1042-2587

Founders, Private Equity Investors, and Underpricing in Entrepreneurial IPOs

Garry D. Bruton
Salim Chahine
Igor Filatotchev

One of the most important events in the life of an entrepreneurial firm is when it undergoes an initial public offering (IPO). Combining signaling theory with research on the role of information asymmetry in pricing of IPOs this study examines the performance outcomes of two distinct types of agency conflicts at the time of the IPO: adverse selection and moral hazard. Empirical results show a curvilinear (U-shaped) relationship between founders' retained equity and underpricing. This suggests that founders' retained ownership in an entrepreneurial IPO limits adverse selection problems and the associated IPO underpricing; however, at some point entrepreneurs' investment and risk become so great that entrepreneurs may no longer act rationally and moral hazard increases. Empirical findings also indicate that the retained ownership of business angels has a stronger mitigating effect on adverse selection and moral hazard problems than do venture capitalist investors.

An initial public offering (IPO) can provide an entrepreneurial firm with critical resources for its future expansion. It can also provide the entrepreneur with the first substantive access to cash from their investment of time and resources in the entrepreneurial effort. Underpricing of the stock at the IPO, the difference between the initial price at which a firm's stock is offered and the closing price of the stock on the first day of trading is a major concern to the entrepreneurial firm and to the entrepreneur since it represents value the market ultimately sees in the stock but which the firm/entrepreneur did not obtain when the stock was first offered for sale (Daily, Certo, Dalton, & Roengpitya, 2003; Ibbotson, Sindelar, & Ritter, 1988).[1] Previous studies indicate that governance characteristics of IPO such as the presence of a founding entrepreneur ownership structure (Brennan & Franks, 1997; Filatotchev & Bishop, 2002), and the presence of "certifying" investors such as private equity investors (Daily et al.) can signal the expected

Please send correspondence to: Garry D. Bruton, tel.: 817-257-7421; e-mail: G.Bruton@tcu.edu.

1. Researchers commonly focus on a 1-day window (trading at the end of day 1) when evaluating underpricing (Loughran & Ritter, 2004; Lowry & Schwert, 2002). A few studies have examined trading at the end of one month. However, the longer the time from the IPO the more other information and market fluctuations can be argued to affect the stock price. Additionally, the concern here is the value of the stock that the IPO entrepreneurial founder does not receive, thus a 1-day window appears the most appropriate.

DOI: 10.1111/j.1540-6520.2009.00309.x

value of an IPO firm which in turn limits underpricing. But the prior research efforts have examined each of these characteristics individually. As yet, there is very little integrative research on the *simultaneous* effect of these corporate governance characteristics on the IPO underpricing.

This paper examines IPO underpricing in a sample of U.K. entrepreneurial IPOs where founders retain a significant ownership stake. The study combines both IPO signaling and agency perspectives (Jensen & Meckling, 1976; Sanders & Boivie, 2004). Signaling research suggests that underpricing can be reduced by idiosyncratic signals through which an IPO team conveys information about the firm's quality to outside parties (Sanders & Boivie). Agency-based studies argue that these signals may be associated with the firm's ownership structure and the governance roles of early stage investors (Barry, Muscarella, Peavy, & Vetsuypens, 1990; Filatotchev & Bishop, 2002).

This paper extends IPO studies in four ways. The first and most significant contribution is the exploration of agency conflicts, not as a unitary concept as has been done in prior research, but instead as two distinctive types of agency problems (adverse selection and moral hazard). We analyze the effectiveness of firm-level signals associated with ownership patterns with regard to each of these types of agency problems within entrepreneurial IPO firms. Second, in contrast with prior research, which tends to either treat outside investors such as private equity investors as a unitary group, or to not define exactly who is included in such designations (i.e., Brav & Gompers, 2003), we compare the governance roles of two types of IPO private equity investors—"formal" (venture capitalists) and "informal" (business angels) private equity investors. A third contribution is that we develop our arguments in the context of founder entrepreneurs who lead IPOs; that is, we examine IPOs where the original founders retain equity stakes and board positions. This environment is unlike the Berle and Means model of agency conflicts in public companies where there is typically widely dispersed ownership. Instead, this environment offers a setting where the founders of IPO firms are typically the largest shareholders and retain majority control even after the IPO (Wasserman, 2003). Therefore, these firms provide a unique laboratory to test various assumptions of the agency and signaling perspectives since potential problems of adverse selection and founders' opportunism may be particularly explicit in this important segment of IPO market.

To test the research hypotheses, we use a sample of IPOs in the United Kingdom. As result, the last contribution of the paper is to take IPO research outside the United States context that helps to generalize our understanding of IPO agency problems in different country environments. This contribution is greater than simply looking at IPOs in a different country. The U.K. private equity industry is different from the U.S. industry in that venture capital (VC) firms focus on later stage ventures and management buy-outs. At the same time, the U.K. has developed communities of business angels that are playing an increasingly important role in financing new ventures (Freear, Sohl, & Wetzel, 2002). The institutional aspects of the U.K. IPO market provide an opportunity to develop a more general analysis of entrepreneurs' signaling strategies in the context of public listings.

Review of Literature

Information asymmetries, or differences in information between the various parties to the listing process, including the IPO firm, banks-underwriters, entrepreneur, and external investors have been the foundation of prior investigations of underpricing (Ritter & Welch,

2002, p. 1807). Results of information asymmetry are two distinctive types of agency problems—adverse selection and moral hazard. To illustrate adverse selection agency conflict, a manager may not accurately reveal all he/she knows about a firm. Specifically, at IPO this may take the form of overly optimistic estimates of the firm's revenues by one of these parties. These overly optimistic estimates can increase the expected value of the firm and in turn increases the rewards from the IPO and are a type of adverse selection agency conflict (Stein, 1998). Moral hazard problems emerge when information asymmetries make it is possible for managers to shirk their duties and not act at maximum efficiency and effectiveness for the firm (Nygaard & Myrtveith, 2000). As a result of these information asymmetries, there are potential agency costs when a firm experiences an IPO since managers may not reveal actions within the firm or do not take certain actions that maximize the firm benefit (Sanders & Boivie, 2004).

At IPO, investors recognize the potential impact of the agency costs associated with information asymmetries, and protect themselves in part through underpricing of the IPO. However, the IPO team may use signals that allow potential investors to better understand the true value of the firm and the risks of agency problems which in turn can reduce underpricing (Sanders & Boivie, 2004). A signal involves a costly action, which because of its cost is not likely to be done in settings where there is a low-quality entrepreneurial venture (Spence, 1973). But signals are not universal in addressing all issues. For example, adverse selection agency conflict needs signals that validate that the entrepreneurial firm is presenting accurate information while moral hazard agency conflict needs signals that the entrepreneurial firm is being appropriately monitored.

