Experience-Based Human Capital and Social Capital of Outside Directors

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Experience-Based Human Capital and Social Capital of Outside Directors†

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In this article, the authors develop and test a theoretical model of the effects of outside directors' human and social capital on firm growth. They posit that outside directors' board memberships and managerial experiences have additive and interactive effects. Using a longitudinal sample of high technology firms, they test their theory and find that outside directors' membership on multiple boards, industry-specific managerial experience, and firm-specific founding experience have strong additive effects on firm growth. They also find negative interaction effects, indicating the costs of acquiring and combining certain types of outside director human and social capital within the board.

Keywords: *board of directors; outside directors; knowledge; human capital; social capital; firm growth*

Introduction

Even though the importance of outside directors' *knowledge and skills* in fulfilling their governing function has been noted, this topic has received limited research attention in the

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corporate governance literature. Researchers have premised their work on agency theory and have focused their attention on the role of incentives and structures in promoting effective governance with the implicit assumption that outside directors are typically knowledgeable and competent. This assumption is now coming under question as anecdotal evidence and new empirical evidence suggest that *a gap may exist* between what outside directors are expected to achieve and the knowledge and relevant experience they possess (Carpenter & Westphal, 2001; Carter & Lorsch, 2004). Consequently, human and social capital of directors in the form of skills and experience and access to information and knowledge is beginning to receive attention (Certo, 2003; Hillman, 2005; Hillman & Dalziel, 2003; Westphal & Fredrickson, 2001; Westphal & Milton, 2000).

This line of research is critical for board governance, as over the past few decades the ratio of outside directors on board has significantly increased in most public firms (especially in the United States) and inside directors have become token directors. Sarbanes-Oxley Act of 2002 further imposed legal requirements for the inclusion of outsiders in large public firm boards. It is disconcerting that this universal prescription has occurred without sufficient scientific input from large sample empirical studies about *how* outside directors' contributions to boards may *vary* based on their skills, experiences, and other relevant credentials.

The significance of human and social capital in organizations has long been recognized as employees with high levels of human and social capital are more likely to provide high-quality services (Becker, 1993; Burt, 1992; Coleman, 1988; Nahapiet & Ghoshal, 1998). Human capital refers to an individual's set of knowledge and skills, which are typically developed through investments in education, training, and various experiences (Becker, 1993). Human capital theory also distinguishes among knowledge and skills gained from team-level, firm-level, and industry-level experiences (Bailey & Helfat, 2003). Social capital or relational capital refers to an individual's ability to access resources through relationships (Burt, 1992). In particular, the information and knowledge that can be gained through relationships is significant in creating human capital (Coleman, 1988). Social capital theory also draws a distinction between the type of knowledge derived from internal and external sources (Adler & Kwon, 2002).

Human and social capital that members bring to groups influence the collective's actions and its effectiveness (Oh, Labiance, & Chung, 2006; Pennings, Lee, & Witteloostuijn, 1998). Researchers have examined the relationship between human capital embedded in the top management team in the form of skills and knowledge that managers collectively bring to the team and the quality of organizational outcomes (Carpenter, Sanders, & Gregersen, 2001; Hitt, Bierman, Shimizu, & Kochhar, 2001; Kor & Leblebici, 2005). In the board context, scholars have posited that the human and social capital of individual board members shapes their ability to govern and offer advice to the management team (Certo, 2003; Hillman & Dalziel, 2003). However, theory development in this area is still lacking, especially regarding identification of different types of director human and social capital (i.e., typology of board capital) and explaining how different types of director capital may enhance directors' advisory and monitoring functions. In addition, only a few studies have empirically examined the effects of certain elements of director human and social capital on strategy and governance effectiveness (e.g., Carpenter & Westphal, 2001; Certo, Daily, & Dalton, 2001; Westphal & Milton, 2000).

We contribute to this line of research by developing theory on how relevant elements of outside directors' human and social capital can enhance directors' ability to perform advisory and governance duties. In building our theory, we draw from human and social capital theories, literatures on knowledge and experience, and board governance research. Bringing together insights from these perspectives, we explain why and how outside directors' board and managerial experiences may shape their collective ability to monitor and advise managers on strategic decisions with consequences for financial outcomes.

We test our theoretical model by examining effects of outside directors' human and social capital on the rate of sales growth of entrepreneurial technology firms in the medical and surgical industry. Rate of sales growth serves as a critical indicator of success for technology firms that are involved in product development and commercialization (Chandler & Hanks, 1994; Eisenhardt & Schoonhoven, 1990; Kazanjian, 1988; Lee, Lee, & Pennings, 2001). Especially in high-velocity markets like the medical and surgical instruments industry, where there is dynamism in competition and technology and competitive advantage is short term, sales growth is a powerful metric of success because it reflects the presence of a complex capability that involves continuity and speed in innovation and commercialization (Eisenhardt & Martin, 2000). In this industry, new products introduced within the preceding two years account for more than 30% of firms' sales (U.S. Industry & Trade Outlook, 1999); thus, competitive advantage from existing products can dissipate as quickly as in a year or two (Finkelstein, 2003; Kor & Mahoney, 2005). Because innovation-driven sales growth enables the continuity of operations and investments, it is essential for the survival and success of firms competing in technology-based high-velocity environments (Boeker & Karichalil, 2002; Lee et al., 2001; Zahra, 1996).

As an organizational phenomenon, firm growth is shaped by strategic decisions that are formulated and implemented by managers as they interact with the firm's resources (Penrose, 1959; Pettus, 2001). Outside directors who serve on the board can have a profound effect on firm's growth as they influence managerial choices through monitoring and advisory functions. Our theory elaborates that these influences of outside directors are likely to be a function of the specific elements of their human and social capital.

Theory and Hypotheses

In today's business world, outside directors are expected to play an increasingly active role in corporate governance and strategic decision making (Finkelstein & Mooney, 2003). Duties of an active board include making complex decisions (e.g., acquisitions) and reviewing and approving strategic plans, budgets, risk limits, major capital commitments, management succession plans, and executive compensation packages (Carter & Lorsch, 2004: 51; Forbes & Milliken, 1999). Effective fulfillment of these duties requires in-depth understanding of the firm's business, technology, human assets, and the specific conditions in the industries in which the firm operates. Access to external information and skills in managing boardroom dynamics and processes are also critical in fulfilling their role within corporations (Westphal, 1998, 1999).

Outside directors individually may not possess the complete set of skills and knowledge to meet a firm's advisory and governance needs. However, as a group, outside directors can bring together multiple perspectives and pool their knowledge, connections, and efforts to produce high-quality outcomes (Conger, Lawler, & Finegold, 2001). With complementary assets of knowledge, skills, and resource connections, outside directors can collectively be effective in fulfilling their governance duties. Thus, we focus on outside directors' *collective human and social capital*, which is affected not only by individuals' skills, knowledge, and connections, but also by the bundle or combination of skills.

