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How much prestige is enough? Assessing the value of multiple types of high-status affiliates for young firms[☆]

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ABSTRACT

Young, unproven firms can signal their worthiness, or potential, through affiliations with various types of prestigious parties. Drawing from signaling theory, we present a formal consideration of the implications of multiple numbers and types of prestigious affiliates for IPO valuations. We argue that different types of prestigious affiliates – prestigious executives, directors, venture capital firms, and underwriters – convey different signals of IPO worth, depending on the extent to which they provide certification or substantive benefits. Based on a sample of 257 software IPOs, we find considerable support for our expectations. The benefits of prestigious executives and directors accumulate in a linear, more is better fashion; in contrast, the payoffs from VC and underwriter prestige accumulate in a curvilinear fashion. We discuss the theoretical implications of these findings and propose an agenda for future research.

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1. Executive summary

We elaborate on the distinction between the certification and substantive benefits of prestigious affiliates, presenting a comprehensive analysis of the implications of multiple numbers and types of prestigious affiliates for IPO valuations. Although scholars have acknowledged that prestigious affiliates vary in the nature of the resources they bring to bear on an IPO firm's behalf (e.g., Jain and Kini, 2000; Sahlman, 1990; Wasserman, 2003), they have largely conflated the certification and substantive benefits of different types of affiliates. Further, while some scholars have considered the simultaneous effects of more than one type of prestigious affiliate on IPO outcomes, they have examined the influence of multiple parties in a purely *ceteris paribus* fashion (e.g., Gulati and Higgins, 2003; Sanders and Boivie, 2004; Stuart et al., 1999). Little attention has been paid to the relationships among the different signals, and how the certification and substantive value of each type of signal influences investors' interpretations as they assign value to the newly public firm.

Our study advances understanding of this socially and economically important phenomenon by drawing a theoretical distinction between the certification and substantive benefits prestigious affiliates can bring to an IPO. In particular, we explore the extent to

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which multiple prestigious affiliates of a given type are seen by investors as additively valuable, as opposed to merely corroborative or even redundant. While prior research has considered the effects of one prestigious underwriter or one VC on IPO valuations, our study is the first to examine the influence of the *number* of prestigious underwriters, VCs, executives and directors. Second, we consider the extent to which the presence of *multiple types* of prestigious affiliates are additive versus redundant in the signals they provide.

Our sample included 257 U.S. IPOs between 1994 and 1996 in three sectors of the computer software industry. Consistent with our hypotheses, our results suggest that every additional prestigious executive and director tends to bring additive value; this value does not diminish as the number of prestigious actors accumulates, and it is only minimally reduced by the presence of other types of prestigious affiliates. Thus, prestigious executives and directors clearly exhibit linear effects on IPO valuations, in a “more is better” pattern. Our results also support our hypotheses that multiple prestigious VCs and underwriters are somewhat redundant in the signals they provide. Although the addition of each prestigious VC and underwriter brings some additional value in the eyes of investors, the marginal benefit diminishes with each additional prestigious affiliate. Further, our results suggest that prestigious underwriters only partially mediate the effects of other forms of prestige.

In sum, our results suggest two potentially important theoretical implications. First, our analysis reveals that the benefits of having multiple prestigious affiliates vary depending on the type of affiliate. Second, our study suggests that prestigious affiliates differ in the extent to which they provide information about the past as opposed to the future. For example, our findings regarding the linear effects of prestigious executives and directors are consistent with expectations that these actors will be more involved in the ongoing operations of the company and will be with the company for a time following the IPO. Thus, the information provided by their presence is prospective. In contrast, the effects of prestigious venture capitalists – who may have provided the firm with a variety of resources during its development, but who are expected to largely sever their ties with the company shortly after its IPO – accumulate in a plateauing, curvilinear fashion. Thus, the information that prestigious VCs signal is more retrospective in nature. Prestigious underwriters, who play an important role at the time of the IPO and in creating the conditions for immediate success thereafter, have a stronger effect than VCs on IPO valuations, but the relationship is still curvilinear. The information they provide is somewhat prospective, but short-term in nature.

2. Introduction

Scholars have long been interested in the effects of interorganizational relationships on a focal organization's behaviors and performance (e.g., Baum et al., 2000; Pfeffer and Salancik, 1978). External linkages can occur through board seats, prior employment affiliations, officerships in trade associations, alliances, and other means. They affect a firm's access to information (Geletkanycz and Hambrick, 1997), ideas (Davis and Greve, 1997), social capital (Fischer and Pollock, 2004; Miner et al., 1990) and other resources (D'Aveni, 1990).

Recently, scholars have become particularly interested in the effects of prestigious affiliates, or relationships with entities that are prominent and socially central, on the market valuations of initial public offerings (IPOs) (e.g., Gulati and Higgins, 2003; Pollock et al., 2004; Stuart et al., 1999). Researchers have been drawn to IPOs as an arena where prestigious affiliates might matter greatly, because these companies typically have limited track records and resources and otherwise carry considerable uncertainty. Under this line of thought, investors will value a newly-public firm more highly if it has prestigious affiliates that convey assurances of quality. By examining the initial valuations of IPOs – or the value of the company's shares at the end of the first day of trading – scholars are able to gauge investors' expectations about the firm's prospects. Thus, the broad question that prior researchers have posed about prestigious affiliates in the IPO context is this: How does the presence of prestigious affiliates affect investors' assessments of the prospects of the firm (Carter and Manaster, 1990; Gulati and Higgins, 2003; Stuart et al., 1999)?

However, the literature on the value of prestigious affiliates has stopped short of providing two important clarifications, both of which are essential for theory to advance and practical insights to be generated. First, there has been little effort to theoretically distinguish between the different types of benefits prestigious affiliates can provide. Generally, researchers emphasize that prestigious affiliates serve an “endorsement” function, certifying the quality of the IPO firm (e.g., Carter and Manaster, 1990; Lee and Wahal, 2004; Sanders and Boivie, 2004; Stuart et al., 1999). Some scholars also have argued that prestigious parties may provide substantive resources, such as abundant social and human capital, that can help to improve the actual functioning of the IPO firm (e.g., Bygrave and Timmons, 1992; Fischer and Pollock, 2004; Jain and Kini, 2000). We might reasonably expect that different types of prestigious affiliates confer different mixes of these two benefits. For instance, prestigious executives might bring substantive benefits based on their experience, capabilities and connections which can be of on-going benefit to a company; by comparison, prestigious underwriters may primarily serve a certification function, aiding a firm in capitalizing on the resources it has accumulated. Both types of affiliates would enhance the value of the IPO in the eyes of investors, but for different reasons; and these differences could greatly affect the optimal mix and amounts of prestigious affiliates for impressing investors.

The lack of theoretical distinction between the certification and substantive benefits of prestigious affiliates makes the second void in the literature all the more notable. Specifically, there has been relatively little attention paid to the implications of having *multiple* prestigious affiliates – either of a given type or of different types. IPO firms can potentially attract various types and quantities of prestigious affiliates, including executives with blue-chip credentials, outside directors with lustrous backgrounds, prominent venture capital firms (VCs), and top-tier underwriters. What is not clear from prior research is the extent to which multiple prestigious affiliates operate in an additive and/or substitutive manner in affecting investors' valuations.

Incorporating the distinction between certification and substantive benefits helps us understand – and predict – the effects of multiple numbers and types of prestigious affiliates on IPO valuations. If a given type of prestigious affiliate provides primarily substantive benefits, every additional affiliate of this type should add to the value of the firm on a generally linear basis; moreover,

the effect of their prestige on the company's valuation will not be dampened by the presence of other types of prestigious affiliates. In contrast, if a given type of affiliate primarily provides a certification function, then the signals provided by additional affiliates of this type would be somewhat redundant in investors' eyes; moreover, the value of a given certifier would be largely mitigated if another type of prestigious certifier were also present.

These distinctions help to enhance our understanding of the operative mechanisms that convert prestigious affiliations into economic value. In addition, they are of practical significance, as they can provide entrepreneurs guidance on how to get the most out of their "prestige dollars." Consider, for example, the software IPO that has several executives with blue-chip backgrounds. How much more valuable would investors deem the firm if they also saw several outside directors with lustrous credentials listed in the prospectus? the backing of a top-tier VC? the backing of an additional top-tier VC? the sponsorship of a prestigious underwriter, or two such underwriters? To the extent that prestigious affiliates exact a toll for their participation (Chen et al., 2008; Hsu, 2004), the questions for the IPO firm are clear: What kinds of, and how much, prestige are enough?

In this study we elaborate on the distinction between the certification and substantive benefits of prestigious affiliates, and we present a comprehensive consideration of the implications of multiple numbers and types of prestigious affiliates for IPO valuations. We argue that the presence of multiple types of prestigious affiliates will have different effects on IPO valuations depending on the extent to which the affiliates provide substantive resources that can enhance the future performance of the firm or primarily certify the quality of the firm. Although our data do not allow direct measurement of substantive versus certification benefits, through argumentation we construct very different portrayals of the ways in which these two types of benefits will be manifested in IPO valuations. Our results, based upon a sample of 257 software IPOs, provide considerable support for our theoretical portrayals.