Within this framework, our research is focused on two types of potential signals. Prior research recognizes that entrepreneurs themselves can provide signals that are difficult to imitate and that provide an indication of the IPO firm's value (Brennan & Franks, 1997). Another potent type of signal comes from outside investors in the firm. Such private equity investors "certify" the potential value of the IPO firm and differentiate it from other listed firms (Daily et al., 2003). In this paper, we build on previous research and analyze how these two broad categories of signals (entrepreneur-related and outside investors) act in tandem and affect both adverse selection and moral hazard problems in IPO firms.

Entrepreneur-Founder

Previous studies that have focused on the entrepreneur himself or herself as a signal have principally been concerned with the effects of their retained share ownership on investors' perceptions of possible agency costs (see Brennan & Franks, 1997, for a discussion). Since entrepreneurs have superior information about their ventures, they may be reluctant to fully disclose proprietary information to potential IPO investors. This may result in potential adverse selection costs (Shane & Cable, 2002). Alternatively, entrepreneurs can engage in opportunistic and self-seeking behavior when they disclose information, which may lead to moral hazard costs (Jensen & Meckling, 1976).

Signaling theory suggests that entrepreneurs may mitigate the agency problems by taking actions that will prove to be costly to those entrepreneurs in lower quality ventures. In other words, the cost of actions undertaken by entrepreneurs in high quality IPO firms is high enough to discourage entrepreneurs from employing them in low quality IPO firms (Downes & Heinkel, 1982). One potentially costly action that can signal that entrepreneurs expect high value from the venture is by retaining significant ownership in the venture after the IPO (Leland & Pyle, 1977).

An IPO represents the first and most important "liquidity event," which the founders and early stage investors can use to appropriate a proportion of wealth associated with the

venture (Daily et al., 2003). After the IPO, the founders' and early stage investors' shareholdings are usually determined by a lock-up agreement that prevents sales of shares for a specified period of time, but they have a considerable discretion in terms of how many shares they would like to retain in the process of listing. In addition, there is evidence that there are often large amounts of stock released after the IPO as covenants of the lock-up agreement are waived (Brav & Gompers, 2003). Therefore, although entrepreneurs look to get outside investors to invest in the venture at the time of an IPO, they will seek to maintain the maximum level of ownership if they believe the venture will ultimately have a high positive value. This action is costly for the entrepreneur since she/he forgoes diversification of his/her personal portfolio (Downes & Heinkel, 1982, p. 3). Thus, high level of ownership by the entrepreneur signals that she/he believes there is high value in the venture, and this signal in turn reduces the adverse selection problem for IPO investors (Prasad, Bruton, & Vozikis, 2000). This will also lead to greater alignment of interest with other investors, and signals that the entrepreneur will aggressively seek to make decisions that maximize the value of the venture (Jensen & Meckling, 1976). Thus, the ownership level of the entrepreneur also reduces the moral hazard problem.

While signaling theory would indicate that increasing ownership would lower underpricing, there may be limits to the potential value of ownership by the founding entrepreneurs (Bruton, Fried, & Hisrich, 2000). A number of studies indicate that a high level of insider ownership may contribute to their entrenchment, and may create conflicts of interests with external shareholders when insiders obtain private benefits of control at the expense of minority shareholders (Busenitz, Fiet, & Moesel, 2005; Mello & Parsons, 1998; Sapienza, Manigart, & Vermeir, 1996; Schulze, Lubatkin, & Dino, 2003). Busenitz et al. found that high levels of ownership and personal net worth invested in a venture by founding teams do not provide a valid signal of actual success to venture capitalists in the United States. Looking outside of the United States, Roosenboom and Schramade (2006) suggest that owner-managers in French IPOs often pursue their own interests, usually at the expense of minority shareholders. Therefore, there may be a trade-off between incentive alignment and entrenchment effects associated with insider ownership. As a result, the effects of founder ownership on IPO underpricing may be nonlinear. In line with signaling research, entrepreneurial stock ownership may signal high levels of commitment that mitigate adverse selection problems and reduce underpricing, but only up to some point. An increase in the founder-entrepreneur's stock ownership beyond that point can lead to increasing levels of moral hazard problems associated with entrenchment and conflicts with other investors. As a result, high levels of entrepreneurial ownership may be interpreted as negative signals by investors after some point, and lead to an increase in underpricing.[2] Hence,

> **Hypothesis 1:** There is a curvilinear (U-shaped) relationship between underpricing and retained (post IPO) ownership by the founding entrepreneurs: Underpricing first decreases and then increases with an increase in founding entrepreneurs' retained ownership.

2. A number of studies argue that insiders may try to reduce monitoring by rationing share allocation and increasing underpricing (Brennan & Franks, 1997). Supporting these arguments, Smart and Zutter (2003) show that underpricing is lower in IPOs with dual class shares that give insiders relatively more control. Although their findings were questioned in a later study by Aruaslan, Cook, and Kieschnick (2004), this research explicitly suggests that insiders in the IPO firm may behave opportunistically and try to reduce the extent of monitoring by external investors.

Outside Investors

As entrepreneurial firms gradually "professionalize," they increasingly look outside for financial recourses provided by various early stage investors. Principal among early stage investors are private equity investors who are the second most important group of shareholders, after founders, in an entrepreneurial venture (Lerner, 1998). Agency research and related "certification" framework (e.g., Barry et al., 1990; Black & Gilson, 1998; Lerner, 1995) suggests that an entrepreneurial venture can signal its expected value by who has invested in the firm. This is because successful investors' time and ability to invest in numerous new ventures is limited so they will invest in those ventures they feel will be the most successful. Thus, private equity investors would be expected from an agency perspective to be involved with those ventures they feel are going to be successful and as a result their presence can certify to public investors the value of the IPO firm.

This perspective places an emphasis on the roles of private equity investors in the price discovery process at the time of an IPO. The perspective argues that the private equity investors can reduce the information asymmetry at the time of the issue, and as a result can have a value-enhancing effect (Lerner, 1995). This is because early stage investors, due to their retained ownership, can have an incentive to be involved in the decision-making process and to exert a significant influence on management before and after flotation. The founder's have incentives to not be as forthcoming in their information. The private equity firms, therefore, design their contracts to reduce this information asymmetry and maximize the disclosure of private knowledge by the entrepreneur-founder (Shane & Cable, 2002). Thus, the presence of private equity investors can mitigate the adverse selection problem in an entrepreneurial venture. As a result, private equity investors can act as a signal about the value of the entrepreneurial venture and limit its underpricing. Hence:

> **Hypothesis 2:** The greater the private equity investors' retained ownership in the new venture the lower the underpricing of the firm's IPO.

