

Investment Banker Directors and Capital Raising Activities*

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Abstract

Using a large hand-collected data set of investment bankers (IB) on corporate boards, we examine whether and how IB directors affect capital raising and corporate policies. We find that firms with IB directors have a higher probability of making seasoned equity offerings (SEOs), and such offerings are associated with higher announcement returns and lower issuance costs. Post-SEO, issuers with IB directors invest more, hold less cash, and experience better operating and stock performance. Our channel analysis suggests that IB directors reduce information asymmetry between issuers and the capital market. Overall, our results highlight the advisory role of specialist directors.

Keywords: Seasoned equity offerings; board of directors; investment banking experience; information asymmetry; advisory role of directors

JEL Classification: G14, G24, G32

I. Introduction

Much of the literature on corporate boards has centered on their monitoring role, yet boards spend a significant portion of their time advising rather than monitoring (Adams and Ferreira (2007) and Adams, Hermalin, and Weisbach (2010)). This leads to some important questions: What kind of experience and skill sets help directors better serve their advisory role? How do specialist directors affect corporate policies?

One of the most common specialist directors on U.S. corporate boards is an investment banker (IB): During the period 2000-2014, over a third of U.S. firms have IB directors. Despite their prevalence, there is a lack of understanding of their advisory role in corporate policies.¹ In this paper, using a large hand-collected data set of IB directors on boards of over 7,000 firms for the period 2000-2014, we examine whether and how the presence of IB directors is related to capital raising activities and corporate policies.

We focus on seasoned equity offerings (SEOs) because they are costly to issuers (Eckbo, Masulis, and Norli (2007) and Lee and Masulis (2009)).² We conjecture that IB directors can help reduce costs of raising equity capital through a number of ways. First, as board members, IB directors have regular access to the Chief Financial Officer (CFO) and/or the Chief Executive Officer (CEO) of a firm with whom they could ask probing questions based on their capital market expertise. This helps bridge information gap between the management and the board, enabling both to be credible certifiers of firm value. Second, because IB directors have a similar professional background as SEO underwriters, they speak the same language as those

¹ With notable exceptions of Güner, Malmendier, and Tate (2008), Huang, Jiang, Lie, and Yang (2014), and Minton, Taillard, and Williamson (2014). We review related literature at the end of this section.

² Lee and Masulis (2009) document that SEO announcement returns range between -2% to -3%, and underwriting fees range between 3% to 8% of gross proceeds, suggesting that issuance costs represent an economically important portion of SEO gross proceeds.

underwriters and can communicate more effectively their insider information to the capital market. This helps improve the information environment of an issuer and allows it to access capital more easily and cheaply. Third, with their own experience in investment banking, IB directors have superior knowledge about the industry that allows them to select underwriters that work well with an issuer; they also have the expertise to negotiate lower fees for underwriting services. Based on the above discussion, we hypothesize that firms with IB directors do more SEOs, and more importantly, their SEOs are associated with higher announcement returns and lower issuance costs in terms of underpricing and underwriter spread.

To test our conjecture, we start with the BoardEx database and hand-match a director's professional affiliations with a list of top investment banks to determine whether that director has investment banking experience for 65,091 directors in 7,036 U.S. firms over the period 2000-2014; we find that more than a third of the firms have IB directors. We then relate the presence of IB directors to firms' SEO activities and find that when there are IB directors on boards, firms are 12% more likely to do SEOs. The presence of IB directors on average is associated with a 60 basis points higher two-day announcement returns, a 50 basis points lower underpricing, and a 5% decrease in gross spreads, which translates into a total of \$10.5 millions of savings in issuance costs for an average issuer in our sample.

A key concern for any analysis of director effects is the endogeneity of board composition (Hermalin and Weisbach (1998, 2003)). In particular, IB directors are not randomly assigned and some omitted variables might be correlated with both the presence of IB directors and SEO performance. Moreover, reverse causality could drive some of our results: Instead of IB directors advising firms to do more SEOs, firms with funding needs may choose to hire directors with investment banking experience. We take two approaches to addressing this endogeneity

concern. First, we employ an instrument for the presence of IB directors on corporate boards using directors' network—their exposure to IB directors on other boards. Our instrument is the fraction of non-IB directors on a board who sit or have sat on other boards on which there are (or were) IB directors. This captures the connectedness and the exposure of non-IB directors to IB directors on other boards. Second, we identify and remove firm-year observations with recently joined IB directors (i.e., those with a tenure less than three years prior to an SEO) to address the reverse causality concern that firms strategically hire IB directors immediately before SEOs. This ensures that IB directors are hired long before a firm's capital raising activities and that the relation we identify is more likely to be causal. In both cases, the effect of IB directors on SEOs remain unchanged or become stronger.³

We explore possible economic mechanisms through which IB directors help improve firms' access to the equity market. We conjecture that IB directors' key role is to reduce information asymmetry between issuers and the equity market. Consistent with this, we find that firms with IB directors make more non-earnings-related conference calls during the six-month period before SEOs compared with their counterparts without IB directors. We also show that the presence of IB directors is associated with better firm information environment as measured by lower return volatility, better earnings quality, and smaller analyst forecast error. We further show that our main results are stronger among smaller firms and firms with less prior SEO experience. Moreover, we show that IB directors play a very limited role in both the bond market and the loan market, in which the securities are less information-sensitive than equity. Finally, we find little support for IB directors affecting SEO activities through their market timing ability

³ To rule out that our results are driven by underwriters sitting on firms' boards, we remove firm-year observations where conflicts of interest might play a significant role (Frydman and Hilt (2017)), that is, affiliated IB directors whose current or former employers are the lead underwriters for the SEO. Our main findings remain.

or their affiliation with the underwriter ('conflict of interest'). Taken together, our results point to IB directors' important role in reducing information asymmetry between issuers and the equity market being the channel behind our main findings.

We further explore the role of IB directors in firm policies post-SEOs. We find that issuers with IB directors hold less cash, make more investment, and experience better operating and stock performance after SEOs, suggesting that IB directors help relax issuers' financial constraints and expand their investment opportunities by improving their access to the equity market and reducing the cost of equity capital.

We conduct a number of robustness checks on our main findings. We repeat the analysis using a sample of SEOs that includes private placements of common equity. Our main findings remain unchanged. We use the volume and the number of SEO deals to capture the propensity of doing SEOs and find a similar relation between the presence of IB directors and SEO volume. Moreover, based on a small sample of initial public offerings (IPOs) in which information on board composition before IPO is available, we show that the presence of IB directors is associated with less IPO underpricing.

Our paper contributes to the literature in a number of dimensions. First, our paper adds to the growing literature on the value of corporate directors' expertise (see, for example, Fich (2005), Fahlenbrach, Low, and Stulz (2010), Dass et al. (2014), and Kang, Kim, and Lu (2017)). More related to our study, several papers focus on directors with financial expertise. Güner, Malmendier, and Tate (2008) examine how these directors affect investment, mergers and acquisitions (M&As), bond issuance, and CEO compensation, and conclude that financial expertise on boards may not benefit shareholders if conflicting interests are present. Minton, Taillard, and Williamson (2014) find that directors' financial expertise is related to poor bank

performance during the crisis. Huang et al. (2014) find that IB directors help firms make better acquisitions through deal screening and negotiation. Complementing prior studies, we examine the role of IB directors in capital raising activities and highlight a different channel—reducing information asymmetry between SEO/IPO issuers and capital market—through which IB directors add value.

Second, our paper also contributes to the literature that examines the relation between executive personal characteristics and corporate policies (see, for example, Adams, Almeida, and Ferreira (2005), Adams and Ferreira (2009), Ahern and Dittmar (2012), Levi, Li, and Zhang (2014), Benmelech and Frydman (2015), and Dittmar and Duchin (2016)). We add to this literature by providing new evidence on how directors' investment banking experience influences firms' capital raising activities and corporate policies.

Finally, our paper contributes to the voluminous SEO literature. The questions of why we observe SEO underpricing and how to reduce it are still not fully answered (see, for example, Altinkılıç and Hansen (2003), Corwin (2003), and the survey by Eckbo, Masulis, and Norli (2007)). One dominant explanation is information asymmetry (Myers and Majluf (1984)). Our paper adds to this literature by showing that one important way to mitigate information asymmetry in SEOs is to have capital market experts—IB directors—on issuers' boards.

II. Sample Formation and Overview

A. Identifying IB directors

We start with U.S. publicly traded industrial firms (after removing financial (SIC 6000-6999) and utilities (SIC 4910-4940) firms) for the period 2000-2014 from the CRSP/Compustat merged database. To obtain directors' background information, we merge the industrial firm

sample with the BoardEx database, which provides extensive biographical information, such as employment history and educational background, of corporate directors and senior executives in public and large private firms. We match CRSP/Compustat with BoardEx based on firm identifiers and firm names. We also manually check all matches and make necessary adjustment to ensure each CRSP/Compustat firm is associated with a unique identifier in BoardEx. Our matching procedure yields a sample of 7,036 unique firms and 65,091 unique directors.

To determine directors with investment banking experience, we first use SDC data to rank investment banks based on aggregate deal value of equity and bond issues that they have underwritten and M&As made by U.S. acquirers that they have advised over the period 1980-2014. We take the 100 most active investment banks by aggregate deal value and manually match their names with employer names given in the BoardEx Employment History file.⁴ When matching, we account for name changes, mergers and acquisitions, and parent-subsidiary relationships among investment banks.⁵ In the case of financial conglomerates, we use their investment banking arm to identify investment banking experience whenever applicable.⁶

A director serving on the board of a public firm is classified as an IB director if she is an independent director and is holding, or at some point in her career, has held a senior position at any of the top 100 investment banks. We define senior position as a top executive (e.g., CEO, CFO, Chairman, or President) or a senior manager (e.g., managing director, regional CEO/CFO,

⁴ The 100 most active investment banks are involved in 91% of the aggregate deal value over the period 1980-2014. Our main findings are unchanged if we use the 50 or 150 most active investment banks.

⁵ For example, Credit Suisse First Boston was renamed to Credit Suisse in 2006, and Banc of America Securities LLC merged with Merrill Lynch to become Bank of America Merrill Lynch in 2008. Cases such as these are accounted for when we match employer names in BoardEx to investment bank names in SDC.

⁶ For example, for Citigroup, we only consider investment banking arms such as Citigroup Global Markets, Salomon Smith Barney, Citi Smith Barney, and Citi Institutional Clients Group, while non-investment banking arms such as Citicorp, Citibank, Citi Private Bank are excluded. In cases where an employer's name is provided at the conglomerate level (e.g., Citigroup), we exclude it from our classification of IB directors.

group executive, or executive president). Junior job titles, such as divisional vice president, analyst, associate, and consultant, are excluded.

Table 1 Panel A provides a list of the ten most active investment banks by aggregate deal value and by the number of connected directors at public firms with whom they have shared an employment relation. As expected, there is a large overlap between the two lists. We find that IB directors take up about 6% of board seats in U.S. public firms and sit on boards of more than a third of these firms. Unreported analysis shows that these numbers have been steadily increasing over the past decade, suggesting an increasing importance of IB directors to U.S. firms.

Panel B presents an overview of IB directors and their roles on a board. We show that among IB directors, a majority of them (85%) had previously worked in investment banking, whereas the remainder (15%) are currently working as an investment banker. We also examine IB directors' different roles on a board. Compared to non-IB directors, IB directors are less likely to be Chairman of the Board (4.7% vs. 12.3%), but are more likely to be lead director (4.0% vs. 2.7%). These directors are much more likely to serve on audit committee (54% vs. 41%), compensation committee (47% vs. 39%), nomination committee (39% vs. 33%), and finance committee (11% vs. 5%), than non-IB directors, consistent with their expertise in finance, accounting, and internal control.

Panel C presents the summary statistics for the panel of 37,012 firm-year observations used to examine SEO propensity. We show that about 40% of the sample firms have IB directors. By comparison, over 80% of the directors are independent. The average board has eight directors. Other firm characteristics are typical of the Compustat population.