Research on top management teams show that managers' preexisting knowledge systems and repertoire of skills are derived from prior professional *experiences* (Hambrick & Fukutomi, 1991; Kor, 2003), which help explain and predict managerial inclinations, strategic choices, biases, and accomplishments (Boeker, 1997; Finkelstein & Hambrick, 1996). Similarly, outside directors' current and past professional experiences as managers and board members can be strong indicators of their human capital (Bailey & Helfat, 2003; Carpenter & Westphal, 2001; Certo, 2003) because these experiences shape directors' thinking, frame of reference, and perceptions (Huff, 1982; Tsoukas, 1996; Westphal & Frederickson, 2001), and allow them to develop specific skills and tacit or procedural knowledge about how boards, firms, and industries operate (Becker, 1993; Nahapiet & Ghoshal, 1998; Polanyi, 1962). Accordingly, we define outside directors' human capital as the set or bundle of skills, knowledge, and perspectives that outside directors collectively bring to the board.

Outside directors' past and current professional experiences also produce social capital (Certo, 2003; Hillman & Dalziel, 2003; Pennings et al., 1998). External connections developed via multiple board appointments and industry experience may represent valuable capital because they help the firm access critical resources and initiate new business relationships (Burt, 1992; Hillman, 2005; Pfeffer, 1972). Directors' firm-specific and board-specific experiences produce internal social capital in the form of familiarity and working-knowledge about directors, firm's management, and other employees. These experiences may affect board processes that influence the quality of communication and information exchange among directors and executives (Letendre, 2004). Thus, we define outside directors' social capital as their collective ability to access information and resource networks through external and internal connections.

Outside Directors' Board Ties: External Social Capital

Directors who are broadly connected to outside groups will have greater social capital because they have "quick access to timely information, diverse ideas, and critical instrumental, political, and emotional resources" (Oh et al., 2006: 578). Similarly, outside directors' *participation in multiple boards* helps build outside directors' *external social capital* in the form of connectivity to other directors and executives (Beckman & Haunschild, 2002; Hillman & Dalziel, 2003; Nahapiet & Ghoshal, 1998). Director ties have the potential to generate social capital because of the presence of opportunity, motivation, and ability (Adler & Kwon, 2002). The frequency and intensity with which board members have to interact both face-to-face as well as remotely provides the opportunity and motivation for information exchange. Furthermore, the willingness to share information stems from norms of "generalized reciprocity," that is, knowing that in the future one can benefit from such exchange

(Adler & Kwon, 2002: 25). The information resources made available through multiple board memberships is likely to be relevant and of high quality, thereby, increasing outsider directors' social capital (e.g., Certo et al., 2001; Davis & Mizruchi, 1999). Embeddedness in critical resource and information networks enables directors to assist managers in identifying directions for growth and in acquiring the resources needed for the pursuit of new initiatives (Pfeffer, 1972; Useem, 1984; Uzzi, 1996).

Membership on multiple boards also helps directors develop *general* director human capital through exposure to a variety of strategic and governance issues. As firms differ in the types of strategic and governance issues they face at a particular point in time, membership on multiple boards educates a director about a diverse set of problems and potential solutions confronting upper-level management and the board (Beckman & Haunschild, 2002). Because board experience allows directors to develop a "cosmopolitan view" of strategic and management issues (Useem, 1984: 48), outside directors with multiple board appointments may provide valuable strategic advice to cope with a variety of problems firms may encounter during growth (Carpenter & Westphal, 2001; Rindova, 1999).

Despite the knowledge and informational benefits of human and social capital, there are costs associated with its generation (Oh et al., 2006). Serving on many boards can take a toll on outside directors' limited time and attention (Carpenter & Westphal, 2001). Because being a director is a prestigious and honorable job that provides valuable learning opportunities (Useem, 1982), directors may be tempted to accept invitations to join several boards. However, to fulfill their advisory and governance duties effectively, directors need to carefully study a firm's unique strategic and governance problems (Carter & Lorsch, 2004). However, if pressed for time, directors may not attend board meetings regularly or fail to prepare for them (Finkelstein & Mooney, 2003). When directors cannot immerse themselves sufficiently in each firm's activities, their contributions to a particular board are adversely affected (Baysinger & Hoskisson, 1990; Conger et al., 2001). In fact, if many of the outside directors of a firm are overburdened with several board memberships, the firm's competitiveness and ability to generate growth can be hurt by the lack of proper advising and governance by outside directors.

Thus, combining the positive effects (external social capital and general human capital) and negative effects (i.e., limited attention) of serving on multiple boards, we hypothesize that membership on multiple boards is curvilinearly related to the firm's rate of growth. At lower levels, multiple board membership increases outsiders' access to information, thereby, improving their ability to advise and monitor managerial decisions that shape firm growth. At higher levels however, limited time and attention spent on the firm reduces their input and contributions to managerial decisions and actions that shape firm growth.

Hypothesis 1: Outside directors' membership on multiple boards is curvilinearly related (inverted U form) to the firm's rate of sales growth.

Outside Directors' Industry-Specific Human and External Social Capital

Outside directors' industry-specific human capital is significant in the group's ability to perform its advising and monitoring duties. Outside directors' experience in the industry provides them with tacit knowledge of the opportunities, threats, competitive conditions, technology, and regulations specific to an industry (Boeker, 1997; Kor, 2003, Spender, 1989). Because new developments in such aspects of the industry as technology, competition, and regulations follow a path-dependent pattern, the knowledge of prior industry conditions can help directors understand the industry's current dynamics (Arthur, 1994). This industry-specific human capital of the group can help them detect emerging opportunities in the industry and evaluate managers' proposals for growth (Castanias & Helfat, 2001; Schefczyk & Gerpott, 2001). In industries that involve complex technologies, regulations, and/or health-safety concerns, outside directors can more effectively question and contest management proposals and give valuable advice to managers (Carter & Lorsch, 2004; Gimeno, Folta, Cooper, & Woo, 1997; Zald, 1969).

Equally important, through positions in the industry, directors develop goodwill and connections with industry players, including suppliers, distributors, and major customers (Certo, 2003; Mizruchi & Stearns, 1994). With this external social capital, outside directors can help the firm acquire critical resources, gain legitimacy, and initiate new business relationships vital for growth (Certo et al., 2001; Hillman & Dalziel, 2003; Pfeffer & Salancik, 1978). Prior positions in different firms in the focal industry increases the number of links that directors have developed with various industry players, which then creates more leads for the focal firm (Eisenhardt & Schoonhoven, 1996). Such connections can be especially critical for entrepreneurial firms that lack the legitimacy of larger and older firms and thus struggle to create business relationships with suppliers and customers that are critical for growth within the industry (Cooper, Gimeno-Gascon, & Woo, 1994; Stinchcombe, 1965).

Hypothesis 2: The number of industry positions held by outside board members in the focal firm's industry is positively related to the firm's rate of sales growth.