We should also emphasize that, by focusing on end-of-first-day IPO valuations, we assess the value of prestigious affiliates (in the market's eyes), net of the costs of securing these affiliates. We can reasonably assume that prestigious parties, aware of their relative rarity and value, will charge more for their association with a firm than would less prestigious parties. Indeed, research has shown that prestigious VCs extract more equity per dollar of investment than do less prestigious VCs (Hsu, 2004), and that prestigious executives hired by firms prior to their IPOs are paid appreciably more than less prestigious executives (Chen et al., 2008).⁴ At the extreme, a prestigious party could withhold its services unless paid its full marginal value, which would have the effect of wiping out that party's net benefit for the IPO. Our results indicate that considerable market value is attached to every type of prestigious affiliate we examine, suggesting that prestigious affiliates (in our sample at least) do not charge an amount even close to their value.

3. Theory and hypotheses

3.1. The signaling value of prestigious affiliates in the IPO context

Signaling theory suggests that under uncertain conditions, and where information asymmetries exist between two parties, one party can send the other signals that provide indications of its quality through characteristics that are costly and difficult to imitate (Milgrom and Roberts, 1986; Spence, 1974). Signaling theory has been used in a wide variety of contexts, including labor markets (Spence, 1974; Turban and Cable, 2003), new product introductions (Akerlof, 1970), advertising (Nelson, 1974), and insider trading of stocks (Sanders and Boivie, 2004).

Because IPOs typically carry a great deal of uncertainty, they provide especially fertile ground for research on signaling via prestigious affiliations. In particular, prior research has shown the importance of examining the prestige of an IPO's executives and directors (e.g., Certo, 2003; Higgins and Gulati, 2003), VC backers (Gulati and Higgins, 2003; Lee and Wahal, 2004), and underwriters (Carter and Manaster, 1990; Pollock et al., 2004). These are the four types of prestigious affiliates we will consider.

Although scholars have noted that prestigious affiliates vary in the resources they bring to bear on the IPO firm's behalf (e.g., Jain and Kini, 2000; Sahlman, 1990; Wasserman, 2003), they have largely conflated, or blurred, the potential certification and substantive benefits of different types of affiliates. Further, while some scholars have considered the simultaneous effects of more than one type of prestigious affiliate on IPO outcomes, they have examined the influence of multiple parties in a purely *ceteris paribus* fashion (e.g., Gulati and Higgins, 2003; Sanders and Boivie, 2004; Stuart et al., 1999). Little attention has been paid to the relationships among the different signals, and how the certification and substantive value of each type of signal influences investors' interpretations as they assign value to the newly public firm.

3.1.1. The value of certification

Prior research has confirmed that the certification process is a way to reduce uncertainty about the quality of an entity when direct indicators of quality are absent or difficult to discern (Baum and Oliver, 1992; Fombrun, 1996; Rao, 1994; Wade et al., 2006). Certification occurs when an actor obtains the endorsement of reputable, high-status third parties who risk their own reputational capital by associating with the entities (Baum and Oliver, 1992; Wade et al., 2006). Following from the idea that certification by prestigious underwriters serves to mitigate some of the uncertainty associated with IPOs (Carter and Manaster, 1990), researchers have argued that affiliations with prestigious actors provide a signal of an IPO's underlying quality (Carter et al., 1998; Gulati and Higgins,

⁴ Whereas prestigious VCs and executives may be expected to capitalize directly on their prestige by extracting higher rents, the same is not true for underwriters and directors. Prior research has demonstrated that there are strong norms in the IPO market that underwriters receive the same overall commission (seven percent of the value of the offering) regardless of their prestige (e.g., Chen and Ritter, 2000). Thus, to capitalize on their prestige underwriters must generate a higher stock price for the IPO. Similarly, all directors are typically paid the same compensation and receive the same option or stock grants for serving on the board (Beatty and Zajac, 1994; Chen et al., 2008), and therefore will recoup the value of their prestige in different ways.

2003; Megginson and Weiss, 1991). As articulated by Stuart and his colleagues (Stuart et al., 1999), there are two major reasons investors are reassured by the endorsements of prestigious affiliates. First, prestigious actors are expected to have superior abilities to make judgments about the firms with which they affiliate. They presumably have achieved their prestige and market position through a sustained series of prudent decisions, and their affiliation with the focal IPO firm represents one more such decision. Second, prestigious actors value their status highly and will guard carefully against tarnishing it. Presented with more affiliation opportunities than they can accept, prestigious actors will only sign on to those deals they see as most likely to reinforce their prominence (Carter and Manaster, 1990; Ferris et al., 1992). As noted above, researchers have not directly examined the implications of endorsements by multiple prestigious actors. But the basic logic of (and even the term) “certification,” clearly suggests that multiple endorsements by prestigious actors will be somewhat redundant and thus will yield declining marginal benefits.

There are several reasons to expect that multiple certifications by prestigious affiliates will be largely redundant in signaling an IPO firm's quality. First, it is unlikely that multiple certifiers will have based their decisions on unique or non-overlapping information. At a minimum, they all will have examined essentially the same business plan, product prototypes, and competition analyses as part of their due diligence. Second, each affiliate's evaluative lens is developed within a web of broader social and institutional forces. Institutionalized norms and techniques exist for analyzing the prospects of entrepreneurial firms (Suchman, 1995; see Gutterman, 1991 for an example of these criteria for IPOs). Application of a common set of evaluation norms to the same body of facts will lead to commonality, or redundancy, in assessments of the IPO firm. Third, not only is there a finite amount of information on which prestigious actors can base their evaluations, there is also a finite amount of uncertainty that their certification can reduce (Pollock and Rindova, 2003; Zuckerman, 1999). As endorsements accumulate, each subsequent signal will have less impact than prior signals. Finally, research in social psychology has found that repeated exposure to similar stimuli can yield declining benefits. In their study of media coverage effects on IPO outcomes, Pollock and Rindova (2003: 633) summarize this line of research, noting,

“Social cognition research has shown that attending to an object reaches threshold levels above which the object becomes ‘taken-for-granted,’ in that further exposure does not further increase attention (Fiske and Taylor, 1991; Starbuck and Milliken, 1988). In addition, Anderson (1981) suggested that the degree to which individuals will use a piece of information in impression formation depends on the value of the information, which is a function of its nonredundancy. He proposed that redundant information leads to an ‘attention decrement,’ diminishing the effect of additional exposure.”

In sum, if a given type of prestigious affiliate serves primarily a certifying function, then multiples of this type will have diminishing positive effects on investors' assessments of firm value.

3.1.2. The substantive value of prestigious affiliates

Beyond certifying an IPO's quality, prestigious affiliates may also provide substantive resources that will enhance the firm's functioning. Prestigious affiliates have social capital that can help make connections, open doors, and secure resources for the newly-public firm (Fischer and Pollock, 2004; Jain and Kini, 2000). Their abundant human capital can contribute to the effective administration, leadership, and governance of the firm (Stuart et al., 1999; Wasserman, 2003). Indeed, considerable literatures in strategic human resource management (Bantel and Jackson, 1989; Becker and Gerhart, 1996; Carpenter et al., 2001; Gerhart and Rynes, 2003), corporate governance (Davis et al., 2003; Finkelstein and Hambrick, 1996; Gimeno et al., 1997; Hillman, 2005; Westphal and Stern, 2006) and economic sociology (Pfeffer and Salancik, 1978; Stearns and Mizruchi, 1993a,b) discuss how executives' and directors' human and social capital are expected to substantively benefit the operational performance of firms. Further, these literatures generally suggest that the benefits of these assets are additively valuable to firms and accrue without limit.

Thus, the picture that emerges when prestigious affiliates are viewed as providing substantive resources, rather than just certification, is very different: Instead of providing largely redundant signals of an IPO firm's quality, multiple prestigious affiliates provide generally additive benefits, where “more is better.” Every prestigious affiliate brings more talent, connections, and decision-making wherewithal – and the potential to attract even more of these resources. In this vein, Stuart et al. (1999: 347) noted, “obtaining a prominent partner invokes a cycle of accumulating advantage for young companies in which the addition of a well-known affiliate expedites the acquisition of the resources that enable future accomplishments.” If investors anticipate these substantive benefits, they will attach additive value, with little or no diminishment, for every prestigious party affiliated with an IPO firm.

3.2. Hypotheses about different types of prestigious affiliates

In this section we discuss the extent to which prestigious executives, directors, VCs, and underwriters are expected to provide substantive resources versus certification, and how the presence of multiple affiliates of each type is likely to influence IPO valuation.

3.2.1. Prestigious executives and directors⁵

Executives are responsible for developing, refining, and implementing company strategy (Finkelstein and Hambrick, 1996; Hambrick and Mason, 1984). Outside directors⁶ oversee and provide advice to executives and help secure resources from the

⁵ We examine the effects of executives and directors separately in this study because these two groups of people play different roles in an IPO firm, as noted below; thus the effects of their prestige may vary. In addition, executives and directors may differ in their level of involvement with the IPO firm; executives are involved with the company on a daily basis, while directors' involvement is typically more episodic. Although we do not hypothesize different patterns of effects for executives and directors, we felt it prudent to allow for that possibility empirically.

⁶ In this study we do not consider board members who are representatives of venture capitalists to be outside directors since we treat venture capitalists separately.

environment (Lorsch and MacIver, 1989; Pfeffer and Salancik, 1978); moreover, research has found that directors in IPO firms tend to be more involved in company activities and resource acquisition than are directors in more established companies (Certo, 2003; Gompers and Lerner, 2004). Thus, executives and outside directors are engaged in the actual functioning of the firm; their involvement occurs on a daily or frequent basis; and they tend to have continuing involvement with the firm well beyond the IPO event. As such, investors can be expected to envision that each prestigious executive or director brings unique expertise, insights, and connections which are valuable for the functioning of the firm.

