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Impact of initial public offering coalition on deal completion

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ABSTRACT: Measures of underwriter and top management team prestige have been shown to signal the underlying quality of a company in an initial public offering (IPO). We extend these measures to include the entire coalition (i.e., managers, board, venture capitalists, underwriters, auditors, and both sets of lawyers) and surprisingly find venture capitalists to have the highest explanatory power in predicting IPO outcomes (completion or withdrawal). Companies with deep management and a separation of the CEO/chair role are more likely to hire prestigious underwriters and successfully complete IPOs. Although companies with prestigious venture capitalists are more likely to have prestigious underwriters, companies with venture capitalist backing are more likely to withdraw the offering, likely to take advantage of better market opportunities. Companies with prestigious underwriters are more likely to have successful IPOs, although we show that the capabilities of underwriters and other intermediaries are more likely driven by activity level (i.e., market share), rather than prestige in affecting IPO outcome. Using an agency framework, we test how signals of monitoring, information asymmetry, bonding, and incentive alignment affect IPO outcomes and show that signals of lower agency costs are associated with a greater likelihood of IPO completion. Finally, because many of these measures are shown to endogenously affect IPO completion, a selection bias may exist in previous IPO studies as up to 70% of IPOs filed annually are not completed.

KEYWORDS: IPO, IPO withdrawal, advisors, prestige, agency costs

Introduction

Characteristics of parties involved in an initial public offering (IPO) affect its success, including agency and board configurations (Certo *et al.* 2001), top management team (TMT) (Filatotchev and Bishop 2002), CEO status (Beatty and Zajac 1994), and venture capitalists (VCs) (Gulati and Higgins 2003). While many studies include prestige measures of the TMT and investment bankers, we include the entire IPO coalition: TMT, board, investment bankers, auditors, VCs, and both sets of lawyers. Our first objective is to test the impact of the entire coalition on IPO outcome using a large sample of IPOs using a time period with hot, cold, and neutral markets.

Second, we argue that prestige measures (often based on past performance) are poor proxies for the actual intermediation capabilities required to conduct a successful IPO. We separate and test the effects of measures of both prestige and capabilities for each member of the coalition and find capabilities to be more important.

Third, the IPO exacerbates the agency relationship inherent in the separation of ownership and control (M. C. Jensen and Meckling 1976). We introduce a typology of agency signals that investors use to make informed decisions including: the levels of monitoring, information asymmetry, bonding, and incentive alignment. The results show that signals of lower agency costs are associated with a greater likelihood of IPO completion.

Finally, while many factors in extant literature (e.g., Gulati and Higgins, 2003) are important determinants of success for completed IPOs, as many as 70% of IPOs filed in a given year are not completed. The same factors that affect IPO outcomes for completed IPOs may also affect completion likelihood, suggesting a potential sample selection bias in prior studies. We test which factors endogenously affect the likelihood that an intended IPO is completed.

Roles of the Coalition in the IPO Process

The IPO is a key milestone that facilitates access to the public capital market and provides investors with a liquid security with an established market price. The decision to pursue an IPO is made by the TMT and board in consultation with investment bankers. In the U.S., after filing a registration statement with the Securities and Exchange Commission (SEC), the underwriters typically market the security using a book-building process (see Benveniste and Spindt 1989). However, until the shares are priced and the underwriter commits to selling them (typically the day before the offer), the issuing company can simply withdraw the IPO.

The coalition of IPO players includes all parties visible to the investing public (listed in the prospectus), both internal (TMT and board which may include VCs) and external (underwriters, lawyers representing the issuer (company counsel) and underwriters (underwriters' counsel), and financial auditors). The opinion of any party can initiate the decision to withdraw (file a Form RW with the SEC), wait, or switch underwriters (Dunbar and Foerster 2008). This option to withdraw improves the company's bargaining position, because it can reject an unacceptable price to pursue a superior alternative (e.g., sale of the company) (Busaba *et al.* 2001). Issuers that withdraw forego the benefits of going public, and face certain costs (Ritter 1987); the IPO process consumes managerial resources and results in substantial fees – most are

not recoverable[1]. A withdrawn IPO can also damage the company's reputation; Dunbar and Foerster (2008) find that only 9% of withdrawals return for successful IPOs.

Prestige –Beyond the TMT

Potential investors rely on deal advisors rather than their own investigations because of the high search costs, given the small amount the investor will invest in a stock (Tinic 1988). Prestigious underwriters should price issues more correctly because they have greater valuation skill and more reputational capital at stake (Baron 1982); high quality issuers hire prestigious advisors to signal that the offering price correctly reflects future company performance (Booth and Smith 1986). Therefore, riskier companies would also want to imitate and send this signal. The common 7% spread suggests banks do not compete on price, but rather on the quality of their distribution networks, research departments, and reputations (Hansen 2001). Underwriters gain prestige by successfully completing and pricing IPOs; withdrawing offerings negatively impact reputation (Dunbar 2000), as does mis-pricing the offer or failing to disclose material information[2] (Booth and Smith 1986). While a quality underwriter should be better able to distinguish 'good' from 'bad' deals (Baron 1982), this discovery may come to light only after the IPO process has begun. Given this, high prestige underwriter IPOs may be withdrawn in order to preserve reputational capital, while low prestige underwriter IPOs may be withdrawn owing to insufficient reputation capital, thereby explaining the mixed findings regarding the effects of prestige on IPO completion (cf. Busaba *et al.* 2001; Dunbar and Foerster 2008)

While the underwriter plays an important role in the IPO, so do the other members of the IPO coalition. An issuer signals quality by hiring prestigious auditors and underwriters (Titman and Trueman 1986), particularly when there is high information asymmetry driving valuation uncertainty (Weber and Willenborg 2003). If the issuer has favorable information to convey then it should choose a prestigious Big 4/5[3] auditor to gain credibility with investors, while it would not be worthwhile for issuers with unfavorable information to pay the premium charged by prestigious auditors who are also more likely to uncover and disclose adverse information (Menon and Williams 1991). Auditing missteps increase the risk of litigation (Tinic 1988) and harm reputation so prestigious auditors are likely to endorse only high quality issuers.

The impact of legal advisors on IPO withdrawal has also not been studied despite their pivotal role in the IPO processes. Dozens of law firms are active in the IPO markets, allowing many more choices for legal counsel than for auditor. A quality law firm should more capably identify and overcome material risk factors in advance of a filing, have good relationships with the SEC, and overcome numerous legal and regulatory hurdles[4], and therefore should be negatively related to withdrawal. However, company counsel represents the issuer and thus wishes to limit negative

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[1] As of 2001, certain SEC fees can be used to offset future SEC fees due, but are not refundable.

[2] Company and other registration statement signatories may be held liable under the 1933 Securities Act (§11).

[3] During our study timeframe, Big Five became the Big Four (Deloitte & Touche, Ernst & Young, KPMG, and PricewaterhouseCoopers) when Arthur Andersen failed, so we use 'Big 4/5'.

[4] Filings are returned by the SEC with 'comments' detailing filing inadequacies that must be addressed.

disclosure. High quality lawyers should be more capable of delaying or limiting disclosure of negative information. Thus, an alternative argument is that company counsel quality is positively related to withdrawal. Given the conflict, perhaps a more popular hypothesis is that 'lawyers do not matter'.