B. The SEO sample

We identify SEOs using the Securities Data Company's (SDC) Global New Issues database over the period 2001-2015. We focus on SEOs by U.S. industrial firms listed on the NYSE, AMEX, and NASDAQ, and remove units, right offerings, Real Estate Investment Trusts (REITS), closed-end funds, withdrawn offerings, pure secondary offerings, and offerings with price less than \$1.⁷ Our main sample consists of 2,508 SEO deals, three-quarters of which have Rule 415 Shelf Registrations.⁸ Table 2 Panel A lists the steps taken to form our main sample.⁹

Table 2 Panel B presents the temporal distribution of our main sample. We see a big spike in SEO activities in 2009 that coincides with the beginning of economic recovery after the crisis (Kahle and Stulz (2013)).

In Panel C, we report the summary statistics of key deal and firm characteristics for our SEO sample. Detailed definitions of the variables are given in the Appendix. All continuous variables are winsorized at their 1st and 99th percentiles to reduce the influence of outliers, and all dollar values are adjusted to 2015 dollars. The numbers are largely in line with other SEO studies (see, for example, Kim and Park (2005), Lee and Masulis (2009), and Ferreira and Laux (2016)).

In Panel D, we compare key deal and firm characteristics for the two SEO subsamples partitioned by the presence of IB directors on an issuer's board or not. We find that SEOs whose issuers have IB directors experience on average higher announcement returns, lower underpricing, and lower underwriter spreads. Given that omitted variable bias in univariate

⁷ We remove issues with offer price less than \$1.00 to ensure that our results are not driven by small firms and to prevent bid-ask bounce from contaminating our analysis on floatation costs later (Blume and Stambaugh (1983)).

⁸ In March 1982, the Securities and Exchange Commission (SEC) adopted Rule 415 Shelf Registration, which enabled public companies to sell securities more quickly. Under the Rule, issuers register securities that can be sold over a two-year period, with offer terms at each sale set based on current market conditions and other factors. In practice, the SEC has allowed shelf registration statements to remain effective for many years.

⁹ As a robustness check, our secondary SEO sample consists of 3,168 deals that include private placements of common stock and Rule 144A resale of securities to qualified institutional buyers. Our main findings remain unchanged.

correlations can mask the true relations between the variables, we will employ regression analysis to examine the role of IB directors in SEOs.

III. Addressing Endogeneity

Examining the effect of IB directors on firms' SEO activities presents the challenge of endogeneity. IB directors are not randomly assigned and the presence of IB directors could be correlated with firms' unobserved growth opportunities or needs for funding. Consider a firm with funding needs and equity issuance is costly. Realizing that information asymmetry between corporate insiders and outside investors could be severe, the firm could appoint a capital market expert, such as an IB director, to its board to facilitate those planned fund-raising activities.

To address the potential endogeneity concern, we adopt an instrumental variable approach. Our instrumental variable for the presence of IB directors on a board follows Adams and Ferreira (2009) and is the fraction of non-IB directors on a board who sit or have sat on boards on which there are IB directors. The network of non-IB directors spans boards of all firms covered by BoardEx, i.e., both public and large private firms. We expect this instrument to meet the relevance condition—it captures the degree to which non-IB directors are connected to IB directors and therefore have the network to appoint IB directors and appreciate their role on a corporate board. In the meantime, non-IB directors' network on other boards should be largely independent of their home firm's funding needs and/or investment opportunities (the exclusion restriction).

We nonetheless consider a number of scenarios where the exclusion condition could potentially be violated and address them by controlling for the specific channel involved. First, non-IB directors sharing boards with investment bankers might also be well-connected to capital

providers. In this case, our IV might capture the capital provider effect in addition to the intended connection to IB directors (i.e., a violation of the exclusion restriction). To address this possibility, we control for a board's connection to capital providers, defined as firms with SIC between 6000 and 6299 (including depository institutions, non-depository credit institutions, security and commodity brokers, dealers, exchanges, and services).

Second, non-IB directors sharing boards with investment bankers might also have more experience and more financial expertise. We therefore control for non-IB directors' board tenure and their number of years of experience in the financial industry.

Third, a firm's directors may react to the SEO activities of its peer firms through interlocked directorship. To address this possibility, we control for the SEO activities of interlocked peer firms.

Finally, a firm located closer to financial centers may have an advantage in accessing capital due to lower information production cost (Coval and Moskowitz (2001) and Peterson and Rajan (2002)), and its directors are also more likely to share boards with financial experts including investment bankers due to geographic proximity. We thus control for a firm's distance to financial centers, defined as the top ten cities with the most number of fund families (Hong, Kubik, and Stein (2005)).¹⁰ We expect that conditioning our instrument on these variables will greatly strengthen the exclusion restriction related to our instrument.

To address the reverse causality concern, we identify and remove firm-year observations where IB directors have a tenure less than three years prior to an SEO.¹¹ In this case, IB directors

¹⁰ Our results are similar if we remove firms located within 100 miles of these major financial centers.

¹¹ Our main findings remain unchanged if we require IB directors to have tenure of at least six years, i.e., two election cycles away from an SEO (for staggered boards).

are hired long before a firm's capital raising activities and any relation we identify is more likely to be causal.

IV. The Role of IB Directors in SEOs

A. IB directors and SEO propensity

We estimate a probit regression where the dependent variable, *SEO*, is an indicator variable that takes the value of one if a firm makes at least one SEO in a given year, and zero otherwise. The variable of interest is an indicator variable, *IB Director*, that takes the value of one if a firm has at least one IB director on its board in the prior year, and zero otherwise.

In addition to the four variables described in Section III, we control for board monitoring using board size and the fraction of independent directors to make sure that our IB director results are not driven by (omitted) board characteristics (Yermack (1996) and Guo and Masulis (2015)). We also control for a number of known determinants of a firm's propensity to do an SEO, including firm size, firm age, ROA, dividend payer, market-to-book ratio (M/B), prior year return, leverage, tangibility, cash holdings, capital expenditures, prior year SEOs, rated, as well as year and industry fixed effects (see, for example, Corwin (2003) and Eckbo, Masulis, and Norli (2007)).

Table 3 Panel A column (1) presents the probit regression results in terms of marginal effects. The estimated coefficients of the control variables all exhibit the expected signs. For example, we find that smaller, younger, and underperforming (in terms of ROA) firms are more likely to do SEOs. Importantly, we show that the marginal effect of *IB Director* is 0.007 and is statistically significant. The effect of IB directors on the SEO propensity is also economically meaningful. *Ceteris paribus*, firms with IB directors on their boards are 0.7 percentage points

more likely to do an SEO than firms without, which is a 12% increase based on the average SEO propensity in our sample at 6.1 percentage points.¹² It is worth noting that the marginal effect of having IB directors on a board is about as large as the marginal effect of a one-standard-deviation increase in capital expenditures (or a two-standard-deviation increase in M/B).

We next employ the instrumental variable approach. Angrist (2001) and Angrist and Krueger (2001) point out that when the endogenous regressor is binary, using the predicted probability from a nonlinear model in the second stage does not generate consistent estimates unless the nonlinear model is exactly correct. Therefore, we estimate a recursive bivariate probit model, which assumes that the binary dependent and independent variables are each determined by latent linear models with jointly normal error terms (Evans and Schwab (1995)). In this model, the probit equations for the indicator variable *IB Director* and the indicator variable *SEO* are estimated simultaneously using the maximum likelihood method, where the instrument is used to predict IB directors' presence.¹³

Panel A columns (2)-(3) present results of the bivariate probit regression in terms of marginal effects. In the first stage (column (2)), *IB director* is instrumented with *Connection to IB directors*, the fraction of non-IB directors who serve or have served on other boards with IB

¹² We also examine whether our results are affected by differences in firm characteristics between firms with and without IB directors using a propensity score matching approach (Rosenbaum and Rubin (1983)). We estimate the propensity score using a set of covariates that includes firm size, firm age, ROA, dividend payer, market-to-book, prior year return, prior year SEO, leverage, rated, tangibility, cash holdings, capital expenditures, and firm industry. We then identify two groups of firms that are virtually indistinguishable from one another except for the presence of IB directors on their boards. Our results are the same after adjusting for covariate differences between these two groups.

¹³ In our current setting, the latent linear model can be specified as follows:

$$\begin{cases} y_1^* = \beta_1 X_1 + \varepsilon_1, y_1 = 1 \text{ for } y_1^* > 0 \\ y_2^* = \beta_2 X_2 + \gamma y_1^* + \varepsilon_2, y_2 = 1 \text{ for } y_2^* > 0 \end{cases}$$

where y_1 and y_2 represent the presence of IB directors and SEO activities, respectively. When the error terms ε_1 and ε_2 are uncorrelated, both equations can be estimated separately as single probit models, but when the error terms might be correlated, a bivariate probit model is required. Greene (1998, 2002) shows that the endogeneity of y_1 does not affect the likelihood of the bivariate probit.

directors. We note that our instrument is positively and significantly associated with a firm's likelihood of having an IB director on its board at the 1% level. The high t-statistic alleviates concerns about weak instrument. More importantly, after instrumentation, in column (3) we show that firms with IB directors are two percentage points more likely to do SEOs than firms without IB directors.

For comparison, we also estimate a standard two-stage least squares (2SLS) regression with our instrument, assuming both binary outcome variables to be linear. Panel A columns (4)-(5) presents the results. The first-stage F-statistic again rejects the null of weak instrument. We show that the coefficient on the indicator variable *IB Director* is positive and significant at the 1% level, confirming the positive effect of IB directors on a firm's SEO propensity. A direct inference of the magnitude of the coefficient is that firms with IB directors are three percentage points more likely to make SEOs than firms without IB directors.¹⁴

To address the reverse causality concern, in Panel B we exclude firm-year observations with directors who join a board less than three years before an SEO. This removes about 15% of the sample. Our main findings on the positive association between IB directors and a firm's SEO propensity remain unchanged.¹⁵

¹⁴ However, we caution against such a direct inference, because 2SLS can produce predicted values that are out of bounds when a model has both a binary dependent variable and binary explanatory variables. Instead, we rely on probit and bivariate probit estimates to infer the marginal effect of IB directors on a firm's SEO propensity, because these estimates are considered more appropriate and efficient in a setting like ours (Greene (1998) and Chiburis, Das, and Lokshin (2012)).

¹⁵ If investment banking experience is a required attribute for director appointment, directors who join the board before gaining investment banking experience should be free of such endogeneity concerns. We therefore limit the SEO propensity tests to a subsample of IB directors who gain investment banking experience after joining the board. However, only 1.9% of the firms have IB directors in such way. The sample is too small to generate any significant effect.

B. IB directors and SEO announcement returns and issuance costs

In this section, we examine whether issuers experience higher abnormal announcement returns and incur lower issuance costs when they have at least one IB director on their boards.

Table 4 Panel A presents the regression results where the dependent variable is SEO announcement return, controlling for known determinants (see, for example, Lee and Masulis (2009) and Ferreira and Laux (2016)) as well as year and industry fixed effects. In column (1), where the regression specification is OLS, we show that the coefficient on the indicator *IB director* is positive and significant at the 5% level. The presence of IB directors increases the issuers' two-day CAR by 60 basis points compared to the sample average of -200 basis points. In terms of economic significance, the average market capitalization for SEO issuers is \$1.59 billion, so a 60 basis point increase corresponds to \$9.54 million value creation to the shareholders of a typical issuer. This effect is similar in magnitude to the effect of a one-standard-deviation increase in share turnover (a proxy for stock liquidity).

To control for potential self-selection bias whereby a firm's SEO decision might be influenced by management's expectations of the market reaction to the announcement (Li and Prabhala (2007)), we employ a two-stage Heckman selection model (Heckman (1979)). In the first stage, we estimate a probit regression of SEO propensity using the same specification as in Table 3 Panel A column (1). In the second stage, we add the Inverse Mills ratio as an additional control variable in our estimation of SEO announcement returns. Column (2) presents the results. The coefficient on the Inverse Mills ratio suggests evidence of negative selection. We show that the coefficient on the indicator *IB Director* is positive and significant at the 5% level and with a similar magnitude as that in column (1) without controlling for selection. We conclude that firms with IB directors are associated with higher SEO announcement returns.

Panel B presents the regression results where the dependent variable is SEO underpricing, controlling for known determinants documented in prior studies (see, for example, Loderer, Sheehan, and Kadlec (1991), Jegadeesh, Weinstein, and Welch (1993), Altinkılıç and Hansen (2003), and Corwin (2003)) as well as year fixed effects. In column (1), we show that the coefficient on the indicator *IB director* is negative and significant at the 5% level. The presence of IB directors reduces SEO underpricing by 50 basis points compared to the sample average of 400 basis points. This effect is similar in magnitude to the effect of a one-standard-deviation decrease in stock return volatility. In terms of economic significance, given an average issue size of \$131 million in our sample, a 50 basis point drop in underpricing corresponds to \$0.66 million value creation to a typical issuer.

