

Founding the Future:
The Evolution of Top Management Teams from Founding to IPO*

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Abstract

We develop an evolutionary theory of entrepreneurial top management teams highlighting that entrepreneurial teams follow a path-dependent process where the founding team shapes the quality and characteristics of subsequent executive teams. By attracting top managers who are both similar to the founders and experienced in their own right, experienced founding teams accrue long-term advantages. Using empirical techniques from the top management team demography literature we simultaneously examine the importance of founders and current executives and demonstrate that both shape firm outcomes. We find that experienced founders who build an early team with a full complement of organizational roles both achieve important milestones faster and attract more experienced top managers. When firms cannot have both experienced people and diverse roles at founding, we find it is easier to add organizational roles than individual experience as firms grow. By examining the origins of top management team experience and heterogeneity, we bring together entrepreneurial and organizational demography research and offer insights into the black box of team composition.

Introduction

The popular press often portrays successful high-technology firms being launched by inexperienced technological geniuses. Brilliant scientists who found a company attract experienced executives and venture capital to bring the firm to the next level. Our research examines the extent to which these popular images reflect reality. We know little about the relationship between the founding team and current executive team, although many pundits explicitly recommend that entrepreneurial firms replace founders with professional managers (Charan et al. 1980, Willard et al. 1992). Indeed, recent research suggests that founders leave the firm as its size increases (Boeker and Karichalil 2002). When they stay, founder CEOs do not necessarily improve venture performance (Certo et al. 2001, Baum and Silverman 2004).

In this paper, we examine the relationship between founding teams and subsequent top management teams (TMTs). Our central research interest is whether there is a vestige of the founder's initial imprint on the functioning of a firm even after significant time has elapsed and the TMT has changed. We consider two interrelated questions: (1) do the characteristics of the founders influence the characteristics of subsequent executives? and (2) do founding teams account for outcomes over and above that of the current executives? Our first question allows us to explore how teams evolve over time and how founder characteristics influence the types of executives who are attracted and retained. Our second question extends the idea that founders of firms make critical choices early in the firm's history that leave a lasting organizational imprint by examining the influence of both founding and TMTs simultaneously.

In contrast to the extant research on teams, both entrepreneurial and otherwise, which focuses on teams at one point in time, we follow the call of Lawrence (1997) and look at the dynamics of early teams. Instead of the standard random cross-sectional sample, which by design embeds the biases associated with both right and left censoring, we study firms and teams longitudinally. We believe that an organizational theory sensitive to the dynamics of TMT evolution offers non-obvious, yet important, insights into how founding teams shape subsequent teams and how both influence firm outcomes.

We develop a theory of entrepreneurial team evolution and argue that imprinting and path dependence operate such that current executives bear a strong resemblance to founding executives. Our theory is broadly evolutionary in that we argue teams change over time according to path dependent processes, and there are important patterns of selection and retention that shape change processes (Aldrich 1999). Building on established traditions in the TMT demography literature, we examine the patterns of team change for two distinct types of functional diversity: the range and diversity of current functional role assignments, termed *assignment diversity*, and the range and diversity of prior functional experiences, termed *background diversity* (Bunderson and Sutcliffe 2002). Consistent with prior research, we conceptualize background diversity as a measure of the team's experience and functional capabilities and assignment diversity as a measure of organizational structure that is distinct from the skills and qualifications of any specific incumbent. These constructs are conceptually distinct and, as argued below, have different implications for team evolution.

There are several means by which founding teams may influence future teams. First, the founders might continue to hold executive positions; thus the founding team and the current team are one and the same. Second, organizational imprinting or path dependence suggests that initial decisions about the characteristics and qualifications of the founding team and the allocation of responsibility among team members are, in reality, the decisions that have lasting consequences (Stinchcombe 1965, Schein 1983, Baron et al. 1996, Hannan et al. 1996, Burton et al. 2002, Shane and Stuart 2002). For example, a founding team with a member from a sales and business planning background may decide to combine the sales and business planning functions under a single executive and build an organization where these functions are closely interrelated and are externally (customer) oriented. When a new executive is recruited to take over the combined position, the structure of the position and the background of the original executive will influence the choice of a new executive. A different founding team might decide to create stand-alone sales and business planning functions, which would lead to different future candidates. The background of the initial marketing executive—business development, classical marketing, product

development, or sales—leads to different choices about what the marketing function does and with which other functions it is aligned.