Underwriters' counsel represents the interests of the underwriters. They are involved in the preparation of the registration statement as well as in conducting due diligence. They question the officers, employees, and third parties, with an emphasis on identifying material omissions, misrepresentations, and potential risk factors, and looking for problems in corporate documents. An underwriter often repeatedly uses a set of law firms. As such, the choice of underwriter counsel may be indistinguishable from the choice of underwriter. Prestigious underwriters' counsel has been linked to greater disclosure of negative information, lower risk offerings and more accurate issue pricing (Barondes *et al.* 2003). However, if the counsel is 'too' good, even marginally adverse information may be disclosed such that investors are dissuaded from investing. Thus, because prestigious (quality) law firms may more capably uncover and disclose such risks, they may increase withdrawal likelihood.

Finally, VCs are important players in the IPO process and offer issue certification (Dolvin 2005), resulting in less underpricing and greater proceeds to the issuer (Lange *et al.* 2001; Megginson and Weiss 1991). However, they may also drive greater underpricing when the VC is looking to establish or build its reputation (Lee and Wahal 2004). While VC-backing provides certification, the VC's level of prestige may accentuate the effect (Dolvin 2005). While the certification arguments suggest VC-backing (and prestige) signals quality and should lead to deal completion, we offer competing arguments. First, VCs may view an IPO as one in a portfolio of potential investments, and thus may push certain deals forward at the expense of others due to resource scarcity (Florin *et al.* 2003). Second, VCs may treat the IPO filing as a real option in which they are simply testing market reception (Draho 2000). Third, VC-backed issuers may be willing to reject unappealing IPO valuations because they can provide an alternative source of capital to the IPO. Finally, the primary intent may be investor liquidity rather than capital-raising, and so the VC may be willing to advise rejection of low valuations. Based on the above, it is unclear how the endorsement signals will affect IPO success, perhaps explaining the prior mixed results concerning VC-backing and underpricing for completed IPOs. While the certification hypothesis (Booth and Smith 1986) predict this endorsement signals high quality and thus IPO completion, real options logic supports a competing view. With mixed expectations, we rely on the prevailing certification theory and offer the following:

> *Hypothesis 1 (H1): Controlling for the likelihood of hiring a prestigious underwriter, coalition prestige is negatively related to IPO withdrawal.*

Intermediation and information asymmetry reduction capability

In a perfectly efficient market, potential investors and issuers would arrive at the same IPO valuation, but high information asymmetry fuels the need for intermediaries such as securities analysts (Zuckerman 2000) and auditors (Weber and Willenborg 2003). Information produced by the network of external parties is particularly important to the young IPO issuer (Stuart *et al.* 1999) in reducing valuation uncertainty (Sanders and Boivie 2004). While certification is valuable, it is information production that reduces information asymmetry sufficiently to allow a market price to be set (Corwin and Schultz 2005). As such, while an intermediary's repeated historical interactions drive

its level of credibility (Chemmanur and Fulghieri 1994), we argue that credibility (prestige) and intermediation capability are related but distinct concepts.

The IPO market can be considered a network in which advisors serve as intermediaries and network architects (Timothy G Pollock *et al.* 2004). Greater network activity creates more information transfer (Larson 1992). Advisors with more network activity have access to more sources of information allowing unique market perspectives. For the underwriter, this may mean bringing to market issues that meet the immediate desires of investors. While repeated interaction with positive outcomes may drive credibility over time, holding advisor prestige constant, we argue that recent network activity drives the ability to effectively intermediate. Given this:

> *Hypothesis 2 (H2): Controlling for advisor prestige, advisor intermediation capability is negatively related to IPO withdrawal.*

Asymmetric information, lemons, and the role of intermediaries

Markets are characterized by asymmetric information where one party possesses valuable knowledge the other does not. Employing a used-car market example, Akerlof (1970) described how the existence of low quality 'lemons' as well as high quality 'cherries' and buyer inability to distinguish between them can lead to adverse selection. In the IPO market, the TMT want to signal that their offering price reflects all non-public information (Booth and Smith 1986).

Agency cost signaling

An IPO can succeed only if investors believe in the ability of the TMT and board to manage the agency costs (M. C. Jensen and Meckling 1976) which exist because managers may have objectives other than shareholder value maximization. We argue that investors may incorporate four agency-related signals into their valuation decisions including the levels of: monitoring, information asymmetry, bonding mechanisms, and incentive alignment.

Monitoring

To lower agency costs, an issuer may structure its TMT and board to ensure sufficient monitoring. Beatty and Zajac (1994) found the separation of the CEO and chair roles drives success for completed IPOs. Additionally, more board members equates to greater monitoring than could be achieved with a small, insider-only board (Abrahamson and Park 1994), provided the board composition is not homogenous (Anderson *et al.* 2011). Further, the ability to monitor should be enhanced by the capabilities one develops from having more professional experience (Higgins and Gulati 2003). According to Gompers (1995), VCs serve on boards to minimize potential agency costs associated with start-ups, while Barry et al (1990) find that high quality VCs with experience in monitoring send a positive signal to investors at the time of the IPO. Given the greater monitoring expected from the separation of CEO and chair, a large and experienced board, and the inclusion of a VC on the board, investors should expect lower agency costs, and thus positive impact on IPO success. Formally:

> *Hypothesis 3a (H3a): Signals of greater monitoring post-IPO suggest lower agency costs and are negatively related to IPO withdrawal.*

Information Asymmetry
Myers and Majluf (1984) point out that information asymmetry exists between investors and issuers that have valuable inside information. Having a greater number of intermediaries will produce more information (Corwin and Schultz 2005) and should thus reduce this asymmetry, decreasing withdrawal likelihood. Because of the prohibitive cost for individual investors to undertake their own investigations (Tinic 1988), publicly accessible information sources will likely be used. Thus, increased media coverage of the pre-IPO company should also be associated with reduced information asymmetry (Baker *et al.* 2002). Given the reduced information asymmetry likely from having more underwriters and greater disclosure, investors should expect lower agency costs, and thus a positive impact on IPO success. Formally:

> *Hypothesis 3b (H3b): Signals of lower information asymmetry suggest lower agency costs and are negatively related to IPO withdrawal.*

Bonding
Debt is beneficial in reducing agency cost by limiting the surplus cash available for discretionary spending by managers (Michael C. Jensen 1986). Leverage policy also serves as a bonding mechanism because of covenants which may include: required reporting, insurance and the enforcement of bond covenants (Smith and Warner 1979). Given the bonding mechanisms of having debt or the reduction in bonding mechanisms signaled by the intent to use IPO proceeds to reduce debt, investors should expect changes in expected agency costs, and thus an impact on IPO success. Formally:

> *Hypothesis 3c (H3c): Signals of greater bonding mechanisms suggest lower agency costs and are negatively related to IPO withdrawal.*

Incentive Alignment
Jensen and Meckling (1976) propose that when management owns less than 100% of a firm, an incomplete incentive alignment exists and shareholders will incur agency costs to minimize management self-interested decision making. Consistent with this, Ang, Cole and Lin (2000) find that agency costs increase when owner-managers sell a portion of their shares while Core et al (1999) report a relationship between poor stock price returns and low levels of insider ownership. Given the incentive alignment signaled by retaining ownership, investors should expect lower agency costs, and we expect a positive impact on IPO success. Formally:

> *Hypothesis 3d (H3d): Signals of incentive alignment suggest lower agency costs and are negatively related to IPO withdrawal.*

Endogenous selection of prestigious underwriters
As seen by the array of literature used to derive our hypotheses, IPOs and the factors that affect their success are popular research topics. Studies frequently focus on IPO underpricing and issue characteristics as predictors of firm success, financial performance, and the ability to conduct an IPO at all. As we argue here, many of these same factors may also affect the likelihood of IPO completion. The prevalence of IPO

non-completion opens additional questions concerning the possibility of a potential selection bias in some extant studies. We do not attempt to provide evidence of any such bias here.

