288)
Leverage: Non-SEO firms	-0.001	-0.001	-0.001	-0.001
	(0.213)	(0.217)	(0.167)	(0.166)
Tobin's *q*: SEO firms	-0.000*	-0.000	-0.000*	-0.000
	(0.078)	(0.130)	(0.089)	(0.148)
Tobin's *q*: Non-SEO firms	-0.000	-0.000	-0.000	-0.000
	(0.192)	(0.174)	(0.226)	(0.211)
Total institutional ownership: SEO firms	0.002	0.001	0.001	0.001
	(0.403)	(0.418)	(0.507)	(0.521)
Total institutional ownership: Non-SEO firms	-0.005***	-0.005***	-0.005***	-0.005***
	(0.000)	(0.000)	(0.000)	(0.000)
Portfolio weight: SEO firms	0.057	0.056	0.045	0.043
	(0.130)	(0.138)	(0.220)	(0.245)
Portfolio weight: Non-SEO firms	-0.146***	-0.146***	-0.151***	-0.151***
	(0.000)	(0.000)	(0.000)	(0.000)
Pre-SEO three-year stock price run-up: SEO firms	-0.000	-0.000	-0.000	-0.000
	(0.632)	(0.598)	(0.710)	(0.674)
Pre-SEO three -year stock price run-up: Non-SEO firms	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Pre-SEO three -year stock return volatility: SEO firms	0.009**	0.007	0.008*	0.007
	(0.045)	(0.101)	(0.069)	(0.144)
Pre-SEO three -year stock return volatility: Non-SEO firms	-0.010**	-0.010**	-0.010**	-0.010**
	(0.034)	(0.038)	(0.028)	(0.031)
SEO and non-SEO firms in the same industry (indicator)			0.001	0.001
			(0.170)	(0.203)
SEO and non-SEO firms have the customer-supplier relationship (indicator)			0.005	0.005
			(0.499)	(0.529)
Fund size			-0.004**	-0.004**
			(0.020)	(0.013)
Portfolio return			-0.010**	-0.009*
			(0.038)	(0.050)
Portfolio turnover			0.012	0.012
			(0.396)	(0.423)
Constant	-0.067***	-0.064***	0.039	0.048

	(0.000)	(0.000)	(1.000)	(1.000)
Year fixed effects	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES
Institution fixed effects	YES	YES	YES	YES
Clustered by event	YES	YES	YES	YES
Adjusted R-squared	0.0077	0.0067	0.0081	0.0071
No. of observations	200,718	200,718	200,710	200,710

Table VIII
OLS Regression of the Three-day Cumulative Abnormal Returns (CARs) for Individual Non-SEO Firms on Financial Characteristics of SEO and Non-SEO Firms

The sample consists of 2,240 SEOs by firms reported in the Thomson Financial SDC New Issues database over the 1991 to 2009 period and 201,895 non-SEO firms that share the same largest institutional blockholder as the issuing firms. To be included in the final sample of issuing firms, they must meet the following requirements: have a largest institutional blockholder that also serves as the largest institutional blockholder for at least one non-SEO firm, be covered in the Compustat, CRSP, and Thomson Reuters CDA/Spectrum Institutional (13F) Holdings databases, not belong to the financial (SIC 6000-6999) and utility (SIC 4910-4940) industries, be listed on the NYSE, Nasdaq, or Amex, and have CRSP share code 10 or 11 (ordinary common shares). The issuer CARs and the individual non-issuer CARs are computed as the difference between realized returns and estimated returns, using the market model over the pre-event period from day -160 to day -11. We use the CRSP value-weighted return as the proxy for the market return. The dependent variable is the CAR (-1, 1) for individual non-SEO firms that share the same largest institutional blockholder as the SEO firms. All firm (institution) characteristics are measured as of the fiscal year-end (calendar quarter-end) that immediately precedes the SEO announcement date. Industries are classified using two-digit SIC codes. The Appendix provides a detailed description of the construction of the variables. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *P*-values are in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Negative issuer CAR (-1,1) (indicator): A	-0.002***	-0.003***	-0.002***	-0.002***	-0.002***	-0.002***	-0.003***	-0.003***	-0.003***	-0.003***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.003)	(0.003)	(0.000)	(0.000)	(0.001)	(0.000)
Small firm (indicator): Non-SEO firms	0.000									
	(0.695)									
A * Small firm (indicator): Non-SEO firms	-0.002**									
	(0.019)									
Young firm (indicator): Non-SEO firms		0.001**								
		(0.043)								
A * Young firm (indicator): Non-SEO firms		-0.001**								
		(0.050)								
Volatile firm (indicator): Non-SEO firms			0.002***							
			(0.007)							
A * Volatile firm (indicator): Non-SEO firms			-0.003***							
			(0.003)							
High R&D firm (indicator): Non-SEO firms				0.001						
				(0.101)						
A * High R&D firm (indicator): Non-SEO firms				-0.001*						
				(0.091)						
Small number of analyst following (indicator): Non-SEO firms					0.001**					
					(0.039)					
A * Small number of analyst following (indicator): Non-SEO firms					-0.002**					
					(0.039)					
High analyst forecast dispersion (indicator): Non-SEO firms						0.001**				
						(0.048)				
A * High analyst forecast dispersion (indicator): Non-SEO firms						-0.002**				
						(0.010)				