Outside Directors' Board-Specific Human and Internal Social Capital

Because firms differ both within and across industries in the bundles of resources and capabilities they posses and how they manage these resources, experiential knowledge of a firm is vital for boards to effectively guide the firm's future directions (Kor & Mahoney, 2000; Penrose, 1959). During tenure on a specific board, outside directors develop the knowledge of a firm's past commitments and unique resources and capabilities that helps them assess the viability of growth proposals presented by management. With firm-specific knowledge, outside directors can speak a common language and integrate and exploit their knowledge more efficiently (Grant, 1996; Nahapiet & Ghoshal, 1998; Postrel, 2002). As Zald (1969) submits, "detailed knowledge of the organization and its problems is a *sine qua non* of decision making. The board member or executive without knowledge has difficulty influencing the decision process" (p. 104). Thus, outside directors' *firm specific human capital* can be critical in enhancing their monitoring and advising capabilities.

Also, during tenure on a specific board, outside directors build *internal social capital* (Fischer & Pollock, 2004) in the form of knowledge of each other and of a firm's top-level executives. As outside directors' knowledge of the top executives' skills, personalities, and inclinations for opportunism increases, outside directors can more accurately interpret the information received from management. Increased familiarity between outside directors and executives fosters interpersonal trust, mitigating management's need for dysfunctional impression management (Sundaramurthy & Lewis, 2003; Westphal, 1999). In a similar fashion, experience on a specific board gives outside directors the opportunity to become familiar with one another's skills, habits, and personalities, thereby enabling them to function and make decisions effectively as a group (Fischer & Pollock, 2004, Westphal & Bednar, 2005). With this familiarity, outside directors can focus more effectively on strategic growth and governance issues rather than on group process issues (Eisenhardt & Schoonhoven, 1990).

However, the solidarity benefits of social capital have costs in that it can restrict information flow (Oh et al., 2006). Extended tenure of outside directors in a specific firm board can result in less communication and openness to outside information, increased commitment to a certain view of the firm, including its opportunities and challenges, and resistance to major changes in firm's strategic direction (Boeker, 1997; Hambrick & Fukutomi, 1991; Katz, 1982; Miller, 1991). With increased familiarity with each other and the management team, outside directors may greatly reduce their use of external information (Tushman & Romanelli, 1985), avoid debating and questioning each other, and develop groupthink tendencies (Janis, 1972). If conformity to similar ideas and views becomes a norm on the board where no one plays the role of devil's advocate, the board may become less effective in monitoring and advising managers about identifying new growth opportunities (Hambrick, 1995). Although the initial experience on a specific board increases outsiders' ability to guide and monitor decisions concerning growth (due to enhanced firm-specific knowledge and group functioning), these benefits may diminish over time due to potentially accentuating groupthink (Forbes & Milliken, 1999). Thus,

Hypothesis 3: Outside directors' average board tenure is curvilinearly related (inverted U form) to the firm's rate of sales growth.

Outside Directors' Firm-Specific Founding Experience and Internal Human and Social Capital

Another critical source of *firm-specific human capital* for outside board members is through founders who remain on the board after they cease to be involved in the day-to-day operations of the company. Founders possess an intimate understanding of a firm's idiosyncratic resources, capabilities, and commitments, and therefore provide the outsiders with critical knowledge to make sound investment and resource allocation decisions (Kor, 2006). With tacit knowledge of the firm, outside directors have a better understanding of the firm's growth strategy and organizational language (March & Simon, 1958). Research indicates that founder managers contribute to entrepreneurial firm performance and survival beyond the initial startup phase (e.g., Chandler & Hanks, 1998; Fischer & Pollock, 2004; Kor, 2003; Nelson, 2003). Thus, many investors prefer that founders stay with the firm as board members even after a succession event (Wasserman, 2003).

Founders are also likely to have connections with many of the firm's employees and through them access insider information about company problems (Certo, Covin, Daily, &

Dalton, 2001). Outside directors empowered with such information can better assess and question the quality of management's growth proposals (Zald, 1969). Because outside directors rely heavily on information provided by the CEO, they may have difficulty in discriminating between legitimate and illegitimate causes of poor performance (Baysinger & Hoskisson, 1990). Inappropriate or premature punishment of managers based on performance results may diminish managerial willingness to invest in growth-producing initiatives. Outsiders can use inputs from founders' internal networks and prevent managers from being penalized or rewarded for factors that are not fully under their control (Eisenhardt, 1985). Also, besides having the trust and loyalty of the firm's employees (Fischer & Pollock, 2004), founders possess rapport and personal connections with the firm's clients and business partners. Maintaining and nurturing these valuable business connections can affect a firm's ability to grow significantly. Therefore, with their firm-specific human capital and social capital, founder outside directors contribute to the ability of the firm to generate further growth.

Hypothesis 4: The number of founder outside directors on the board is positively related to the firm's rate of sales growth.

Bundling Effects

In addition to the main effects of outside directors' industry and firm-specific human capital, bundling different types of experiences on the board may accentuate or diminish the individual effect of a particular type of experience (Kor, 2003; Meyer, Tsui, & Hinings, 1993). We first consider how outside directors' membership on multiple boards may affect the relationship between outsiders' industry-specific human capital and firm growth. Even though participation in multiple boards helps directors build connections, serving on many boards limits the time and attention directors can dedicate to any single board (Carter & Lorsch, 2004; Conger et al., 2001). Overly occupied directors tend to learn little about the firm's strategy, resources, and capabilities, which collectively shape a firm's capability to pursue specific growth opportunities (Penrose, 1959). In the absence of meaningful firm-specific knowledge *coupled with* the presence of high levels of industry experience, outsiders may heavily rely on industry knowledge when they counsel and evaluate managers concerning strategic choices about firm growth because individuals typically use the information and knowledge *readily available* to them when making decisions under uncertainty (Kahneman & Tversky, 1979). Put differently, a group of busy outside directors who have readily available past industry experience may base their decisions heavily on industry practices and norms, which may leave little room for innovation and adjustments for firm-specific contingencies. Psychological adherence to "industry recipes" may restrict one's vision and result in resistance to adoption of growth strategies that deviate from industry norms (Hambrick, Geletkanycz, & Fredrickson, 1993; Spender, 1979). Thus, we predict that when outsiders participate in a large number of boards, the positive impact of directors' industry experience on firm growth will be diminished.

Hypothesis 5: The positive relationship between the number of industry positions held by outside board members and the rate of sales growth will become weaker as outsiders' membership on multiple boards increases.

The second interaction we consider is how outside directors' tenure on the firm's board may affect the relationship between outsiders' industry-specific experience and firm growth. Although tenure on a firm's board contributes to outsiders' human and internal social capital, it can bear significant costs (Coleman, 1988). When outsiders stay longer on the board and develop familiarity and friendship with each other, as a group they may become less open to outside information (Katz, 1982; Miller, 1991; Tushman & Romanelli, 1985), more committed to the status quo strategies (Hambrick & Fukutomi, 1991), and develop groupthink tendencies (Janis, 1972). These tendencies can be especially problematic when directors have extensive experience in the industry and are entrenched in prior industry assumptions (Finkelstein & Hambrick, 1996). Lengthy tenure on the board may prevent debates on where the industry is headed in terms of regulatory, competitive, and technological changes. Lacking rigorous discussions on industry dynamics and future trends, directors may be inclined to rely on industry recipes and make growth decisions favoring past industry norms and practices (Hambrick et al., 1993; Huff, 1982) rather than recognizing the need for change in firm's strategic direction. Thus, knowledge of the industry can become a liability in achieving sales growth if directors serve on a particular board for long periods.