This simple example illustrates several core ideas. First, the initial assignment of functional roles—assignment diversity—is an important decision about the organizational structure that may have lasting consequences. Second, the functional background experiences of an executive team—background diversity—influences how it defines and enacts organizational roles. Third, these two choices have implications for the characteristics of the subsequent executives who would be both *capable* of filling the defined roles and *attractive* to the incumbent team members. We know that people are the carriers of structure, bringing ideas and innovations with them when they move across organizations (Boeker 1997, Sørensen 1999), yet our arguments imply that prior decisions made by incumbents constrain the pool of people who might be willing or able to make a move. We posit that a particular type of path dependence—one that operates by differentially attracting new members, selecting desirable traits and characteristics, and retaining particular types of individuals over time (Schneider 1987)—constrains future top management teams to closely resemble the initial one. Thus, while we know that high-performing firms make different choices about the expertise of managers who are brought into the firm (Virany and Tushman 1986), initial conditions may shape team evolution.

While the general ideas regarding functional diversity and experience have been established in the TMT demography and entrepreneurial literatures, there are few longitudinal studies that link diversity and experience to firm outcomes (see Boone et al. 2004 for an exception). Furthermore, we know of no studies that consider the career histories of both founding and current executive teams as well as their current assignments. We ask whether the backgrounds and experiences of the incumbent team influence their successors' backgrounds and experiences. We also consider the impact of founding and current team diversity on firm outcomes. For example, are new firms more likely to achieve important milestones when they are launched by a well-rounded and experienced team, or are they better off adding experience and functional diversity later?

We first draw upon two traditions, personnel psychology and organizational ecology, to develop arguments for why current executive teams should resemble the original founding teams. We then empirically investigate the relationship between the two. Second, we review the literature on top management teams—current and founding—and firm performance. Consistent with the extant empirical evidence, we find both founding and current top management teams influence organizational outcomes.

Founding Teams' Influences on Top Management Teams

Lawrence (1997) critiques the “black box” of organizational demography research and calls for a deepening of variance explanations, developing dynamic models, and explaining the source of demographic distributions in organizations (see also Carroll and Harrison 1998). Empirical research now regularly examines the intervening processes that heterogeneity is argued to influence (Knight et al. 1999, Pelled et al. 1999, Ensley et al. 2002), and this research is an important step in opening the black box. Little work has examined the process of path dependence that results in continued heterogeneity or homogeneity among teams (see Sørensen 2004 for a recent exception), or more importantly, the internal origins of heterogeneity. Interestingly, founding teams do not generally begin with functional diversity (Ruef et al. 2003) yet those teams that are functionally diverse may achieve better outcomes. By examining the evolution of TMT composition, we investigate the internal structural factors that shape how teams become diverse. Thus, we explore the role of the founding team in creating the TMT.

Several mechanisms (which may operate simultaneously) could generate an association between the human capital characteristics of founding and TMTs. The simplest is founders staying with the firm. So, before we can consider team evolution, we must examine whether teams change over time. However, assuming change, there are several ways the founding team might shape subsequent teams.

First, a robust finding in the psychological literature suggests that similarity results in interpersonal attraction (Byrne et al. 1966). Individuals prefer to interact and work with those like themselves. Thus, founders and managers alike should be attracted to one another when they share common experiences and knowledge. Managers seek organizations where existing personnel have similar characteristics, founders select managers like themselves, and managers who do not fit will leave

(Schneider 1987). This attraction-selection-attrition cycle results in founding and future top management teams with similar characteristics. A larger literature on homophily supports this framework (Rogers and Bhowmik 1971, McPherson et al. 2001, Ruef et al. 2003). Although research on homophily has generally focused on categories such as race and gender, we examine preferences for homophily through functional experience and heterogeneity. Founders may privilege and recruit executives with similar experiences to their own rather than hire executives with experience that may be more relevant for the position being hired. If a founding team begins with different executives, individual preferences for homophily may maintain team-level diversity. Alternately, founders with diverse backgrounds may value that variety and seek TMT members that themselves have diverse experiences. In both cases, at the team-level, homophily suggests similarity between the diversity of the founding team and the diversity of the TMT.