High discretionary accruals (indicator): Non-SEO firms							0.001			
							(0.111)			
A * High discretionary accruals (indicator): Non-SEO firms							-0.001*			
							(0.084)			
A * Pre-SEO three-year stock price run-up: Non-SEO firms								-0.001***		
								(0.001)		
Low post-SEO one-year market-adjusted stock return (indicator): Non-SEO firms									0.001	
									(0.178)	
A * Low post-SEO one-year market-adjusted stock return (indicator): Non-SEO firms									-0.001*	
									(0.095)	
Equity issuance in next two years of an issuer's SEO (indicator): Non-SEO firms										0.002***
										(0.005)
A * Equity issuance in next two years of an issuer's SEO (indicator): Non-SEO firms										-0.002**
										(0.047)
Log (total assets): SEO firms	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.832)	(0.830)	(0.834)	(0.829)	(0.828)	(0.951)	(0.736)	(0.804)	(0.826)	(0.830)
Log (total assets): Non-SEO firms		0.000***	0.001***	0.000***	0.000**	0.000**	0.000***	0.000***	0.000***	0.000***
		(0.004)	(0.000)	(0.005)	(0.012)	(0.021)	(0.006)	(0.004)	(0.005)	(0.004)
Leverage: SEO firms	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002	-0.001
	(0.282)	(0.282)	(0.296)	(0.289)	(0.440)	(0.537)	(0.364)	(0.283)	(0.283)	(0.286)
Leverage: Non-SEO firms	-0.001	-0.001	-0.002*	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.229)	(0.160)	(0.069)	(0.179)	(0.210)	(0.332)	(0.145)	(0.168)	(0.168)	(0.134)
Tobin's *q*: SEO firms	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.147)	(0.146)	(0.139)	(0.147)	(0.133)	(0.101)	(0.135)	(0.132)	(0.148)	(0.149)
Tobin's *q*: Non-SEO firms	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.177)	(0.202)	(0.148)	(0.203)	(0.269)	(0.167)	(0.184)	(0.231)	(0.214)	(0.208)
Total institutional ownership: SEO firms	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.001	0.001	0.001
	(0.530)	(0.522)	(0.531)	(0.521)	(0.673)	(0.820)	(0.445)	(0.518)	(0.512)	(0.528)
Total institutional ownership: Non-SEO firms	-0.004***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Portfolio weight: SEO firms	0.044	0.043	0.044	0.042	0.034	0.019	0.052	0.043	0.042	0.043
	(0.230)	(0.245)	(0.231)	(0.252)	(0.413)	(0.671)	(0.177)	(0.243)	(0.250)	(0.241)
Portfolio weight: Non-SEO firms	-0.135***	-0.151***	-0.147***	-0.151***	-0.172***	-0.150***	-0.168***	-0.152***	-0.151***	-0.151***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Pre-SEO three-year stock price run-up: SEO firms	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.677)	(0.670)	(0.688)	(0.675)	(0.796)	(0.839)	(0.675)	(0.687)	(0.673)	(0.675)
Pre-SEO three -year stock price run-up: Non-SEO firms	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.000	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.156)	(0.000)	(0.000)
Pre-SEO three -year stock return	0.007	0.007	0.007	0.007	0.005	0.005	0.007	0.006	0.007	0.007
	(0.144)	(0.144)	(0.144)	(0.146)	(0.299)	(0.316)	(0.143)	(0.158)	(0.142)	(0.146)