Executive and director prestige of various types can be considered (D'Aveni, 1990), but three main types have been central in the IPO literature: employment or board seats with the most prominent firms in the focal industry (Higgins and Gulati, 2006; Stuart et al., 1999), employment or board seats with the most prominent firms on the overall business landscape (Certo, 2003; Higgins and Gulati, 2006), and elite educational credentials (Finkelstein, 1992). Employment or board linkages with other leading firms in the industry give executives and directors informational cues about major industry trends (Geletkanycz and Hambrick, 1997), relevant formulas for success (Florin et al., 2003), and connections to knowledgeable parties (Davis and Useem, 2002; Davis et al., 2003). Linkages to blue-chip firms afford additional access to valuable information and resources (Boeker, 1997); ties to these prestigious firms also signal power, sophistication and centrality (Pfeffer and Salancik, 1978). Experience with blue-chip companies can be expected to provide knowledge about the practices of the economy's most enduring and successful firms (Burton et al., 2002), as well as the prospect that these firms might become allies (Gulati, 1998). Finally, prestigious educational credentials suggest a combination of abundant human capital (via the selectivity and educational process of elite schools) and social capital (via the alumni networks and cachet that accompany elite degrees) among the firm's upper-echelons (Finkelstein, 1992; Palmer and Barber, 2001).

The prestigious credentials of executives and directors signify that these individuals are talented enough to have been selected into elite organizations (Wasserman, 2003); they gained experience and insights from those organizations (Lovas, 2002); and they may still have access to influential and informed parties at these organizations (Finkle, 1998; Zimmerman and Zeitz, 2002). Thus, prestigious executives and directors have the potential to bring significant substantive resources to the IPO firm. Moreover, compared to underwriters and VCs, whose involvement is more episodic and will largely cease shortly after the IPO event, prestigious executives and directors are expected to continue their intensive involvement with the firm. If we combine the expectation of on-going involvement of these individuals with the assumption that they each bring additive capabilities – in the form of distinctive expertise, knowledge, and connections – then we can reasonably envision that investors will attach additive value to every prestigious executive and director associated with an IPO firm (Becker and Gerhart, 1996; Carpenter et al., 2001).

Hypothesis 1. The number of prestigious executives on an IPO firm's top management team will be related to IPO valuations in a positive, linear manner.

Hypothesis 2. The number of prestigious outside directors on an IPO firm's board will be related to IPO valuations in a positive, linear manner.

3.2.2. Prestigious venture capital firms

The backing of a prestigious VC is also a signal of IPO quality (Gompers, 1996; Gulati and Higgins, 2003; Lee and Wahal, 2004). The willingness of a prestigious VC to back a young firm with its reputation and capital clearly serves an endorsement function, suggesting that the young firm has good potential. But VC involvement with a young firm can also provide a host of benefits beyond infusions of capital, including access to the VC's social networks, advice and expertise in strategic planning, and assistance in recruiting experienced managers and prestigious underwriters (Bygrave and Timmons, 1992; Gompers and Lerner, 2004; Jain and Kini, 2000; Sahlman, 1990). Indeed, the expectation that prestigious VCs will provide substantive enhancements to a young firm has been used to justify the value of VC backing generally (e.g., Megginson and Weiss, 1991).

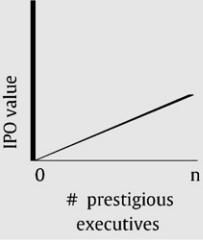
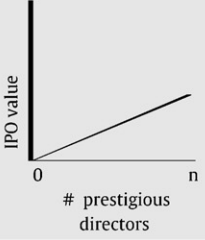
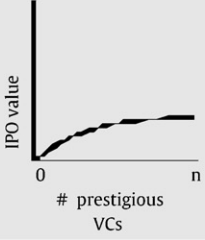
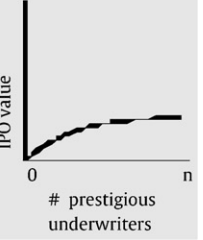
Most of the substantive resources that VCs provide help get a firm to the stage where it is ready to go public. Once the IPO occurs, VCs scale back their involvement and harvest their investments (Gompers and Lerner, 2004). Their help in post-IPO activities – through their connections and counsel – may still be felt, but it will not occur on the same scale as prior to the IPO. Thus, at the point of the IPO, we can expect that prestigious VCs primarily certify the quality of the firm, but they also will be seen as having some potential to indirectly contribute to post-IPO functioning. If so, the involvement of multiple prestigious VCs will provide partially, but not totally, redundant signals of IPO quality. That is, multiple prestigious VCs bring added value, but in a non-linear, diminishing manner:

Hypothesis 3. The number of prestigious venture capital firms affiliated with an IPO firm will be positively related to IPO valuations, but at a declining rate as the number of prestigious VC firms increases.

3.2.3. Prestigious underwriters

Research has amply shown that the involvement of a prestigious lead underwriter reduces investor perceptions of uncertainty, thereby increasing the amount investors are willing to pay for an IPO's stock (e.g., Carter et al., 1998; Gulati and Higgins, 2003; Pollock, 2004; Stuart et al., 1999; see also Ritter and Welch, 2002, for an extensive review). Beyond this certification function, however, prestigious underwriters also offer some post-IPO substantive benefits. They may have prominent analysts who will cover the firm (Krigman et al., 2001); through their own holdings they can stabilize post-IPO stock prices (Ellis et al., 2000); they can place shares with investors who are less likely to quickly trade the stock, thereby creating a more stable investor network for the newly public firm (Carter and Dark, 1993; Fischer and Pollock, 2004); and they make their services available to help secure post-IPO financing (Welch, 1993). In sum, prestigious underwriters play primarily a certification role, but they also provide some substantive benefits to IPO firms.

Table 1
Independent effects of four types of prestigious affiliates on IPO valuations

	Prestigious Executives	Prestigious Outside Directors	Prestigious VCs	Prestigious Underwriters
Provides substantive resources for post-IPO functioning	Major	Major	Minor	Minor
Relative duration of post-IPO involvement	Major	Major	Minor	Minor
Primary type of benefit	Substantive	Substantive	Mostly Certification, Some Substantive	Mostly certification, some substantive
Effects of multiple such affiliates on IPO valuations	Linear; more is better	Linear; more is better	Diminishing returns	Diminishing returns
Shown graphically				

It is important to note that all prior research has focused primarily on the *lead* underwriter managing an offering; thus, any implications of involving additional prestigious underwriters as co-managers have been largely overlooked. While the lead underwriter plays a central role in the IPO process (Pollock et al., 2004), co-managers also play an important role through their distribution of significant proportions of the shares; and they are prominently indicated on an IPO's prospectus.⁷ Investment banks may be given a co-manager role because of their prestige, because they employ a prominent analyst who will cover the IPO firm (Guterman, 1991; Krigman et al., 2001), and/or because they have the resources to help support the stock following the IPO (Ellis et al., 2000). Thus the prestige of *both* the lead underwriter and any co-managing underwriters can provide informative signals to investors. Since many IPOs have co-managers, it is entirely possible that an IPO will have the endorsement of more than one top-tier underwriter. The question then arises: Do endorsements by multiple prestigious underwriters signify anything beyond what is conveyed by just one?

As discussed above, prestigious underwriters provide primarily a certification function, which suggests that multiple prestigious underwriters are somewhat redundant in the signals they provide. However, prestigious underwriters also provide a lesser, but still significant, substantive role in enhancing the post-IPO success of the firm. Thus, multiple prestigious underwriters may bring some non-overlapping incremental value to the firm. When we combine these two effects, we envision a diminishing return pattern much like we portrayed for VCs:

Hypothesis 4. The number of prestigious (lead or co-manager) underwriters of an IPO will be related to IPO valuations in a positive but curvilinear manner, with valuations increasing at a diminishing rate as the number of prestigious underwriters increases.

Table 1 summarizes the role of each type of prestigious affiliate in affecting IPO valuations.

3.3. Are prestigious underwriters the conduit for conveying other forms of prestige?

Prior research suggests that multiple types of prestigious affiliates are readily found together in some IPOs. Prestigious founders are able to attract prestigious fellow executives and outside directors, who can attract prestigious VCs; together, they can also attract prestigious investment banks to underwrite the offering (Bygrave and Timmons, 1992; Higgins and Gulati, 2003; Sahlman, 1990). The “prestige snowball” grows because of mutual attraction among prestigious parties who rely on each other's presence as an economical signal that their own affiliation with the entity is also warranted (Chen et al., 2008; Podolny, 1994).

Prior to the IPO, this process is likely to be iterative, as VCs join over multiple rounds of financing and as executives and directors arrive (and leave), making it difficult to model the exact causal order of this process. Indeed, we have no way of knowing (from the data we have, at least) the sequence in which executives, directors, and VCs arrived (particularly since there is no way to know about any early affiliates who departed prior to the IPO). However, we can be relatively sure that executives, directors, and VCs arrived prior to the engagement of underwriters.