Hypothesis 6: The positive relationship between the number of industry positions held by outside directors and the rate of sales growth will become weaker as outsiders' average board tenure increases.

Methods

Sample

Our sample includes technology-based entrepreneurial firms that went public in the medical and surgical instruments industry in the United States. This sample adds to the variety of empirical contexts in board research, which is dominated by studies of Fortune 500 firms. This context also allows us to build theory about the roles and valued added of firms' founders as nonexecutive members of the board. As more family corporations are rising to the ranks of Fortune 500 or Forbes 1000 firms, such theorizing and empirical investigations on founder directors have benefits for both startup and large firm governance.

The sample includes all firms that completed a common stock initial public offering (IPO) in the medical and surgical instruments industry between 1990 and 1995. In this industry setting and time frame, out of the 80 firms that filed a preliminary prospectus, 72 of them fulfilled the Securities and Exchange Commission filing requirements and successfully completed the initial public offering process. The sample includes data on these 72 firms from their initial public offering year through 1999. Because these firms went public in different years and not all of them continued to operate through 1999, the sample does not include an equal number of observations for each firm. The final sample includes a total of 326 observations from 72 firms. The sample firms develop and produce high-technology medical products like cardiac pacemakers, defibrillators, angioplasty catheters, ultrasound imaging, and in vitro diagnostics products. The longitudinal data on outside director characteristics were collected from initial registration statements and proxy statements, and the data on firm growth and firm size come from Compustat files.

Variables

The rate of sales growth. As the dependent variable, the rate of sales growth reflects firms' ability to generate and market innovative ideas, a priority for entrepreneurial firms that are engaged in technology commercialization (Chandler & Hanks, 1994; Eisenhardt & Schoonhoven, 1990; Kazanjian, 1988; Mosakowski, 1993). In technology environments, sales growth indicates the success of a firm's innovation strategy, because growth is conferred on firms whose product and service offerings are increasingly accepted by the customers (Fombrun & Wally, 1989; Lerner, 1999; Porter, 1980). Especially in high-velocity markets, which involve high levels of dynamism in competition and technology and where short-term competitive advantage is the norm, sales growth is a powerful metric of performance (Eisenhardt & Martin, 2000). In dynamic markets, a firm's (technology) resources and capabilities yield growth only as long as these resources remain applicable in their environment (Penrose, 1959). Sales growth is also expected and sought by shareholders because it is a natural outcome of exploiting innovative ideas and because it is necessary to sustain continuity of operations and investments (Boeker & Karichalil, 2002; Lee et al., 2001).[1] The rate of sales growth is calculated as the percentage of annual sales growth achieved by a firm at time (t + 1). To create a one-year lag between the dependent and independent variables, all independent variables are measured at time (t).

We define outside directors as *nonmanagement members* of the board (Dalton, Daily, Ellstrand, & Johnson, 1998). Given our focus on outside directors' experience-based human and social capital, this definition allows us to develop theoretical arguments about relevant types of experience (Daily, Johnson, & Dalton, 1999). Even though outside directors with industry experience may have affiliations with the firm through business relationships or financing, the main concern in this article is the value of outside directors' human and social capital, rather than their strict independence from firm's management. Excluding such directors would prevent us from studying some of the most important forms of outside director experience from both theoretical and practical points of view (Carter & Lorsch, 2004).

Outside directors' membership on multiple boards. We measure this variable as the total number of board ties of outside directors of a firm during a particular year. The total number of board memberships serves as a proxy for outside directors' collective external social capital and general director human capital because membership on multiple boards enhances a director's network connections and knowledge repository developed due to exposure to a variety of strategic and governance issues (e.g., Certo et al., 2001; Davis & Mizruchi, 1999). We focus on directors' current board ties, as recent connections can typically be better leveraged to access information and because their current experience will be particularly potent due to recency effects on their knowledge repository (Tesluk & Jacobs, 1998). Also, this measure captures the limits imposed on time and attention of directors due to simultaneous board appointments.

Outside director industry positions. We measure this variable as the average number of managerial positions that outside directors have held in the industry. Unlike general work experience in a particular industry, managerial industry experience indicates a higher level of responsibility, which enhances learning industry-specific skills and knowledge critical for effective performance (McCauley, Ruderman, Ohlott, & Morrow, 1994; Tesluk & Jacobs, 1998). With every managerial position held in the industry, outside directors become more familiar with the key assets and strategies of different industry players (Kor, 2003). Our measure is consistent with insights from the experience literature that suggest that the number of times a task has been performed enhances the proficiency of the skills (i.e., industry-specific managerial skills) gained through practice (Tesluk & Jacobs, 1998). Also, the number of valuable links with key industry players rises with the number of managerial assignments in the focal industry (Eisenhardt & Schoonhoven, 1996). Thus, this indicator serves as a proxy for the industry-specific human and social capital of outside directors (Certo, 2003; Hillman & Dalziel, 2003). This indicator could have been further enriched with information on the length of industry experience; however, this information was not systematically available in prospectus and proxy statements.

Outside directors' average board tenure. The average number of years outside directors served on the firm's board is used as a proxy for outside board members' firm-specific capital. Prior studies have used this measure to capture firm-specific human capital of groups (Fischer & Pollock, 2004; Hitt et al., 2001; Pennings et al., 1998).

Number of founder outside directors. This variable is calculated as the sum of nonexecutive founder directors on the board. Given the focus of the article on outside directors, we count the number of directors who were the original founders of the firm but are not part of the top management team.

Control variables. We have controlled for several factors. Because experience in the start-up firm context may influence the governance capability of outside directors (Stuart & Abetti, 1990), we controlled for outsiders' start-up experience (i.e., the number of firms founded by outside directors). We controlled for outsiders' board tenure heterogeneity, because diversity of views among outside directors may spur rigorous discussions and allow directors to consider a wider range of options in making decisions (Beckman & Haunschild, 2002; Carpenter & Westphal, 2001; Sundaramurthy & Lewis, 2003). We measure this variable as the coefficient of variation of outsiders' tenure on the firm's board (Michel & Hambrick, 1992).

Furthermore, we controlled for the proportion of outside directors (i.e., nonmanagement members) on boards, which indicates the relative impact of outsiders on board decisions (Dalton et al., 1998). We controlled for the percentage of outsiders who are affiliated with investors, as they may have a more pronounced board governance effect. The total number of outside directors was controlled because in addition to their relative size, the absolute size of the outside director group can affect its impact on board decisions. We also controlled for founders who are active in the top management team (i.e., founder managers), because founders' knowledge of the firm can be valuable in identifying new growth opportunities that match with the firm-specific capabilities (Kor, 2003; Nelson, 2003). This variable is measured as the ratio of founders active in the management team, where a higher ratio indicates stronger influence of historical knowledge of the firm on new business development decisions. We also controlled for the presence of a founder outside director who is also the chair of the board (1 for presence, 0 for absence), because these cases may be indicative of a transition stage between the founder CEO and nonfounder first CEO. Firm size, measured as the log of dollar value of total assets, is a control variable because larger firms may better attract customers because of scale-related advantages and perceptions of higher credibility. Finally, we controlled for firm age (i.e., the number of years since its founding) and the number of years since the IPO as they may influence the firms' level of resource stocks and growth potential (Fischer & Pollock, 2004; Florin, Lubatkin, & Schulze, 2003).