Methods

Sample and data collection
We include IPOs with outcomes from January 1, 1999 to December 31, 2004 from Thomson Financial's SDC (TFSD) New Issues Database, excluding unit offerings, REITs, ADRs, closed-end mutual funds, sub-IPOs, spin-offs, enhanced income and income deposit securities, limited liability, limited partner and shares of beneficial interests, and companies with prior public reporting requirements. The sample occurs after the SEC's implementation of "plain English" rules in 1998 and provides a sufficiently large sample from the full complement of market conditions. TFSD data are often inaccurate and incomplete (especially for withdrawn issues) for financial, offering, and advisor data; these data were hand-collected from SEC filings. Market returns were obtained from CRSP; VC data were collected from TFSD's VentureXpert; while lawyer data were from Vault.com.

Dependent and endogenous measures
We identify *underwriter prestige* as the lead manager's Carter and Manaster (C-M) ranking (Richard Carter and Manaster 1990) provided by Carter, Dark, and Singh (1998) for 1999-2000, and Loughran and Ritter (2004) for 2001-2004. C-M uses a 10 point scale from zero (least) to nine (most) prestigious and classifies underwriters by the relative location of their name on the deal tombstone and the quality of the syndicate.

Withdrawal (=1) when the filing is withdrawn and (=0) when completed. The decision to withdraw is indicated by the filing of SEC form RW (90% of the cases) or the 'abandonment' of the offering (270 days after the date of the last amendment (Lerner 1994)).

Independent measures
Underwriter reputation is generally proxied by either relative market share proposed by Megginson and Weiss (M-W) (1991) or by C-M, yet these represent distinct concepts. Although the measures are correlated (ρ = .17 to .64) (Richard B Carter *et al.* 1998), they have yielded contradictory results (cf., Dunbar and Foerster 2008)[5]. We propose that these variables may be temporally correlated with C-M reflecting historical standing while activity levels reflect current intermediation capabilities. For each advisor, we consider both reputation measures.
Coalition Prestige
VC backing (=1) when the issuer has VC-backing prior to the outcome as indicated in TFSD database (confirmed by inspecting prospectuses). *Underwriter prestige* is as

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[5] In the decision to withdraw, the C-M proxy was not significant while market share was. In the decisions to switch and the probability of successful IPO return, market share was not significant while the C-M proxy was.

defined above. *Auditor* prestige (=1) for a Big 4/5 auditor. C*ompany counsel prestige* and *underwriters' counsel prestige* are determined using the annual '*Vault.com Guide to the Top 100 Law Firms'* rankings at the initial filing date which are based on an annual peer-driven survey of lawyer prestige. Underwriters hire their own counsel and can affect the choice of auditor either directly (Menon and Williams 1991) or by requesting a new auditor (Balvers *et al.* 1988). As such, both prestige measures are orthogonalized to the underwriter's C-M prestige ranking so as to avoid redundant signals. Finally, because coalition endorsement signals are complementary, we remove the effects of underwriter prestige from the VC-backing indicator. These transformations have the effect of allowing us to measure complementary (unique) legitimacy signals.

Intermediation capability

To measure the intermediation capabilities of the coalition, we use the *relative* activity level of each (in the 365 days leading up to the outcome), rather than absolute level because the total number of deals varies considerably by year. *Underwriter activity level* is the count of deal outcomes with which lead underwriters had lead capacity, divided by the total number of outcomes in the same period. *Company counsel and Underwriters' counsel activity levels* are the counts of deals on which the law firm was involved as either company or underwriters' counsel divided by the volume of all outcomes in the same period. *Auditor activity level* is the share of the deals on which it provided the audit. *VC activity level* is a measure of the share of VC dollars invested in the year preceding the outcome by a VC on the board of directors, using the most active VC when there was more than one. VC investment is denominated by the volume of all VC investments made in that year. To focus specifically on the activity level not explained by prestige, we orthogonalized activity level variables to their respective prestige variables thereby reducing prestige-activity level correlations to zero and mitigating potential multicollinearity.

Agency cost signals

CEO-chair separation (=1) when the CEO does not also hold the board chair position. *Board size* is the number of board members. *Board experience* is the average age of all board members. VC prestige is commonly based on the ranked value of investments made (Timothy G. Pollock *et al.* 2005), but because we distinguish reputation from market activity level, we use a list of prestigious VCs compiled by Forbes in 2000 (Lange *et al.* 2001). When at least one of the VCs invested in an issuer was on this prestige list, *VC prestige* (=1).

 Number of underwriters captures the total number of both lead- and co-managing underwriters for the issue. The number of underwriters is highly correlated to the size of the issue ($\rho = .58$), and so is orthogonalized (using '$\perp$' as a symbol) to proceeds. *Information disclosure* captures the amount of information a company conveys about itself as measured by a word count of the prospectus (Arnold *et al.* 2007).

 Bonding mechanisms include *total debt* as taken from the most recent balance sheet prior to the outcome as well as the *use of proceeds for debt*, an indicator (=1) if the primary stated use of proceeds includes the issuer intention to retire debt and thus reduce a bonding mechanism.

 Finally, incentive alignment is measured by the percentage of the shares retained/shares outstanding post offering. In our sample, 18% of companies that

withdrew do not disclose this. To address this potential bias, we used instruments to predict the missing data, yielding no reduction in sample but creating the possibility of an unreliable measure.

Control variables – issue and issuer, market and TMT legitimacy

To ensure the robustness of our models, we control for inherent risks associated with the issue, issuer, and state of the markets which may impact the ability of an issuer to attract a prestigious underwriter and to complete an issue. For the size of the issue, we use IPO *proceeds* ($US millions). Issuer characteristics include: *pre-filing revenue*, the annual sales ($US M) taken over the last 12 months and *total assets* taken from the most recent balance sheet. The *debt-to-assets* ratio reflects issuer capital structure (financial risk). *Company age* (years) is measured from date of incorporation to date of the outcome. The *high-tech industry* indicator (=1) when the issuer is from Fama and French (1997) industries 35, 36, or 37. Proceeds, issuer revenue, assets, and debt are normalized using natural logarithms of the variables plus one. *TMT experience* level is the average age of disclosed management. *CEO experience* is measured as the age of the CEO. *TMT size* is the number of material employees listed in the prospectus, excluding board members without operational roles. We calculate *market return* as the CRSP value-weighted index return for the month of the IPO outcome. We use a *hot market* (*cold market*) indicator (=1) when the outcome occurs during a hot market (cold market), adapted from Helwege and Liang (2004).

Withdrawal is modeled as a binary outcome with an endogenous covariate (underwriter prestige) using the IVPROBIT routine from STATA to retain full C-M ranking information. We separately show the results of the maximum likelihood regression endogenous model of underwriter prestige. We also calculate the marginal effects[6] of the probability of withdrawal as the change in the probability of withdrawal given a one unit change in the covariate.