This temporal reality allows us to explore the degree to which prestigious executives, directors, and VCs engender the enlistment of prestigious underwriters. At one extreme, one might anticipate that the main benefit of prestigious executives,

⁷ Underwriting syndicates consisting of other investment banks are also generally involved in the distribution of shares, and the extent to which more high status underwriters are included in the deal can influence the distribution of the stock (Pollock et al., 2004). However, even the most prestigious syndicate members are only allotted a small portion of the stock, and it is the lead and co-lead managers who vet the company, work with it most closely during the IPO process, and receive the lion's share of the stock to distribute. Therefore, we focus our attention on the lead and co-managers in this study.

directors, and VCs is in enlisting prestigious underwriters, and that it is the underwriters who then fully signal value to investors. In contrast, one might expect that prestigious executives, directors, and VCs play a role in attracting prestigious underwriters, and that all four forms of prestigious affiliates then enhance the value of the firm in investors' eyes. We have no strong *a priori* basis for predicting these joint effects. However, we will conduct distinct analyses to examine whether prestigious underwriters represent the "conduit" through which all other forms of prestige create value (Podolny, 2001).

4. Data and method

4.1. Sample and data sources

Our sample included all U.S. IPOs between 1994 and 1996 in three sectors of the computer software industry: computer programming services (SIC 7371), computer software (7372) and computer integrated designs (7373). The software industry was selected because it had a large number of IPOs during the study period. We chose 1994 to 1996 because it was a time of significant IPO activity and pre-dated the bubble that engulfed the IPO market in the late nineties (Ritter and Welch, 2002). IPO listings were drawn from the *Securities Data Corporation Global New Issues* database. We excluded any IPOs that were spin-offs or carve-outs from corporations to ensure that we were examining only independent firms (Ritter, 1991; Pollock and Rindova, 2003). Our final sample consisted of 257 firms. We gathered market valuation data from the *Center for Research on Securities Prices* (CRSP) database. Upper-echelons biographical data and other pre-IPO data were drawn from IPO prospectuses.

4.2. Dependent variable: IPO valuations

Consistent with prior research (Gulati and Higgins, 2003; Megginson and Weiss, 1991), we measured the value of the IPO firm as the natural logarithm of the firm's market capitalization at the end of the IPO's first day of trading – the total number of outstanding shares at IPO multiplied by the closing price at the end of the first trading day.⁸

4.3. Independent variables

4.3.1. Number of prestigious executives and outside directors

Consistent with prior research (Higgins and Gulati, 2006; Fischer and Pollock, 2004) we examined all executives and outside directors (who were not current or prior officers of the company, or their family members, or representatives of VC firms invested in the IPO firm) listed in the IPO prospectus to identify those who were prestigious. An executive or outside director was considered prestigious if he or she possessed one or more of the following credentials: a tie to a prominent firm in the focal industry (intra-industry prestige), a tie to a blue-chip corporation (blue chip prestige), and/or a degree from an elite educational institution (educational prestige).

An individual had intra-industry or blue chip prestige if he or she was currently or previously employed at a prestigious firm at the level of vice president or higher, and/or sat on a prestigious firm's board of directors. We considered a company to be a blue chip company if it was a member of the Standard & Poor's (S&P) 100 index between 1993 and 1995. The S&P 100 is a subset of the S&P 500 that includes the largest, most reliably profitable and liquid companies.⁹

To identify prestigious firms in the software industry, we applied a method similar to that used by S&P to generate its rankings. We first identified all publicly-listed companies in the 7371, 7372 and 7373 SICs from 1993 to 1995 (a total of 713) and collected the following data: 1) market capitalization at the end of each year; 2) financial viability, measured as the percentage of quarters during the three-year period in which the firm was profitable; 3) liquidity, the ratio of annual dollar value traded to market capitalization, and 4) free float, the percentage of company shares that were available for trading in the market. We standardized these four factors by transforming them into z-scores and combined them into an index. Using this index, we identified the 20 most prestigious companies in each year (yielding a final list of 23 firms) in the software industry.¹⁰

We also identified prestigious firms in the computer hardware sector because there is considerable "prestige permeability" between hardware (e.g., HP) and software (e.g., Microsoft) firms, and because some firms (e.g., IBM, Sun Microsystems, Apple) have a significant presence in both sectors. We used the same method described above to generate an additional list of the 20 most prestigious companies in each year (for a total of 29 firms) in the computer hardware industry (using SIC 3571, 3575, 5045, and 7377).

A person was coded as having a prestigious education if he or she had a degree (undergraduate or graduate) from an elite institution, using the list provided in Finkelstein (1992). The number of prestigious executives and outside directors equals the sum of individuals in each category (at the time of the IPO) who possessed one or more prestigious credentials.¹¹

⁸ In analyses not shown here, we also ran our models using underpricing (the percentage change between the initial value of the IPO and its value at the end of the first day of trading) and market-to-book value at the end of the first day of trading as our dependent variable. The results were similar to those reported here.

⁹ We also experimented with using the full S&P 500. The pattern of results was the same.

¹⁰ We also experimented with using the top 15 firms. The results were the same.

¹¹ We also experimented with the number of *prestigious credentials* (i.e., if an executive had an MBA from Stanford and was a former senior VP at IBM, he or she was given a score of 2 instead of 1) that a firm's executives and directors possessed, rather than the total number of prestigious individuals a young firm had. The results were highly similar to those we report here.

4.3.2. Number of prestigious venture capital firms

Although there is currently no widely used indicator of VC prestige, prior research has suggested that the size of the fund a VC raises is a reasonable proxy for its prestige (Gompers, 1996; Lee and Wahal, 2004). The amount of money a VC raises depends on recent returns for the venture industry as a whole, as well as that firm's own performance. Investors' expectations regarding a VC's future performance are reflected in the amount of new capital it is able to raise, which in turn is based upon its prestige and record of generating good past performance (Lee and Wahal, 2004).

To identify the number of prestigious VCs, we examined the *Venture Capital Journal's* annual rankings from 1990 to 1994, which reports on the size of new funds raised each year. We used a five-year period because not all VC firms necessarily raise new funds each year, but almost all raise at least one new fund within a five-year period (Sahlman, 1990). We first identified the ten VCs that raised the largest funds during each of the years 1990–1994, yielding a final list of 46 prestigious VCs. We then counted the number of these prestigious VCs that owned at least 5% of each IPO firm's stock. To test for curvilinear effects on IPO valuations, we created a squared term for the number of prestigious VCs. When a squared term was included, it was mean centered to reduce collinearity.

4.3.3. Number of prestigious underwriters

We used the IPO prospectuses to identify the lead and co-managing underwriters for each IPO. We counted the total number of prestigious lead and co-managing underwriters using the well-known Carter and Manaster (C-M) rating system (Carter et al., 1998; Carter and Manaster, 1990).

Carter and associates developed a nine-point rating of underwriters based on their positions in underwriting syndicates. Underwriting syndicates provide clear, stable prestige orderings of investment banks (see Carter and Manaster (1990) and Podolny (1994) for detailed discussions). Because we needed to count the number of prestigious underwriters, we had to determine a cutoff point on the C-M scale above which a bank would be considered prestigious. We wanted to establish a cutoff that would capture both generally high-status banks and those that focus specifically on IPO underwriting and have substantial prestige within this particular sector (Pollock et al., 2004). Based on prior studies (e.g., Certo et al., 2001; Megginson and Weiss, 1991; Pollock, 2004), we counted an underwriter as prestigious if it received a C-M score of 8.75 or higher.¹² The 18 banks that met this criterion correspond highly with the top banks identified in other listings and were the most active underwriters in our sample. The lists of all types of prestigious affiliates are provided in Appendix A.

As noted earlier, a potential endogeneity problem exists because the presence of prestigious VCs, executives and directors increases the likelihood that prestigious underwriters will endorse an IPO (Higgins and Gulati, 2003). Thus, we needed to fully separate the effects of underwriter prestige from the effects of the other prestigious actors. To do so, we first used the number of prestigious executives, directors, VCs, and VCs squared to predict the number of prestigious underwriters. Because the number of prestigious underwriters is a restricted count variable, we used negative binomial regression for this analysis. As reported in Appendix B, the number of prestigious executives, the number of VCs, and its squared term were significantly associated with the number of prestigious underwriters. The number of prestigious directors was significant when entered individually, but not in the full model. We used the residuals from this first-stage regression in the models testing our hypotheses.¹³ To test for the hypothesized nonlinear effects, we included this residual and its squared term in our final models. For ease of interpretation, we report raw counts of prestigious underwriters in our descriptive statistics.

4.4. Control variables

4.4.1. Firm quality

We included several measures to control for the size, strength and momentum of each firm, because market valuation can be a function of underlying firm quality (Guterman, 1991; Pollock and Rindova, 2003). These indicators were: *pre-IPO sales* (logarithm of revenues for the year prior to the IPO), *pre-IPO income* (profit (loss) before income tax and extraordinary items for the year prior to the IPO), *pre-IPO sales growth* (percentage change in revenues from two years prior to the IPO to one year prior to the IPO), *insider selling* (percentage of the total shares offered that were sold by the original shareholders), *average TMT tenure* (mean number of years that the executives listed in the IPO prospectus had been with the company at the time of the IPO), *firm age at IPO* (number of years since founding), and the *number of risk factors* listed in the offering prospectus.

4.4.2. Segment and year dummies

To control for the effects of belonging to a particular sub-industry segment, we included two dummy variables, coded one if firms had primary SIC codes of 7371 or 7372 (7373 was the omitted segment). Because our sample included IPOs over a three-year period, we also created two dummy variables, coded one if companies went public in 1995 or 1996 (1994 was the omitted year).

¹² Using 8.75 as our cutoff point enables us to generate a conservative list of the most reputable underwriters. We also tried a cutoff point of 8.0, which some prior research has suggested as a breakpoint for identifying the most prestigious underwriters (Carter et al., 1998; Chen and Mohan, 2000). The results were essentially the same.