Column (2) presents the second-stage regression results controlling for selection in SEO decisions. We show that the coefficient on the indicator *IB Director* is negative and significant at the 5% level and with a similar magnitude as that in column (1) without controlling for selection. We obtain similar results after instrumenting *IB Director* in a 2SLS specification (column (3)) and in a subsample that excludes firm-year observations whose IB director's tenure is less than three years (column (4)). Overall, we find that IB directors are associated with smaller SEO underpricing.

Panel C presents the regression results where the dependent variable is the logarithm of gross spread, controlling for known determinants (see, for example, Lee and Masulis (2009) and Butler, Grullon and Weston (2005)) as well as year and industry fixed effects. The OLS regression results in column (1) show that the coefficient on the indicator *IB director* is negative and significant at the 5% level, and the presence of IB directors reduces the issuer's underwriting fees by 4.7%. In terms of economic significance, with an average issue size of \$131 million and

an average gross spread of 5.1 percentage points in our sample, a 4.7% decrease in underwriting fees corresponds to a savings of \$0.31 million in fees to a typical SEO issuer ($= 131 \times 0.051 \times 0.047$); this effect is larger than that of a one-standard-deviation increase in $\log(\text{Stock price})$.

Column (2) presents the second-stage regression results controlling for selection in SEO decisions. We show that the coefficient on the indicator *IB Director* is barely changed. Columns (3) and (4) present the second-stage regression results of 2SLS for the full sample and for a subsample that excludes firm-year observations whose IB director's tenure is less than three years, respectively. Again, the estimated coefficient on the indicator *IB Director* remains negative and significant, supporting the argument that IB directors lead to lower gross spreads.

In summary, we present evidence that the presence of IB directors on boards is associated with a higher SEO propensity, higher announcement returns, less underpricing, and lower gross spreads. In the next section, we explore the possible channel underlying our findings.

V. Underlying Mechanism

We conjecture that one key role of IB directors in SEOs is to reduce information asymmetry between an issuer and the capital market. In this section, we conduct a number of tests to help establish this economic mechanism.

A. Conference calls and firm information environment

Extant literature shows that conference calls are an important communication channel used by management to reach capital market participants (Matsumoto, Pronk, and Roelofsen (2011)). We conjecture that, due to their capital market experience, firms with IB directors would be more effective in conveying information to market participants such as investors and

analysts via conference calls to reduce information asymmetry, and hence firms with IB directors are more likely to hold conference calls before SEOs.

For each SEO firm, we collect its conference calls from FactSet's Call Street. Results from the second-stage regression of 2SLS are reported in Table 5 Panel A. The sample size is reduced because FactSet's coverage of conference calls starts in 2003, while our SEO sample starts in 2000. In column (1), the dependent variable is the natural logarithm of one plus the total number of conference calls during the six-month period prior to an SEO. We find that the total number of calls is not significantly higher for firms with IB directors than for those without IB directors. In columns (2) and (3), we examine earnings calls and non-earnings-related calls, respectively. Earnings calls refer to conference calls where a firm discusses its financial results of a particular reporting period, while non-earnings-related calls include investor conference calls (i.e., analysts and investors meetings), earnings guidance calls, sales and revenues calls, and event-related calls (e.g., M&As). We find that firms with IB directors have significantly more non-earnings-related calls in the six-month period prior to the offering than those without IB directors over the same period, whereas both groups have similar number of earnings calls over the same period. Given that firms typically have more discretion over non-earnings-related conference calls, this result is consistent with our conjecture that IB directors know how to communicate with the equity market and can help improve the information environment of the issuer by advising the issuers to make more non-earnings-related calls.¹⁶

If IB directors are effective communicators of firm value to capital market, we expect their presence to be associated with better firm information environment, which in turn leads to

¹⁶ We also conduct textual analysis of conference call transcripts. In particular, we examine the length of each conference call and the tone of the call. Table IA1 in the Internet Appendix presents the results. We do not find any evidence that firms with IB directors make longer calls or calls with more positive tone than those without IB directors.

more frequent SEOs and lower floatation costs (Taggart (1977), Choe, Masulis and Nanda (1993), Lee and Masulis (2009), and Billett and Yu (2016)).

Our first proxy for firm information environment is return volatility following Billett and Yu (2016). With a more transparent information environment, new information is promptly incorporated into stock prices, leading to less variation in stock returns. We expect the presence of IB directors leads to lower return volatility.

Our second proxy focuses on the quality of accounting information, and we use accrual quality following Lee and Masulis (2009). IB directors, very often (about 54% of the times in our sample), sit on the audit committee, and their presence can help firms communicate their financial information to the broad capital market in a more timely and effective manner. Prior work has shown that financial expertise on the audit committee is associated with better earnings quality (Defond, Hann, and Hu (2005)). Lee and Masulis (2009) show that poor accounting information quality raises uncertainty about a firm's financial condition for outside investors, lowers demand for a firm's stock, and raises underwriting costs and risk. We thus expect that another important marker of IB directors' role in SEOs is that their presence is associated with higher quality of accounting information.

Our third and final proxy for firm information environment is analyst forecast error. As noted earlier, IB directors help issuers improve their communication with financial intermediaries like analysts who are financial experts themselves. Having a similar professional background means the IB directors speak the same language as and can communicate more effectively with the analyst community. Custódio and Metzger (2014) find that firms whose CEOs have finance experience are associated with more accurate analyst forecasts. Similarly, we

expect that IB directors could improve the accuracy of analyst forecasts, lowering the uncertainty surrounding SEOs.

Table 5 Panel B presents our investigation of the underlying mechanism using proxies of firm information environment. Consistent with our conjecture, the coefficient on the indicator *IB director* is negative and significant when the dependent variables are return volatility, earnings quality, and analyst forecasts error, suggesting that the presence of IB directors helps improve firm information environment.

In summary, we show that the positive effect of IB directors on SEO outcome variables is due to their ability in reducing information asymmetry between the issuer and capital market.

B. Cross-sectional heterogeneity

We explore several cross-sectional heterogeneities in our main findings to further shed light on the underlying mechanism. Table 6 Panels A and B shows that the effects of IB directors on SEO propensity and outcomes are stronger among smaller firms. This is consistent with IB directors being especially important for firms subject to greater information asymmetry. In Panel B, we show that the effects of IB directors on SEO outcomes are stronger for firms with less prior SEO experience, consistent with director's capital market experience making up for firms' lack of prior capital market experience. Overall, these results are consistent with IB directors improving firms' access to capital markets when the potential for information asymmetry is severe.

C. IB directors and debt markets

We further explore the role of IB directors in capital raising activities across different security types. If the effect of IB directors operates primarily through reducing information

asymmetry, such effect should be weaker in securities that are less information-sensitive in the first place. Among different securities, common equity is the most sensitive to information asymmetry between corporate insiders and the capital market, while corporate bonds and bank loans are less information-sensitive. We thus expect IB directors to have less of an effect on the issuance and pricing of bonds and loans. Table 7 presents the results.

Consistent with our conjecture, we find some weak effects of IB directors on a firm's propensity to issue bonds and no significant effect on bond spreads or other non-price terms at issuance (Panel A). We also find no effect of IB directors on a firm's propensity to obtain bank loans and very limited effect on the terms of bank loans (Panel B). These results are not surprising because bonds and loans are less information-sensitive than equity. Moreover, these results also help rule out alternative explanations such as conflicts of interests or reverse causality for our IB director results in SEOs, as these explanations should also apply for corporate bonds and bank loans.

In summary, our evidence points out the mechanism underlying IB directors' role in SEOs/IPOs is to reduce information asymmetry between issuers and the capital market.

VI. Additional Investigation

A. Post-SEO firm policies and performance

So far, we have shown that IB directors enable firms to access the capital market more easily and cheaply. As a result, the precautionary motive of holding cash becomes less important, and we would expect that firms with IB directors are more likely to spend the proceeds in valuable investments than hoarding them.

To examine the real implications of firms having IB directors on corporate policies, we follow Barber and Lyon (1996) and adopt the industry-performance benchmarking approach. Specifically, we pair each SEO firm with a set of non-SEO firms that have the same SIC code (starting with four-digit SIC) and operating performance within 90% to 110% of the SEO firms' performance in year -1. Benchmark-adjusted measures are then calculated as the difference between the measures of the SEO firm and the median measures of the matching firms. We measure operating performance as operating income before depreciation (OIBD) scaled by sales. As pointed out by Barber and Lyon (1996), unlike measures based on earnings, OIBD mitigates the effects of different financing methods. Table 8 Panel A presents the results, where we compare the median changes in SEO firms' cash holdings, investment (Capex + R&D), and operating performance for two subsamples partitioned by the presence of IB directors from year +1 up to year +3 relative to year -1.

Consistent with our conjecture on the role of IB directors in firm policies, Panel A shows that post-SEOs, firms with IB directors hold less cash and invest more than their matched peers without IB directors. These findings are consistent with the notion that IB directors help firms relax their financial constraints, leading to less (precautionary) cash holdings and in the meantime, the lower issuance costs reduces cost of capital, leading to more investment opportunities and hence more real investment.¹⁷ Supporting the above findings, we find that IB directors have performance implications: SEO firms with IB directors significantly outperform their peers without IB directors in terms of operating performance.

We next examine whether firms with IB directors outperform other firms in terms of long-run abnormal stock performance after SEO. Specifically, we analyze the benchmark-

¹⁷ In untabulated analysis, we also examine SEO firms' acquisition and total payout post-SEOs and find no significant difference between issuers with IB directors and those without IB directors.

adjusted returns over three years after the offer date. To calculate the benchmark-adjusted buy and hold abnormal returns (BHARs), we follow Barber and Lyon (1997) and calculate abnormal returns as the return of the SEO firm less the return on a control firm, which is chosen among all firms that have market values of equity between 70% and 130% of that of the SEO firm and whose book-to-market ratio is closest to that of the SEO firm. Panel B presents the results.

We show that SEO firms with IB directors outperform other SEO firms in a statistically significant and economically meaningful way. Over a two-year horizon starting at the offer date, SEO firms with IB directors outperform those without by 6.8%.

We also use alternative approaches to examining firm policies and performance post-SEOs. Table IA2 in the Internet Appendix presents the results. We show that the findings are similar when we use the closest matching firm to compare the operating performance (Panel A) and use the market-adjusted returns and Fama-French adjusted returns to generate the buy-and-hold abnormal returns (Panels B and C).

Overall, we provide evidence suggesting that IB directors improves firms' access to equity market, leading to less cash hoarding, more investments, and better operating and stock performance.

B. Robustness checks

First, we re-do our analysis of the SEO propensity in Table 3 using different measures of SEO activity. Table IA3 in the Internet Appendix presents the results. We show that using a number of volume-based measures to capture SEO activity, the positive effect of IB directors remains.

Second, we examine whether and how IB directors affect issue size. IB directors help reduce information asymmetry, leading firms to raise capital more frequently and more cheaply.

As a result, firms might not need to lump their issues to benefit from economies of scale. This channel suggests that there is either no or a negative association between the presence of IB directors and the size of SEO issues. Table IA4 presents the results where the dependent variable is the size of SEO deal. We show that the presence of IB directors is not significantly associated with the size of the SEO deal, as measured by both the absolute and normalized net proceeds. It is clear that our main findings are not driven by SEO deal size.

C. Other possible mechanisms

We also consider and rule out two alternative explanations of our main findings. First, our results could be due to a conflict of interest channel, whereby IB directors are current or former employees of the lead underwriters for the SEO. To address this, we remove about 5% of firm-year observations in which IB directors are compromised. In untabulated analysis, we show that our findings remain unchanged after removing these firm-year observations.

Second, our results could be due to IB directors' superior abilities to time the market, thereby making firms more likely to do SEOs in market upturns. We argue that this is unlikely to be the case based on two observations. Our results on long-run stock performance are inconsistent with the market timing channel: If firms with IB directors are more likely to time the market, their long-run stock returns after the SEO should be lower (Loughran and Ritter (1995) and Baker and Wurgler (2000)); we find the opposite. We then directly test for market timing in Table IA5. We find that firms with IB directors are not more likely to issue equity when prior year stock return is high, suggesting that IB directors do not have superior abilities to time the market.