Table 1 presents the descriptive statistics and correlations among all variables. Our analysis of the variance inflation factors for all variables indicates no multicollinearity problem.

Analysis and Results

We test our hypotheses with longitudinal panel data that involve repeated observations on the same set of cross-sectional units (Hsiao, 1996). Fixed effects regression (also referred to as the least squares dummy variable model) controls for both the unobserved firm effects and the year effects. Fixed-effects regression assumes that the unit-specific residuals do not have a distribution and treats them as fixed and estimable.

As with most strategy research, we considered the issue of potential endogeneity, which occurs when independent variables (such as outside director characteristics) are potentially choice variables and correlate with unobserved variables (Greene, 2000). The longitudinal nature of our sample, the one year lag between dependent variable and independent variables, and the use of a fixed-effects model help us to control for both observed and unobserved time-constant variables. Yet, as a further precaution, we also tested for endogeneity. Following the procedure in Wooldridge (2002), we first estimated all four potentially endogeneous outside director capital variables (i.e., our four main variables) using a set of instrumental variables and the control variables (from the original study). In choosing the instrumental variables, we considered important factors that may affect a venture's ability to attract outside directors with relevant experience and connections. We used net income, return on assets, institutional ownership percentage, and managerial stock ownership percentage as instrumental variables. Net income and return on assets were used as positive returns that may increase willingness of experienced outside directors to accept a board position in an otherwise highly risky venture firm (Beatty & Zajac, 1994; Zajac & Westphal, 1994). Institutional investor ownership percentage was used because such ownership may signal credibility and positively influence firm's ability to recruit a director with strong human and social capital (Certo, 2003). Finally, we used managerial stock ownership percentage, because stock-driven managerial power may be influential in the director nomination process (Westphal & Zajac, 1995). Using these instrumental variables, and the control variables from the original regression analysis, we estimated each of our main outside director variables, saved the residuals, and entered them into the original regression as a new variable. In all four regressions, the coefficient of the residual variable (and the corresponding F-test for the significance of the residual variable) was statistically insignificant. Thus, we were able to rule out the endogeneity concerns. With the current modeling, we can be certain that our coefficient estimates for outside director characteristics are *not* the result of lurking unobserved, firm-specific variables.

Table 1
Descriptive Statistics and Correlations

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Outsiders' membership on multiple boards	7.63	6.75														
2. Outsiders' industry positions	1.02	0.77	–0.13*													
3. Outsiders' average board tenure	5.63	4.11	–0.03	–0.21**												
4. Founder outside directors	0.31	0.69	0.17**	0.16**	0.09†											
5. Outsiders' start-up experience	0.95	1.63	0.26**	0.26**	–0.02	0.57**										
6. Outsiders' board tenure heterogeneity	0.47	0.31	0.10†	0.12*	0.06	0.05	0.07									
7. Outside directors ratio	0.69	0.16	0.43**	–0.02	–0.04	0.20**	0.17**	0.20**								
8. % of outsiders affiliated with investors	0.25	0.27	0.29**	–0.11†	0.06	0.10†	–0.01	0.02	0.19**							
9. Number of outside directors	4.17	1.48	0.59**	–0.05	–0.04	0.24**	0.19**	0.15*	0.74**	0.24**						
10. Ratio of founder managers	0.16	0.19	–0.23**	0.10	–0.12*	0.06	–0.14*	–0.34**	–0.27**	–0.04	–0.22**					
11. Founder chair	0.14	0.35	0.08	0.07	0.09	0.77**	0.25**	0.03	0.19**	0.13*	0.17**	0.08				
12. Firm size	76.85	195.21	0.25**	–0.14*	0.30**	0.00	–0.04	0.01	0.02	–0.01	0.32**	–0.23**	–0.01			
13. Firm age	9.89	6.64	0.01	–0.21**	0.76**	–0.08	–0.10†	0.25**	–0.04	–0.13*	0.01	–0.16**	–0.07	0.31**		
14. Years since initial public offering	2.37	1.48	0.11†	0.08	–0.24**	0.09†	0.00	0.15*	0.07	0.19**	0.03	–0.09	0.10†	–0.10†	– 0.30**	
15. Rate of sales growth	0.81	2.44	0.06	0.13*	–0.14*	0.14*	0.12*	–0.04	0.03	0.08	0.08	0.07	0.10†	–0.08	–0.16**	0.10†

Note: $n = 326$. Firm size (i.e., total assets) are in millions of U.S. dollars.
†$p < .10$
*$p < .05$
**$p < .01$

Table 2 presents the coefficient estimates for the effects of outside director experience on the rate of sales growth. The first model has all the control variables. The second model has both control and main variables. The squared terms for outsiders' current experience on multiple boards and average board tenure enter the regression one at a time in the third and fourth models to test for curvilinear effects. The interaction effects are tested in the fifth and sixth models. The first *F* statistic indicates the overall significance of each model, and the second *F* statistic provides a test of significance for the added variables in specific models. For Models 3-6, the *F* statistic for change compares each model to the main effects model (i.e., Model 2).

In the first hypothesis, we predict a curvilinear (inverted U form) relationship between the level of outside directors' membership on multiple boards and the rate of growth. This hypothesis is tested in Model 3 of Table 2, where both the experience variable and its squared term are included. The results indicate a positive linear relationship. The rate of sales growth goes up as the level of outsiders' membership on multiple boards increases (Model 3, $\beta = 0.89$, $p < .01$). Thus, this hypothesis is not supported. The results are consistent with the argument that participation in multiple boards has positive effects on firm growth.

The second hypothesis predicts a positive relationship between outsiders' industry positions and the rate of growth. This hypothesis is supported (Model 2, $\beta = 0.28$, $p < .05$). The third hypothesis suggests a curvilinear relationship between outside directors' average board tenure and the rate of growth. Model 4 shows that the variable has a negative coefficient ($\beta = -0.96$, $p < .05$), but its squared term is insignificant. All models provide support for a negative linear effect of this variable; thus, the third hypothesis (an inverted U-shape prediction) is not supported. The fourth hypothesis suggests a positive relationship between the number of founder outside directors and the rate of growth. This hypothesis is supported (Model 2, $\beta = 1.17$, $p < .001$).

Furthermore, in Hypothesis 5, we argued that the positive relationship between outsiders' industry experience (positions) and the rate of entrepreneurial growth weakens as outsiders' membership on multiple boards increases. This hypothesis receives only weak support (Model 5, β-interaction $= -0.21$, $p < .10$). Figure 1 illustrates that the positive relationship between industry experience and the rate of growth disappears when outsiders' total number of board memberships goes up. Also, in support of Hypothesis 6, the positive relationship between outsiders' industry experience (positions) and the rate of growth weakens as outside directors' average board tenure increases (Model 6, β-interaction $= -0.35$, $p < .01$). As shown in Figure 2, the positive relationship between outsiders' industry experience and the rate of sales growth is fully diminished when outsiders have long tenure on the board.