Second, experienced founding teams likely attract experienced executives. Highly experienced founding teams are likely to recognize, recruit, and select the executive talent necessary for future success. Whereas homophily suggests that founding teams and TMT are similar due to the desire to interact with others similar to themselves, an experience argument suggests all founding teams seek TMT characteristics helpful for future firm success. Experienced founding teams are going to be more able to attract experienced executives than those founding teams that began with less experienced founders. Of course, it is difficult to differentiate preferences for homophily and preferences for experience; however, both imply similarity between founding and TMTs. In many cases both explanations may operate in concert; for example, when experienced founders add experienced executives, it is likely the founders both prefer and attract experienced others. But, the homophily and experience explanations may be disentangled if the founding team selects executives with an experience that is similar to the founding team's experience but no longer relevant for the firm. For example, if founding teams select TMT members with prior founding experience, the choice is likely driven by homophily rather than experience as founding experience is unlikely to be critical to the future of an established firm.

Third, experienced founders may create an organizational structure with differentiated roles that allows new executive team members to join and have both authority and accountability. By defining the

roles and responsibilities clearly, founders signal to potential team members that they understand functional boundaries and are seeking specific functional skills. Firm executives are able to conduct a targeted search for these specific skills and screen for those with demonstrated executive talent.

By differentiating functional assignment diversity and functional background diversity, we explore which of these various mechanisms – stability, homophily, experience, or structural precedence -- appears to dominate. We examine how entrepreneurial teams change, and explore differences in the pace and type of change depending on the initial conditions. We pursue a research strategy that begins with the first team, and then tracks changes in people—both through entrances and exits—and in functional composition – both assignment and background diversity – and can begin to explore exactly how the founding team shapes the subsequent TMT. All of our proposed mechanisms suggest a tight linkage between the founding team and subsequent TMT and offer an explanation for the origin of functional heterogeneity. Building on a path dependent argument, we hypothesize:

Hypothesis 1: Experienced founding teams will have more experienced top management teams.

Top Management Teams, Founding Teams, and Firm Outcomes

In order to understand why the experience of founding or top management teams is relevant for firms, we turn to the literature on organizational demography. Many studies of TMT demography have shown the positive impact of both functional expertise and functional heterogeneity on firm performance. This well-developed literature originated with two seminal contributions. Pfeffer (1983) developed the basic theoretical argument for the demographic tradition, and Hambrick and colleagues generated a set of propositions linking the age, background, and tenure of TMTs to both organizational outcomes and team processes (Hambrick and Mason 1984; Finkelstein and Hambrick 1996). A relatively large body of empirical research confirms the intriguing and sensible possibility that TMT composition has consequences for organizational strategy and performance (see Williams and O'Reilly 1998, for a review), although the precise mechanisms are still much debated (Lawrence 1997, Reagans et al. 2004).

In most of the empirical literature, TMT functional expertise and heterogeneity is based on the past experiences of the individual team members. The central theoretical argument is that the TMT's

skills in running the company are reflected in the human capital characteristics of the managers; these skills and experiences frame managerial perceptions and actions. Further, having diverse functional backgrounds ensures that the TMT has the full range of skills and abilities needed to manage the organization (e.g., Bantel and Jackson 1989). Ample evidence documents the linkage between founding team human capital characteristics such as the type and amount of prior experience and entrepreneurial success (Aldrich and Zimmer 1986, Roberts 1991, Cooper et al. 1994, Chandler 1996, Schefczyk and Gerpott 2000, Burton et al. 2002). For example, the functional background of the founder influences whether the firm adopts a first-mover strategy (Boeker 1988). Drawing on this research, we expect that experienced teams can draw on that experience to help the firm. Thus, we hypothesize that:

Hypothesis 2: Founding and top management teams with significant human-capital experience will reach important firm outcomes more quickly than teams with less of such experiences.