D. IB directors and IPOs

IPOs in the U.S. are on average underpriced by over 20% (Liu and Ritter (2011)), making it one of the costliest capital raising activities. Prior literature suggests that this phenomenon is mainly driven by information asymmetry (see, for example, Rock (1986), Allen and Faulhaber (1989), and Grinblatt and Hwang (1989)). If IB directors indeed reduce information asymmetry between an issuer and the capital market, we would expect that IPO firms with IB directors experience less underpricing than their counterparts without IB directors.

To explore this conjecture, we identify all IPOs by U.S. industrial firms over the period 2001-2015 using the SDC database. We then merge the IPO data with the IPO firm database constructed by Kenney and Patton (2017) to obtain firms' founding years. Finally, we obtain financial information from Compustat and board information from BoardEx.¹⁸ The above steps yield a sample of 99 IPOs with no missing variables.

Table IA6 presents the second-stage regression results of 2SLS where the dependent variable is IPO underpricing, defined as the first-day percentage return from the offer price to the closing price. We find some evidence that the presence of IB directors reduces IPO underpricing, supporting our conjecture that IB directors reduce information asymmetry between IPO issuers and the equity market.

VII. Conclusions

Much of the literature on corporate boards has centered on their monitoring role, yet boards spend a significant portion of their time advising rather than monitoring. In this paper, using a large hand-collected data set of IB directors on boards of over 7,000 firms for the period

¹⁸ The BoardEx database mainly covers public firms, so our IPO sample is small when we require pre-IPO board information.

2000-2014, we examine whether and how the presence of IB directors is related to capital raising activities and corporate policies.

We find that firms with investment bankers on their boards have a higher probability of making SEOs, and that these offerings are associated with higher announcement returns, lower underpricing, and lower underwriter spreads. In terms of the channel analysis, we show that firms with IB directors initiate more non-earnings-related conference calls in the six-month period before SEOs, and have better information environment proxied by lower return volatility, better earnings quality, and lower analyst forecast error than their counterparts without IB directors. Moreover, the effect of IB directors on SEO outcomes is stronger for smaller firms and firms with less prior SEO experience, whereas there is a limited role of IB directors in capital raising activities involving bonds or loans, which are less information-sensitive than equity. These results are consistent with the notion that IB directors reduce information asymmetry between issuers and the equity market. Finally, we show that post-SEOs, issuers with IB directors invest more, hold less cash, and experience better operating and stock performance than their counterparts without IB directors. Overall, our results highlight the advisory role of specialist directors in shaping corporate policies.

Appendix. Variable definitions

All Compustat firm characteristics are measured as of the fiscal year-end before the SEO announcement, and all continuous variables are winsorized at the 1st and 99th percentiles. All dollar values are in 2015 dollars.

Variables	Definitions
<i>Dependent variables</i>	
SEO	An indicator variable that takes the value of one if a firm makes at least one SEO during the year, and zero otherwise. Source: SDC.
CAR	Two-day cumulative abnormal return centered on the SEO announcement date, calculated using the market model estimated over the 200-day period ending 11 days before the SEO announcement date, with the return on the CRSP value-weighted index as the market return. Source: CRSP.
Underpricing	Negative one times the return from the closing price on the day prior to the offer date to the offer price. Source: CRSP.
Gross spread	The total compensation to IBs as a percentage of total SEO proceeds. Source: SDC.
# Calls	The number of conference calls during the six-month period prior to an SEO. Source: FactSet.
# Earnings calls	The number of earnings conference calls where a firm discusses its financial results over a reporting period during the six-month period prior to an SEO. Source: FactSet.
# Non-earnings calls	The number of non-earnings conference calls including investor conference calls, earnings guidance calls, sales and revenues calls, and event-related (e.g., mergers and acquisitions) calls during the six-month period prior to an SEO. Source: FactSet.
Stock return volatility	The standard deviation of monthly stock return in a year. Source: CRSP.
Accrual quality	The standard deviation of the five most recent firm-specific residuals from the regression of total current accruals on lagged, contemporaneous, and leading cash flow from operations; total current accruals = Δ current assets - Δ current liabilities + Δ debt in current liabilities - Δ cash; cash flow from operations = earnings before extraordinary items - total accruals; and total accruals = total current accruals - depreciation and amortization; all variables are scaled by total assets; the regression is estimated annually for each industry groups having at least 20 firms with data available for each of the past five years (Lee and Masulis (2009)). Source: Compustat.
Forecast error	The median absolute forecast error, defined as the absolute difference between the actual annual earnings per share and the median analyst earnings forecast, scaled by actual earnings per share, computed annually. Source: I/B/E/S.
Bond issuance	An indicator variable that takes the value of one if a firm makes at least one public bond issuance during the year, and zero otherwise. Source: SDC.
Bond spread	The difference between the yield of a corporate bond at issuance minus the yield of maturity-matched Treasury bond. Source: FISD.
Bond covenants	The number of covenants associated with a bond. Source: FISD.
Bond issuance size	The size of a bond issue in thousands of dollars. Source: FISD.
Bond maturity	The maturity of a bond in number of years. Source: FISD.
Obtaining loan	An indicator variable that takes the value of one if a firm obtains at least one bank loan during the year, and zero otherwise. Source: Dealscan.
Loan spread	The all-in-spread of a bank loan. Source: Dealscan.
Loan covenants	The number of covenants associated with a bank loan. Source: Dealscan.

Loan size	The size of a bank loan in thousands of dollars. Source: Dealscan.
Loan maturity	The maturity of a bank loan in number of years. Source: Dealscan.
Investment	(Capital expenditures + R&D expenses)/Total assets. Source: Compustat.
Operating performance	Operating income before depreciation (OIBD) scaled by sales. As pointed out by Barber and Lyon (1996), unlike measures based on earnings including ROA, OIBD mitigates the effects of different financing methods which is relevant in our setting. Source: Compustat.

Director characteristics

IB director	An indicator variable that takes the value of one if there is at least one outside director on a board with investment banking experience when the SEO is announced (or made), and zero otherwise. Source: BoardEx.
IB director (%)	The fraction of outside directors on a board with investment banking experience when the SEO is announced (or made). Source: BoardEx.
Connection to IB directors	The fraction of non-IB directors on a board who sit on other boards (either now or in the past) on which there are IB directors. Source: BoardEx.
Board size	The number of directors on a board. $\log(1 + \text{Board size})$ is used in regressions. Source: BoardEx.
Board independence	The fraction of independent directors on a board. Source: BoardEx.
Connection to capital providers	An indicator variable that takes the value of one if there is at least one director on a board who sits on the board of a capital provider (SIC 6000-6299). Source: BoardEx.
Board tenure	The average board tenure of non-IB independent directors. $\log(1 + \text{Board tenure})$ is used in regressions. Source: BoardEx.
Financial expertise	The number of years of experience in financial industry (SIC 6000-6299) averaged across non-IB directors on a board. $\log(1 + \text{Financial expertise})$ is used in regressions. Source: BoardEx.

Firm characteristics

Interlocked peer SEO	An indicator variable that takes the value of one if a peer firm with interlocking directors makes SEOs during the year, and zero otherwise. Peers are first defined at the four-digit SIC level and if there are fewer than five peer firms (at the four-digit level) in the sample, we move up to three-digit SIC level and if there are fewer than five firms (at the three-digit level), we move up to two-digit SIC level. Source: SDC.
Distance	Distance to the nearest financial center, where financial centers are defined as the top 10 cities that have the most number of fund families as of December 1998 (Hong, Kubik, and Stein (2005)). $\log(\text{Distance})$ is used in regressions. Source: Compustat, Compact Disclosure, and U.S. Census Bureau.
Total assets	Book value of total assets. Source: Compustat.
Firm age	The number of years since a firm first appeared in CRSP. $\log(1 + \text{Firm age})$ is used in regressions. Source: CRSP.
ROA	Net income/Total assets. Source: Compustat.
Dividend payer	An indicator variable that takes the value of one if a firm pays any dividend during the year, and zero otherwise. Source: Compustat.
M/B	(Total assets - Book equity + Market value of equity)/Total Assets. Source: Compustat.
Prior year return	The annual return on the common stock of a firm. Source: CRSP.
Leverage	(Long-term debt + Debt in current liabilities)/Total assets. Source: Compustat.
Tangibility	Net property, plant and equipment/Total assets. Source: Compustat.

Cash	Cash and cash equivalent holdings/Total assets. Source: Compustat.
Capex	Capital expenditures/Total assets. Source: Compustat.
Prior year SEOs	An indicator variable that takes the value of one if a firm makes SEOs in the past year, and zero otherwise. Source: SDC.
Rated	An indicator variable that takes the value of one if the firm has a credit rating, and zero otherwise. Source: Compustat.
Daily return volatility	The standard deviation of daily stock return during the trading days -90 to -11 prior to the filing date (or offer date). Source: CRSP.
Share turnover	The ratio of average daily share trading volume to the number of shares outstanding during the trading days -90 to -11 prior to the filing date (or offer date). Source: CRSP.
PreCAR	Five-day cumulative abnormal return relative to the market return ending the day prior to the SEO offer date, where the market return is the return on the CRSP value-weighted index. Source: CRSP.
Stock price	The closing price on the day prior to the SEO offering date. Source: CRSP.
Cash flow volatility	The standard deviation of annual cash flows in the past ten years. Source: Compustat.

SEO characteristics

Relative size	The number of shares offered divided by the number of shares outstanding prior to the SEO. Source: SDC.
Secondary	The fraction of shares offered that are sold by existing shareholders. Source: SDC.
# Bookrunners	The number of book runners involved in an SEO. Source: SDC.
IPO underpricing	The average underpricing of IPOs in the same month as an SEO. Source: Jay Ritter's website

References:

- Adams, R.B., H. Almeida, and D. Ferreira, 2005. Powerful CEOs and their impact on corporate performance, *Review of Financial Studies* 18, 1403–1432.
- Adams, R.B., and D. Ferreira, 2007. A theory of friendly boards, *Journal of Finance* 62, 217–250.
- Adams, R.B., and D. Ferreira, 2009. Women in the boardroom and their impact on governance and performance, *Journal of Financial Economics* 94, 291–309.
- Adams, R.B., B.E. Hermalin, and M.S. Weisbach, 2010. The role of boards of directors in corporate governance: A conceptual framework and survey, *Journal of Economic Literature* 48, 58–107.
- Ahern, K.R., and A.K. Dittmar, 2012. The changing of the boards: The impact on firm valuation of mandated female board representation, *Quarterly Journal of Economics* 127, 137–197.
- Allen, F., and G.R. Faulhaber, 1989. Signalling by underpricing in the IPO market, *Journal of Financial Economics* 22, 303–323.
- Altinkılıç, O., and R.S. Hansen, 2003. Discounting and underpricing in seasoned equity offers, *Journal of Financial Economics* 69, 285–323.
- Angrist, J.D., 2001. Estimation of limited dependent variable models with dummy endogenous regressors: Simple strategies for empirical practice, *Journal of Business & Economic Statistics* 19, 2–28.
- Angrist, J.D., and A.B. Krueger, 2001. Instrumental variables and the search for identification: From supply and demand to natural experiments, *Journal of Economic Perspectives* 15, 69–85.
- Bae, K.H., R. Stulz, and H. Tan, 2008. Do local analysts know more? A cross-country study of the performance of local analysts and foreign analysts, *Journal of Financial Economics* 88, 581–606.
- Baker, M., and J. Wurgler, 2000. The equity share in new issues and aggregate stock returns, *Journal of Finance* 55, 2219–2257.
- Barber, B., and J. Lyon, 1996. Detecting abnormal operating performance: The empirical power and specification of test statistics, *Journal of Financial Economics* 41, 359–399.
- Barber, B., and J. Lyon, 1997. Detecting long-run abnormal stock returns: The empirical power and specification of test statistics, *Journal of Financial Economics* 43, 341–372.