We also conducted a post-hoc analysis of the impact of outsiders' human and social capital on gross profits (i.e., sales minus cost of goods sold) and on Tobin's Q as an indicator of value creation for shareholders (Montgomery & Wernerfelt, 1988). In the early stages of technology firm development, sales growth is consistently viewed in the entrepreneurship literature as a *less noisy* measure of success than measures of profitability such as accounting ratios (Eisenhardt & Martin, 2000; Kazanjian, 1988; Lee et al., 2001). Therefore, this post-hoc analysis is supplemental in nature rather than an attempt to replicate the growth results.[2]

With respect to gross profits, the results supported Hypothesis 1 (outsiders' membership on multiple boards) and Hypotheses 2 (outsiders' industry positions) and also indicated that the four outside director variables collectively increased the explanatory power of the based

Table 2
Results of Fixed Effects Regression Analysis: The Rate of Sales Growth

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Outsiders' membership on multiple boards		0.52**	0.89**	0.54**	0.42*	0.58**
		(2.91)	(2.81)	(3.03)	(2.22)	(3.30)
Outsiders' past industry positions		0.28*	0.31**	0.29**	0.14	0.17
		(2.58)	(2.78)	(2.63)	(1.00)	(1.47)
Outsiders' average board tenure		–0.52*	–0.51*	–0.96*	–0.51†	–0.79**
		(–1.99)	(–1.98)	(–2.33)	(–1.95)	(–2.91)
Founder outside directors		1.17***	1.18***	1.11***	1.14***	1.30***
		(3.81)	(3.87)	(3.63)	(3.76)	(4.28)
Squared outsiders' membership on multiple boards			–0.31			
			(–1.42)			
Squared outsiders' average board tenure				0.41		
				(1.39)		
Outsiders' industry positions * Membership on multiple boards					–0.21†	
					(–1.71)	
Outsiders' industry positions * Board tenure						–0.35**
						(–2.98)
Outsiders' start-up experience	0.08	0.05	0.03	0.07	0.14	–0.01
	(0.46)	(0.33)	(0.20)	(0.40)	(0.80)	(–0.03)
Outsiders' board tenure heterogeneity	0.06	–0.11	–0.13	–0.12	–0.08	–0.12
	(0.67)	(–1.04)	(–1.18)	(–1.14)	(–0.74)	(–1.15)
Outside directors ratio	–0.18	–0.10	–0.10	–0.07	–0.11	–0.07
	(–0.87)	(–0.51)	(–0.50)	(–0.32)	(–0.52)	(–0.34)
% of outsiders affiliated with investors	0.08	0.19	0.18	0.23†	0.15	0.23†
	(0.72)	(1.52)	(1.52)	(1.84)	(1.18)	(1.88)
Number of outside directors	0.10	–0.12	–0.11	–0.15	–0.11	–0.17
	(0.62)	(–0.72)	(–0.68)	(–0.90)	(–0.69)	(–1.04)
Founder managers	0.44*	0.46**	0.47**	0.45**	0.46**	0.39*
	(2.61)	(2.78)	(2.84)	(2.77)	(2.83)	(2.42)
Founder chairs	0.00	–0.65**	–0.69**	–0.64*	–0.62*	–0.66**
	(0.01)	(–2.64)	(–2.77)	(–2.57)	(–2.51)	(–2.69)
Log firm size	–0.03	0.00	–0.02	0.02	0.00	–0.03
	(–0.25)	(0.03)	(–0.16)	(0.12)	(–0.03)	(–0.24)
Firm age	–0.11	0.31	0.28	0.49	0.32	0.66
	(–0.36)	(0.73)	(0.67)	(1.12)	(0.77)	(1.52)
Years since initial public offering	0.38	0.47	0.62	0.53	0.35	0.68
	(0.38)	(0.49)	(0.64)	(0.54)	(0.36)	(0.71)
Adjusted R-square	0.05	0.15	0.16	0.1562	0.16	0.18
F-value	1.39	3.01***	2.96***	2.95***	3.03***	3.49***
F-value for change in the model		12.35***	2.01	1.92	2.92†	8.86**

Note: T values are provided below coefficient estimates.
†$p < .10$
*$p < .05$
**$p < .01$
***$p < .001$

model from 17% to 23% (i.e., an increase of 6 points approximately in R-square). A joint test of significance also indicated that four main outside director variables were significantly different than zero (F = 4.55, $p < .034$). The fact that we found support for some of the hypotheses, and that the main explanatory variables are collectively significant in predicting

Figure 1
Moderating Effect of Outsiders' Number of Board Appointments on the Relationship Between Outsiders' Past Industry Positions and Sales Growth

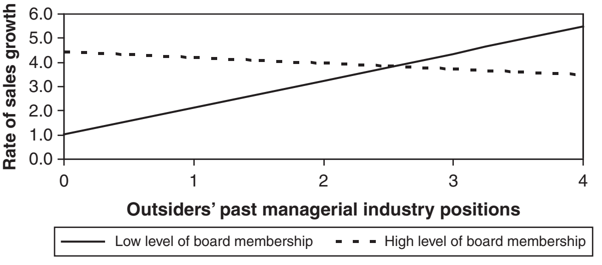
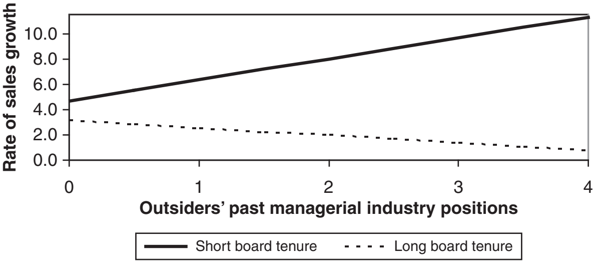


Figure 2
Moderating Effect of Outsiders' Average Board Tenure on the Relationship Between Outsiders' Past Industry Positions and Sales Growth



the very noisy profitability indicator shows that current findings are *not* merely an artifact or spurious finding. The results with respect to Tobin's q, where we used a proxy calculated as the ratio of the sum of market value of equity and book value of total debt to the book value of total assets (Chung & Pruitt, 1994) did not indicate a significant relationship. These results are not surprising given the notion that during the past few decades the stock market has been firmly focused on the issues about board independence, which may have taken attention away from director knowledge, skills, and connections. Even though director characteristics are typically recognized at the time of IPO (Certo, 2003), stock market attention to director capital seems to dissipate *at later stages*, despite the empirically shown affect of outsiders on firm's ability to generate sales growth. This finding underscores the importance of building an in-depth understanding of outsider human and social capital, because only through research, the *sustained relevance* of outside director knowledge and skills will come to the foreground of board governance practice. Our study's results clearly indicate that outsiders' human and social capital attributes are significant in generating sales growth.