¹³ In separate analyses, we conducted an alternative analysis suggested by prior research (Pollock and Rindova, 2003; Sine et al., 2005), and orthogonalized all of the prestige measures using the *orthog* command in STATA. Orthogonalizing variables transforms them such that all of the common variance for each measure is partialled out, and the correlation among the orthogonalized measures is zero, while each variable's unique correlation with the dependent variable is retained (Cohen et al., 2003). The results obtained using this approach were the same as those reported here.

4.4.3. Executives' and directors' experience

The experiences of executives and directors can also affect perceptions of their value (Beckman, 2006; Dimov and Shepherd, 2005; Eisenhardt and Schoonhoven, 1990; Gimeno et al., 1997; Higgins and Gulati, 2003). To control for these effects, we included separate controls for the numbers of executives and directors who had prior software industry experience. To control for prior relationships among TMT members, we also included a control for the number of prior companies at which two or more members of the TMT had previously worked (Beckman, 2006).¹⁴

4.4.4. Total number of executives, outside directors, underwriters and VCs

We included the total number of executives, outside directors, underwriters and VCs as controls because larger groups have the potential to contain more prestigious parties. Initial analyses revealed potential collinearity problems between the number of underwriters and underwriter prestige ($r=.63$) and between the number of VCs and VC prestige ($r=.61$), which increased the VIF scores for our models. To address these issues, we created instrumental variables by regressing the number of underwriters and VCs on underwriter and VC prestige, respectively, and included the residuals from these regressions in our models.¹⁵ However, to ease interpretation, the untransformed variables are used when reporting our descriptive statistics.

4.4.5. Education information dummy

Companies are not required to provide information about the educational backgrounds of executives and board members. Thus, it is possible that we undercounted executive and director prestige for firms that did not report educational backgrounds. Although we searched other reference sources to track down such data, we were unable to locate educational backgrounds for a number of executives. We therefore included a dummy variable, coded 1, if a company's prospectus provided educational background information.

4.4.6. Founder–CEO dummy

Prior research suggests that having a founder-CEO can influence IPO valuations (Certo et al., 2001; Nelson, 2003). We thus included a dummy variable, coded 1, if a founder was CEO.

4.4.7. Prone to IPO

Because not all firms go public, studying only IPO firms may introduce a “success” bias that could influence our results (e.g., Higgins and Gulati, 2003; Stuart et al., 1999). To address this possibility, we included a selectivity instrument as a control. Following prior research on IPOs (Higgins and Gulati, 2003; Stuart et al., 1999), we employed the Heckman procedure (Heckman, 1979) to create the instrument. First, we collected data on a random sample of 223 private software firms in 1994 that did not go public between 1994 and 1996. We chose 1994 for collecting private firm data because it was the first year of our time frame; thus all of these firms were “at risk” of going public during our period of study. We obtained information about each private firm's founding year, 1994 revenues, and number of employees from the *D&B Million Dollar Directory*. We combined these data with similar data on our IPO firms and then used a probit regression to predict whether a firm went public during 1994–1996. Each of the predictor variables was strongly associated with the likelihood of going public. This regression was then used to create the selectivity instrument that was included in our OLS regression models (Hamilton and Nickerson, 2003; Higgins and Gulati, 2003; Van de Ven and van Praag, 1981).

5. Results

Table 2 presents the descriptive statistics and correlations.¹⁶ Table 3 presents results of OLS regression analyses predicting IPO valuations. White's test, checking whether the OLS residuals vary systematically with the regressors, indicated that heteroskedasticity was not a problem. Model 1 includes the control variables alone (several of which were significant and yielded a highly significant overall model); Models 2–5 add the different types of prestigious affiliates separately; and Model 6 presents the completely specified model. We should re-emphasize that in Table 3, our measure of prestigious underwriters is the residual after using prestigious executives, directors, and VCs to explain the number of prestigious underwriters. Therefore, any significant effects for executives, directors, or VCs in Model 6 can be considered to be net of any effect they have in attracting prestigious underwriters.

Model 2 tests Hypothesis 1 by including the number of prestigious executives; Model 3 tests Hypothesis 2 by including the number of prestigious outside directors. Both executive prestige and director prestige were positively and significantly related to IPO valuations and remained significant in Model 6 when all variables were included. To rule out the possibility of curvilinear

¹⁴ We also examined the overall experience of executives and directors, proxied by the average ages of the executives and outside directors on the board (Higgins and Gulati, 2003). Neither of these controls had a significant effect on market valuation and did not influence our pattern of results, so we did not include them in our final models.

¹⁵ In analyses not reported here, we also used ratio variables (i.e., prestigious underwriters (VCs) / total number of underwriters (VCs)) to address the collinearity problem. The results using the ratios are similar to using the count variables we report here.

¹⁶ Of potential note is the fact that the standard deviation for net income is much larger than its mean, suggesting the possibility of extreme values for this measure. Additional analysis revealed that while the range for this measure was quite large (-\$28 million to 28.1 million) and exhibited substantial kurtosis, the distribution of the variable was not particularly skewed. In additional analyses not reported here we winsorized this measure at the 5% and 10% levels and re-ran our models. With the kurtosis of the measure reduced to normal levels, the results of our analysis remained unchanged.

Table 2
Descriptive statistics and correlations

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
1 Pre-IPO sales ^a	2.39	1.37																											
2 Pre-IPO income	0.11	5.34	0.34																										
3 Pre-IPO sales growth	0.76	0.81	-0.05	-0.07																									
4 Insider selling	0.15	0.16	0.38	0.23	0.04																								
5 Risk factors	19.90	4.78	-0.41	-0.18	-0.07	-0.35																							
6 Prone to IPO	0.74	0.33	0.05	0.09	-0.23	0.01	-0.07																						
7 Issue 1995	0.36	0.48	0.07	0.03	0.05	0.16	-0.08	-0.10																					
8 Issue 1996	0.48	0.50	-0.04	-0.04	-0.03	-0.18	0.28	0.00	-0.72																				
9 SIC 7371	0.12	0.33	0.15	-0.05	-0.05	-0.01	-0.10	-0.06	0.03	0.02																			
10 SIC 7372	0.70	0.46	-0.17	-0.01	0.00	0.07	0.04	0.05	0.05	-0.02	-0.58																		
11 Average TMT tenure	4.57	2.31	0.29	0.18	-0.31	0.21	-0.32	0.38	-0.08	-0.06	-0.04	0.00																	
12 Founder-CEO	0.68	0.47	0.04	-0.04	0.08	0.13	-0.09	0.00	0.02	-0.04	0.00	0.20	0.07																
13 No. of executives	6.53	2.21	0.28	-0.04	0.05	0.20	-0.13	-0.18	0.07	0.03	-0.09	0.10	0.01	0.04															
14 No. of outside directors	3.71	1.77	0.17	0.04	0.12	0.12	-0.10	-0.24	0.02	0.03	-0.05	0.02	-0.23	-0.04	0.20														
15 Firm age	9.42	5.59	0.37	0.22	-0.31	0.19	-0.25	0.70	-0.03	0.00	0.02	-0.04	0.60	0.02	0.06	-0.14													
16 No. of exc with software ind. exp	4.35	4.50	0.16	-0.06	0.21	0.18	-0.11	-0.17	0.13	-0.09	-0.27	0.11	-0.18	0.02	0.73	0.25	-0.08												
17 No. of directors with software ind. exp	1.89	2.00	0.10	0.07	0.02	0.10	0.04	-0.07	0.18	-0.25	-0.20	0.00	-0.06	0.03	0.04	0.49	-0.04	0.15											
18 Common prior working experience	1.08	1.00	0.15	0.01	-0.01	0.09	0.03	-0.24	0.06	0.03	0.04	-0.02	-0.16	0.05	0.41	0.34	-0.06	0.38	0.24										
19 Education information	0.54	0.50	-0.10	-0.05	0.00	-0.09	0.13	0.05	-0.03	0.06	-0.07	0.12	-0.04	0.10	-0.13	0.01	0.03	-0.03	0.00	-0.11									
20 No. of underwriters	2.37	1.93	0.14	-0.01	0.06	0.17	-0.04	-0.05	-0.07	0.16	-0.04	0.08	-0.05	0.08	0.17	0.11	0.04	0.27	-0.06	0.05	-0.04								
21 No. of VCs	2.08	2.24	0.11	-0.15	0.04	0.08	-0.21	-0.10	-0.04	-0.02	-0.02	0.10	-0.07	-0.08	0.15	0.38	-0.11	0.23	0.03	0.01	0.08	0.06							
22 No. of prestigious executives	1.33	1.61	0.09	-0.07	0.10	0.00	-0.01	-0.06	0.01	0.03	0.00	0.14	-0.05	0.18	0.27	0.17	-0.05	0.28	-0.01	0.12	0.52	0.04	0.20						
23 No. of prestigious outside directors	1.18	1.45	0.03	-0.13	0.14	-0.11	0.01	-0.09	-0.01	0.11	-0.03	0.10	-0.14	0.12	0.11	0.39	-0.07	0.17	0.09	0.07	0.42	0.03	0.31	0.52					
24 No. of prestigious VCs	0.61	0.97	0.15	-0.12	0.22	0.00	-0.16	-0.09	-0.01	0.02	0.06	0.03	-0.15	0.00	0.11	0.23	-0.10	0.22	-0.12	-0.09	0.15	0.08	0.61	0.26	0.36				
25 No. of prestigious underwriters	1.04	1.08	0.28	-0.01	0.30	0.19	-0.09	-0.25	0.00	0.11	-0.02	0.13	-0.18	0.16	0.34	0.25	-0.08	0.31	-0.01	0.10	0.01	0.63	0.25	0.31	0.27	0.30			
26 IPO valuations ^a	4.57	1.07	0.47	0.06	0.31	0.25	-0.15	-0.29	0.13	0.07	0.05	0.06	-0.14	0.18	0.46	0.29	-0.03	0.42	0.03	0.31	-0.04	0.22	0.25	0.35	0.33	0.31	0.63		

^a Logarithm; Correlations above .12 are significant at .05 level; above .16 are significant at .01 level; N=257.