The prior hypothesis addresses private equity investors as a group. This approach has been the typical view of prior research. But private equity can involve different types of investors. Specifically, venture capitalists and business angels are two central types of private equity investors who may both play a "certification" role in reducing information asymmetries and adverse selection costs associated with the IPO firm. To date, despite the theoretical arguments which would indicate that private equity investors should send a strong signal about the value of the new venture, empirical evidence that supports their value as a signal to investors is patchy. Daily et al. (2003), for example, found in their meta-analysis that VC investment does not reduce underpricing. This meta-analysis was not, however, clear on how the different studies define venture capitalists. Often researchers combine two distinct types of private equity investors, venture capitalists and business angels, and refer to both as venture capitalists. While the capital sourced by both may indeed be private equity, the two sources of capital themselves are distinctly different. VC is provided by formally organized funds while business angels are an informal source of capital. Venture capitalists and business angels play roles that can be complementary in financing the firm. Business angels often provide funds at an earlier stage in the investment life-cycle of a firm at a time when the venture is too small and too risky for venture capitalists (Lerner, 1998; Prowse, 1998). The venture capitalist then invests in the new venture as it becomes

more mature and established (Lerner, 1995). Prior research has tended to combine such private equity investors into a single group. However, a number of studies suggest that they have different incentive systems and monitoring capacities (Shane & Cable, 2002), and, therefore, angels may differ in terms of their effects on moral hazard problems associated with managerial opportunism.

One of the principal differences between the two types of private equity is that the venture capitalist invests largely for others, although many limited partners will not join a VC fund unless the venture capitalists co-invest their personal savings. In contrast, business angels invest totally for themselves (Wetzel, 1983), so even if the venture capitalist heads a limited partnership there is a less direct monitoring incentive than if all the funds were their own. As a result of this difference there is also a difference in agency risk (Fiet, 1995) that may lead to differences in the monitoring mechanisms adopted by venture capitalists and business angels with the latter being more active at monitoring (Osnabrugge, 2000; Prowse, 1998). In addition, business angels are under less pressure to cash in their investment and exit the venture, and this extends their time horizon (Shane & Cable, 2002). In the United Kingdom, VC firms are mainly focused on later stage ventures and management buy-outs, and they normally exit their investments when the lock-up agreement expires after the IPO (Wright, Robbie, & Ennew, 1997).

Considerably less is known about business angels than about venture capitalists (Sohl, 1999). In large measure, this is because they are wealthy, successful individuals, and there is limited reporting required from them about their activities. However, business angels are generally seen as investing on the basis that they trust the entrepreneur (Fiet, 1995). In addition, some studies suggest that business angels may be considered to be patient investors (Sohl). The time pressures of either being in a limited partnership or working for a financial institution such as a bank places pressures on the venture capitalist to obtain fast results. But since the business angels are investing for themselves, they can be more patient for the firm to perform as desired. The fact that they invest for themselves also means that they do not have to exit the invested firm in the way a venture capitalist may need to since there are limits on the time a limited partnership can exist while angels have no set time limits.

A number of studies investigate informal ties between business angels and entrepreneurs that may enhance their monitoring capacity. For example, business angels have a preference to invest in closer geographic area than do venture capitalists (Sohl, 1999). The closer the funded firms are, the easier it will be for the business angel to monitor them. The business angel also is more likely to invest with those that they have contact with (Mason & Harrison, 2002). The result of these direct social ties is that they provide a mechanism to the business angel to obtain private information about the quality of entrepreneurs' talents and their tendency to behave opportunistically. These informal ties also generate obligations that mitigate self-interested behavior of founders (Shane & Cable, 2002).

These arguments suggest that, although business angels and venture capitalists may provide similar, *ex ante* "certification" signals, their *ex post* monitoring capacities and incentives may differ. As a result, business angels' involvement in the venture at the time of IPO may be a more potent signal of superior monitoring that mitigates potential moral hazard costs of founders' opportunism.

Hypothesis 3: The mitigating effect of the business angels' retained ownership on underpricing of the firm's IPO is higher than that of the venture capitalists' retained ownership.

Database and Methodology

Sample

Since our research is focused on an interplay between entrepreneur/founder characteristics and early stage investors, we constructed a sample of entrepreneurial IPOs (i.e., firms that are floated by their original founder) using a multi-stage data collection procedure. Initially, we compiled a list of all IPOs that have been floated on the London Stock Exchange (LSE) and the Alternative Investment Market (AIM) from January 1, 2000 to January 1, 2003. We obtained our primary list of IPOs from the LSE New Issues files. We also gathered additional information from the AIM Market Statistics publications. From the resulting list of 631 IPOs, we excluded readmissions and transfers from the main market to AIM. In line with previous IPO studies we also excluded flotation of unit and investment trusts and focused on manufacturing and services firms (Beatty & Ritter, 1986; Beatty & Zajac, 1994). We also excluded listings that represented investment and acquisition vehicles because their governance systems were extremely simplified and their management teams resemble investment committees of private equity firms. Next, we excluded all IPOs that represented de-mergers, corporate spin-offs, reverse takeovers, equity reorganizations, and flotation of MBO/MBI firms since these are more mature firms that are associated with less extensive information asymmetries compared to entrepreneurial ventures. Finally, we required that all firms' founders still remained as board members and/or block-shareholders at the time of IPO. After these steps, the final sample included 275 entrepreneurial IPOs.

Our main variables of interest were obtained from the information provided in the IPO prospectuses that contained detailed information on the career histories and pre- and post-IPO ownership of managing officers and other board members. The IPO prospectuses were obtained from the *Thomson One Banker* database that comprehensively covers companies' files for publicly quoted firms in the United Kingdom. The missing listing prospectuses were collected directly from the firms and/or their advisors by sending written requests. The stock-market-related data were obtained from *Datastream*.

Measures—Dependent Variable

To measure the IPO's underpricing we used the percentage difference between the offer price and the price at the end of the first day of trading (e.g., [{end first day price}/{initial price} −1]). This is consistent with prior IPO literature (e.g., Barry et al., 1990; Certo, Daily, & Dalton, 2001; Filatotchev & Bishop, 2002).

Measures—Independent Variables

In the United Kingdom, listing prospectuses provide data on pre- and post-IPO ownership structure including equity stakes of individual and institutional investors. Previous research has identified equity retention by early stage investors as a signal that outside investors consider when evaluating the IPO firm. This information is disclosed before an IPO, and, therefore, using retained ownership disclosure does not create a causality problem when studying factors affecting underpricing. One way to measure the extent of retention is to use the ratio of the shares retained to the shares held before IPO. However, this may distort the hypothesized incentive/entrenchment effects of the retained equity since it does not differentiate between investors' absolute shareholdings before and after an IPO. Therefore, we followed previous studies and used the percentage ratio of the

total number of ordinary shares a particular early stage investors owned after the IPO to the total number of the firm's shares after the IPO as a driver of incentives and/or entrenchment effects associated with share ownership (Brennan & Franks, 1997; Chahine, Filatotchev, & Wright, 2007; Filatotchev & Bishop, 2002; Wright et al., 1997).