Discussion

Although the role of independent outsiders in the governance of corporations has received considerable research attention, only more recently, the role of knowledge and experience of board members has come to the forefront. To advance this stream of work, we provide a deeper understanding of how outside directors' social and human capital influences their ability to effectively monitor and govern companies. In this regard, we studied the impact of their board and managerial experiences and connections on the growth of high-tech post-IPO firms that operate in a high-velocity environment. Overall, the findings of our study indicate that various types of human capital—firm and industry-specific—and internal and external social capital of outside directors influence the growth of the firm, suggesting that these varied knowledge bases, experiences and connections can determine how effectively they question, assess, inform, and influence managerial action. Furthermore, a noteworthy finding of our study is that the various types of capital have interactive effects, indicating that specific combinations of internal and external social capital and human capital types can dilute or enhance the impact of outsiders' human and social capital.

Main Effects of Outside Director Human and Social Capital

Our results suggest that when outside directors have extensive external connectivity to directors and executives through multiple board memberships, firm growth is enhanced. These connections can serve as a conduit for information and other resources that can enrich the group's *general human capital base*. They also provide timely access to a wide variety of ideas and knowledge needed for general problem recognition, analysis, and solving. Outsiders who participate on multiple boards are exposed to a diverse set of strategic decision making and implementation challenges and complex corporate governance issues (Carter & Lorsch, 2004; Useem, 1984). Consequently, these directors contribute significantly to the group's general human capital, which drives their ability to advise managers in (re)formulating the growth strategy and in creatively dealing with numerous challenges that emerge during implementation. It appears that the general skills and knowledge that outside directors develop by serving on multiple boards are *transferable* and can produce value in different firm settings.

The findings of our study also indicate that the firm benefits from outside directors' *industry-specific* human and social capital. Due to the path-dependent nature of the developments in important industry conditions (Arthur, 1994), prior experiential knowledge of the industry helps outside directors develop a sophisticated and tacit understanding of the current and future industry dynamics, which in turn enables them to better evaluate managers' growth proposals. Furthermore, because industry experience creates goodwill and connections to key industry players, outside directors' industry-specific capital can help the firm acquire essential resources, initiate new business relationships, and propel growth (Certo, Daily, & Dalton, 2001; Hillman & Dalziel, 2003; Mizruchi & Stearns, 1994).

With respect to these findings, our article is consistent with Carpenter and Westphal's (2001) study on the impact of the strategic context of board ties on outside directors' involvement in monitoring and advising. Carpenter and Wesphal (2001) show that in stable environments, outside directors are more involved in monitoring and advising when they are familiar with the focal firm's strategy (through board memberships at firms with similar strategies). In dynamic environments, however, they find that "an optimal portfolio of outsider board appointments may include a heterogeneous mix of ties to strategically similar and dissimilar firms" (Carpenter & Westphal, 2001: 643). Our study, which is characterized as a dynamic environment, provides additional evidence of this phenomenon, as we show that both the breath of experience (i.e., multiple board experience) and (managerial) experience specific to the industry have positive additive effects on firm growth. Participation in multiple boards allows directors to build a diverse knowledge base on strategy and governance issues whereas industry experience provides them with specialized business and technology knowledge and access to industry networks. *These distinct sources of director capital (i.e., multiple board experience and managerial industry experience) are uniquely valuable, but complementary to each other in dynamic environments*.

Our results also indicate that extended tenure of outside board members in a specific firm board is negatively related to firm growth. Extended tenure may create a groupthink phenomenon among outsiders and result in resistance to major changes in firm's strategic direction (Boeker, 1997; Hambrick & Fukutomi, 1991; Miller, 1991). If conformity to similar ideas and views becomes a norm, the board becomes ineffective in monitoring and advising managers about identifying new growth opportunities (Hambrick, 1995).

Furthermore, we find that when outside directors have access to *firm-specific* founding experience, entrepreneurial firms achieve a high rate of sales growth. Endowed with the tacit and historical knowledge of the firm and the social capital generated through connections within the firm and with the firm's clients and business partners, founder outside directors can help the board bolster the firm's ability to generate further growth. Because only the original founders of the firm can provide the board with this experience, firm-specific founding experience is not transferable (Bailey & Helfat, 2003) and constitutes a hard to imitate asset.

We also want to note that even though the presence of founder outsiders on the board help boost firm growth, this effect is reduced when a founder has the chair seat on the board. Our interpretation of this finding is that with progression in a firm's life cycle, a new set of managerial skills become essential. If these skills are not fully possessed by the founders, a transition usually occurs in management where the founder is replaced by a nonfounder CEO. During this transition, some of the retired founders assume the chair position on the board. Chair position allows them to look over the shoulder of a new CEO, but this close "coaching" may produce unwanted negative effects. Empowering retired founders with the board chair position may intensify their influence and interfere with the new CEO's ability to take the firm to the next level. Thus, although a retired founder can be a valuable addition to the firm's board as a director (due to firm-specific knowledge and social capital), giving a founder the chair seat as well may be detrimental for sustained firm growth.

Our findings with respect to the value of outsiders' industry-specific experience and firm-specific founding experience have important theoretical and practical implications. Executives from firms in an industry's value chain such as suppliers, distributors, and customers have in-depth knowledge of the industry and connections with key players. Even though these executives may not pass a strict test of independence due to business ties to the firm, they may be good candidates for outside directors (Carter & Lorsch, 2004) because they enhance the board's human and social capital—a critical issue insufficiently addressed in the current board governance literature. Similarly, due to their historic ties with the firm, founders will not qualify as independent directors even when they are no longer part of the management team. Yet, founders can enhance the board's internal social and human capital. Therefore, instead of excluding such knowledgeable directors, the board can acknowledge upfront the potential conflicts of interest and assess the significance of these conflicts along with directors' potential contributions to the board. In the absence of a significant conflict of interest, such individuals can productively serve on the board but be excused from particular discussions and decisions (Carter & Lorsch, 2004). Thus, as an important practical implication, this study suggests that *instead of adhering to a strict definition of outside director independence, boards may benefit from focusing on the social and human capital needed to effectively advise and monitor*. This implication also highlights that the current focus of the industry and the corporate governance legislation on director independence may be depriving boards of potentially valuable director human and social capital.

Interaction Effects and Implications

A significant finding is that the *bundling effects* of specific types of human and social capital can dramatically alter the individual effects. The results indicate that the contribution of outsiders' industry-specific human capital to firm growth diminishes as outsiders' firm-specific human capital, measured as tenure on the board, increases. When outsiders work together for a long time, they may develop groupthink tendencies (Forbes & Milliken, 1999; Hambrick, 1995; Janis, 1972) and avoid debating each other on industry trends. Yet strict adherence to historical industry practices leaves little room for a firm's strategic renewal and innovation and curtails its growth potential (Boeker, 1997; Hambrick et al., 1993).

Furthermore, at a weak level of support, the results show that the positive relationship between outside directors' industry-specific human capital and firm growth dissipates when outsiders' serve on too many boards. Such membership offers the group external social capital, however, there are costs associated with its generation (Oh et al., 2006). Extensive board obligations limit the time and attention directors can dedicate to any specific board (Carter & Lorsch, 2004; Conger et al., 2001), and consequently, the availability of extensive industry-specific human capital can result in directors basing most of their decisions on their industry knowledge without making adjustments for firm-specific contingencies. Thus, the positive effects of industry-specific human capital can be negated when coupled with significant external board memberships.