volatility: SEO firms										
Pre-SEO three -year stock return volatility: Non-SEO firms	-0.011** (0.021)	-0.010** (0.028)		-0.010** (0.030)	-0.009* (0.077)	-0.010* (0.077)	-0.011** (0.018)	-0.010** (0.032)	-0.010** (0.032)	-0.010** (0.026)
SEO and non-SEO firms in the same industry (indicator)	0.001 (0.196)	0.001 (0.203)	0.001 (0.211)	0.001 (0.195)	0.001 (0.410)	0.000 (0.578)	0.001 (0.190)	0.001 (0.204)	0.001 (0.208)	0.001 (0.206)
SEO and non-SEO firms have the customer-supplier relationship (indicator)	0.005 (0.507)	0.005 (0.526)	0.005 (0.534)	0.005 (0.532)	0.003 (0.641)	0.009 (0.232)	0.004 (0.658)	0.005 (0.505)	0.005 (0.536)	0.005 (0.524)
Fund size	-0.004** (0.016)	-0.004** (0.014)	-0.004** (0.017)	-0.004** (0.014)	-0.003** (0.044)	-0.004** (0.029)	-0.004** (0.012)	-0.004** (0.015)	-0.004** (0.013)	-0.004** (0.014)
Portfolio return	-0.009* (0.052)	-0.009* (0.051)	-0.009* (0.050)	-0.009* (0.050)	-0.011** (0.032)	-0.010* (0.056)	-0.010** (0.040)	-0.010** (0.046)	-0.009* (0.051)	-0.009* (0.050)
Portfolio turnover	0.011 (0.441)	0.012 (0.426)	0.011 (0.454)	0.012 (0.420)	0.018 (0.254)	0.016 (0.302)	0.010 (0.514)	0.012 (0.421)	0.012 (0.425)	0.012 (0.425)
Constant	0.048 (1.000)	0.044 (1.000)	0.042 (1.000)	0.050 (1.000)	0.023 (1.000)	-0.078 (0.997)	-0.001 (0.982)	0.046 (1.000)	0.048 (1.000)	0.046 (1.000)
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Institution fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Clustered by event	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.0071	0.0071	0.0071	0.0071	0.0076	0.0080	0.0071	0.0073	0.0071	0.0072
No. of observations	200,710	200,710	200,710	200,710	175,273	159,163	193,323	200,710	200,710	200,710

Table IX
OLS Regression of the Three-day Cumulative Abnormal Returns (CARs) for Individual Non-SEO Firms on Market Timing Indicators