Table 3
Results of regression analyses predicting IPO valuations

	(1)	(2)	(3)	(4)	(5)	(6)
Pre-IPO sales ^a	0.32** (0.05)	0.30** (0.04)	0.30** (0.04)	0.28** (0.05)	0.27** (0.04)	0.20** (0.04)
Pre-IPO income	-0.00 (0.01)	-0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.00 (0.01)	0.00 (0.01)
Pre-IPO sales growth	0.28** (0.06)	0.27** (0.06)	0.27** (0.06)	0.29** (0.06)	0.22** (0.06)	0.20** (0.06)
Insider selling	0.25 (0.33)	0.33 (0.32)	0.47 (0.33)	0.23 (0.33)	0.03 (0.32)	0.16 (0.30)
Risk factors	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.01 (0.01)
Prone to IPO	-0.66** (0.22)	-0.74** (0.21)	-0.68** (0.21)	-0.68** (0.22)	-0.41† (0.22)	-0.48* (0.20)
Issue 1995	0.44** (0.15)	0.44** (0.14)	0.39** (0.14)	0.44** (0.15)	0.43** (0.14)	0.41** (0.13)
Issue 1996	0.50** (0.15)	0.51** (0.15)	0.44** (0.15)	0.48** (0.15)	0.46** (0.15)	0.39** (0.13)
SIC 7371	0.28 (0.19)	0.18 (0.19)	0.25 (0.19)	0.20 (0.19)	0.29 (0.18)	0.10 (0.17)
SIC 7372	0.31* (0.13)	0.26* (0.13)	0.28* (0.13)	0.26* (0.13)	0.22† (0.13)	0.09 (0.12)
Average TMT tenure	-0.05† (0.03)	-0.06* (0.03)	-0.05* (0.03)	-0.05† (0.03)	-0.03 (0.03)	-0.03 (0.03)
Founder-CEO	0.27** (0.10)	0.22* (0.10)	0.22* (0.10)	0.29** (0.10)	0.21* (0.10)	0.16+ (0.09)
No. of executives	0.04 (0.04)	0.02 (0.03)	0.04 (0.03)	0.06† (0.03)	0.03 (0.03)	0.03 (0.03)
No. of outside directors	0.05 (0.04)	0.03 (0.04)	-0.01 (0.04)	0.01 (0.04)	0.06† (0.04)	-0.04 (0.04)
Firm age	0.03* (0.02)	0.04* (0.02)	0.03* (0.02)	0.03* (0.02)	0.01 (0.02)	0.02 (0.01)
No. of executives with software ind. exp	0.07* (0.03)	0.06† (0.03)	0.06† (0.03)	0.05 (0.04)	0.07* (0.03)	0.02 (0.03)
No. of directors with software ind. exp	-0.07 (0.05)	-0.05 (0.05)	-0.06 (0.04)	-0.03 (0.05)	-0.08† (0.04)	-0.01 (0.04)
Common prior working experience	0.08† (0.04)	0.07 (0.06)	0.06 (0.06)	0.08 (0.06)	0.07 (0.06)	0.10† (0.06)
Education information	-0.04 (0.10)	-0.29* (0.11)	-0.22* (0.10)	-0.08 (0.10)	0.09 (0.10)	-0.25* (0.11)
No. of underwriters	-0.14* (0.06)	-0.10† (0.06)	-0.12* (0.06)	-0.12* (0.06)	-0.05 (0.07)	0.05 (0.06)
No. of VCs	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)	0.04 (0.03)	0.02 (0.03)	0.02 (0.03)
No. of prestigious executives		0.14** (0.04)				0.12** (0.04)
No. of prestigious outside directors			0.17** (0.04)			0.10* (0.04)
No. of prestigious VCs				0.41** (0.13)		0.42** (0.12)
No. of prestigious VCs – squared				-0.08* (0.04)		-0.09** (0.03)
No. of prestigious underwriters					0.33** (0.07)	0.40** (0.07)
No. of prestigious underwriters – squared					-0.08* (0.03)	-0.10** (0.03)
Constant	2.22** (0.43)	2.57** (0.43)	2.46** (0.42)	2.16** (0.42)	2.63** (0.42)	3.10** (0.40)
F-Value	13.89**	14.80**	15.00**	14.65**	14.92**	17.07**
Adjusted R-squared	0.53	0.56	0.56	0.55	0.57	0.64

^a Logarithm; Standard errors in parentheses; † significant at 10%; * significant at 5%; ** significant at 1%.

effects for these variables, we re-ran our models including squared terms for the number of prestigious executives and directors. The squared terms were not significant and the linear terms remained significant. Thus, Hypotheses 1 and 2 were strongly supported.

Model 4 includes the number of prestigious VCs and its squared term, testing Hypothesis 3. Consistent with our hypothesis, we found that the linear term for VC prestige was positive and significant and that the squared term was negative and significant, indicating a curvilinear relationship between prestigious VCs and IPO valuations. These effects remained in the fully specified Model 6. Based on the coefficients, the number of prestigious VCs at which no further value is added is 2.4, suggesting that the effects of VC prestige are positive but diminishing up to two prestigious VCs, and that the benefits begin to actually decline with

three or more prestigious VCs. Although 16% of the firms in our sample were affiliated with two prestigious VCs, fewer than 7% of our sample firms were affiliated with more than two prestigious VCs (and fewer than 2% were affiliated with more than three prestigious VCs). Thus, for most of our observations, the overall effect of affiliations with prestigious VCs was positive but diminishing, in support of Hypothesis 3.

Model 5 tests Hypothesis 4, which argued that underwriter prestige would have a positive but diminishing relationship with IPO valuations. Consistent with our hypothesis, the results show that the linear term for underwriter prestige was positive and significantly related to IPO valuations, and its squared term was negative and significant. These results remained in Model 6. In order to estimate the inflection point at which an additional prestigious underwriter yields no increased value, in analyses not shown we re-ran Model 6 using the untransformed underwriter prestige score. Consistent with results reported in Table 3, the linear term was positive and significant ($\beta=0.71, p<0.01$), and the squared term was negative and significant ($\beta=-0.13, p<0.01$). Based on these coefficients, the effects of underwriter prestige plateau at 2.7 prestigious underwriters. As with VCs, affiliations with this many prestigious underwriters were relatively rare; while 33% of our sample firms were affiliated with two prestigious underwriters, fewer than 8% of our sample firms were affiliated with more than two prestigious underwriters, and fewer than 2% were affiliated with more than three. Thus, the prevailing benefits of prestigious underwriters were positive but diminishing, and Hypothesis 4 was supported.

Although we did not develop a hypothesis regarding the extent to which underwriter prestige mediates the effects of the other prestigious affiliations, our results suggest that partial mediation occurs. Specifically, the effects of the other three types of prestigious actors remained significant in the full model, but the coefficients for prestigious executives and directors were somewhat smaller than those reported in their individual Models 2 and 3 (prestigious executives dropped from 0.14 to 0.12, and prestigious directors dropped from 0.17 to 0.10). The effect of VC prestige was largely unchanged across Models 4 and 6. Therefore, prior prestigious actors not only help to attract prestigious underwriters, but are perceived by the market as providing additional value – on their own – to the newly public companies.

As a way to make our results tangible, Fig. 1 shows how increments of each of the four types of prestigious affiliates affect the valuation of a hypothetical firm that, without any prestigious affiliates, has a valuation of \$100 million (roughly the median for our sample). The line of each graph shows the dollar effect of the respective type of prestigious affiliate, while controlling for all other types (from Model 6 in Table 3). The solid portion of each line represents the range for 95% of our sample; the dotted portion represents the remaining extreme 5%. Although the true value of a given prestigious affiliate will surely vary from the numbers we present here, and any specific dollar values generated based on our sample may be of limited generalizability to other samples, it is still illustrative to consider the monetary contributions of the “average” prestigious affiliate.