Results

Table 1 shows an overview of IPOs by year. The final sample has 1,655 issues, of which 584 were withdrawn (35.3%). The percentage of outcomes that were withdrawn varies considerably by year, from a low of 18.5% (38 of 205) in 2004 to a high of 70.6% (139 of 197) in 2001, providing strong evidence of the magnitude of the withdrawal phenomenon.

Nonparametric Spearman correlations are shown in Table 2. The significant correlations validate the decision to orthogonalize, but because the correlations are far from perfect, we argue that activity level and prestige are complementary rather than redundant measures.

Table 3 presents the estimations from a GLM (maximum likelihood) model of the endogenous determination of underwriter prestige. An OLS regression (not shown) was used to obtain the R^2 and variance inflation factors (VIF). The model is explanatory (R^2 = 43.3%) and does not exhibit multicollinearity (maximum VIF of 1.27). As expected, issue size largely determines underwriter prestige (alone, R^2 =

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[6] The marginal effects are defined as $\phi(\beta x)\beta$, where $\phi()$ is the standard normal probability density function ($\left[\frac{1}{\sqrt{2\pi}}\right]e^{-\frac{1}{2}X^2}$); x is the mean value of the explanatory variable, and β is the coefficient estimate.

34.7%). Having a prestigious VC extends the notion that prestige attracts prestige. High tech companies are more likely to attract prestigious underwriters, consistent with Xie (2002). Highly leveraged issuers are less likely to attract such underwriters, although issuers with strong revenue are more likely to do so. Issuers with deep[7] management teams and boards attract prestigious underwriters, perhaps both because of company quality and greater externalities. The positive relationship between underwriter prestige and having separate CEO and board chair roles suggests that underwriters are the first screen in the determination of an appropriate agency configuration.

[INSERT TABLE 1 ABOUT HERE]

[INSERT TABLE 2 ABOUT HERE]

[INSERT TABLE 3 ABOUT HERE]

Determinants of Withdrawal

To probe the factors associated with withdrawal likelihood, we first tested for univariate differences between successful and withdrawn offerings, shown in Table 4. It is interesting to note insignificant factors. High-tech companies are no more likely to withdraw which is likely endogenous to finding they have higher status underwriters. Debt is insignificant, although upon further inspection this is because the relationship is curvilinear in which too little (insufficient signal) or too much (too risky) debt are both related to withdrawal. Finally, both lawyer prestige measures are insignificant, consistent with popular oxymoronic clichés about lawyer importance.

Table 5 presents the results of the withdrawal model with the estimated coefficients, marginal effects, and chi-square statistics. Model 2a includes only issuer and market controls; Model 2b adds the coalition legitimacy variables; Model 2c adds the intermediation capability variables; and Model 2d adds the agency cost signaling variables. The goodness of fit for Model 2d is high, with a pseudo R^2 of 43.42%, up from 18.04% for the controls-only model. VIFs showed a maximum VIF of 2.31 ruling out multicollinearity. The *p*-values for the Wald tests of exogeneity are significant, substantiating the need to endogenously control for underwriter prestige. The endogenous covariate for underwriter prestige is negative and significant in all models, lawyers are not significant, while both auditor and VC prestige measures are

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[7] The SEC requires that at least three executive officers and all "material" employees be listed in the prospectus. "Material" is up to the discretion of the management team. Given that the filing is distributed to potential investors and used to market the IPO during the road show, and that the firm has the discretion to do so, it will list more top management team members when it has a "deeper" bench of management talent (i.e., more managers with good backgrounds). All else being equal a firm with 10 good executives would list them while a competitor firm with only 3 would list only those. Neither would list a "bad" manager (e.g., with a bad track record), unless it must.

significant. The negative relationship between withdrawal and both underwriter and VC prestige (see also univariate differences in Table 4) provides partial support for H1, while the insignificant (Table 4) and positive (Table 5) auditor results do not.

H2 suggests that advisor intermediation capability should be negatively related to IPO withdrawal. The univariate differences (Table 4) for advisor intermediation capability measures are significant, except auditor activity, suggesting strong support for H2. In the models containing the intermediation capabilities variables (Table 5, Model 2c, 2d) with orthogonalized measures, the measures of underwriter and auditor activity not explained by prestige have a significant positive effect on withdrawal, opposite to H2. VC market activity is negatively related to withdrawals, supporting H2, while the lawyer teams remain insignificant.

[INSERT TABLE 4 ABOUT HERE]

H3 suggests that monitoring, information asymmetry, bonding and incentive alignment that are associated with lower agency costs and are negatively related to withdrawal. We find the univariate differences (Table 4) to be significant (all $p<.10$ or better) for all agency cost signals. In investigating the monitoring signals in the full model (Table 5, Model 2d), a company having more experienced directors and separate CEO and chair roles is less likely to withdraw, further supporting H3a.

[INSERT TABLE 5 ABOUT HERE]

VC-backing (as a proxy for additional monitoring) has a positive and significant relationship to withdrawal, as is the case for a prestigious auditor while the two lawyer prestige measures are not significant. These results do not support H3a, but do open interesting questions concerning why unsuccessful IPOs are more likely to have prestigious auditors and VCs. H3b suggests that reduced information asymmetry should result in fewer withdrawn offerings. In the full model (Model 2d), having more underwriters (more information production), and greater disclosure have a significant and negative impact on withdrawal, consistent with H3b. H3c suggests that signals of increased bonding should result in fewer withdrawn offerings. In the full model (Model 2d), having more debt in the capital structure is significant and negative while expecting to use the IPO proceeds to reduce debt is significant and positive and consistent with H3c. H3d suggests that signals of increased incentive alignment between managers and shareholders should reduce agency costs. While the univariate model supports H3d, the percentage of shares retained by management is not significant in the full model (Model 2d). This is not surprising since it is very costly for the risk-averse managers to use this signal because they wish to diversify their personal portfolios (Leland and Pyle (1977)).

Discussion

Impact of entire IPO coalition team on IPO outcome

We extend measurement to the entire coalition of parties involved in the IPO including the TMT, board, VCs, investment banks, auditors, and both sets of lawyers. Given high information asymmetry, investors in the IPO market look for signals to evaluate the prospects of a potential investment. Issuers with management depth and a separate CEO and board chair roles are more likely to have prestigious underwriters and complete their IPOs, suggesting that underwriters are the first screen in the determination of an appropriate agency configuration. VC-prestige is highly explanatory of the ability of an issuer to attract a prestigious underwriter, but having VC-backing is associated with a greater likelihood of not completing the deal. In order to attract new investors, VC's need to earn substantial returns and maintain their reputations, but according to Gompers (1996), they do not want to sell too much equity if they think the share price might fall as that would damage their reputation and ability to take firms public in future. Therefore, the VC would withdraw an IPO with expected returns below the cost of capital, rather than risk the negative reputational impact of cashing out to benefit existing investors at the expense of the new investors (Paul A. Gompers and Lerner 1999). This implies that an issuer with a prestigious VC is more likely to attract a prestigious underwriter (positive relationship with IPO completion) and that a highly active VC further increases the likelihood of completion. However, simply having a VC decreases the likelihood of completion, perhaps suggesting a tiered VC market in which a company should not accept VC capital except from a prestigious, active VC.