The sample consists of 2,240 SEOs by firms reported in the Thomson Financial SDC New Issues database over the 1991 to 2009 period and 201,895 non-SEO firms that share the same largest institutional blockholder as the issuing firms. To be included in the final sample of issuing firms, they must meet the following requirements: have a largest institutional blockholder that also serves as the largest institutional blockholder for at least one non-SEO firm, be covered in the Compustat, CRSP, and Thomson Reuters CDA/Spectrum Institutional (13F) Holdings databases, not belong to the financial (SIC 6000-6999) and utility (SIC 4910-4940) industries, be listed on the NYSE, Nasdaq, or Amex, and have CRSP share code 10 or 11 (ordinary common shares). The issuer CARs and the individual non-issuer CARs are computed as the difference between realized returns and estimated returns, using the market model over the pre-event period from day -160 to day -11. We use the CRSP value-weighted return as the proxy for the market return. The dependent variable is the CAR (-1, 1) for individual non-SEO firms that share the same largest institutional blockholder as the SEO firms. High pre-SEO three-year price run-up and negative CAR is a market timing indicator that takes the value of one for SEO firms with an above-median pre-SEO three-year market-adjusted abnormal stock return and a negative CAR (-1, 1), and zero otherwise. High pre-SEO one-year price run-up and negative CAR is a market timing indicator that takes the value of one for SEO firms with an above-median pre-SEO one-year market-adjusted abnormal stock return and a negative CAR (-1, 1), and zero otherwise. High pre-SEO three-year price run-up, negative CAR, and low post-SEO one-year market-adjusted return is a market timing indicator that takes the value of one for SEO firms with an above-median pre-SEO three-year market-adjusted abnormal stock return, a negative CAR (-1, 1), and a below-median post-SEO one-year market-adjusted abnormal stock return, and zero otherwise. All firm (institution) characteristics are measured as of the fiscal year-end (the calendar quarter-end) that immediately precedes the SEO announcement date. Industry is classified using the two-digit SIC codes. The appendix provides a detailed description of the construction of the variables. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *P*-values are in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High pre-SEO three-year price run-up and negative CAR (indicator): A	-0.003***			-0.002**	-0.002***	-0.002***	-0.002**
	(0.000)			(0.021)	(0.003)	(0.004)	(0.028)
High pre-SEO one-year price run-up and negative CAR (indicator)		-0.003***					
		(0.000)					
High pre-SEO three-year price run-up, negative CAR, and low post-SEO one-year market-adjusted return (indicator)			-0.002***				
			(0.004)				
Small firm (indicator): Non-SEO firms				-0.000			
				(0.420)			
A * Small firm (indicator): Non-SEO firms				-0.002**			
				(0.018)			
Young firm (indicator): Non-SEO firms					0.001**		
					(0.028)		
A * Young firm (indicator): Non-SEO firms					-0.001*		
					(0.061)		
Volatile firm (indicator): Non-SEO firms						0.001	
						(0.120)	
A * Volatile firm (indicator): Non-SEO firms						-0.002**	
						(0.036)	
Small number of analyst following (indicator): Non-SEO firms							0.001*
							(0.080)
A * Small number of analyst following (indicator): Non-SEO firms							-0.002**
							(0.024)
Log (total assets): SEO firms	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.781)	(0.638)	(0.944)	(0.763)	(0.783)	(0.780)	(0.769)
Log (total assets): Non-SEO firms	0.000***	0.000***	0.000***		0.000***	0.001***	0.000**
	(0.004)	(0.004)	(0.004)		(0.002)	(0.000)	(0.010)
Leverage: SEO firms	-0.002	-0.001	-0.001	-0.002	-0.002	-0.002	-0.001
	(0.255)	(0.350)	(0.280)	(0.261)	(0.254)	(0.257)	(0.392)
Leverage: Non-SEO firms	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002*	-0.001
	(0.154)	(0.156)	(0.153)	(0.216)	(0.140)	(0.064)	(0.205)
Tobin's *q*: SEO firms	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.245)	(0.155)	(0.202)	(0.238)	(0.245)	(0.248)	(0.210)