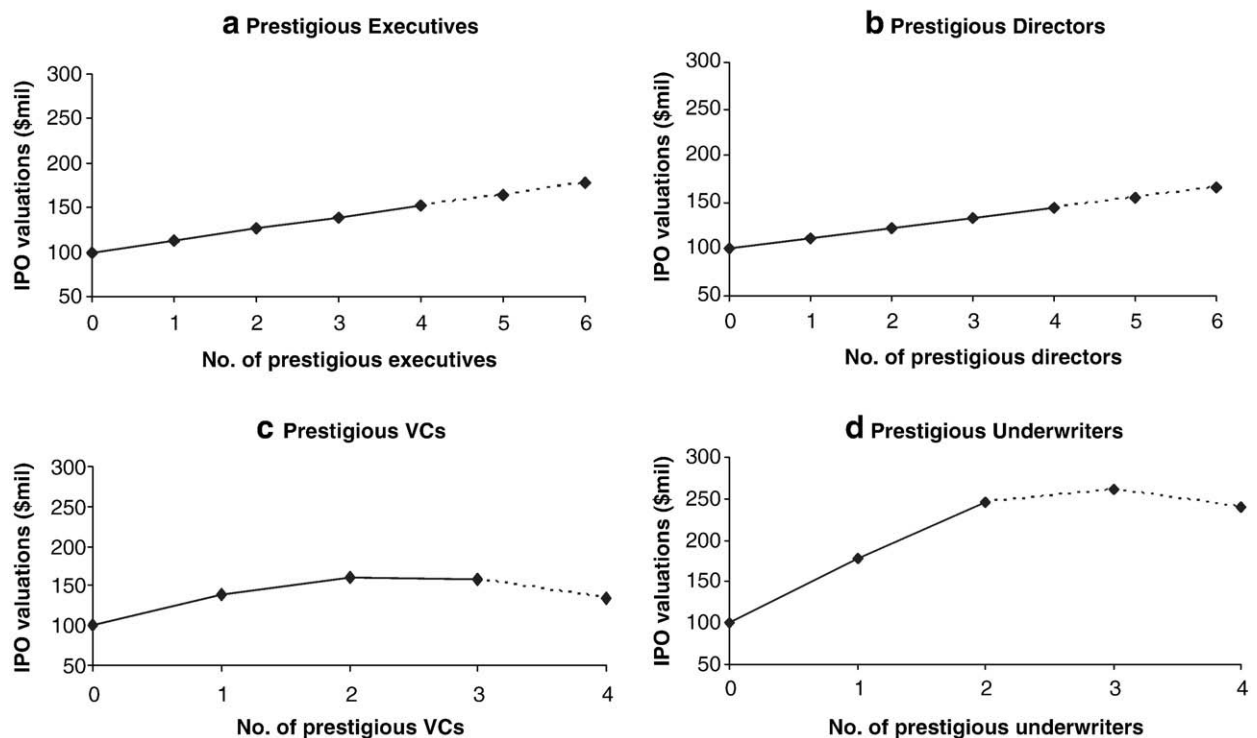


Fig. 1. Effects of prestigious affiliates on IPO valuations (Assuming \$100 million valuation for a company with no prestigious affiliates). Notes: 1) Solid lines are used for the range of 95% of our sample companies; and dashed lines are used for the remaining range. 2) To estimate the effects of prestigious underwriters for this illustration, we generated coefficients using the untransformed counts.

Fig. 1a shows the linear effects of prestigious executives on IPO valuations. For our sample, each additional prestigious executive brought about \$13 million to the valuation of the hypothetical firm (after controlling for the presence of other types of prestigious affiliates). The pattern for outside directors was also linear, as shown in Fig. 1b. Each additional prestigious director added about \$11 million to the value of our hypothetical IPO (again, after controlling for other types of prestige).

Fig. 1c shows the effects of prestigious VCs on the valuation of the hypothetical \$100 million IPO. The presence of a single prestigious VC, controlling for other types of prestige, added about \$39 million to the firm's value; a second added about \$23 million more; and a third brought no additional value. Thus, in line with our theoretical expectations, each prestigious VC appears to bring a combination of substantive benefits and corroborative reassurance about the quality of the IPO; but these benefits quickly plateau as additional prestigious VCs are added.

Finally, in graphing the potential payoff from multiple prestigious underwriters, we also see results in line with our hypothesis: additional prestigious underwriters add value, but at a diminishing rate.¹⁷ As Fig. 1d shows, the presence of one prestigious underwriter added about \$78 million in value to the hypothetical \$100 million IPO; a second added about \$67 million more; and a third added about \$15 million more. At first blush it may seem that prestigious underwriters have an extraordinary effect on the valuation of IPOs relative to the other types of prestigious affiliates, but there is a potential confound that needs to be noted: underwriters specialize in different sized offerings (Pollock et al., 2004). In particular, some of the largest underwriters are optimized to handle the largest offerings. Moreover, multiple co-managers are often added to handle large offerings so as to spread the risk and ensure wide distribution of the shares. However, we only expect these factors to influence the magnitude of the coefficients, not the basic relationship between the number of prestigious underwriters and IPO valuations. To confirm this expectation, we re-ran our models while including offering size as a control.¹⁸ As expected, the significant curvilinear pattern observed in our prior analysis held, but the coefficients associated with prestigious underwriters were smaller.

6. Discussion

Young firms can signal their quality through affiliations with various types of prestigious parties (Gulati and Higgins, 2003; Stuart et al., 1999). Our study advances understanding of this socially and economically important phenomenon by drawing an essential theoretical distinction between the certification and substantive benefits that prestigious affiliates can bring to an IPO. In particular, we explore the extent to which multiple prestigious affiliates of a given type are seen by investors as additively valuable, as opposed to merely corroborative. Our study is the first we are aware of to examine the influence of the *number* of prestigious underwriters, VCs, executives and directors. Moreover, we consider the extent to which the presence of *multiple types* of prestigious affiliates are additive versus redundant in the signals they provide.

6.1. Effects of multiple prestigious executives and directors

Consistent with our hypotheses, our results suggest that every additional prestigious executive and director tends to bring additive value that a) does not diminish as the number of prestigious actors accumulates and b) is only minimally affected by the presence of other types of prestigious affiliates. Thus, executive and director prestige clearly exhibit linear effects on IPO valuations in a “more is better” pattern. These findings suggest that investors value the unique substantive human and social capital of each prestigious executive and director. This linear valuation may exist because executives and directors are expected to have considerable influence over the strategic and operating activities of the company; moreover, compared to underwriters and VCs, they are expected to have enduring value, since they play an active role in the firm's activities following the IPO.¹⁹

We need to emphasize that the linear effects of prestigious executives and directors were observed for the range of observations in our particular sample, but they might become curvilinear for extremely large values. For instance, we can readily envision that an IPO firm might obtain added value from having a sixth prestigious director on its board (the maximum in our sample), but that a seventh, eighth, or ninth would start yielding diminishing (and eventually negligible) returns. Of course, the limits of our specific sample prevent us from observing such patterns.

However, in a partial effort to observe what happens when executive and director prestige scores take on large values, we re-coded these variables more liberally. Instead of scoring an individual as prestigious if he or she had one or more of our indicators of prestige, we instead summed every indicator of prestige among the individuals. For instance, an executive with a degree from Stanford, experience at Oracle, and a board seat at Monsanto would contribute three units of prestige. With this scoring system, the range of prestige-counts was much larger: zero to 15 for executive groups and zero to 14 for director groups. Despite this greatly broadened range, we still found strictly linear relationships (in multivariate analyses) between these prestige scores and IPO values – for both executives and directors. Further, in an additional analysis we treated prior employment with an S&P 500 firm (instead of just the S&P 100) as a prestigious credential. Again, our results remained unchanged. We recognize that these post-hoc analyses, too, are constrained by the range of observations in our sample. Still, it appears that the benefits of recruiting prestigious executives and

¹⁷ To estimate the effects of prestigious underwriters for this illustration, we used the coefficients generated from models employing the untransformed prestigious underwriter counts.

¹⁸ We did not include this measure as a control in our initial analyses because it is a component of the dependent variable, which captures both the initial value of the offering and the change in value on the first day of trading. Thus, including this measure as a co-variant creates some collinearity problems, especially in the fully-specified model. However, for illustrative purposes we felt it reasonable to include the measure for this supplemental analysis.

¹⁹ In our sample, 76% of the executives and 84% of the directors were still with their firms a year after the IPO.

directors accrue over a substantial number of such individuals. Any diminishment in returns from prestigious executives or directors lies beyond the ranges in our sample.

6.2. Effects of multiple prestigious VCs and underwriters

Our results also support our hypothesis that multiple prestigious VCs are somewhat redundant in the signals they provide. Although the addition of each prestigious VC brings some additional value in the eyes of investors, the marginal benefit declines with each additional VC. As previously noted, a VC's main resources – besides money – are its experience in developing entrepreneurial ventures and its social capital (Bygrave and Timmons, 1992; Jain and Kini, 2000). These resources can provide substantive benefits that help the IPO firm get to its current position and help attract prestigious upper-echelons members and underwriters. But once VCs have accomplished these tasks, their contributions become less necessary, as the resources they were expected to provide can now be directly observed. Thus, at the time of the IPO, VCs serve primarily a certification function; alternatively, it may be that any substantive resources VCs provide are seen as duplicative or of limited value to the ongoing functioning of the firm – which is understandable, since their active involvement with the firm will usually end soon after the IPO event.

While consistent with our hypothesis, the additive but plateauing value of multiple prestigious underwriters is noteworthy. Although prior literature has focused on the certification function of underwriters (e.g., Carter and Manaster, 1990; Stuart et al., 1999), prestigious underwriters also bring substantive resources that are valuable beyond the IPO event itself, and which investors apparently recognize. In the course of facilitating the IPO, prestigious underwriters help the firm raise adequate capital, place the shares with stable, long-term investors (Carter and Dark, 1993; Fischer and Pollock, 2004; Higgins and Gulati, 2006), provide coverage by prestigious analysts (Krigman et al., 2001) and create a stable and liquid market for the company's stock (Ellis et al., 2000), thus helping to create the post-IPO conditions that will put the firm on a trajectory with positive long-term consequences.