The certification offered by a prestigious underwriter is positively related to IPO completion, clarifying previous results; prestigious underwriters price issues more accurately (Booth and Smith 1986) because mispriced issues damage their reputations (Chemmanur and Fulghieri 1994). Investors realize this and thus may rely on the endorsement signal.

A high quality auditor should convey a related signal, but we find prestigious auditors to be associated with withdrawn deals. While the auditor prestige result was unexpected, because 93% of issuers use a Big 4/5 auditor, we submit that issuers wishing to become public have little choice, but to conform. As evidence that each IPO coalition member matters and that the 'weakest link' can lead to withdrawal, all deals with Arthur Andersen as its auditor withdrew despite an SEC ruling that deemed its audits acceptable, despite the firm's legal woes.

Although we have spoken light-heartedly about the insignificant result of both sets of lawyers, it is probably not the entire story. As with the underwriter league tables that are published quarterly in the Wall Street Journal, the US News Media Group and Best Lawyers expanded the U.S. News 'America's Best' series to include law firms rankings beginning in Fall 2009. Although it is common for small law firms to be considered prestigious regionally, we suggest that the advent of well-publicized league tables may yield a similar result, wherein only 'bulge bracket'[8] law firms will be considered prestigious.

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[8] The term "bulge bracket" is used to describe the largest underwriting companies in the industry. The term originated because the most prestigious banks are listed in the

Coalition prestige and intermediation capability

We believe that because prestige measures are based on past performance, they may be poor proxies for the intermediation capabilities required for a successful IPO. We separated and tested the effects of measures of both prestige and capabilities for each member of the coalition. The results (four of five coalition members in the univariate models) suggest that capabilities may be more important than prestige in determining the impact an advisor may have. Advisors gain market knowledge, not through prestige, but rather through market activity that results in intermediation capability through their boundary spanning capabilities (Burt 2000). While the lawyers are insignificant, underwriter and auditor activity measures are significant and positively related to withdrawal. While the auditor result is driven by the failure of Arthur Andersen, the underwriter result is on its face inconsistent with the boundary spanning capabilities theory. Given that the activity measures are orthogonalized to prestige, the result is not inconsistent. Prestige is related to the level of social capital an advisor has to market an IPO to institutional buyers. Holding constant the level of prestige, an advisor would thus have a level of market activity at which there are no further returns to additional activity. There are both market- and firm-level capacity constraints that when exceeded result in the inability to screen deals and properly intermediate (Khanna *et al.* 2005). We posit that given a level of prestige, too little market activity reduces market knowledge below capabilities while too much exceeds available resources, yielding a non-linear relationship. The implication is that a firm should choose advisors whose activity levels are in line with their prestige.

Further, the effect of the underwriter is inconsistent with Dunbar and Foerster (2008) in which banks with large market share are argued to use their market power to ensure deals get done. We build on their work by separating prestige from capabilities which yields the difference in results. The contradiction highlights the need to control for the endogenous choice of underwriter, and to model both prestige and (intermediation) capabilities.

Interestingly, VC activity level is highly significant and has the most explanatory power in the model. While the boundary spanning capability and market knowledge arguments seemingly hold, we offer a supporting theory. Underwriters and auditors are compensated for their activities, but do not have investment capital at stake. In contrast, VCs hold equity stakes and have an interest in gaining liquidity by way of IPOs. As well, VCs actually have an interest in underpricing certain deals (i.e., getting the deal done at any price), because it will increase future funds flows to the VC (Lee and Wahal 2004). The implication is that the VCs with high activity levels appear to bring to bear unique and valuable market knowledge, which increases the likelihood of completing the IPO.

Finally, the prestige and intermediation measures each add unique information (e.g., legal, financial, risk, potential return) and together form a complementary signal. We reduced the five prestige and activity measures into two combined measures using principal components derived from the transformation matrix on the eigenvectors of the correlation matrix. Rerunning the model with these principal components (not shown), coalition prestige is insignificant, while coalition activity level is significant and negative on withdrawal, suggesting that market knowledge has an important relationship to the ability of an advisor to be an effective

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largest font at the top of the tombstone and therefore their names 'bulge out' compared to the other bankers listed.

intermediary, while prestige may not. The implications are that the choices a company makes regarding its IPO advisory coalition may impact the likelihood of ever completing the IPO.

Agency cost signaling

When a company goes public, the agency problem increases as the ownership stake of the owner/manager is reduced and investors seek signals that agency costs will be managed. We find that monitoring signals are relevant to IPO completion, in contrast with related research finding that monitoring is not relevant to IPO underpricing (Arugaslan *et al.* 2004). We find that issuers with more experienced directors and separate CEO and chair roles are more likely to attract a high prestige underwriter and less likely to withdraw. Board size is insignificant which may be related to the fact that IPO boards may be quite homogeneous, and according to Anderson et al., (2011), this lack of heterogeneity would not improve monitoring. The result for VC-backing was unexpected, but is explained by the VC's concern for its reputation superseding those of its current investors (Paul A Gompers 1996). The board and CEO/chair separation results suggest that investors expect lower agency costs with an experienced board having greater monitoring capabilities. This has implications for a firm considering an IPO.

Measures that signal a reduction in the level of information asymmetry will also help assuage investors' concerns about agency problems. We find that having more underwriters increases the likelihood of IPO completion. Theoretical arguments suggest that more underwriters produce more information which allows the lead underwriter to better fill structural holes and thus connect supply with demand. Consistent with findings that more information disclosure leads to more accurate IPO pricing (Arnold *et al.* 2007), we find that increased S-1 filing information disclosure yields a greater likelihood of IPO completion. In data not shown, we also found that greater media attention[9] was correlated to IPO completion. Media scrutiny may represent an inexpensive form of monitoring to protect the interests of outside shareholders. The disclosure and media results are consistent with Stein's (2003) theory that timely disclosure of information reduces the information asymmetry between managers and outsiders which investors expect to lower agency costs, and thus have a positive impact on IPO completion. This suggests that a potential issuer add more underwriters, and to seek information production.

Having debt in the capital structure signals increased bonding and has a positive impact on IPO completion which is consistent with Jensen's (1986) theory of free cash flow. According to Jensen, 'Debt … enables managers to effectively bond their promise to pay out future cash flows.' Bonding was used initially in law and economics to refer to the costs that an agent incurs to assure investors that it will perform as promised, thereby enabling it to market its securities at a higher price (Coffee 2002). Because of the legal bonding associated with debt, default would be redressed through the legal system (Smith and Warner 1979), and signals of increased

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[9] Media visibility is measured as the number of citations in the Wall Street Journal (Baker, Nofsinger, and Weaver, 2002) in the year prior to filing the S-1. Although we found the differences between the number of media citations to be statistically significant between the withdrawn and successful issues, the variable was not significant in our full model, likely due to the large number of firms for which there was no media coverage.

bonding which should lower agency costs should have a positive impact on IPO success.

We do not find that signals of increased incentive alignment between managers and shareholders resulted in increased IPO completion. This could be a result of missing data or it could be legitimate. Consistent with IPO signaling models (Leland and Pyle 1977), we assume that low- and high-value companies exist and that it is very difficult for investors to differentiate the two. Since low-value companies have incentive to attempt to masquerade as high-value types, high-value companies want to signal their quality to investors and seek a behavior that is unlikely to be imitated by the low-value companies. Leland and Pyle (1977) argue that the amount of equity retained by insiders signals their high private valuation, but we find that the percentage of shares retained by management is not significant in our IPO completion model. Alternatively, perhaps it is too costly for the risk-averse managers to use this signal or it may well be that the owners instead choose to use some form of long term equity compensation (e.g., options with a long vesting period) to demonstrate this alignment.