Tobin's *q*: Non-SEO firms	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.208)	(0.209)	(0.204)	(0.175)	(0.199)	(0.148)	(0.265)
Total institutional ownership: SEO firms	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.529)	(0.436)	(0.574)	(0.513)	(0.527)	(0.536)	(0.659)
Total institutional ownership: Non-SEO firms	-0.005***	-0.005***	-0.005***	-0.004***	-0.005***	-0.005***	-0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Portfolio weight: SEO firms	0.051	0.049	0.048	0.053	0.051	0.053	0.044
	(0.172)	(0.190)	(0.202)	(0.157)	(0.169)	(0.158)	(0.297)
Portfolio weight: Non-SEO firms	-0.152***	-0.152***	-0.153***	-0.134***	-0.151***	-0.147***	-0.171***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pre-SEO three-year stock price run-up: Non-SEO firms	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pre-SEO three -year stock return volatility: SEO firms	0.007	0.008*	0.007	0.007	0.007	0.007	0.005
	(0.138)	(0.082)	(0.117)	(0.136)	(0.137)	(0.140)	(0.274)
Pre-SEO three -year stock return volatility: Non-SEO firms	-0.010**	-0.010**	-0.010**	-0.011**	-0.010**		-0.009*
	(0.034)	(0.033)	(0.032)	(0.023)	(0.027)		(0.085)
SEO and non-SEO firms in the same industry (indicator)	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.224)	(0.177)	(0.193)	(0.216)	(0.222)	(0.231)	(0.439)
SEO and non-SEO firms have the customer-supplier relationship (indicator)	0.005	0.004	0.005	0.005	0.005	0.005	0.003
	(0.511)	(0.559)	(0.520)	(0.497)	(0.513)	(0.512)	(0.618)
Fund size	-0.004**	-0.004**	-0.004**	-0.004**	-0.004**	-0.004**	-0.003**
	(0.010)	(0.010)	(0.011)	(0.012)	(0.011)	(0.013)	(0.036)
Portfolio return	-0.009*	-0.009*	-0.009*	-0.009*	-0.009*	-0.009*	-0.010**
	(0.065)	(0.057)	(0.059)	(0.063)	(0.065)	(0.064)	(0.041)
Portfolio turnover	0.011	0.011	0.013	0.011	0.011	0.010	0.016
	(0.462)	(0.441)	(0.383)	(0.461)	(0.458)	(0.484)	(0.293)
Constant	0.049	0.047	0.049	0.049	0.048	0.041	0.025
	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)
Year fixed effects	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES
Institution fixed effects	YES	YES	YES	YES	YES	YES	YES
Clustered by event	YES	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.0069	0.0069	0.0067	0.0069	0.0069	0.0068	0.0074
No. of observations	200,710	200,710	200,710	200,710	200,710	2007,10	175,273

Table X
OLS Regression of the Three-day Cumulative Abnormal Returns (CARs) for Individual Non-SEO firms on the Similarity between SEO Firm and Non-SEO Firms in the Same Blockholding Network

The sample consists of 2,240 SEOs by firms reported in the Thomson Financial SDC New Issues database over the 1991 to 2009 period and 201,895 non-SEO firms that share the same largest institutional blockholder as the issuing firms. To be included in the final sample of issuing firms, they must meet the following requirements: have a largest institutional blockholder that also serves as the largest institutional blockholder for at least one non-SEO firm, be covered in the Compustat, CRSP, and Thomson Reuters CDA/Spectrum Institutional (13F) Holdings databases, not belong to the financial (SIC 6000-6999) and utility (SIC 4910-4940) industries, be listed on the NYSE, Nasdaq, or Amex, and have CRSP share code 10 or 11 (ordinary common shares). The issuer CARs and the individual non-issuer CARs are computed as the difference between realized returns and estimated returns, using the market model over the pre-event period from day -160 to day -11. We use the CRSP value-weighted return as the proxy for the market return. The dependent variable is the CAR (-1, 1) for individual non-SEO firms that share the same largest institutional blockholder as the SEO firms. All firm (institution) characteristics are measured as of the fiscal year-end (calendar quarter-end) that immediately precedes the SEO announcement date. Industries are classified using two-digit SIC codes. The Appendix provides a detailed description of the construction of the variables. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *P*-values are in parentheses.