- Benmelech, E., and C. Frydman, 2015. Military CEOs, *Journal of Financial Economics* 117, 43–59.
- Billett, M.T., and M. Yu, 2016. Asymmetric information, financial reporting, and open market share repurchases, *Journal of Financial and Quantitative Finance* 51, 1165–1192.
- Blume, E., and R. F. Stambaugh, 1983. Biases in computed returns: An application to the size effect, *Journal of Financial Economics* 12, 387–404.
- Butler, A.W., G. Grullon, and J.P. Weston, 2005. Stock market liquidity and the cost of issuing equity, *Journal of Financial and Quantitative Analysis* 40, 331–348.
- Chiburis, R., J. Das, and M. Lokshin, 2012. A practical comparison of the bivariate probit and linear IV estimators, *Economics Letters* 117, 762–766.
- Choe, H., R. Masulis and V. Nanda, 1993. Common stock offerings across the business cycle: Theory and evidence, *Journal of Empirical Finance* 1, 3–31.
- Corwin, S.A., 2003. The determinants of underpricing for seasoned equity offers, *Journal of Finance* 58, 2249–2279.
- Coval, J. D., and T. J. Moskowitz, 2001. The geography of investment: Informed trading and asset prices, *Journal of Political Economy* 4, 811–841.
- Custódio, C., and D. Metzger, 2014. Financial expert CEOs: CEO’s work experience and firm’s financial policies, *Journal of Financial Economics* 114, 125–154.
- Dass, N., O. Kini, V. Nanda, B. Onal, and J. Wang, 2014. Board expertise: Do directors from related industries help bridge the information gap? *Review of Financial Studies* 27, 1533–1592.
- Datta, S., M. Iskandar-Datta, and K. Raman, 2005. Executive compensation structure and corporate equity financing decisions, *Journal of Business* 78, 1859–1889.
- DeFond, M.L., R.N. Hann, and X. Hu, 2005. Does the market value financial expertise on audit committees of boards of directors? *Journal of Accounting Research* 43, 153–193.
- Denis, D.J., 1994. Investment opportunities and the market reaction to equity offerings, *Journal of Financial and Quantitative Analysis* 29, 159–177.
- Dittmar, A., and R. Duchin, 2016. Looking in the rearview mirror: The effect of managers’ professional experience on corporate financial policy, *Review of Financial Studies* 29, 565–602.

- Eckbo, B.E., R.W. Masulis, and O. Norli, 2007. Security offerings, in: Eckbo, B.E. (Ed.), *Handbook of Corporate Finance: Empirical Corporate Finance*, Elsevier/North-Holland, Amsterdam (Chapter 13).
- Evans, W.N., and R.M. Schwab, 1995. Finishing high school and starting college: Do Catholic schools make a difference? *Quarterly Journal of Economics*, 941–974.
- Fahlenbrach, R., A. Low, and R.M. Stulz, 2010. Why do firms appoint CEOs as outside directors? *Journal of Financial Economics* 97, 12–32.
- Ferreira, M., and P. Laux, 2016. Corporate boards and CEOs: The effect of certification and monitoring, *Journal of Financial and Quantitative Analysis* 51, 899–927.
- Fich, E.M., 2005. Are some outside directors better than others? Evidence from director appointments by Fortune 1000 firms, *Journal of Business* 78, 1943–1971.
- Frydman, C. and E. Hilt, 2017. Investment banks as corporate monitors in the early twentieth century United States, *American Economic Review* 107, 1938–1970.
- Gerard, B., and V. Nanda, 1993. Trading and manipulation around seasoned equity offerings, *Journal of Finance* 48, 213–245.
- Greene, W., 1998. Gender economics courses in liberal art colleges: Further results, *Journal of Economic Education* 29, 291–300.
- Grinblatt, M., and C.Y. Hwang, 1989. Signalling and the pricing of new issues, *Journal of Finance* 44, 393–420.
- Guo, L., and R.W. Masulis, 2015. Board structure and monitoring: New evidence from CEO turnovers, *Review of Financial Studies* 28, 2770–2811.
- Güner, A.B., U. Malmendier, and G. Tate, 2008. Financial expertise of directors, *Journal of Financial Economics* 88, 323–354.
- Heckman, J. J., 1979. Sample selection bias as a specification error, *Econometrica* 47, 53–161.
- Hermalin, B., and M. Weisbach, 1998. Endogenously chosen boards of directors and their monitoring of the CEO, *American Economic Review* 88, 96–118.
- Hermalin, B., and M. Weisbach, 2003. Boards of directors as an endogenously determined institution: A survey of the economic literature, *Economic Policy Review* (April), 7–26.
- Hong, H., J. Kubik, and J. Stein. 2005. The Neighbor’s portfolio: Word-of-mouth effects in the holdings and trades of money managers, *Journal of Finance* 60, 2801–2824.

- Huang, Q., F. Jiang, E. Lie, and K. Yang, 2014. The role of investment banker directors in M&A, *Journal of Financial Economics* 112, 269–286.
- Jegadeesh, N., M. Weinstein, and I. Welch, 1993. An empirical investigation of IPO returns and subsequent equity offerings, *Journal of Financial Economics* 34, 153–175.
- Kahle, K.M. and R.M. Stulz, 2013. Access to capital, investment, and the financial crisis, *Journal of Financial Economics* 110, 280–299.
- Kang, S., E.H. Kim, and Y. Lu, 2017. Does independent directors' CEO experience matter? *Review of Finance* forthcoming.
- Kenney, M., and D. Patton. 2017. Firm database of emerging growth initial public offerings (IPOs) from 1990 through 2015, University of California Davis working paper.
- Kothari, S.P., and J.B. Warner, 1997. Measuring long-horizon security price performance, *Journal of Financial Economics* 43, 301–339.
- Kim, Y., and M. Park, 2005. Pricing of seasoned equity offers and earnings management, *Journal of Financial and Quantitative Analysis* 40, 435–463.
- Lee, I., S. Lochhead, J. Ritter, and Q. Zhao, 1996. The costs of raising capital, *Journal of Financial Research* 19, 59–74.
- Lee, G., and R.W. Masulis, 2009. Seasoned equity offerings: Quality of accounting information and expected flotation costs, *Journal of Financial Economics* 92, 443–469.
- Levi, M., K. Li, and F. Zhang, 2014. Director gender and mergers and acquisitions, *Journal of Corporate Finance* 28, 185–200.
- Li, K., and N.R. Prabhala, 2007. Self-selection models in corporate finance, in: Eckbo, B.E. (Ed.), *Handbook of Corporate Finance: Empirical Corporate Finance*, Elsevier, North-Holland, Amsterdam (Chapter 2).
- Liu, X., and J.R. Ritter, 2011. Local underwriter oligopolies and IPO underpricing, *Journal of Financial Economics* 102, 579–601.
- Loderer, C.F., D.P. Sheehan, and G.B. Kadlec, 1991. The pricing of equity offerings, *Journal of Financial Economics* 29, 35–57.
- Loughran, T., and J.R. Ritter, 1995. The new issues puzzle, *Journal of Finance* 50, 23–51.
- Matsumoto, D., M. Pronk, and E. Roelofsen, 2011. What makes conference calls useful? The information content of managers' presentations and analysts' discussion sessions, *Accounting Review* 86, 1383–1414.

- Minton, B. A., J.P. Taillard, and R. Williamson, 2014. Financial expertise of the board, risk taking, and performance: Evidence from bank holding companies, *Journal of Financial and Quantitative Analysis* 49, 351–380.
- Myers, S.C., and N.S. Majluf, 1984. Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, 187–221.
- Petersen, M.A., and R. Rajan, 2002. Does distance still matter? The information revolution in small business lending, *Journal of Finance* 57, 2507–2532.
- Rock, K., 1986. Why new issues are underpriced, *Journal of Financial Economics* 15, 187–212.
- Rosenbaum, P.R., and D.B. Rubin, 1983. The central role of the propensity score in observational studies for causal effects, *Biometrika* 70, 41–55.
- Safieddine, A., and W.J. Wilhelm, 1996. An empirical investigation of short-selling activity prior to seasoned equity offerings, *Journal of Finance* 51, 729–749.
- Scholes, M.S., 1972. The market for securities: Substitution versus price pressure and the effects of information on share prices, *Journal of Business* 45, 179–211.
- Taggart, R.A., 1977. A model of corporate financing decisions, *Journal of Finance* 32, 1467–1484.
- Tate, G., and L. Yang, 2015. Female leadership and gender equity: Evidence from plant closure, *Journal of Financial Economics* 117, 77–97.
- Yermack, D., 1996. Higher market valuation of companies with a small board of directors, *Journal of Financial Economics* 40, 185–211.

Table 1. Sample overview

This table presents an overview of top investment banks, the role of IB directors on a board, and firm characteristics. Panel A provides two ranking lists of investment banks. The first list is the ten most active investment banks in terms of aggregate deal value that they advise (M&As) and/or underwrite (securities issuances) in the U.S. market over the period 1980-2014, based on data from SDC. The second list is the ten investment banks that have the largest number of connected directors at public firms with whom they once shared an employment relation. Panel B compares the role of IB directors versus that of non-IB directors on a board. Past IB refers to the frequency of directors working as IBs in the past, and current IB refers to the frequency of directors working as IBs. Obs. refers to director-year observations. Panel C presents summary statistics of the sample used in SEO propensity analysis. The sample consists of 37,012 firm-year observations by merging CRSP, Compustat, and BoardEx databases over the period 2001-2015.

Panel A: Top 10 investment banks

Ranking	By aggregate deal values	By number of affiliated directors
1	Goldman Sachs	Goldman Sachs
2	Morgan Stanley	JP Morgan
3	JP Morgan	Citigroup
4	Merrill Lynch	Bank of America
5	Credit Suisse	Morgan Stanley
6	Bank of America	Merrill Lynch
7	Citigroup	Lehman Brothers
8	Lehman Brothers	Credit Suisse
9	Deutsche Bank	Deutsche Bank
10	UBS	UBS

Panel B: Overview of IB directors

Variable	IB directors			Non-IB directors		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Past IB	31,855	0.847	0.360			
Current IB	31,855	0.153	0.360			
Chairman of the Board	31,855	0.047	0.211	467,281	0.123	0.329
Lead director	31,855	0.040	0.197	467,281	0.027	0.162
Audit Committee	31,855	0.544	0.498	467,281	0.408	0.492
Compensation Committee	31,855	0.471	0.499	467,281	0.393	0.488
Nomination Committee	31,855	0.385	0.487	467,281	0.328	0.469
Corporate Governance Committee	31,855	0.137	0.344	467,281	0.117	0.322
Strategy Committee	31,855	0.134	0.340	467,281	0.142	0.349
Finance Committee	31,855	0.107	0.309	467,281	0.052	0.221

Panel C: Summary statistics

	Full sample (N = 37,012)				
	Mean	P25	Median	P75	Std
SEO	0.061	0.000	0.061	0.000	0.238
IB director	0.387	0.000	0.387	1.000	0.487
IB director (%)	0.064	0.000	0.064	0.125	0.095
Connection to IB directors	0.294	0.111	0.294	0.462	0.242
Board size	8.109	7.000	8.109	9.000	2.256
Board independence	0.808	0.750	0.808	0.875	0.102
Connection to capital providers	0.249	0.000	0.249	0.000	0.432
Board tenure	7.280	4.300	7.280	9.620	4.141

Financial expertise	1.362	0.000	1.362	2.000	2.064
Interlocked peer SEO	0.023	0.000	0.023	0.000	0.151
Distance	275.263	27.812	275.263	413.173	357.259
Log (Total assets)	6.290	4.881	6.290	7.639	1.973
Firm age	18.032	7.000	18.032	26.000	13.931
ROA	-0.039	-0.041	-0.039	0.076	0.249
Dividend payer	0.326	0.000	0.326	1.000	0.469
M/B	2.108	1.185	2.108	2.411	1.537
Prior year return	0.176	-0.212	0.176	0.391	0.674
Leverage	0.203	0.006	0.203	0.322	0.212
Tangibility	0.244	0.067	0.244	0.352	0.230
Cash	0.222	0.039	0.222	0.328	0.238
Capex	0.051	0.015	0.051	0.061	0.060
Prior year SEOs	0.062	0.000	0.062	0.000	0.241
Rated	0.301	0.000	0.301	1.000	0.459