6.3. Synthesis

Although our study is exploratory, our results suggest two potentially important theoretical implications for future research on signaling via the accumulation of prestigious affiliates. First, our analysis reveals that multiple prestigious affiliations differ in their implications for IPO values, depending on the type of affiliate. We believe that these variations are due to differing expectations regarding affiliates' abilities to provide substantive as opposed to certification benefits. The greater the expectation that they will provide substantive resources, the more linear the relationship between the number of prestigious affiliates and the value they are perceived to bring. In contrast, certification benefits will be perceived as more redundant and thus add value at a diminishing rate, with the plateauing slope of the curve reflecting the amount of perceived overlap. If affiliation networks serve as both “pipes” and “prisms” (Podolny, 2001), our findings suggests that affiliates vary in the extent to which they are seen as providing conduits for resource flows versus certifying an actor's status position within a market.

The second theoretical insight is that prestigious affiliates may differ in the extent to which they provide information about the past as opposed to the future. For example, we argued above that our findings regarding the linear effects of prestigious executives and directors are consistent with expectations that they will be more involved in the ongoing operations of the company following the IPO. Thus, the information provided by their presence is prospective. In contrast, the effects of prestigious VCs – who may have provided the firm with a variety of resources during its development, but who are expected to largely sever their ties with the company shortly after its IPO – accumulate in a curvilinear fashion. This may be because the information that prestigious VCs signal is more retrospective in nature. Finally, prestigious underwriters, who play an important role at the time of the IPO and in creating the initial conditions for immediate success thereafter, have a stronger effect than VCs on IPO valuations, but the relationship is still curvilinear. This suggests that the information these affiliates provide is somewhat prospective, but still short-term. Future research should continue to explore, in a finer-grained manner, the implications of different kinds of signals and the ways that multiple signals add value.

7. Future research directions

Our study raises a number of opportunities for future research. First, focusing on a single industry segment allowed us to control for a variety of factors, but it limited our ability to consider the moderating effects of industry uncertainty (Stuart et al., 1999) on the relationship between prestigious affiliates and market valuations. As others (Gulati and Higgins, 2003; Podolny, 2001) have demonstrated, the ways in which investors react to signals from prestigious affiliates can vary under different types of industry and market conditions. Future research should continue to explore the issues raised in this study, but possibly use multi-industry IPO samples that vary in their uncertainty and market conditions.

A second research opportunity lies in considering prestigious affiliates beyond those studied here. These might include alliance partners (Stuart et al., 1999), customers, and lawyers (Pollock et al., 2004). We focused on four types of prestigious affiliates that have been widely studied and which our theory suggested would differ in their effects on IPO valuations. Future research should continue to explore the effects of other types of affiliates on investor perceptions of quality.

A third future research direction would be to examine the moderating effects of firm-level uncertainty (Stuart et al., 1999). Prior research has suggested that signals of quality are valuable in proportion to uncertainty about an entity's capabilities (Spence, 1974). Thus, investors may place even greater weight on the value of prestigious affiliates for the very youngest companies, whose future prospects are especially uncertain. To explore this idea in a limited way, in analyses not shown here we examined the interaction of firm age with each of the prestigious affiliate terms in Table 3. The results were highly congruent with the idea that prestige

matters all the more when firm-level uncertainty is greater. Specifically, all of the main effects from prestigious affiliates retained their significance; but, the following forms of prestige, when interacted with firm age, were additionally negative and significant: number of prestigious executives ($p < .05$), number of prestigious VCs ($p < .05$) (but not the squared term), and number of prestigious underwriters ($p < .055$) (but not the squared term). Thus, younger firms appear to derive even greater benefits from these types of prestigious affiliates than do more established IPO firms. We also conducted a quantile regression analysis, examining the effects of the different prestige indicators for the 25th, 50th and 75th percentile firms in our sample based on the size of their market valuation. The pattern of results was generally the same as reported here. The only difference was that director prestige ceased to be significant for firms in the highest portion of the distribution, although the coefficients for this measure were not significantly different from each other across the three regressions. Again, future research should pursue the idea that the value of prestige is contingent on the firm's degree of uncertainty.

A fourth possibility is to examine the effects of various prestigious credentials more carefully. Recall that we used an index based on three forms of executive and director prestige, and counted an individual as prestigious if he or she possessed any of these indicators. It is possible that the three credentials are not equally valuable as indicators of prestige. To explore this, we decomposed our prestige index and ran additional models, counting the number of executives and directors who possessed each form of prestige. Although the results varied somewhat across models, prestigious focal industry experience and prestigious education generally had positive and significant effects. Ties to blue chip companies were marginally significant using one-tailed tests. These findings provide at least some evidence that our approach of combining all three sources of prestige was appropriate. Future research can continue to consider how different indicators of prestige may be more or less impressive to different constituencies.

Finally, and particularly promising for future research, we need to know more about the total costs and benefits of enlisting prestigious affiliates. We know from our results that prestigious affiliates are valuable. But how expensive are they, and does the value outweigh the expense? As noted earlier, a young firm may have to pay more to attract prestigious executives than to attract non-prestigious executives (Chen et al., 2008). And it is widely surmised that prestigious VCs require a much bigger levy – in terms of ownership percentage – than do less prestigious VCs (Hsu, 2004). These phenomena need to be placed into a broader framework that will help the founders of young firms answer this question: What are the *net benefits* in signing-up prestigious affiliates?

Appendix A

Listings of prestigious affiliates

Prestigious software companies, 1993–1995

3Com Corporation	Electronic arts	Peoplesoft
Adobe	H B O & Co.	Powersoft
Autodesk	Legent	Progress Software
B M C Software	Microsoft	Spyglass
Broderbund Software	Netscape	Structural Dynamics Research
Cheyenne Software	Novell	Symantec
Computer associates Intl	Oracle	Wall Data
Compuware	Parametric Tech	

Prestigious hardware companies, 1993–1995

AST Research.	Gateway	Sequent Computer Systems
Amdahl	Gtech Holdings	Silicon Graphics
American Management Systems	IBM	Stratus Computer
Apple	Intelligent Electronics	Sun Microsystems
Compaq	International Network Services	Sykes Enterprises
CompuServe	Lucent	Tandem Computers
Computer Sciences Corp	Medical Marketing Group	Tech Data
Cray Research	Merisel	Uninet Technologies
Electronic Data Systems	Proquest	Vanstar
Epresence	Psinet	

Finkelstein's (1992) list of elite educational institutions

Amherst College	Massachusetts Institute of Technology	University of California, Berkeley
Brown University	New York University	University of California, Los Angeles
Carleton College	Northwestern University	University of Chicago
Columbia University	Oberlin College	University of Michigan
Cornell University	Pomona College	University of Pennsylvania
Dartmouth College	Princeton University	Wellesley College
Grinnell College	Stanford University	Wesleyan University
Harvard University	Swarthmore College	Williams College
Haverford College	United States Military Academy	Yale University
Johns Hopkins University	United States Naval Academy	

Prestigious underwriters – Carter–Manaster score of 8.75 or higher

Alex Brown & Sons	Kidder, Peabody	Prudential Securities
Bear, Stearns & Company	Lazard Freres	Robertson Stephens
Donaldson Lufkin & Jenrette	Merrill Lynch	Salomon Brothers
First Boston	Montgomery Securities	Shearson Lehmann

(continued on next page)

Appendix A (continued)*Prestigious underwriters – Carter–Manaster score of 8.75 or higher*

Goldman Sachs Hambrecht & Quist	Morgan Stanley Paine, Webber	Smith Barney Inc Wertheim
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Prestigious venture capital firms, 1990–1994

Abingdon Venture Capital	Enterprise Partners	Nazem & Co.
Accel Ventures	Frontenac Ventures	New Enterprise Associates
Advent Ventures	Greylock Ventures	Norwest Equity Partners
Alta Ventures	Hancock Venture Partners	Oak Investment Partners
APA Excelsior	Healthcare Ventures	Prudential Equity
Asset Management Associates	Highland Capital Partners	Sequoia Capital
Austin Ventures	Institutional Venture Partners	Sevin Rosen Ventures
Battery Ventures	InterWest Partners	Sierra Ventures
BCI Growth (Bridge Capital)	Kleiner Perkins Caufield & Byers	Sigma Partners
Brentwood Associates	Marquette Venture Partners	Sprout Capital
Canaan Capital Partnership	Matrix Partners	Summit Ventures
Centennial Ventures	Mayfield Fund	Weston Presidio Capital
Charles River Ventures	Media Communication Partners	J. H. Whitney & Co.
Connecticut Innovations	Menlo Ventures	WPG Ventures Associates
Domain Partners	Merrill, Pickard, Anderson & Eyre	
Edison Venture	Mohr, Davidow Ventures	

Appendix B

Negative binomial regression predicting the number of prestigious underwriters affiliated with an IPO

	Negative binomial model
No. of prestigious executives	0.12** (0.04)
No. of prestigious outside directors ^a	0.23 (0.16)
No. of prestigious VCs	0.67** (0.16)
No. of prestigious VCs – squared	-0.15** (0.05)
Constant	-0.45** (0.10)
Chi-squared	51.64**
Log likelihood	-323.38

Standard errors in parentheses.

† significant at 10%; * significant at 5%; ** significant at 1%.

^a The effect of the number of prestigious outside directors is significant at $p < 0.01$ level when included individually, although it is not significant when we include executive prestige, VC prestige and its squared term in the full model. In separate analyses where we orthogonalized executive prestige, director prestige, VC prestige and its squared term such that all of the common variance for each type of prestige measure is partialled out, we found that the number of prestigious directors also significantly increases the number of prestigious underwriters involved in an IPO.

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