	(1)	(2)	(3)
Negative issuer CAR (-1,1) (indicator): A	-0.003***	-0.003***	-0.002***
	(0.000)	(0.000)	(0.001)
Similar B/M (indicator):	0.001		
	(0.236)		
A * Similar B/M (indicator)		-0.002**	
		(0.019)	
Similar price momentum (indicator)		-0.000	
		(0.666)	
A * Similar price momentum (indicator)			-0.003***
			(0.001)
Similar leverage (indicator)			0.002***
			(0.004)
A * Similar leverage (indicator)			-0.002**
			(0.015)
Log (total assets): SEO firms	-0.000	-0.000	-0.000
	(0.327)	(0.339)	(0.500)
Log (total assets): Non-SEO firms	0.000**	0.000**	0.000***
	(0.018)	(0.027)	(0.005)
Leverage: SEO firms	-0.001	-0.001	-0.001
	(0.653)	(0.673)	(0.590)
Leverage: Non-SEO firms	-0.001	-0.001	-0.001
	(0.582)	(0.623)	(0.198)
Tobin's *q*: SEO firms	-0.000	-0.000	-0.000
	(0.141)	(0.139)	(0.132)
Tobin's *q*: Non-SEO firms	-0.000	-0.000	-0.000
	(0.593)	(0.551)	(0.174)
Total institutional ownership: SEO firms	0.001	0.001	0.001
	(0.530)	(0.530)	(0.640)
Total institutional ownership: Non-SEO firms	-0.004***	-0.004***	-0.005***
	(0.000)	(0.000)	(0.000)
Portfolio weight: SEO firms	0.125**	0.126**	0.048
	(0.049)	(0.048)	(0.196)
Portfolio weight: Non-SEO firms	-0.149***	-0.145***	-0.147***
	(0.004)	(0.005)	(0.000)
Pre-SEO three-year stock price run-up: SEO firms	-0.000	-0.000	-0.000
	(0.254)	(0.289)	(0.587)
Pre-SEO three -year stock price run-up: Non-SEO firms	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)
Pre-SEO three -year stock return volatility: SEO firms	0.007	0.007	0.006
	(0.196)	(0.190)	(0.155)
Pre-SEO three -year stock return volatility: Non-SEO firms	-0.010*	-0.009*	-0.009*
	(0.064)	(0.076)	(0.073)

SEO and non-SEO firms in the same industry (indicator)	0.000 (0.913)	0.000 (0.819)	0.001 (0.312)
SEO and non-SEO firms have the customer-supplier relationship (indicator)	0.003 (0.759)	0.004 (0.748)	0.005 (0.523)
Fund size	-0.004** (0.037)	-0.004** (0.034)	-0.003* (0.097)
Portfolio return	-0.011** (0.044)	-0.011** (0.043)	-0.012*** (0.009)
Portfolio turnover	0.007 (0.644)	0.008 (0.603)	0.020 (0.182)
Constant	0.076*** (0.007)	0.076*** (0.007)	0.085 (1.000)
Year fixed effects	YES	YES	YES
Industry fixed effects	YES	YES	YES
Institution fixed effects	YES	YES	YES
Clustered by event	YES	YES	YES
Adjusted R-squared	0.0077	0.0081	0.0070
No. of observations	163,623	163,623	198,534

Appendix
Variable Definitions

This appendix provides a detailed description of the construction of all the variables used in the tables.