Founders' Ownership. Founders' ownership was measured by the percentage ratio of the total number of ordinary shares the founders owned after the IPO to the total number of the firm's shares outstanding after the IPO as reported in the listing prospectus. Although the U.K. IPOs do not usually involve dual class shares (see Smart & Zutter, 2003, for a discussion of possible effects of dual class shares on underpricing), the founders' ownership variable included shareholdings whose voting rights have been effectively controlled by the founders through various trusts, as well as stakes owned by outside firms which the founders controlled. This latter measure allowed us to account for an "ownership pyramid effect" that may increase founders' voting powers beyond their immediate share ownership.

External Investors' Ownership. Similar to the founders' ownership variable, we measured the venture capitalist equity by the percentage ratio of the total number of ordinary shares retained by venture capitalists after the IPO to the total number of the firm's shares outstanding after the IPO as reported in the listing prospectus. We identified VC firms from the *British Venture Capital Association 2000/2001 Directory* (2001), *Pratt's Guide to Venture Capital Sources* (2000), and *Venture Capital Report Directory (2000/2001)* (2001) to VC in the United Kingdom (see Lerner, 1995), for a discussion of these sources of information).

The business angels were identified from the "Other Substantial Interests" section in the prospectus. This section contains ownership by individual persons that had invested in the venture as private individuals, and we made sure that the identified individuals are not associated with founders, other board members, senior managers, and VC investors. Where possible, we verified business angels using the *British Business Angel Association*'s directory. Business angel equity is measured by the percentage of the total number of ordinary shares retained by business angels at the IPO, similar to the VC ownership variable.

Measures—Control Variables

Previous research acknowledges the importance of firm size and age in determining organizational performance (Amit, Glosten, & Muller, 1990; Mikkelson, Partch, & Shah, 1997). The IPO's size was measured in terms of the logarithm of the firm's capitalization at the offer price. IPO age was measured by the number of years elapsed between the firm's founding date and its IPO date. The IPO firms come from a variety of industries and the IPO could be impacted by potential investors' assessment of the industry risk of particular IPOs. Therefore, to control for the riskiness level of IPO firms, we used a "Hi-tech" dummy variable that was equal to one if the firm was from the information technology and software sectors. Following more recent studies we added two more firm-specific variables that approximate the risk of the IPO firm. First, we introduced a dummy that was equal to 1 if the firm made a net loss in the year prior to the IPO date, and zero otherwise. Second, we used the standard deviation of the stock return during the 30 days following the end of the first day of trading. Using the *ex post* return standard deviation as a measure of the *ex ante* perception of risk involves assumptions about the market's ability to foretell the future; previous studies (e.g., Bhagat & Ranjan, 2004)

suggest that this proxy of the *ex ante* uncertainty of the IPO firm is statistically significant in explaining underpricing.

Prior research suggests that the certification role played by more prestigious underwriters allows for a lower underpricing (Beatty & Ritter, 1986). More recently, Cooney, Singh, Carter, and Dark (2001) found a positive association between underpricing and underwriter reputation. This is consistent with the agency argument of Loughran and Ritter (2004) where underwriters may seek their own advantage by charging lower fees, and leaving more money on the table leading to higher underpricing. Hence, our empirical investigations also controlled for the underwriter reputation using a dummy variable equal to 1 for more prestigious underwriters, and zero otherwise. More prestigious underwriters included the top 10 U.K. underwriters based on their cumulative market share over the period 1996–1999, as well as the most prestigious international underwriters as ranked in Loughran and Ritter (2004). Further sensitivity analysis of the underwriter reputation calculation method indicates a stable ranking over the study period.

Stock market conditions vary with time, and there are periods when IPO investors exhibit (periodic) over-optimism (Derrien & Womack, 2003; Finkle, 1998). These periods are characterized by large positive short-run stock returns and a large number of new issues. To control these time effects on IPOs, we constructed two proxies for market momentum. A "Market return" variable was calculated as the weighted average of the buy-and-hold returns of the AIM index in the 3 months before the IPO date. The weights were equal to 3 for the first month, 2 for the second month, and 1 for the third month before the offering, and the weighted sum was divided by 6. In addition, a "Market volatility" variable was calculated as the standard deviation of the 1-month returns of the AIM index in the immediate month before the IPO first-trade date (see Derrien & Womack for a discussion).

Finally, we included a number of founder-related characteristics as controls. Certo et al. (2001) and Wasserman (2003) provide evidence that founder-entrepreneurs who are also the CEOs of their firms may have a strong impact on organizational outcomes, including performance. Therefore, we included a Founder-CEO dummy variable in our analysis. Using a sample of U.K. IPOs, Filatotchev and Bishop (2002) provide evidence that underpricing may be affected by founders' human and social capital. Consistent with this research, we operationalized founders' human and social capital by their external board positions or "board interlocks" (Carpenter, Geletkanycz, & Sanders, 2004). We calculated founders' external board positions as those held in other firms at present and over the last 5 years before the IPO, which we obtained from the "Other Directorships" section of the prospectus (Finkle, 1998; Higgins & Gulati, 2003). A 5-year period is a standard reporting cut-off date used in listing prospectuses in the United Kingdom (Filatotchev & Bishop).

Testable Model

To test our research hypotheses we used the following regression model:

$$\begin{aligned} \textit{Underpricing} = {} & \alpha + \beta_1 \textit{ Founder ownership} + \beta_2 \textit{ VC ownership} + \beta_3 \textit{ BA ownership} + \\ & \beta_4 \textit{ Founder experience} + \beta_5 \textit{ Founder-CEO dummy} + \beta_6 \textit{ Log size} + \\ & \beta_7 \textit{ age} + \beta_8 \textit{ Hi-tech dummy} + \beta_9 \textit{ Loss dummy} + \beta_{10} \textit{ Aftermarket SD.} + \\ & \beta_{11} \textit{ Underwriter reputation} + \beta_{12} \textit{ Market return} + \beta_{13} \textit{ Market volatility} \end{aligned}$$

However, previous research suggests that founder ownership may be endogenously related to firm characteristics and involvement of outside investors (Wright et al., 1997).

In order to deal with this endogeneity problem, we used the 2SLS (semi-parametric least square) regression methodology that produces a consistent estimator when the explanatory variables are correlated with the error terms. This procedure requires an instrument that does not belong to the explanatory equation, which is correlated with the endogenous variable, and uncorrelated with the error term. The first stage of 2SLS analysis provides an estimate of the endogenous variable. This estimate is uncorrelated with the disturbance term of the endogenous variable and is used in the second stage as a substitute for the endogenous variable. We used the number of founders on board as an instrument variable for founder ownership. We believe this variable satisfies the necessary conditions for a valid instrument for two reasons. First, founder ownership mechanically increases with the number of founders. Second, previous research associates founders' equity with their power within organizations (Adams, Almeida, & Ferreira, 2005), and the number of board positions occupied by founders is another common proxy for founders' power.