Table 2. The SEO sample

This table presents summary statistics of the SEO sample, obtained from SDC's New Issues Database. The SEO sample consists of 2,508 offers over the period 2001-2015. Panel A presents the sample formation process. Panel B presents the distribution of SEOs by year. Panel C presents the descriptive statistics of selected variables. Panel D presents the mean and median values of these variables for two subsamples of SEOs partitioned by the presence of IB directors. t-tests for the differences in mean values and Wilcoxon tests for the differences in median values are presented in the last two columns. Detailed variable definitions are provided in the Appendix. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Sample formation

	Number of deals
All follow-on issuances by BoardEx-covered firms during 2001-2015	7,818
Exclude issues by utilities (SIC 4910-4940) and financial (SIC 6000-6999) firms	5,190
Common stocks (share codes 10 and 11) listed on NYSE, AMEX, and NASDAQ	4,644
Exclude units, rights offer, REITs, and closed-end funds	4,479
Exclude withdrawn cases	4,406
Exclude pure secondary offers (or no share information)	3,538
Offer price \geq \$1	3,168
Public offering	2,508
R415 Rule Shelf	1,884
Non-Shelf	624
Private placement	650
R144A resale	10

Panel B: SEOs over time

Year	Number of SEOs	Frequency (%)
2001	73	2.91
2002	75	2.99
2003	106	4.23
2004	182	7.26
2005	151	6.02
2006	157	6.26
2007	142	5.66
2008	81	3.23
2009	297	11.84
2010	206	8.21
2011	179	7.14
2012	200	7.97
2013	228	9.09
2014	223	8.89
2015	208	8.29
Total	2,508	100

Panel C: SEO and firm characteristics

	Obs.	Mean	Std	25 th percentile	Median	75 th Percentile
CAR	2,050	-0.020	0.062	-0.054	-0.020	0.007
Underpricing	2,254	0.040	0.041	0.011	0.030	0.057
Gross spread	2,143	0.051	0.014	0.045	0.055	0.060
Relative size	2,506	0.179	0.136	0.093	0.148	0.218
Secondary	2,508	0.069	0.197	0.000	0.000	0.000
# Bookrunners	2,507	1.544	0.934	1.000	1.000	2.000
IPO underpricing	2,254	0.137	0.097	0.079	0.123	0.193
Daily return volatility	2,504	0.042	0.024	0.027	0.036	0.050
Share turnover	2,504	0.014	0.015	0.005	0.009	0.016
PreCAR	2,254	-0.010	0.090	-0.061	-0.014	0.032
Stock price	2,254	19.620	24.510	5.040	12.855	25.590

Panel D: Mean and median values for SEO and firm characteristics across subsamples

	SEOs with IB directors			SEOs without IB directors			Test of difference	
	Obs.	Mean	Median	Obs.	Mean	Median	t-test	Wilcoxon test
CAR	793	-0.018	-0.017	1,257	-0.028	-0.023	***	***
Underpricing	879	0.037	0.028	1,375	0.043	0.030	***	**
Gross spread	831	0.049	0.050	1,312	0.053	0.055	***	***
Relative size	998	0.171	0.142	1,508	0.184	0.153	*	**
Secondary	998	0.079	0.000	1,510	0.061	0.000	**	*
# Bookrunners	998	1.709	1.000	1,509	1.435	1.000	***	***
IPO underpricing	879	0.138	0.122	1,375	0.136	0.125		
Daily return volatility	997	0.039	0.034	1,507	0.044	0.037	***	***
Share turnover	997	0.013	0.009	1,507	0.014	0.009		
PreCAR	879	-0.014	-0.014	1,375	-0.008	-0.014		
Stock price	879	21.701	15.090	1,375	18.298	11.610	***	***

Table 3. SEO propensity

This table presents the regression results where the dependent variable is an indicator variable, *SEO*, that takes the value of one if a firm does at least one SEO in a given year, and zero otherwise. The sample consists of 37,012 firm-year observations by merging CRSP, Compustat, and BoardEx databases over the period 2001-2015. Panel A presents the results for the full sample. Column (1) presents the standard probit regression results, columns (2) and (3) presents the recursive bivariate probit regression results, and columns (4) and (5) reports the two-stage least squares (2SLS) regression results. Panel B presents the results for the subsample that excludes firm-year observations where an IB director's tenure on a board is less than three years. For brevity, only the key variable of interest is reported. All coefficients in Probit and Biprobit models represent average marginal effects. Detailed definitions of all variables are provided in the Appendix. All regressions include year fixed effects and industry (two-digit SIC) fixed effects. Robust standard errors, adjusted for firm-level clustering, are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Using the full sample

Variable	Probit (1)	Biprobit		2SLS	
		1-st stage (2)	2nd-stage (3)	1-st stage (4)	2nd-stage (5)
IB director	0.007** (0.003)		0.020** (0.010)		0.031*** (0.012)
Connection to capital providers	-0.004 (0.004)	0.080** (0.040)	-0.004 (0.004)	0.033** (0.014)	-0.004 (0.003)
Board tenure	-0.006** (0.003)	-0.136*** (0.038)	-0.005* (0.003)	-0.040*** (0.012)	-0.004 (0.003)
Financial expertise	0.002 (0.002)	-0.064** (0.029)	0.002 (0.002)	-0.020** (0.010)	0.002 (0.002)
Interlocked peer SEO	0.027*** (0.006)	-0.322*** (0.070)	0.027*** (0.006)	-0.104*** (0.024)	0.073*** (0.014)
Distance	0.001 (0.001)	-0.030** (0.012)	0.001 (0.001)	-0.009** (0.004)	0.001 (0.001)
Board size	0.017*** (0.006)	0.569*** (0.081)	0.014** (0.006)	0.179*** (0.026)	0.016** (0.007)
Board independence	0.003 (0.013)	0.356** (0.179)	-0.001 (0.014)	0.077 (0.057)	-0.008 (0.014)
Log (Total assets)	-0.008*** (0.001)	-0.021 (0.016)	-0.009*** (0.001)	-0.008 (0.005)	-0.008*** (0.001)
Firm age	-0.014*** (0.002)	-0.025 (0.026)	-0.014*** (0.002)	-0.01 (0.009)	-0.014*** (0.002)
ROA	-0.028*** (0.004)	0.063 (0.046)	-0.028*** (0.004)	0.022 (0.014)	-0.083*** (0.009)
Dividend payer	-0.026*** (0.003)	0.006 (0.043)	-0.026*** (0.003)	-0.004 (0.014)	-0.014*** (0.003)
M/B	0.002*** (0.001)	-0.004 (0.008)	0.002*** (0.001)	-0.001 (0.003)	0.005*** (0.001)
Prior year return	0.014*** (0.002)	0.012 (0.012)	0.014*** (0.002)	0.005 (0.004)	0.019*** (0.003)
Leverage	0.028*** (0.006)	0.314*** (0.076)	0.026*** (0.006)	0.104*** (0.026)	0.026*** (0.010)
Tangibility	0.007	0.312**	0.006	0.111**	-0.004

	(0.010)	(0.126)	(0.010)	(0.043)	(0.011)
Cash	0.013*	-0.066	0.013*	-0.032	0.027***
	(0.007)	(0.093)	(0.007)	(0.030)	(0.010)
Capex	0.134***	-0.388	0.137***	-0.154	0.208***
	(0.025)	(0.294)	(0.026)	(0.099)	(0.041)
Prior year SEOs	0.087***	0.117***	0.086***	0.04***	0.134***
	(0.007)	(0.036)	(0.007)	(0.012)	(0.010)
Rated	0.016***	0.012	0.016***	0.011	0.011***
	(0.005)	(0.053)	(0.005)	(0.019)	(0.004)
Connection to IB directors		1.753***		0.626***	
		(0.092)		(0.030)	
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	36,786	37,012	37,012	37,012	37,012
R ²	0.181	0.135	-	0.170	0.108
F-statistics				426.7	
Prob > F				0.000	

Panel B: Removing firm-years with recently hired IB directors

Variable	Probit	Biprobit	2SLS
	(1)	(2)	(3)
IB director	0.060**	0.018*	0.027**
	(0.030)	(0.010)	(0.013)
Other controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	31,458	31,695	31,695
R ²	0.181	-	0.108

Table 4. SEO announcement returns and issuance costs

This table presents the regression results where the dependent variables are SEO announcement return, underpricing, and gross spread. Panel A presents the regression results of two-day cumulative abnormal returns (CARs) around the SEO filing date. Column (1) presents the OLS regression results. Column (2) presents the results from a two-stage Heckman selection model where the Inverse Mills ratio is added as an additional independent variable in the second-stage estimation of CARs. Panel B presents the regression results where the dependent variable is SEO underpricing, defined as negative one times the close-to-offer return. Column (1) presents the OLS regression results, column (2) presents the results from a two-stage Heckman selection model where the Inverse Mills ratio is added as an additional independent variable in the second-stage estimation of SEO underpricing, column (3) presents the second-stage regression results of 2SLS for the full sample, and column (4) presents the second-stage regression results of 2SLS for the subsample that excludes firm-year observations where an IB director's tenure on a board is less than three years. Panel C employs the same model specifications as Panel B except that the dependent variable is the natural logarithm of gross spreads. For brevity, firm characteristics common to Panel A are not reported in Panels B and C. Detailed definitions of all variables are provided in the Appendix. All regressions include year fixed effects and industry (two-digit SIC) fixed effects. Robust standard errors, adjusted for firm-level clustering, are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: IB directors and CAR

Variable	OLS (1)	Heckman (2)
IB director	0.006** (0.003)	0.007** (0.004)
Connection to capital providers	-0.002 (0.005)	0.001 (0.006)
Board tenure	-0.003 (0.003)	-0.001 (0.004)
Financial expertise	0.001 (0.002)	0.003 (0.003)
Interlocked peer SEO	-0.000 (0.005)	-0.007 (0.007)
Distance	0.001 (0.001)	0.001 (0.001)
Board size	0.003 (0.008)	-0.001 (0.009)
Board independence	-0.014 (0.017)	-0.006 (0.020)
Log (Total assets)	0.003* (0.002)	0.005** (0.003)
M/B	-0.000 (0.001)	-0.001 (0.001)
ROA	-0.004 (0.006)	-0.001 (0.007)
Prior year return	-0.002 (0.002)	-0.003* (0.002)
Leverage	0.017** (0.008)	0.009 (0.010)
Tangibility	0.005 (0.012)	-0.007 (0.015)
Cash	0.011 (0.009)	-0.013 (0.013)

Capex	-0.086*** (0.030)	-0.147*** (0.046)
Prior year SEOs	-0.009** (0.004)	-0.025*** (0.010)
Rated	-0.005 (0.005)	-0.011* (0.006)
Daily return volatility	-0.158* (0.084)	-0.083 (0.097)
Share turnover	-0.468*** (0.151)	-0.523*** (0.158)
Relative size	-0.005 (0.008)	-0.004 (0.009)
Secondary	-0.021** (0.009)	-0.030*** (0.009)
Inverse Mills ratio		-0.034** (0.016)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	1,957	1,427
R ²	0.11	0.13

Panel B: IB directors and underpricing

Variable	OLS (1)	Heckman (2)	2SLS (3)	Subsample (4)
IB director	-0.005** (0.002)	-0.004** (0.002)	-0.017* (0.009)	-0.021* (0.012)
Connection to capital providers	0.001 (0.003)	-0.000 (0.003)	0.001 (0.003)	0.002 (0.004)
Board tenure	-0.000 (0.002)	-0.003 (0.003)	-0.000 (0.002)	0.001 (0.003)
Financial expertise	-0.003* (0.002)	-0.003 (0.002)	-0.003* (0.002)	-0.004** (0.002)
Interlocked peer SEO	-0.007** (0.003)	-0.001 (0.004)	-0.007* (0.004)	-0.006 (0.004)
Distance	-0.000 (0.001)	0.000 (0.001)	-0.000 (0.001)	0.000 (0.001)
PreCAR	0.040*** (0.015)	0.040*** (0.015)	0.039*** (0.015)	0.044*** (0.017)
Log (Stock price)	-0.010*** (0.002)	-0.010*** (0.002)	-0.011*** (0.002)	-0.011*** (0.002)
Relative size	0.015 (0.015)	0.015 (0.015)	0.013 (0.014)	0.000 (0.017)
IPO underpricing	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Inverse Mills ratio		0.018** (0.008)		
Other firm controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	2,153	2,153	2,153	1,782
R ²	0.20	0.20	0.18	0.17