Variable	Definition
Analyst forecast dispersion	Standard deviation across analysts' EPS forecasts divided by the absolute value of the mean EPS forecast. Observations are missing when only one analyst EPS forecast is available in a particular month or when the mean EPS forecast is zero.
CAR (-1,1) for the portfolios of non-SEO firms	Abnormal returns for the value-weighted portfolio of non-SEO firms that share the same largest institutional blockholder as the SEO firms cumulated over 3 days from day −1 to day +1 relative to the SEO announcement dates. The abnormal return is measured as the difference between realized returns and estimated returns, using the market model over the pre-event period from day −160 to day −11.
Discretionary accruals	Discretionary accruals is measured as the residual from the following regression: Total accruals (TA) = a + b1 (1/item 6) + b2 (change in item 12) + b3 (item 7) + e, where total accruals (TA) = the change in item 4 – the change in item 5 +change in item 34 – item 14 from the COMPUSTAT data.
Equity issuance in next two years of an issuer's SEO (indicator)	Indicator that takes the value of one if at least one of non-SEO firms that has the same largest institutional blockholder as the SEO firm issues equity during two years after the SEO announcement and zero otherwise.
Firm age (years)	Number of years since the SEO firm's stock price is available in the CRSP database.
Fund size ($ billions)	Total market value of equity holdings managed by the institutional investor.
High analyst forecast dispersion (indicator)	Indicator that takes the value of one if the firm's analyst forecast dispersion is higher than the sample median and zero otherwise.
High discretionary accruals (indicator)	Indicator that takes the value of one if the firm's discretionary accruals is higher than the sample median and zero otherwise.
High portfolio weight (indicator)	Indicator that takes the value of one if the largest institutional blockholder's portfolio weight in the issuing firm is higher than the sample median and zero otherwise.
High pre-SEO one-year price run-up and negative CAR (indicator)	Market timing indicator that takes the value of one if the SEO firm has both an above-median pre-SEO one-year market-adjusted abnormal stock return and a negative CAR (-1, 1) and zero otherwise.
High pre-SEO three-year price run-up and negative CAR (indicator)	Market timing indicator that takes the value of one if the SEO firm has both an above-median pre-SEO three-year market-adjusted abnormal stock return and a negative CAR (-1, 1) and zero otherwise.
High pre-SEO three-year price run-up, negative CAR, and low post-SEO one-year market-adjusted return (indicator)	Market timing indicator that takes the value of one if the SEO firm has an above-median pre-SEO three-year market-adjusted abnormal stock return, a negative CAR (-1, 1), and a below-median post-SEO one-year market-adjusted abnormal stock return and zero otherwise.
High reputation underwriter (indicator)	Indicator that takes the value of one if the lead underwriter's or the bookrunner's reputation rank on Jay Ritter's website (Loughran and Ritter (2004)) is 9 (the highest possible ranking score) and zero otherwise.
Investment advisors (indicator)	Indicator that takes the value of one if an institutional investor's legal type is classified as independent investment advisors by 13F and Brian Bushee and zero otherwise.
Issuer (non-issuer) CAR (-1,1)	Abnormal returns for SEO (non-SEO) firms cumulated over 3 days from day −1 to day +1 relative to the SEO announcement dates. The abnormal return is measured as the difference between realized returns and estimated returns, using the market model over the pre-event period from day −160 to day −11.
Leverage	Book value of short-term debt plus book value of long-term debt divided by book value of total assets.
Log (proceeds)	Log of number of shares issued in the offer times the offer price as reported in the SDC Platinum New Issues database.
Log (total assets)	Log of book value of total assets.
Low post-SEO one-year market-adjusted return (indicator)	Indicator that takes the value of one if the firm's post-SEO one-year market-adjusted abnormal return is lower than the sample median and zero otherwise.
Mutual funds (indicator)	Indicator that takes the value of one if an institutional investor's legal type is classified as investment companies by 13F and Brian Bushee and zero otherwise.