Empirical Results

Descriptive Statistics

Table 1 (panel A and B) presents the correlation matrix and descriptive statistics for the study's variables. The average size (capitalization at the IPO) for the firms in the sample was £27 million (approximately $U.S. 54 million) and they were 6 years old. The average level of underpricing in the sample is 14.2%, which is similar to the figures reported in other IPO studies (e.g., Brennan & Franks, 1997; Certo et al., 2001). The data suggests that underpricing is a widespread phenomenon even after the burst of "Internet bubble" of the late 1990s. Table 1 also shows that founders are by far the predominant group of insider shareholders, retaining 32% of voting shares after the IPO on average. VC firms and business angels retain 4.1 and 5% of shares, respectively.

The variable for number of founders is significantly correlated with the founder ownership variable, whereas it is insignificantly related to underpricing. This confirms the choice of the number of founders as a valid instrument for founders' ownership.

Table 2 provides the average ratios of the shares retained after the IPO by the three groups of early stage investors relative to the number of shares they held before IPO. It shows that the founders' shareholding falls almost by 24% in the IPO process followed by business angels (23%) and venture capitalists (15%). Our sample did not include cases where share ownership of all early stage investors remained unchanged. This confirms our expectations that the retained ownership is a decision-making outcome that should have expected signaling characteristics.

Underpricing, Founders, and Private Equity Investors

Table 2 presents the results of the regression analysis of factors affecting underpricing as the dependent variable. In Model 1, we used the linear ordinary least square (OLS) regression analysis that shows that among our main explanatory variables only share ownership of business angels has a negative and significant effect on underpricing ($p = 10\%$), in line with hypothesis 3. However, Model 1 considers the exogenous determination of post-IPO shares ownership by founding entrepreneurs. Indeed, the decision to retain shares by founders may be affected by the extent to which private equity investors retain their shares. In other words, the signaling role of founder ownership depends on the signal provided by the involvement of other shareholders, such as venture capitalists and business angels.

Table 1

Descriptive Statistics and Correlations

Panel A—descriptive statistics in mean and standard deviation

N	Variable	Mean	SD	N	Variable	Mean	SD
1	Underpricing	.142	.528	9	Age	6.247	6.390
2	Founder ownership	.325	.213	10	Hi-tech dummy	.382	.487
3	Founder experience	5.969	6.127	11	Loss dummy	.673	.470
4	Founder-CEO dummy	.764	.426	12	Aftermarket std dev	.034	.030
5	Number of founders	1.793	1.076	13	Underwriter reputation	.218	.414
6	VC ownership	.041	.100	14	Market return	−.020	.080
7	BA ownership	.050	.078	15	Market volatility	.010	.008
8	Log size	1.413	.619				

Table 1

Continued

Panel B—Pearson correlation coefficients

	Founder ownership	Founder experience	Founder-CEO dummy	Number of founders	VC ownership	BA ownership	LogSize	Age	Hi-tech dummy	Loss dummy	Aftermarket SD	Underwriter reputation	Market return	Market volatility
Underpricing	.103	−.137	.042	.033	−.007	−.087	−.074	−.019	.127	.111	.248	−.037	.296	0.205
Founder ownership		−.021	.262	.280	−.191	−.172	−.053	.005	.154	−.294	−.017	−.087	.004	.086
Founder experience			−.017	−.043	−.118	−.077	−.017	−.002	−.021	.023	−.068	−.182	−.055	−.042
Founder-CEO dummy				.170	−.137	−.085	−.173	−.078	−.021	−.187	−.074	−.100	−.011	.027
Number of founders					.054	−.073	.013	−.054	.068	−.142	.024	−.062	.010	.025
VC ownership						−.084	.201	.035	−.042	−.002	.080	.206	−.048	.086
BA ownership							−.078	−.036	.027	.072	−.016	−.021	.013	−.086
LogSize								.184	.015	−.059	.005	.574	−.051	.171
Age									−.097	−.306	−.058	.093	.074	−.062
Hi-tech dummy										.149	.088	.056	.011	.333
Loss dummy											.041	−.044	.031	.098
Aftermarket std dev												.045	.209	.163
Underwriter reputation													−.059	.053
Market return														−.026

Notes: N = 275; ownership variables are measured by the percentage ratio of the total number of ordinary shares a particular type of block-holders owned after the IPO to the total number of the firm's shares outstanding after the IPO as reported in the listing prospectus; correlation coefficients greater than .125 are significant at the .05 level or higher.
BA, business angel; VC, venture capital; CEO, chief executive officers; IPO, initial public offering.

Table 2

The Ratio of Number of Shares Held by Early Stage Investors Before and After the Initial Public Offering

	Founders	Venture capitals	Business angels
Mean	.763	.849	.776
Median	.760	.831	.783
Standard deviation	.232	.588	.248

A Hausman (1978) specification test indicated potential endogeniety of the founders' equity (at the 1% significance level). This suggests that the OLS estimations with founders' equity used as an exogenous variable may generate inconsistent results. Model 2 includes the regression run for post-IPO founding entrepreneurs' ownership using the "number of founders" as an instrument variable. It shows that founders' equity is positively associated with the number of founders, and it is higher when a founder is also the CEO. Founders are more likely to retain ownership in high technology and profitable firms, whereas private equity investors have a negative effect on founders' shareholding.

To verify the robustness of our estimations we performed a number of further tests. First, we used Sargan test to confirm that we do not have a problem with over identifying restrictions. Second, we used the Pagan-Hall test for the presence of generalized heteroskedasticity. This test showed a small test statistic of .23, which does not reject the null hypothesis of homoskedasticity. We also performed the Breusch-Pagan test and the White's general test, and both did not show evidence of heteroskedasticity in our model.

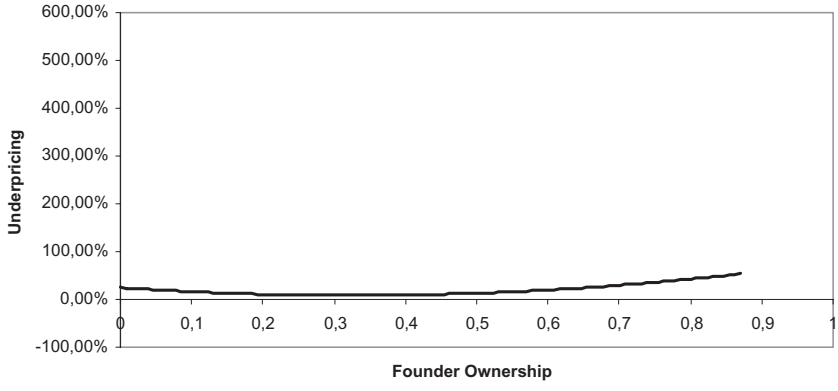
Model 3 provide the results of 2SLS analysis of underpricing controlling for the endogenous level of founder ownership and using Model 2 as a first stage. Model 3 exhibits a positive and significant linear effect of founders' share ownership on underpricing ($p = 10\%$). This suggests that founders are more likely to entrench at higher levels of ownership, which increases underpricing.