Theoretical modeling and empirical testing of the bundling effects of the types of human and social capital are important contributions to the research literature on boards because they reveal the significance of exploring individual and combinative effects simultaneously. Examining only the main effects of industry-specific human capital can be misleading because of significant interactions among other types of human capital. As a practical implication, these effects suggest that in assembling a group of outsiders with various types of knowledge, skills, and connections, careful thought must be given to the relative costs and benefits of *acquiring and combining* specific human and social capital bases. Different outside director human and social capital attributes can be synergistically combined to create a group of outside directors with a complete set of skills, knowledge, and connections to serve the firm's needs. However, certain combinations may also produce negative synergies in specific firm or industry contexts. Attention to these bundling effects is critical to designing an effective board. A productive human and social capital *configuration* within the board can serve as an *intangible corporate governance asset*.

Limitations and Future Research

Our study is not without limitations. Our data come from a specific context. Although focusing in this specific context allowed us to develop context-specific hypotheses (e.g., founder outside directors), it limited the generalizability of our findings to other empirical settings. Future research could extend and apply our research to other industry and decision contexts. Testing the theory with a more current data set could also be revealing as corporate governance practices and regulations have gone through important changes during the past decade. Also, because we used secondary data, we could not observe the processes involved in board-level decision making and dynamics. Incorporating other data collection techniques such as interviews with directors and observations of board meetings can significantly enrich our knowledge of how human and social capital influence board processes. In terms of theoretical modeling, we acknowledge that extraneous variables may affect both growth and director characteristics. We use firm age and the number of years since IPO to control the firm's life cycle; however, other variables may be useful as firms may go through stages at different rates.

Furthermore, we acknowledge that sales growth does not reflect the firm's ability to manage its costs and achieve profitability. Such ability is clearly as important as the ability to generate sales and commercialize products, because without healthy returns, a firm cannot sustain its long-term market presence. It is important to note that there could be tensions between growth and profitability, because growth does not always deliver profits. Indeed, excessive growth may come at the expense of profitability, which can be a major concern especially among large firms with free cash flow (Jensen, 1983). These concerns, however, are significantly diminished for entrepreneurial firms due to limited availability of excess funds (Mueller, 1972). Nevertheless, based on our post-hoc analysis and results with respect to sales growth, we emphasize the need for future research to examine the impact of outside director capital on different performance outcomes. Presence or lack of convergence in different performance outcomes can reveal new insights and help advance the theory on outside director human and social capital.

We also note that although focusing on performance outcomes as the dependent variable (e.g., firm growth or stock returns) helps to reveal the aggregate impact of boards on financial performance, such impact can be hard to capture empirically due to the prolific number of influences on financial outcomes (with various forms of relationships and time lags). It will be worthwhile to explore the impact of outsiders' human and social capital on other dependent variables that are more directly affected by boards such as CEO compensation, CEO replacement, and continuation of CEO tenure despite poor firm performance.

In addition, even though our theoretical model incorporates several types of human capital, other types of experience may also contribute to human capital depending on certain firm and environmental characteristics (Baysinger & Hoskisson, 1990; Cascio, 2004; Finkelstein & Mooney, 2003; Hillman, Cannella, & Harris, 2002; Leblanc, 2004; Pearce & Zahra, 1992). For example, directors with acquisition experience may be valuable for firms that frequently undertake acquisitions. Firms with significant investments in international markets may benefit from having global (or country) experts on their boards (Carpenter & Westphal, 2001; Carter & Lorsch, 2004). Firms with critical dependencies on the government may recruit directors with political experience to acquire information on public policy process, influence political decisions, and gain legitimacy (Hillman, 2005). Future research may also benefit from studying outside directors' diversity of human capital because diverse managerial experience may spark debate and help boards devise creative strategies (Beckman & Haunschild, 2002; Rindova, 1999; Sundaramurthy & Lewis, 2003). Directors with managerial experience in a single organization may be entrenched with specific strategies and may advocate adoption of similar strategies (Westphal & Fredrickson, 2001). Future research should also take into account that an individual director's ability to influence board decisions may depend on his or her demographic minority status as a director (e.g., being the only director with a specific background) and prior director experience with such status (Westphal & Milton, 2000).

Exploring the effects of bundling different experiences on the board will be another fruitful avenue for future research because these experiences may create synergistic or negative effects on director effectiveness. For example, it would be interesting to examine if the value of directors' international or acquisition experience diminishes with the number of board appointments.

Furthermore, understanding the dynamics between outside directors' experiences and top managers' experiences is a noteworthy direction for future theoretical and empirical research (Shen, 2003; Westphal & Fredrickson, 2001). Such research can reveal the importance of director attributes vis-à-vis executive attributes. Future research can also benefit from an examination of the value added of *inside* directors' human and social capital (e.g., firm and industry-specific knowledge) in comparison to that of outsiders (Baysinger & Hoskisson, 1990; Coles & Hesterly, 2000). The presence of inside directors on boards has diminished substantially during the last few decades due to concerns about their lack of independence. Yet, as inside directors become token directors, it is harder to do a comparative study. Historical data with more balanced representation of insiders and outsiders on board may be necessary to study whether and how inside directors' human and social capital adds to the overall board capital.

Finally, board governance research may benefit from an assessment of the interplay between independence of outside directors and board expertise (Beatty & Zajac, 1994;

Sundaramurthy & Lewis, 2003; Westphal, 1998, 1999; Zajac & Westphal, 1994). For instance, does the generation of human and social board capital through affiliated directors outweigh the costs of reduction in director independence? Or does this capital indeed complement the board's ability to make both informed and independent decisions? The effective balance between board independence and board capital may vary depending on the context. For instance, firms operating in *dynamic markets* may need to place considerable focus on human and social capital needs relative to strict independence of outsiders.

In conclusion, the empirical findings of our study indicate that outsiders' human and social capital gained through managerial and board experiences play a vital role in effective board governance. Our results highlight that different types of human capital, including firm and industry-specific experience and internal and external social capital, are significant in promoting growth. Furthermore, these capital bases not only have individual effects but also have interactive effects. Therefore, improving the effectiveness of outside board members entails promoting *appropriate types, levels, and compatible combinations* of relevant experiences among members.

Notes

1. Alternative measures of firm growth include monetary value of the capital investment and physical measures of expansion (Pettus, 2001); although as Penrose (1959: 199) explains, all measures have their problems. Value of the capital invested does not make allowance for differences in the proportions of the various factors of production employed or for technological differences that affect capital-output ratio. Physical measures such as workers employed are distorted by differences in the proportion of factors used. Likewise, sales growth does not sufficiently take into account the degree of value added. In the current empirical context, sales growth is an imperfect, but highly relevant and powerful indicator of performance, reflecting success in innovation and commercialization (Eisenhardt & Martin, 2000).

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