Sample selection bias in studies that do not control for withdrawn IPOs
Approximately one third of IPOs are withdrawn annually in the United States. Existing studies of IPO success may have a selection bias because they include only those issues that were completed. Even though the costs of withdrawal are considerable, we propose that there are both good and bad withdrawals. Many issues with characteristics of the most successful IPOs (using measures other than completion) are in fact being selected out of the samples. This result invites rethinking of some existing IPO studies and provides an alternative framework for future research. The inference may support modeling the IPO as a real option. The choice to pursue an IPO has both benefits and costs for companies that withdraw because the IPO filing process may introduce, enhance, or affect other strategic and financial options.

Conclusion
IPO Coalition members contribute knowledge and skills and must work together to achieve a successful IPO outcome. Our results suggest that intermediation capabilities may be more important than prestige, and that firms should strive to choose advisors with activity levels commensurate with their level of prestige. While prestige and market activity are related measures, future studies will strive to better understand their reciprocal and temporal relationship. Although IPO studies tend to focus on the underwriter, we found the VCs to be the most significant determinant of outcome, likely because they hold considerable equity stakes. We also show that firms that send signals of lower agency costs are more likely to complete their IPOs, adding evidence to the incorporation of agency costs into the investment decision making process. Overall, the choices a company makes regarding its IPO advisory coalition may impact the likelihood of ever completing the IPO.

The choice to pursue an IPO has both benefits and costs for companies that withdraw given that the IPO filing process may introduce, enhance, or affect other strategic and financial options. Withdrawal essentially represents the failure of investors and issuers to arrive at an equilibrium price; investors may reject an issue based on inadequate compensation for the expected level of risk or issuers may decide the offering price does not match or exceed their reservation price. Therefore, withdrawal may be the optimal outcome and as such, we propose that not all

withdrawals reflect bad companies. Future studies will attempt to separate these and the inference from our work may support modeling the IPO as a real option.

While market conditions are better when IPOs succeed (median monthly return on CRSP value-weighted index of 1.14%) than withdraw (-0.33%), withdrawals occur in all states of the market (22% in hot markets, 48% in neutral, 30% in cold). In the SEC RW filings, 'adverse market conditions' is the commonly stated basis for withdrawal. While this is believable for cold market withdrawals, it is unlikely true for the 129 (22%) withdrawn in hot markets and is suspicious for the 280 (48%) in neutral markets. Given this, the decision to withdraw is not simply related to market conditions.

To the best of our knowledge, there are no academic studies on withdrawn IPOs outside of the U.S. market. The financial media suggests that this phenomenon is not limited to the U.S. equity markets and that it is becoming an increasingly important issue in the global equity markets. According to Thomson Financial, 36 Asian firms withdrew equity offerings in Asia in the first half of 2011, twice the number as in 2010. International IPO withdrawals would be an interesting avenue of future research. While there is a sizable body of literature on IPOs, it appears there are more puzzles to solve.

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Table 1. IPO outcomes (1999-2004).

Year of offering/withdrawal	Number of deals	Number withdrawn	Percent withdrawn
1999	531	114	21.5%
2000	527	219	41.6%
2001	197	139	70.6%
2002	99	40	40.4%
2003	96	34	35.4%
2004	205	38	18.5%
Total	1,655	584	35.3%

Table 2. Spearman Correlations [a]

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Withdrawn IPO	0.35	0.48																	
2. Proceeds (m)	106.67	239.44	-.051																
3. Pre-filing revenues (m)	165.42	1,137.00	-.065	.300															
4. Pre-filing total assets (m)	704.87	10,100.00	-.038	.524	.630														
5. Firm age at outcome (years)	8.76	11.62	-.050	-.016	.326	.123													
6. High tech flag	0.52	0.50	-.007	-.089	-.165	-.271	-.045												
7. Debt-to-assets ratio	0.66	0.82	-.007	.047	.267	-.026	.141	-.114											
8. Monthly market return	0.01	0.05	-.124	-.022	-.003	-.020	-.044	-.002	.006										
9. Hot market flag	0.39	0.49	-.268	-.073	-.141	-.172	-.133	.154	-.084	.309									
10. Neutral market flag	0.46	0.50	.035	.026	.092	.108	.060	-.108	.017	-.220	-.737								
11. Cold market flag	0.15	0.36	.317	.064	.065	.083	.099	-.060	.092	-.116	-.339	-.386							
12. CEO experience	46.79	8.64	-.040	.024	.237	.193	.155	-.247	.131	-.019	-.123	.106	.021						
13. TMT experience	44.70	8.87	-.056	.075	.276	.274	.222	-.327	.151	.009	-.179	.111	.090	.664					
14. Board + TMT experience	46.79	4.93	-.075	.005	.270	.232	.251	-.338	.142	-.006	-.204	.132	.094	.598	.835				
15. TMT size	7.50	3.19	-.032	.290	.035	.158	-.029	.133	-.089	-.003	.040	-.042	.004	-.123	-.166	-.268			
16. Board + TMT size	12.69	4.05	-.082	.351	.036	.234	-.017	.051	-.082	-.015	.011	-.017	.008	-.053	-.086	-.129	.782		
17. Underwriter C-M prestige	7.91	1.89	-.229	.041	-.064	-.007	-.072	.152	-.130	-.020	.111	-.053	-.078	-.100	-.137	-.144	.138	.130	
18. VC prestige flag	0.09	0.29	.045	.074	-.237	-.069	-.033	.225	-.157	-.029	.037	-.047	.015	-.201	-.223	-.263	.211	.248	.298
19. Auditor prestige flag	0.93	0.26	-.037	.330	.126	.219	.062	.127	-.118	-.052	.063	-.057	-.006	-.067	-.088	-.092	.255	.265	.403
20. Company counsel prestige	5.66	1.29	.006	.282	.117	.226	.032	-.059	.006	-.054	-.180	.138	.053	.037	.063	.059	.135	.169	.251
21. Underwriters' counsel prestige	6.43	1.48	-.007	.371	.181	.330	.028	-.034	.006	-.038	-.147	.112	.045	.004	.022	-.025	.168	.239	.389
22. Underwriter activity	0.08	0.10	.004	.475	.172	.359	.004	.080	-.081	-.058	-.149	.111	.048	-.067	-.042	-.105	.280	.316	.702
23. VC activity	0.26	0.70	-.557	.076	-.073	.009	-.007	.161	-.115	.065	.229	-.082	-.199	-.100	-.096	-.125	.158	.207	.233
24. Auditor activity	0.20	0.08	-.001	.225	.005	.131	.040	.047	-.094	-.043	-.079	.054	.032	-.022	-.024	-.026	.157	.198	.266
25. Company counsel activity	0.05	0.06	-.093	.155	-.081	.037	-.038	.147	-.165	-.010	.003	.009	-.016	-.121	-.129	-.140	.178	.195	.269
26. Underwriters' counsel activity	0.05	0.05	-.050	.202	.008	.098	.006	.135	-.128	-.022	-.053	.054	-.003	-.107	-.111	-.121	.142	.163	.247
27. VC-backing flag	0.65	0.48	.045	.074	-.237	-.069	-.033	.225	-.157	-.029	.037	-.047	.015	-.201	-.223	-.263	.211	.248	.298
28. CEO-Chair separate flag	0.52	0.50	.048	-.035	.034	-.011	.011	.015	.019	.029	.022	-.021	-.001	.049	-.001	-.036	.004	-.079	-.063
29. Board size	6.89	2.33	-.059	.198	.068	.220	.011	-.117	-.046	-.019	-.048	.038	.013	.090	.113	.168	.094	.568	.174
30. Board experience	48.96	5.76	-.080	-.024	.232	.177	.232	-.243	.109	-.022	-.161	.114	.061	.548	.595	.882	-.165	-.066	-.126
31. Underwriter count	3.40	1.58	-.182	.531	.183	.351	.014	.049	-.017	-.023	-.048	.072	-.035	-.049	-.009	-.053	.250	.305	.508
32. Information disclosure/time	755.98	3,425.18	-.558	.249	.108	.185	.011	-.013	-.017	.086	.153	.054	-.284	.027	.026	.003	.135	.210	.201
33. Pre-filing debt (m)	552.82	9,194.61	-.026	.437	.682	.739	.223	-.249	.563	-.019	-.199	.109	.120	.222	.297	.264	.086	.137	.218
34. Use of proceeds for debt	0.16	0.37	.121	.034	.277	.167	.082	-.064	.185	-.036	.005	-.035	.041	.057	.082	.060	-.046	-.065	.010
35. Shares retained (%)	0.75	0.14	-.139	.157	-.134	.022	-.127	.268	-.244	-.021	.163	-.108	-.083	-.215	-.266	-.297	.308	.253	.380