Model 4 investigates our hypothesized nonlinear association between underpricing and founder ownership. Consistent with hypothesis 1, it shows evidence of a curvilinear (U-shaped) relationship between retained (post-IPO) ownership by the founding entrepreneurs and underpricing: Underpricing first decreases and then increases with an increase in founding entrepreneurs' retained ownership. These results are represented in Figure 1 that shows that incentive alignments dominate this relationship first, and are then dominated by conflicts of interest when founder ownership is greater than 32%. Thus, hypotheses 1 is supported.

Both Models 3 and 4 confirm the negative and significant relationship between business angel ownership and underpricing ($p = 5\%$), and the insignificant effect of venture capitalist ownership. Taken together, these results partially confirm hypothesis 2. However, looking deeper the results are more in line with the prediction of hypothesis 3. The involvement of business angels represents a more potent signal of the quality of IPO firm than does the involvement of venture capitalists. Thus, hypothesis 3 is supported. Therefore, the partial support for hypothesis 2 (the impact of all private investors; ownership and underpricing) is at least in part driven by the results on business angels.

Figure 1

Underpricing vs. Founder Ownership



In terms of control variables, Table 3 indicates that underpricing increases with an increase in the uncertainty associated with the IPO firm. Both the loss dummy variable and aftermarket SD variable as proxies of the IPO uncertainty are positive and statistically significant at the 5% significance level. Finally, consistent with Derrien and Womack (2003), underpricing is positively and significantly related to market momentum variables.

As a robustness check, we replaced founder ownership variable in our 2SLS analysis with all shares of insiders combined. The results show that both the linear and quadratic combined share ownership variables do not have significant effects on underpricing. This suggests that, in the specific context of IPOs, the impact of insider ownership is not one of insiders *per se*, but rather one of entrepreneur-founders, in line with our theoretical arguments.

Previous research indicates that VCs tend not to hold a significant number of shares subsequent to the IPO, and once the lock-up period expires there is usually a flurry of sales by the VCs (Osnabrugge, 2000). We replaced the number of shares that is retained by the VC with a dummy variable which indicates whether the IPO firm is VC backed or not. However, the regression coefficients for this dummy variable were insignificant.

Discussion and Conclusions

Theoretically, this research extends agency theory by integrating two distinct types of agency conflicts at the time of the IPO (adverse selection and moral hazard) into the understanding of underpricing. The support for a curvilinear (U-shaped) relationship between founders' retained equity and underpricing demonstrates that each type of agency risk plays a role in underpricing. The founder's ownership works increasingly to control one of these agency risks (adverse selection); however, as ownership raises higher ultimate moral hazard agency risk increases and underpricing increases. This finding not only improves our understanding of agency theory but also enriches the literature on the signalling effects of founders' share ownership (e.g., Brennan & Franks, 1997). The results show that founders' retained equity may create a trade-off between incentives alignment (e.g., Jensen & Meckling, 1976) and entrenchment effects (e.g., Filatotchev, 2006). Our results are robust when we control for a potential endogeniety of the founders'

Table 3

Factors Affecting Underpricing

	Underpricing OLS (1)	Founder ownership OLS (2)	Underpricing 2SLS (3)	Underpricing 2SLS (4)
Intercept	−.019	.352***	.087	.021
	(.133)	(.058)	(.080)	(.076)
Founder ownership	.249		246†	−1.104†
	(.232)		(.138)	(.628)
Founder ownership^2				1.700*
				(.820)
Founder experience	−.010*	.002	−.010*	.011*
	(.004)	(.002)	(.004)	(.004)
Founder-CEO dummy	−.004	.023†	.004	−.006
	(.023)	(.013)	(.024)	(.023)
Number of founders		.041***		
		(.012)		
VC ownership	−.023	−.410***	−.117	−.014
	(.199)	(.088)	(.192)	(.174)
BA ownership	−.550†	−.414***	−.660*	−.470*
	(.296)	(.119)	(.312)	(.233)
Log size	−.080	−.005	−.080	−.086
	(.061)	(.027)	(.061)	(.062)
Age	.003	−.001	.002	.002
	(.003)	(.002)	(.003)	(.003)
Hi-tech dummy	.029	.071**	.049	.033
	(.058)	(.025)	(.064)	(.060)
Loss dummy	.133*	−.131***	.097*	.125*
	(.067)	(.028)	(.048)	(.056)
Aftermarket SD	2.762*	−.182	2.721*	2.647*
	(1.280)	(.386)	(1.296)	(1.236)
Underwriter reputation	.005	−.028	−.005	.013
	(.056)	(.032)	(.062)	(.062)
Market return	1.660***	.035	1.673***	1.664***
	(.449)	(.133)	(.450)	(.435)
Market volatility	1.498**	1.653	10.876**	11.263***
	(3.461)	(1.551)	(3.417)	(3.422)
Adjusted R^2	.202	.255	.202	.218
F-statistic	5.085	6.881	5.067	5.167
Prob (F-statistic)	.000	.000	.000	.000

N = 275; † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Notes: Ownership variables are measured by the percentage ratio of the total number of ordinary shares a particular type of block-holders owned after the IPO to the total number of the firm's shares outstanding after the IPO as reported in the listing prospectus. Model (1) contains the OLS regression of Underpricing, whereas Models (3) and (4) present the 2SLS regressions controlling for the endogenous determination of founder ownership using the results of the OLS regression in Model (2). White heteroskedasticity-consistent standard errors and covariance. Standard errors are in parentheses.
BA, business angel; VC, venture capital.

retained equity variable, and this represents a methodological advance with regard to previous studies.

The separation of private equity investors into venture capitalists and business angels in this research also provides further important insight. The findings here indicate that

business angels' retained share ownership is a more powerful signal of the venture's quality than VC investment. Previous research generally emphasizes similarities between financing decisions of VCs and angel investors (see, e.g., Shane & Cable, 2002, for a discussion of investors in high-technology ventures in the United States). Our research suggests the importance of recognizing the differences in venture capitalists and business angels in the context of the stock market evaluation of quality of IPO firms. The research therefore has strong implications for studies of the short-term IPO performance and VC. The results indicate in a manner consistent with Busenitz et al.'s (2005) arguments that there is a need for more refined and specific examinations of signaling theory.

The results also suggest that founders' characteristics, such as external board "interlocks" and CEO position may have significant effects on investors' perception of the IPO's value. Sanders and Boivie (2004) argue that an IPO firm has a number of potential "signals" that it can use to communicate its (expected) value to external investors, and this study reinforces their arguments by suggesting that these signals can be used as complements or substitutes in the IPO process. The results here indicate that cognitive and institutional aspects of founders' extra-organizational links may be another set of very potent signals that investors consider when evaluating the quality of an IPO.