Panel C: IB directors and gross spread

Variable	OLS (1)	Heckman (2)	2SLS (3)	Subsample (4)
IB director	-0.047** (0.023)	-0.049** (0.023)	-0.219*** (0.081)	-0.276** (0.108)
Connection to capital providers	0.043 (0.030)	0.037 (0.030)	0.050 (0.031)	0.044 (0.034)
Board tenure	0.016 (0.019)	0.008 (0.024)	0.008 (0.019)	0.064** (0.026)
Financial expertise	-0.040** (0.016)	-0.040** (0.016)	-0.042** (0.017)	-0.047** (0.019)
Interlocked peer SEO	0.017 (0.041)	0.030 (0.048)	0.018 (0.041)	0.017 (0.050)
Distance	0.009 (0.006)	0.009 (0.006)	0.008 (0.007)	0.003 (0.007)
Share turnover	-1.702 (1.216)	-1.755 (1.217)	-2.081* (1.256)	-1.507 (1.232)
Log (Stock price)	-0.035** (0.016)	-0.034** (0.016)	-0.039** (0.016)	-0.045** (0.018)
Relative size	0.449*** (0.115)	0.447*** (0.115)	0.427*** (0.113)	0.331*** (0.103)
Log (1 + # Bookrunners)	0.791*** (0.108)	0.793*** (0.109)	0.833*** (0.114)	0.843*** (0.129)
Inverse Mills ratio		0.048 (0.085)		
Other firm controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	2,028	2,028	2,028	1,640
R ²	0.30	0.29	0.27	0.29

Table 5. Mechanisms

This table explores the mechanism underlying the effect of IB directors in SEOs. The second-stage regression results of 2SLS are reported. In Panel A, the dependent variable is the natural logarithm of one plus the total number of conference calls during the six-month period prior to an SEO in column (1), the natural logarithm of one plus the total number of earnings calls over the same period in column (2), and the natural logarithm of one plus the total number of non-earnings conference calls over the same period in column (3). In Panel B, the dependent variable is a firm's stock return volatility in column (1), accrual quality in column (2), and forecast error in column (3). Detailed definitions of all variables are provided in the Appendix. All regressions include year fixed effects and industry (two-digit SIC) fixed effects. Robust standard errors, adjusted for firm-level clustering, are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: IB directors and conference calls prior to SEOs

Variable	Log (1 + # Calls)	Log (1 + # Earnings calls)	Log (1 + # Non-earnings calls)
	(1)	(2)	(3)
IB director	0.061 (0.168)	-0.113 (0.125)	0.380** (0.186)
Board tenure	0.022 (0.041)	0.002 (0.031)	0.033 (0.044)
Financial expertise	-0.019 (0.035)	-0.009 (0.025)	-0.011 (0.040)
Distance	0.004 (0.016)	0.001 (0.013)	0.011 (0.016)
Board size	0.110 (0.121)	0.088 (0.091)	0.046 (0.124)
Board independence	0.537** (0.256)	0.490** (0.191)	0.164 (0.294)
Log (Total assets)	0.182*** (0.024)	0.089*** (0.019)	0.175*** (0.025)
ROA	0.103 (0.085)	0.141** (0.063)	-0.068 (0.086)
M/B	0.058*** (0.012)	0.022*** (0.008)	0.066*** (0.014)
Prior year return	-0.059** (0.023)	-0.038** (0.019)	-0.042* (0.025)
Leverage	0.099 (0.112)	0.129 (0.081)	-0.001 (0.119)
Tangibility	-0.176 (0.178)	-0.111 (0.122)	-0.237 (0.185)
Cash	0.288** (0.136)	0.193** (0.099)	0.196 (0.144)
Capex	0.049 (0.319)	0.169 (0.253)	-0.101 (0.372)
Rated	-0.024 (0.066)	-0.027 (0.050)	0.026 (0.074)
Cash flow volatility	-0.126*** (0.029)	-0.094*** (0.024)	-0.072*** (0.021)
Year FE	Yes	Yes	Yes

Industry FE	Yes	Yes	Yes
Observations	1,279	1,279	1,279
R ²	0.319	0.249	0.211

Panel B: IB directors and firm information environment

Variable	Stock return volatility	Accrual quality	Forecast error
	(1)	(2)	(3)
IB director	-0.009** (0.004)	-0.014*** (0.004)	-0.055** (0.025)
Board tenure	-0.012*** (0.001)	-0.010*** (0.001)	-0.022*** (0.007)
Financial expertise	0.000 (0.001)	0.001 (0.001)	0.003 (0.005)
Distance	-0.000 (0.000)	0.001* (0.000)	-0.000 (0.002)
Board size	-0.012*** (0.003)	-0.002 (0.003)	-0.041** (0.018)
Board independence	0.006 (0.006)	-0.007 (0.006)	-0.007 (0.040)
Log (Total assets)	-0.010*** (0.000)	-0.002*** (0.000)	-0.036*** (0.003)
ROA	-0.102*** (0.003)	-0.035*** (0.004)	-0.096*** (0.020)
M/B	-0.003*** (0.000)	0.002*** (0.001)	-0.026*** (0.002)
Prior year return	0.002*** (0.001)	0.002*** (0.001)	-0.018*** (0.005)
Leverage	0.049*** (0.003)	0.005 (0.003)	0.106*** (0.021)
Tangibility	-0.007 (0.004)	0.004 (0.004)	0.060* (0.031)
Cash	0.007** (0.003)	-0.004 (0.003)	0.023 (0.021)
Capex	0.048*** (0.013)	0.045*** (0.012)	-0.103 (0.092)
Rated	-0.002 (0.002)	-0.002 (0.001)	0.011 (0.010)
Cash flow volatility	0.006*** (0.001)	0.019*** (0.002)	0.005 (0.007)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	31,194	27,632	20,232
R ²	0.382	0.262	0.066

Table 6. Cross-sectional heterogeneity

This table examines when IB directors matter more in SEOs by splitting the sample based on the median of firm size or the median number of a firm's past SEO deals. Panel A presents the subsample results sorted by firm size where the dependent variable is an indicator variable, *SEO*, that takes the value of one if a firm does at least one SEO in a given year, and zero otherwise. Columns (1) and (2) present the standard probit regression results, columns (3) and (4) present the recursive bivariate probit regression results, and columns (5) and (6) report the second-stage regression results of 2SLS. All regressions include the same set of control variables as in Table 3. Panel B presents the subsample results sorted by firm size where the dependent variables are SEO announcement return, underpricing, and gross spread. All regressions include the same set of control variables as in Table 4. Panel C repeats the subsample analysis as in Panel B but sorted by a firm's past SEO experience. Detailed definitions of all variables are provided in the Appendix. Robust standard errors, adjusted for firm-level clustering, are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Subsample analysis of SEO propensity split by median firm size

	Probit		Biprobit		2SLS	
	Small	Large	Small	Large	Small	Large
IB director	0.009** (0.004)	0.004 (0.003)	0.057*** (0.017)	-0.001 (0.010)	0.069*** (0.019)	-0.004 (0.014)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,059	18,220	18,506	18,506	18,506	18,506
R ²	0.185	0.151	-	-	0.261	0.183

Panel B. Subsample analysis of SEO outcomes split by median firm size

	CAR		Underpricing		Underwriting fee	
	Small	Large	Small	Large	Small	Large
IB director	0.008** (0.004)	0.004 (0.004)	-0.008*** (0.003)	-0.000 (0.003)	-0.062* (0.035)	-0.039 (0.030)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	979	978	1,077	1,076	1,014	1,014
R ²	0.154	0.141	0.160	0.191	0.372	0.102

Panel C. Subsample analysis of SEO outcomes split by median number of a firm's past SEO deals

	CAR		Underpricing		Underwriting fee	
	Less experienced	More experienced	Less experienced	More experienced	Less experienced	More experienced
IB director	0.010** (0.004)	0.002 (0.005)	-0.006** (0.003)	-0.002 (0.003)	-0.041 (0.027)	-0.032 (0.033)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,147	810	1127	1024	1092	936
R ²	0.137	0.198	0.171	0.208	0.393	0.269

Table 7. IB directors and debt markets

This table examines the role of IB directors in debt markets. Panel A presents the regression results related to corporate bond market. Columns (1) - (3) present the regression results where the dependent variable is an indicator variable, *Bond issuance*, that takes the value of one if a firm does at least one bond issue in a given year, and zero otherwise. The same set of firm characteristics as in Table 3 are included. Columns (4) - (7) present the second-stage regression results of 2SLS where the dependent variables are *Log (Bond spread)*, *Log (1 + Bond covenants)*, *Log (Bond issuance size)*, and *Log (Bond maturity)*, respectively. All regressions include firm characteristics, bond characteristics including seniority and embedded options (puttable, redeemable, callable, exchangeable, or convertible), and macroeconomic controls (default spread and term spread). Panel B presents the regression results related to bank loan market. Columns (1) - (3) present the regression results where the dependent variable is an indicator variable, *Obtaining loan*, that takes the value of one if a firm obtains at least one bank loan in a given year, and zero otherwise. Columns (4) - (7) present the second-stage regression results of 2SLS where the dependent variables are *Log (Loan spread)*, *Log (1 + Loan covenants)*, *Log (Loan size)*, and *Log (Loan maturity)*, respectively. All regressions include firm characteristics, loan characteristics including seniority and loan type (a term loan, revolver greater than one year, revolver less than one year, or 364-day facility), and macroeconomic controls (default spread and term spread). Detailed definitions of all variables are described in the Appendix. All regressions control for calendar year-fixed effects and industry (2-digit SIC) fixed effects. For brevity, only key variables of interest are reported. Robust standard errors, adjusted for firm-level clustering, are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: IB directors and corporate bonds

Variable	Bond issuance			Log (Bond spread)	Log (1 + Bond covenants)	Log (Bond issuance size)	Log (Bond maturity)
	Probit (1)	Biprobit (2)	2SLS (3)	2SLS			
IB director	0.013 (0.024)	0.010 (0.012)	0.034** (0.015)	0.128 (0.082)	0.210 (0.163)	0.068 (0.085)	-0.030 (0.068)
Connection to capital providers	-0.022 (0.027)	-0.004 (0.004)	0.002 (0.005)	-0.004 (0.021)	0.007 (0.048)	-0.016 (0.021)	-0.026 (0.016)
Board tenure	-0.032 (0.028)	-0.004 (0.004)	-0.007* (0.004)	0.021 (0.022)	-0.047 (0.040)	0.008 (0.020)	0.010 (0.017)
Financial expertise	0.018 (0.019)	0.003 (0.003)	0.005 (0.003)	-0.010 (0.015)	-0.037 (0.031)	-0.015 (0.016)	0.006 (0.013)
Distance	0.008 (0.008)	0.001 (0.001)	0.000 (0.001)	0.002 (0.006)	-0.012 (0.014)	0.003 (0.006)	-0.002 (0.005)
Log (Bond size)				0.094*** (0.018)	-0.079*** (0.029)		0.024 (0.015)
Log (Bond maturity)				0.189*** (0.017)	0.000 (0.020)	0.023 (0.015)	
Bond and macroeconomic characteristics				Yes	Yes	Yes	Yes
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	36,766	37,012	37,844	4,713	5,474	5,474	5,474
R ² (Pseudo R ² for probit)	0.29	-	0.23	0.74	0.384	0.630	0.271

Panel B: IB directors and bank loans

Variable	Obtaining loan			Log (Loan spread)	Log (1 + Loan covenants)	Log (Loan size)	Log (Loan maturity)
	Probit	Biprobit	2SLS	2SLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
IB director	-0.020 (0.021)	0.001 (0.076)	0.028 (0.020)	-0.076 (0.048)	-0.049 (0.053)	0.164* (0.096)	0.019** (0.009)
Connection to capital providers	0.041* (0.024)	0.039 (0.025)	0.020*** (0.007)	-0.032** (0.015)	0.017 (0.017)	-0.058* (0.032)	-0.008 (0.010)
Board tenure	-0.035 (0.024)	-0.033 (0.025)	-0.011* (0.006)	-0.072*** (0.014)	0.028* (0.016)	-0.021 (0.026)	-0.029*** (0.009)
Financial expertise	-0.008 (0.017)	-0.008 (0.017)	-0.002 (0.004)	0.001 (0.011)	-0.012 (0.012)	0.021 (0.022)	-0.013* (0.007)
Distance	0.019*** (0.007)	0.019*** (0.007)	0.004** (0.002)	-0.006 (0.005)	-0.003 (0.005)	0.027*** (0.009)	-0.001 (0.003)
Log (Loan size)				-0.073*** (0.009)	0.007 (0.008)		0.046*** (0.005)
Log (Loan maturity)				-0.038** (0.017)	-0.041** (0.017)	0.189*** (0.032)	
Loan and macroeconomic characteristics				Yes	Yes	Yes	Yes
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	29,278	29,280	29,280	8,940	8,940	8,940	8,940
R ² (Pseudo R ² for probit)	0.2	-	0.19	0.76	0.45	0.65	0.60