Table 2. (Continued).

	Mean	SD	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
1.Withdrawn IPO	0.35	0.48																	
2.Proceeds (m)	106.67	239.44																	
3.Pre-filing revenues (m)	165.42	1,137.00																	
4.Pre-filing total assets (m)	704.87	10,100.00																	
5.Firm age at outcome (years)	8.76	11.62																	
6.High tech flag	0.52	0.50																	
7.Debt-to-assets ratio	0.66	0.82																	
8.Monthly market return	0.01	0.05																	
9.Hot market flag	0.39	0.49																	
10.Neutral market flag	0.46	0.50																	
11.Cold market flag	0.15	0.36																	
12.CEO experience	46.79	8.64																	
13.TMT experience	44.70	8.87																	
14.Board + TMT experience	46.79	4.93																	
15.TMT size	7.50	3.19																	
16.Board + TMT size	12.69	4.05																	
17.Underwriter C-M prestige	7.91	1.89																	
18.VC prestige flag	0.09	0.29																	
19.Auditor prestige flag	0.93	0.26	.074																
20.Company counsel prestige	5.66	1.29	.026	.200															
21.Underwriters' counsel prestige	6.43	1.48	.013	.239	.232														
22.Underwriter activity	0.08	0.10	.078	.329	.257	.336													
23.VC activity	0.26	0.70	.426	.189	.037	.075	.172												
24.Auditor activity	0.20	0.08	.015	.449	.164	.174	.263	.122											
25.Company counsel activity	0.05	0.06	.203	.235	.574	.158	.261	.262	.224										
26.Underwriters' counsel activity	0.05	0.05	.110	.251	.165	.419	.346	.210	.209	.305									
27.VC-backing flag	0.65	0.48	.237	.247	.082	.116	.262	.488	.196	.297	.259								
28.CEO-Chair separation flag	0.52	0.50	.000	-.029	-.058	-.055	-.062	-.079	-.087	-.091	-.083	-.094							
29.Board size	6.89	2.33	.010	.127	.114	.137	.159	.102	.110	.053	.048	.082	-.114						
30.Board experience	48.96	5.76	-.098	-.046	.050	-.035	-.112	-.103	-.007	-.113	-.084	-.227	-.031	.109					
31.Underwriter count	3.40	1.58	.060	.306	.205	.301	.490	.207	.256	.200	.232	.148	.000	.165	-.045				
32.Information disclosure/time	755.98	3,425.18	.153	.136	.084	.151	.194	.372	.109	.202	.169	.093	-.079	.145	.003	.297			
33.Pre-filing debt (m)	552.82	9,194.61	-.078	.145	.190	.268	.230	-.058	.075	-.047	.003	-.121	.002	.135	.207	.266	.125		
34.Use of proceeds for debt	0.16	0.37	-.092	.023	.021	-.028	-.011	-.104	-.072	-.116	-.110	-.124	.025	-.018	.023	-.055	-.108	.244	
35.Shares retained (%)	0.75	0.14	.274	.239	.091	.185	.283	.281	.163	.271	.201	.301	-.002	.018	-.238	.193	.156	-.103	-.133

Note: [a]Correlations: $\rho > |.041|$ significant at $p < .10$; $\rho > |.048|$ significant at $p < .05$; $\rho > |.063|$ significant at $p < .01$; $\rho > |.081|$ significant at $p < .001$

Table 3. Endogenous maximum likelihood model of prestigious underwriter

Independent variable	Model 1			
	Coefficient	Robust SE	Marginal effect	
Intercept	1.79	0.37		***
Issue and issuer characteristics				
Proceeds (ln)	1.13	0.07	1.13	***
Pre-filing revenue (ln)	0.05	0.02		**
High tech flag	0.52	0.07	0.52	***
Debt-to-assets ratio	-0.25	0.05	-0.25	***
Market characteristics				
Market return	-2.75		-2.75	***
Agency characteristics				
Board size	0.03	0.02	0.09	†
TMT size	0.09	0.02	0.03	***
CEO-chair separate flag	0.26	0.07	0.26	***
VC prestige flag	0.40	0.07	0.40	***
Pseudo R^2	43.3%			
Log pseudolikelihood	-2907.98			
Maximum VIF	1.27			

Note:† $p < 0.1$; ** $p < 0.01$; *** $p < 0.001$

Table 4. Univariate differences by IPO withdrawal (1999 – 2004).