For entrepreneurial firms, the IPO is both a sign of a high degree of success to date and an indication that the firm will have greater resources to pursue its strategic goals in the future. For the entrepreneurs, who are often referred to as "paper millionaires" until the IPO stock market flotation, the IPO is the first opportunity to actually obtain cash from their entrepreneurial venture. The IPO is thus a highly significant event of the entrepreneurial firm, where underpricing can steal part of the benefit that the entrepreneurial firm and the entrepreneur may seek from the IPO. This research extends our understanding of how underpricing can be limited in the IPO process. The study also sheds light on the role played by founder and private equity investor ownership and informs future research on this important event in the life of an entrepreneurial firm.

Future Research

Our findings set the stage for further research on signalling theory and IPOs. It was highlighted in the introduction that the IPO typically represents the first key opportunity for the entrepreneur and others to be able to obtain cash for their investment of time and money in the venture. Thus, there is a strong desire for the IPO to suffer as little underpricing as possible. Within this context, we have examined several key signals that can help limit such underpricing. But there are other potential signals. For example, it has been argued that the financial intermediaries associated with the IPO can have a significant impact on underpricing (Brau & Fawcett, 2006). It has similarly been argued that the lock-up period can impact underpricing, with longer lock-up periods leading to lower underpricing (Brau & Fawcett). These factors and other potential signals need to be examined.

The key to such future research is employing finer grained methods that allow richer insights to be drawn. As discussed earlier in the paper, the inconclusive results seen in much of the prior research on signalling is likely in part due to the coarse methods that have been used. In the future, greater specification of the sample and of the variables should be used in the investigation of IPOs and signalling. The impacts of the variables are very distinct, and if these factors are blended in a coarse manner their organizational outcomes may be ambiguous.

Future research should also continue the examination of signalling and IPOs outside the United States. Too often research in entrepreneurial topics remains concentrated in

North America (Bruton, Ahlstrom, & Oblój, 2008). There is a diverse range of nations and institutional settings in which entrepreneurship can be pursued. The examination of topics such as signalling should be expanded beyond the U.S. context to develop a better understanding of factors that affect IPO performance. For example, today in Scandinavia there is extensive entrepreneurship development, and how signalling impacts organizational outcomes in these markets would appear ripe for investigation.

Managerial Implications

Our study has implications not only for research but also for practice. The signals analyzed here were ones that entrepreneurs can actively choose. This suggests that entrepreneurs are not passive participants. Entrepreneurs are able to make choices with regard to their firm's capital structure, and the type of investors they will pursue. Hence, they should be aware of their ability to shape the success of the ultimate IPO as they build and develop the venture. They should seek to ensure that they use each opportunity that presents itself to send the correct signal to external investors.

The greatest danger that faces the entrepreneur in this process is not thinking about the long-term implications of their actions. The push necessary to start and move the entrepreneurial firm forward to an IPO is tremendous. The argument here is not that the entrepreneur should consume themselves with signals that may never be valuable if they do not go to IPO. Instead, if the entrepreneurs are aware of these issues they can make choices that may have long-term implications for the IPO. Thus, if the entrepreneurs understand the process of signalling and the implications of their actions they can over the long term generate significant resources for themselves in the IPO process.

REFERENCES

Adams, R.B., Almeida, H., & Ferreira, D. (2005). Powerful CEOs and their impact on corporate performance. *Review of Financial Studies*, *18*(4), 1403–1432.

Amit, R., Glosten, L., & Muller, E. (1990). Entrepreneurial ability, venture investments, and risk sharing. *Management Science*, *36*, 1232–1245.

Aruaslan, O., Cook, D.O., & Kieschnick, R. (2004). Monitoring as a motivation for IPO underpricing. *Journal of Finance*, *59*, 2403–2420.

Barry, C., Muscarella, C., Peavy, J., & Vetsuypens, M. (1990). The role of venture capitalists in the creation of a public company. *Journal of Financial Economics*, *27*, 447–471.

Beatty, R.P. & Ritter, J.R. (1986). Investment banking, reputation and the underpricing of initial public offerings. *Journal of Financial Economics*, *15*, 213–232.

Beatty, R.P. & Zajac, E.J. (1994). Managerial incentives, monitoring, and risk bearing: A study of executive compensation, ownership, and board structure in initial public offerings. *Administrative Science Quarterly*, *39*, 313–335.

Bhagat, S. & Ranjan, S. (2004). *Determinants of IPO valuation*. Working Paper, Leeds School of Business. http://cep.lse.ac.uk/seminarpapers/01-06-04-BHA.pdf, accessed February 16, 2009.

Black, B. & Gilson, R. (1998). Venture capital and the structure of capital markets: Banks versus stock markets. *Journal of Financial Economics*, *47*(3), 243–278.

Brau, J. & Fawcett, S.E. (2006). Initial public offerings: An analysis of theory and practice. *Journal of Finance*, *61*, 399–436.

Brav, A. & Gompers, P. (2003). The role of lockups in initial public offerings. *Review of Financial Studies*, *16*, 1–29.

Brennan, M.J. & Franks, J. (1997). Underpricing, ownership and control in initial public offerings of equity securities in the U.K. *Journal of Financial Economics*, *45*, 391–413.

British Venture Capital Association 2000/2001 Directory. (2001). London: BVCA.

Bruton, G., Fried, V.H., & Hisrich, R.D. (2000). CEO dismissal in venture capital backed firms: Further evidence from an agency perspective. *Entrepreneurship Theory & Practice*, *24*, 69–78.

Bruton, G.D., Ahlstrom, D., & Oblój, K. (2008). Entrepreneurship in emerging economies: Where are we today and where should the research go in the future. *Entrepreneurship Theory & Practice*, *32*, 1–14.

Busenitz, L.W., Fiet, J.O., & Moesel, D.D. (2005). Signaling in venture capital—New venture team funding: Does it indicate long term venture outcomes? *Entrepreneurship Theory & Practice*, *29*, 1–12.

Carpenter, M.A., Geletkanycz, M.A., & Sanders, W.G. (2004). Upper echelons research revisited: Antecedents, elements, and consequences of top management team composition. *Journal of Management*, *30*(6), 749–778.

Certo, S.T., Daily, C.M., & Dalton, D.R. (2001). Signaling firm value through board structure: An investigation of initial public offerings. *Entrepreneurship Theory & Practice*, *26*, 33–50.

Chahine, S., Filatotchev, I., & Wright, M. (2007). Venture capitalists, business angels, and performance of entrepreneurial IPOs in the UK and France. *Journal of Business Finance and Accounting*, *34*(3–4), 505–528.