Negative issuer CAR (-1,1) (indicator)	Indicator that takes the value of one if the issuer CAR (-1, 1) around the SEO announcement date is negative and zero otherwise.
Number of analyst following	Number of analysts following the firm.
Number of largest blockholding	Number of stocks that the institution holds as the largest institutional blockholder.
NYSE listed (indicator)	Indicator that takes the value of one if the firm trades on the New York Stock Exchange and zero otherwise.
Percent of non-SEO firms issuing equity in next two years after the issuer's SEO	Percent of non-SEO firms that issue equity during two years after the SEO announcement date and share the same largest institutional blockholder as the SEO firm.
Percent of primary shares sold	Number of primary shares sold based on the offering prospectus divided by the total shares sold in the offer.
Portfolio return	Largest institutional blockholder's buy-and-hold value-weighted portfolio return in the quarter before the SEO announcement.
Portfolio turnover	Churn rate for the largest institutional blockholder in the quarter before the SEO announcement, defined as the minimum of aggregate purchase and sale over average equity asset holding value, as estimated by Carhart (1997) and Yan and Zhang (2009).
Portfolio weight	Largest institutional blockholder's portfolio weight in a firm.
Pre-SEO one-year stock price run-up	Buy-and-hold market-adjusted stock return during a one-year period from month -13 to month -2 prior to the SEO announcement. The CRSP-value-weighted return is used as a proxy for the market return. We skip month -1 prior to the announcement to avoid the overlap between the time period to calculate stock price run-up and the event window of abnormal returns.
Pre-SEO three-year stock price run-up	Buy-and-hold market-adjusted stock return during a three-year period from month -37 to month -2 prior to the SEO announcement. The CRSP-value-weighted return is used as a proxy for the market return. We skip month -1 prior to the announcement to avoid the overlap between the time period to calculate stock price run-up and the event window of abnormal returns.
Pre-SEO three-year stock return volatility	Standard deviation of monthly stock returns for three years prior to the SEO announcement.
Post-SEO one-year market-adjusted stock return	Buy-and-hold market-adjusted stock return during a one-year period after the SEO issuance. The CRSP-value-weighted return is used as a proxy for the market return.
High R&D firm (indicator)	Indicator that takes the value of one if the firm's R&D intensity is higher than the sample median and zero otherwise.
R&D intensity	Ratio of R&D expenditures to total assets. This variable is set to be zero if R&D expenditure is missing.
Rule 415 Shelf (indicator)	Indicator that takes the value of one if the SEO offer is a shelf offer according to SEC Rule 415 and zero otherwise.
SEO and non-SEO firms have the customer-supplier relationship (indicator)	Indicator that takes the value of one if there is a major customer-supplier relationship between SEO and non-SEO firms that share the same largest institutional blockholder and zero otherwise. Major customers are those that account for 10% or more of sales of their suppliers.
SEO and non-SEO firms in the same industry (indicator)	Indicator that takes the value of one if SEO and non-SEO firms that share the same largest institutional blockholder belong to the same two-digit SIC industry and zero otherwise.
Similar B/M (indicator)	Indicator that takes the value of one if the squared difference in the ranking of B/M between the issuer and non-issuer hold by the same largest institutional blockholder is lower than the sample median and zero otherwise. The ranking of B/M is from a quarterly triple sort for the universe of stocks listed on NYSE, AMEX, and Nasdaq on their size (market equity value), B/M (book-to-market ratio), and price momentum (past 12-month compounded stock return), as constructed by Daniel et al. (1997).
Similar leverage (indicator)	Indicator that takes the value of one if the squared difference in the ranking of leverage ratio between the issuer and non-issuer hold by the same largest institutional blockholder is lower than the sample median and zero otherwise. The ranking of leverage ratio is obtained by sorting all the firms covered by CRSP and COMPUSTAT into 5 quintiles according to their leverage ratio.
Similar price momentum (indicator)	Indicator that takes the value of one if the squared difference in the ranking of price momentum between the issuer and non-issuer hold by the same largest institutional blockholder is lower than the sample median and zero otherwise. The ranking of price momentum is from a quarterly triple sort for the universe of stocks listed on NYSE, AMEX, and Nasdaq on their size (market equity value), B/M (book-to-market ratio), and price momentum (past 12-month compounded stock return), as constructed by Daniel et

	al. (1997).
Small number of analyst following (indicator)	Indicator that takes the value of one if the firm's number of analyst following is lower than the sample median and zero otherwise.
Small number of largest institutional blockholding (indicator)	Indicator that takes the value of one if the number of large institutional blockholding by a firm's largest institutional blockholder is lower than the sample median and zero otherwise.
Small firm (indicator)	Indicator that takes the value of one if the firm's book value of total assets is lower than the sample median and zero otherwise.
Small fund (indicator)	Indicator that takes the value of one if the total market value of equity holdings managed by a firm's largest institutional blockholder is lower than the sample median and zero otherwise.
Tobin's *q*	Book value of assets minus book value of equity plus market value of equity divided by book value of assets.
Total institutional ownership	Aggregate ownership held by institutions.
Volatile firm (indicator)	Indicator that takes the value of one if the firm's pre-SEO three-year stock return volatility is higher than the sample median and zero otherwise.
Young firm (indicator)	Indicator that takes the value of one if the firm's age is lower than the sample median and zero otherwise.