Table 8. Post-SEO firm policies and long-run performance

This table examines firm policies and performance post-SEOs for two subsamples partitioned by the presence of IB directors or not. Panel A presents median changes in benchmark-adjusted cash holdings, investment, and operating performance for SEO firms with and without IB directors. To obtain benchmark firms, we pair each SEO firm with a set of matching non-SEO firms by selecting firms with the same SIC code (starting with four-digit SIC) and operating performance within 90% to 110% of the SEO firms' performance in year -1. The benchmark-adjusted measure is then calculated as the difference between the raw measure of an SEO firm and the median measure of its matching firms. Median changes are reported for three different event windows ranging from the one year prior to the SEO to one year, two years, and three years after the offer. Panel B presents the median benchmark-adjusted buy-and-hold abnormal returns (BHARs) across subsamples partitioned by the presence of IB directors or not. Each SEO firm is matched to a control firm whose market capitalization is between 70% and 130% of that of the SEO sample firm and whose book-to-market ratio is closest to that of the SEO firm. Benchmark-adjusted BHAR is then calculated as the difference between the BHAR of an SEO firm and the BHAR of its matching firm. The number in parentheses indicates the number of observations in each sample. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels based on the Wilcoxon tests.

Panel A: Firm policies and operating performance of SEO firms with versus without IB directors

Variable	Event window	SEOs with IB directors	SEOs without IB directors	Difference
Cash	(-1,+1)	-0.005 (612)	0.001 (886)	
	(-1,+2)	0.001 (509)	0.005 (720)	**
	(-1,+3)	0.000 (424)	0.004 (596)	
Investment	(-1,+1)	-0.002 (607)	-0.004 (880)	
	(-1,+2)	0.001 (507)	-0.011 (729)	***
	(-1,+3)	-0.001 (414)	-0.011 (590)	**
Operating performance	(-1,+1)	0.011 (621)	0.001 (887)	***
	(-1,+2)	0.011 (517)	0.005 (715)	*
	(-1,+3)	0.020 (422)	0.003 (581)	**

Panel B: Stock performance of SEO firms with versus without IB directors

Event window	SEOs with IB directors	SEOs without IB directors	Difference
(0, +1)	-0.014 (865)	-0.078 (1,333)	**
(0, +2)	-0.035 (755)	-0.103 (1,145)	*
(0, +3)	-0.097 (639)	-0.105 (960)	

Internet Appendix for “Investment Banker Directors and Capital Raising Activities”

Table IA1. Textual analysis of conference call transcripts

This table conducts textual analysis of conference call transcripts made during the six-month period before an SEO. The second-stage regression results of 2SLS are reported. In column (1), the dependent variable is the natural logarithm of the total number of words in a conference call transcript. In column (2), the dependent variable is tone, the difference between the percentage of positive words and the percentage of negative words in a transcript. Detailed definitions of all other variables are provided in the Appendix. All regressions control for conference call type fixed effects, year fixed effects, and industry (2-digit SIC) fixed effects. Robust standard errors, adjusted for firm-level clustering, are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Variable	Log (Total words) (1)	Tone (2)
IB director	-0.084 (0.055)	-0.048 (0.086)
Board tenure	-0.007 (0.020)	0.012 (0.030)
Financial expertise	0.004 (0.013)	-0.018 (0.023)
Distance	0.001 (0.007)	0.001 (0.010)
Board size	0.032 (0.055)	0.217*** (0.082)
Board independence	0.218** (0.111)	0.270 (0.224)
Log (Total assets)	0.061*** (0.010)	-0.018 (0.019)
ROA	0.016 (0.059)	0.040 (0.066)
M/B	0.014*** (0.005)	-0.008 (0.011)
Prior year return	0.019* (0.011)	0.046** (0.019)
Leverage	0.049 (0.038)	0.029 (0.058)
Tangibility	-0.176*** (0.066)	-0.383*** (0.134)
Cash	0.008 (0.058)	-0.254*** (0.084)
Capex	0.312** (0.142)	0.341 (0.238)
Rated	0.006 (0.030)	0.028 (0.048)
Cash flow volatility	0.007 (0.013)	0.034** (0.015)

Conference call type	Yes	Yes
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	4,192	4,192
R-squared	0.392	0.153

Table IA2. Post-SEO firm policies and long-run performance: robustness checks

This table uses alternative approaches to comparing firm policies and performance post-SEOs for two subsamples partitioned by the presence of IB directors or not. Panel A presents median changes in cash holdings, investment, and operating performance for SEO firms with IB directors and matching SEO firms without IB directors. Matching firms are chosen using the following algorithm: 1) if there is at least one SEO firm without IB directors in the same four-digit SIC industry in the same year, the one with the closest operating performance measured in year -1 is used (year 0 is the SEO year); ii) if no matching firm is found, we then search for a match at a broader SIC level. Median changes are reported for three different event windows ranging from the year prior to the SEO to one year, two years, and three years after the offer. Panel B presents the median market-adjusted BHARs for subsamples partitioned by the presence of IB directors or not where the return on the CRSP value-weighted index is the market return. Panel C presents the median Fama-French factors-adjusted BHARs for subsamples partitioned by the presence of IB directors or not. BHARs are calculated for the SEO firm for up to three years after the offer. Number in parentheses indicates the number of observations in each sample. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels based on the Wilcoxon tests.

Panel A: Firm policies and operating performance of SEO firms with versus without IB directors

Variable	Event window	SEOs with IB directors	SEOs without IB directors	Difference
Cash	(-1,+1)	0.002	0.002	
		(630)	(630)	
	(-1,+2)	0.000	0.002	
		(518)	(518)	
	(-1,+3)	-0.005	0.001	**
		(407)	(407)	
Investment	(-1,+1)	-0.003	-0.016	***
		(630)	(630)	
	(-1,+2)	-0.003	-0.012	**
		(518)	(518)	
	(-1,+3)	-0.004	-0.017	***
		(405)	(405)	
Operating performance	(-1,+1)	0.009	0.005	**
		(633)	(633)	
	(-1,+2)	0.011	0.006	*
		(518)	(518)	
	(-1,+3)	0.017	0.000	**
		(407)	(407)	

Panel B: Market-adjusted buy-and-hold returns of SEOs with versus without IB directors

Event window	SEOs with IB directors	SEOs without IB directors	Difference
(0, +1)	-0.079	-0.178	***
	(872)	(1349)	
(0, +2)	-0.106	-0.243	***
	(762)	(1160)	
(0, +3)	-0.211	-0.331	***
	(644)	(972)	

Panel C: Fama-French factors-adjusted buy-and-hold returns of SEOs with versus without IB directors

Event window	SEOs with IB directors	SEOs without IB directors	Difference
(0, +1)	-0.133	-0.221	***
	(609)	(910)	

(0, +2)	-0.239 (539)	-0.327 (792)	**
(0, +3)	-0.187 (458)	-0.347 (670)	**

Table IA3. SEO propensity: robustness checks

This table presents the regression results where the dependent variables are the number of SEOs and the size of SEO deals in a given year. The sample consists of 37, 012 firm-year observations by merging CRSP, Compustat, and BoardEx databases over the period 2001-2015. In Panel A, the dependent variable is the natural logarithm of one plus the number of SEOs during a year. In Panel B, the dependent variable is the natural logarithm of one plus SEO proceeds scaled by an issuer's market capitalization. Column (1) presents the OLS regression results. Columns (2) and (3) report the 2SLS results for the full sample and for the subsample that excludes firm-year observations where the IB director's tenure on board is less than three years, respectively. Detailed definitions of all variables are provided in the Appendix. All regressions include the same set of control variables as in Table 4. Robust standard errors, adjusted for firm-level clustering, are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: The number of SEOs

Variable	Log (1 + # SEOs)		
	OLS (1)	(2)	2SLS (3)
IB director	0.006*** (0.002)	0.024*** (0.010)	0.021** (0.012)
Firm characteristics	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	37,012	37,012	31,695
R ²	0.12	0.12	0.12

Panel B: The volume of SEOs

Variable	Log (1 + Proceeds/Mktcap)		
	OLS (1)	(2)	2SLS (3)
IB director	0.001** (0.000)	0.007*** (0.002)	0.007*** (0.003)
Firm characteristics	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	37,012	37,012	31,695
R ²	0.09	0.09	0.09

Table IA4. IB directors and SEO issue size

This table presents the regression results where the dependent variables are the natural logarithm of net proceeds, the natural logarithm of one plus net proceeds scaled by an issuer's market capitalization, and the natural logarithm of one plus net proceeds scaled by an issuer's total assets, respectively. Detailed definitions of all variables are provided in the Appendix. All regressions include the same set of control variables as in Table 4. Robust standard errors, adjusted for firm-level clustering, are in parentheses. Detailed definitions of all variables are provided in the Appendix. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Variable	Log (Proceeds)	Log (1 + Proceeds/Mktcap)	Log (1 + Proceeds/Total assets)
	(1)	(2)	(3)
IB director	-0.031 (0.033)	-0.005 (0.009)	-0.005 (0.007)
Firm characteristics	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	2,174	2,174	2,174
R ²	0.76	0.63	0.28

Table IA5. IB directors and market timing

This table presents the regression results relating IB directors to market timing. In column (1), we present the Probit regression results where the dependent variable is the indicator variable *SEO*. In column (2), we present the OLS regression results where the dependent variable is the natural logarithm of one plus the number of SEOs. In column (3), we present the OLS regression results where the dependent variable is the natural logarithm of one plus net proceeds scaled by an issuer's market capitalization. Detailed definitions of all variables are provided in the Appendix. All regressions include the same set of control variables as in Table 4. Robust standard errors, adjusted for firm-level clustering, are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Variable	SEO (1)	Log (1 + # SEOs) (2)	Log (1 + Proceeds/Mktcap) (3)
IB director	0.063** (0.028)	0.005** (0.002)	0.001** (0.000)
IB director * Prior year abnormal return	0.015 (0.031)	0.002 (0.004)	-0.000 (0.001)
Firm characteristics	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	36,786	37,012	37,012
R ² (Pseudo R ² for probit)	0.18	0.12	0.09

Table IA6. IB directors and IPO underpricing

This table examines the role of IB directors in IPOs where the dependent variable is *IPO underpricing*, defined as the first-day percentage return from the offer price to the closing price. The second-stage regression results of 2SLS are reported. Both columns (1) and (2) include firm and offering characteristics. Column (2) further include board characteristics including *Board size*, *Board independence*, *Connection to capital providers*, *Board tenure*, and *Financial expertise*. *VC_backed* is an indicator variable that takes the value of one if an IPO firm had received venture capital funding prior to IPO, and zero otherwise. Detailed definitions of all other variables are provided in the Appendix. All regressions include year fixed effects and industry (two-digit SIC) fixed effects. Robust standard errors, adjusted for firm-level clustering, are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Variable	IPO underpricing	
	2SLS	
	(1)	(2)
IB director	-0.497*	-0.271*
	(0.257)	(0.158)
Log (Total assets)	-0.086	-0.104
	(0.065)	(0.045)
ROA	-0.013	0.001
	(0.033)	(0.024)
Leverage	-0.011	-0.067
	(0.063)	(0.050)
Tangibility	0.069	-0.131
	(0.850)	(0.231)
Cash	-0.321	-0.083
	(0.372)	(0.225)
Capex	-0.694	-0.317
	(0.529)	(0.371)
Issue size	0.307***	0.247***
	(0.114)	(0.068)
VC_backed	-0.061	-0.008
	(0.101)	(0.081)
Firm age	-0.068	-0.083*
	(0.052)	(0.049)
Board characteristics	No	Yes
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	99	99
R ²	0.540	0.414