Cooney, J.W., Singh, A.K., Carter, R.B., & Dark, F.H. (2001). *IPO initial returns and underwriter reputation: Has the inverse relationship flipped in the 1990s?* Working Paper, University of Kentucky, Case Western Reserve, and Iowa State. http://jcooney.ba.ttu.edu/papers/flipped.pdf, accessed February 16, 2009.

Daily, C.M., Certo, T., Dalton, D.R., & Roengpitya, R. (2003). IPO underpricing: A meta-analysis and research synthesis. *Entrepreneurship Theory Practice*, *27*, 271–295.

Derrien, F. & Womack, K.L. (2003). Auctions vs. book-building and the control of underpricing in hot IPO markets. *Review of Financial Studies*, *16*, 31–61.

Downes, D.H. & Heinkel, R. (1982). Signaling and valuation of unseasoned new issues. *Journal of Finance*, *37*(1), 1–10.

Fiet, J.O. (1995). Risk avoidance strategies in venture capital markets. *Journal of Management Studies*, *32*, 551–574.

Filatotchev, I. (2006). The effects of executive characteristics and venture capital involvement on board composition and share ownership in IPO firms. *British Journal of Management*, *17*, 75–92.

Filatotchev, I. & Bishop, K. (2002). Board composition, share ownership and "underpricing" of U.K. IPO firms. *Strategic Management Journal*, *23*, 941–955.

Finkle, T.A. (1998). The relationship between boards of directors and initial public offerings in the biotechnology industry. *Entrepreneurship Theory Practice*, *22*, 5–29.

Freear, J., Sohl, J.E., & Wetzel, W. (2002). Angels on angels: Financing technology based ventures—A historical perspective. *Venture Capital*, *4*, 275–287.

Hausman, J.A. (1978). Specification tests in econometrics. *Econometrica*, *46*, 1251–1271.

Higgins, M.C. & Gulati, R. (2003). Getting off to a good start: The effects of upper echelon affiliations on underwriter prestige. *Organization Science*, *4*(3), 244–282.

Ibbotson, R.J., Sindelar, J., & Ritter, J. (1988). Initial public offerings. *Journal of Applied Corporate Finance*, *1*, 37–45.

Jensen, M.C. & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics*, *3*, 305–360.

Leland, H.E. & Pyle, D.H. (1977). Informational asymmetries, financial structure, and financial intermediation. *Journal of Finance*, *32*, 371–387.

Lerner, J. (1995). Venture capitalists and the oversight of private firms. *Journal of Finance*, *50*, 301–318.

Lerner, J. (1998). Angel financing and public policy: An overview. *Journal of Banking and Finance*, *22*, 773–783.

Loughran, T. & Ritter, J.R. (2004). Why has IPO underpricing changed over time? *Financial Management*, *33*, 5–37.

Lowry, M. & Schwert, G.W. (2002). IPO market cycles: Bubbles or sequential learning? *Journal of Finance*, *57*, 1171–1200.

Mason, C.M. & Harrison, R.T. (2002). Barriers to investment in the informal venture capital sector. *Entrepreneurship & Regional Development*, *14*(3), 271–287.

Mello, A.S. & Parsons, J.E. (1998). Going public and the ownership structure of the firm. *Journal of Financial Economics*, *49*, 79–109.

Mikkelson, W.H., Partch, M.M., & Shah, K. (1997). Ownership and operating performance of companies that go public. *Journal of Financial Economics*, *44*, 281–307.

Nygaard, A. & Myrtveith, I. (2000). Moral hazard, competition and contract design: Empirical evidence from managerial, franchised, and entrepreneurial businesses in Norway. *Applied Economics*, *32*(3), 349–356.

Osnabrugge, M.V. (2000). A comparison of business angel and venture capitalist investment procedures: An agency theory based analysis. *Venture Capital*, *2*, 91–110.

Prasad, D., Bruton, G.D., & Vozikis, G. (2000). Signaling value to business angels: The proportion of the entrepreneur's net worth invested in a new venture as a decision signal. *Venture Capital*, *2*, 167–182.

Pratt's Guide to Venture Capital Sources. (2000). New York: Edwards and Angell, 2001.

Prowse, S. (1998). Angel investors and the market for angel investments. *Journal of Banking and Finance*, *22*, 785–792.

Ritter, J. & Welch, I. (2002). A review of IPO activity, pricing, and allocations. *Journal of Finance*, *57*, 1795–1828.

Roosenboom, P. & Schramade, W. (2006). The price of power: Valuing the controlling position of owners-managers in French IPO firms. *Journal of Corporate Finance*, *12*, 270–295.

Sanders, G.W. & Boivie, S. (2004). Sorting things out: Valuation of new firms in uncertain markets. *Strategic Management Journal*, *25*, 167–186.

Sapienza, H., Manigart, S., & Vermeir, W. (1996). Venture capitalist governance and value added in four countries. *Journal of Business Venturing*, *11*, 439–469.

Schulze, W.S., Lubatkin, M.H., & Dino, R. (2003). Exploring the agency consequences of ownership dispersion among the directors of private family firms. *Academy of Management Journal*, *46*, 217–229.

Shane, S. & Cable, D. (2002). Network ties, reputation, and the financing of new ventures. *Management Science*, *48*(3), 364–381.

Smart, S.B. & Zutter, C.J. (2003). Control as a motivation for underpricing: A comparison of dual and single-class IPOs. *Journal of Financial Economics*, *69*, 85–110.

Sohl, J.E. (1999). The early stage equity market in the USA. *Venture Capital*, *1*, 101–121.

Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics*, *87*(3), 355–374.

Stein, M.T. (1998). Discussion of bias and accuracy of management earnings forecasts: An evaluation of the impact of auditing. *Contemporary Accounting Research*, *15*(2), 197–201.

Venture Capital Report Directory (2000/2001). Private equity and venture capital in the U.K. and Europe. (2001). London: Prentice Hall.

Wasserman, N. (2003). Founder-CEO succession and the paradox of entrepreneurial success. *Organization Science*, *14*(2), 149–172.

Wetzel, W.E., Jr. (1983). Angels and informal risk capital. *Sloan Management Review*, *24*, 23–34.

Wright, M., Robbie, K., & Ennew, C. (1997). Venture capitalists and serial entrepreneurs. *Journal of Business Venturing*, *12*, 227–249.

Garry D. Bruton holds the Zeko Professorship at the Neeley School of Business, Texas Christian University.

Salim Chahine is Associate Professor of Finance at the Olayan School of Business, American University of Beirut.

Igor Filatotchev is Professor of Corporate Governance and Strategy at the Cass Business School, City University London.

Authors made an equal contribution to the paper and they are listed in alphabetical order. We are grateful to Lowell Busenitz, Jenifer Piesse, Suzanne Espenlaub, Mike Wright, the participants of the Academy of Management Annual Conference (August 2006, Atlanta, USA), for their insightful comments, and Mufit Arberk for a valuable research assistance with developing our database. The first author received summer support from the Neeley Entrepreneurship Program in support of this research.