	Successful offerings		Withdrawn offerings		p-Values (from t-tests)
	Mean	n	Mean	n	Differences
Controls - Issue and Issuer					
Proceeds (m)	116.72	1,071	88.23	584	0.02
Pre-filing revenue (m)	200.51	1,071	101.07	584	0.09
Pre-filing total assets (m)	981.50	1,071	197.56	584	0.13
Firm age at outcome (years)	9.27	1,071	7.83	584	0.02
High tech flag	0.52	1,071	0.51	584	0.78
Debt-to-assets ratio	0.65	1,071	0.66	584	0.79
Controls – Market					
Monthly market return	1.14%	1,071	-0.33%	584	< 0.001
Hot market flag	0.49	1,071	0.22	584	< 0.001
Neutral market flag	0.44	1,071	0.48	584	0.16
Cold market flag	0.07	1,071	0.3	584	< 0.001
Coalition Prestige					
CEO experience	47.04	1,066	46.33	578	0.11
TMT experience	45.00	1,071	44.14	583	0.06
Board + TMT experience	47.06	1,071	46.28	583	< 0.01
TMT size	7.54	1,071	7.42	583	0.45
Board + TMT size	12.90	1,071	12.30	583	< 0.01
Underwriter C-M prestige	7.98	1,071	7.78	584	0.03
VC prestige flag	0.14	1,071	0.01	584	< 0.001
Auditor prestige flag	0.93	1,071	0.91	584	0.12
Company counsel prestige	5.65	1,071	5.67	584	0.74
Underwriters' counsel prestige	6.44	1,071	6.42	584	0.74
Intermediation Capability					
Underwriter activity	0.08	1,071	0.09	584	0.04
VC activity	0.39	1,071	0.01	584	< 0.001
Auditor activity	0.20	1,071	0.19	584	0.25
Company counsel activity	0.05	1,071	0.04	584	< 0.01
Underwriters' counsel activity	0.05	1,071	0.04	584	< 0.01
Agency Cost Signals					
VC-backing flag	0.63	1,071	0.68	584	0.07
CEO-Chair separate flag	0.50	1,065	0.45	580	0.05
Board size	6.99	1,071	6.71	583	0.02
Board experience	49.30	1,071	48.34	583	< 0.01
Underwriter count⊥ proceeds	3.61	1,071	3.02	584	< 0.001
Information disclosure/time	1035.32	1,067	243.84	582	< 0.001
Pre-filing debt (m)	804.85	1,071	90.62	584	0.08
Use of proceeds for debt	0.13	1,071	0.22	584	< 0.001
Shares retained (%)	75.46%	1,071	71.80%	312	< 0.001

Table 5. IPO withdrawal model with endogenous covariate (IVPROBIT).

	Model 2a				Model 2b			
	β	dy/dx	S.E.		β	dy/dx	S.E.	
Intercept	2.18		0.46	***	2.58		0.48	***
Controls - Issue and Issuer								
$^{\lambda}$ Proceeds (ln)				***				***
$^{\lambda}$ Pre-filing revenue (ln)				***				***
Pre-filing total assets (ln)	-0.00	-0.00	0.03		-0.00	-0.00	0.03	
Firm age at outcome (years)	-0.01	-0.00	0.00	**	-0.01	-0.00	0.00	**
High tech flag	0.06	0.02	0.08		0.07	0.03	0.08	
Debt-to-assets ratio	-0.07	-0.03	0.04	†	-0.08	-0.03	0.04	*
Controls – Market								
Monthly market return	-1.72	-0.63	0.74	*	-1.66	-0.61	0.74	*
Hot market flag	-0.58	-0.20	0.08	***	-0.60	-0.21	0.08	***
Cold market flag	0.88	0.34	0.10	***	0.86	0.33	0.10	***
Coalition Prestige								
CEO experience	-0.00	-0.00	0.01		-0.00	-0.00	0.00	
TMT experience	-0.02	-0.01	0.01	**	-0.02	-0.01	0.01	**
$^{\lambda}$ TMT size				***				**
Underwriter C-M prestige	-0.16	-0.06	0.04	***	-0.20	-0.07	0.05	***
$^{\lambda}$ VC prestige flag				***				***
Auditor prestige flag					0.63	0.23	0.21	*
Company counsel prestige					0.06	0.02	0.03	
Underwriters' counsel prestige					-0.03	-0.01	0.02	
Intermediation Capability								
Underwriter activity$^{\perp}$ prestige								
VC activity$^{\perp}$ prestige								
Auditor activity$^{\perp}$ prestige								
Company counsel activity$^{\perp}$ prestige								
UWs' counsel activity$^{\perp}$ prestige								
Agency Cost Signals								
VC backing flag								

Table 5. (*Continued*).

	Model 2a			Model 2b		
	β	dy/dx	S.E.	β	dy/dx	S.E.
CEO-Chair separate flag						
Board size						
Board experience						
Underwriter count⊥ proceeds						
Information disclosure						
Pre-filing debt (ln)						
Use of proceeds for debt						
Shares retained (%)						
Pseudo R^2		18.04%			18.21%	
Wald χ^2		257.09***			269.97***	
Model change LR Test					145.17***	
Wald test of exogeneity		11.24***			13.73***	

	Model 2c				Model 2d		
	β	dy/dx	S.E.		β	dy/dx	S.E.
Intercept	2.33		0.51	***	1.90		0.68	**
Controls - Issue and Issuer								
$^\lambda$ Proceeds (ln)				***				***
$^\lambda$ Pre-filing revenue (ln)				**				**
Pre-filing total assets (ln)	0.02	0.01	0.04		0.06	0.02	0.05	
Firm age at outcome (years)	-0.01	-0.00	0.00	**	-0.01	-0.00	0.00	*
High tech flag	0.16	0.05	0.08	*	0.09	0.02	0.09	
Debt-to-assets ratio	-0.09	-0.02	0.04	*	-0.05	-0.01	0.05	
Controls – Market								
Monthly market return	-1.82	-0.53	0.77	*	-1.66	-0.44	0.82	*
Hot market flag	-0.47	-0.13	0.11	***	-0.55	-0.14	0.09	***
Cold market flag	0.69	0.24	0.11	***	0.66	0.21	0.11	***
Coalition Prestige								

Table 5. (*Continued*).

	Model 2c				Model 2d			
	β	dy/dx	S.E.		β	dy/dx	S.E.	
CEO experience	-0.01	-0.00	0.01		-0.00	-0.00	0.01	
TMT experience	-0.02	-0.01	0.01	*	-0.00	-0.01	0.01	
$^\lambda$ TMT size				***				***
Underwriter C-M prestige	-0.29	-0.08	0.06	***	-0.20	-0.05	0.09	**
$^\lambda$ VC prestige flag				***				***
Auditor prestige flag	1.04	0.30	0.24	***	0.80	0.21	0.30	**
Company counsel prestige	0.06	0.02	0.04		0.04	0.02	0.04	
Underwriters' counsel prestige	-0.03	-0.01	0.03		-0.03	-0.01	0.03	
Intermediation Capability								
Underwriter activity$^\perp$ prestige	1.42	0.42	0.61	*	1.73	0.46	0.69	*
VC activity$^\perp$ prestige	-3. 13	-0.92	0.30	***	-3.61	-0.96	0.35	***
Auditor activity$^\perp$ prestige	2.66	0.78	0.62	***	2.63	0.70	0.71	***
Company counsel activity$^\perp$ prestige	0.07	0.02	1.02		-0.56	-0.15	1.11	
UWs' counsel activity$^\perp$ prestige	-0.86	-0.25	0.87		-0.79	-0.21	0.94	
Agency Cost Signals								
VC backing flag					0.51	0.14	0.10	***
CEO-Chair separate flag					-0.16	-0.04	0.08	*
Board size					0.01	-0.01	0.02	
Board experience					-0.03	-0.01	0.01	**
Underwriter count$^\perp$ proceeds					-0.16	-0.04	0.05	***
Information disclosure					-0.08	-0.02	0.02	***
Pre-filing debt (ln)					-0.03	-0.01	0.02	†
Use of proceeds for debt					0.51	0.16	0.10	***
Shares retained (%)					0.28	0.07	0.38	
Pseudo R^2		34.28%				43.42%		
Wald χ^2		406.44***				456.57***		
Model change LR Test		537.51***				302.08***		
Wald test of exogeneity		21.44***				7.90**		

Note:† p < 0.1; * p < 0.05; ** p < 0.01; *** p < 0.001; λ = instruments included only in endogenous model; first stage significance shown