A second argument—quite distinct from human capital-style ones—emphasizes the social psychological and communication consequences of diversity. The evidence regarding group dynamics is complicated by studies that emphasize a variety of intervening processes that are difficult to observe; however, the underlying social psychological theories of interpersonal attraction are quite sound. Scholars theorize that functionally diverse teams should be open to new ideas, communicate more frequently to bridge differences, and learn from each other and the environment (Virany et al. 1992, Glick et al. 1993). That said, the differences in beliefs and perceptions that accompany diversity also increase conflict, lower consensus, and slow competitive response (Knight et al. 1999, Pelled et al. 1999). Despite these countervailing pressures, there is evidence that in turbulent environments – and turbulence is almost definitional in an entrepreneurial firm -- functional diversity is beneficial for firm performance (Virany et al. 1992, Hambrick et al. 1996).

Interestingly, both human capital and social psychological arguments have been used to establish linkages between performance and both assignment diversity and background diversity. Empirically, the bulk of empirical research has focused on top manager prior experience (e.g., Eisenhardt and Schoonhoven 1990). Functional assignment diversity—although subject to less empirical scrutiny—also

impacts firm outcomes. It has been tied to firm performance, strategic reorientation, and external communication (Ancona and Caldwell 1992, Lant et al. 1992, Keck 1997). In the entrepreneurial literature, Roure and Keeley (1990) report that team “completeness”—the degree to which founding team members hold a range of key positions—is associated with entrepreneurial success. Especially when focusing on founding teams, assignment diversity implies important initial choices about organizational structures that may have a lasting imprint.

Although the existing literature draws upon the same logic to account for assignment diversity and background diversity, we believe that there is an important conceptual distinction. While assignment diversity refers to the existence of *organizational roles or positions* irrespective of any person who might occupy the role, background diversity refers to the human capital characteristics of the *individual incumbents*. This distinction between assignment and background diversity is theoretically interesting and important as it allows us to consider team evolution from a structural perspective and from a human capital/social psychological perspective. Without predicting the dominance of either assignment or background diversity, we thus examine how founding team and TMT diversity influence firm outcomes. Furthermore, research has not looked at these teams simultaneously and we examine whether the founding team has an impact on outcomes over and above that of the current TMT. We hypothesize:

Hypothesis 3a: Founding and top management teams with functional background diversity will reach important firm outcomes more quickly than teams with less of such experiences.

Hypothesis 3b: Founding and top management teams with functional assignment diversity will reach important firm outcomes more quickly than teams with less of such experiences.

Data and Methods

This study uses data longitudinal data on the executive teams in 170 young high-technology firms in California’s Silicon Valley. The focus on firms in a single region allows us to hold constant key labor market and environmental conditions. Within the region, we focused on the high-technology industries of computer hardware and/or software, telecommunications, medical devices and biotechnology, and semiconductors. The focus on a range of industries allows us to talk about top management and founding

teams more generally. The sampling frame explicitly over-samples young and small firms. The firms in the sample had at least 10 employees and that were no more than 10 years old at the time data collection began in 1994–96. Certo et al. (2001) also use 10 years as their cutoff for new ventures. About half of the firms were founded before 1989 and thus the median age of the firms in 1994 was five years. Our sample is not representative of all start-up firms in that we have fewer solo founders (18% in our sample vs. 49% reported by Ruef et al. 2003) and more teams of three or more founders. It is less clear whether our sample is representative of other high-technology start-ups. Our sampling frame has the disadvantage of biasing the sample toward firms that have survived several years and thus are more likely to be (or become) successful. That said, we see no a priori reason to expect that evolutionary pressures, where TMTs are constrained and shaped by founding teams, would be different for a broader sample of start-up firms. The sampling of executive teams rather than solo entrepreneurs also allows us to examine the impact of initial founding team structures, an important goal of this research.

The key independent variables for this study are constructed from executive career histories. In order to compile the data for this study, we constructed a monthly database of every founder and every executive that ever worked for one of the sampled firms from founding through December 2000 or the time of IPO, acquisition, or failure (see below). Beginning with the founding team, we coded the addition and departure of each subsequent executive. The founding team was identified in an interview with the founder, and all subsequent TMT members were identified as those individuals ranked as vice-president or higher (e.g., senior vice- president, CTO, CIO, COO) (e.g., Wagner et al. 1984, Michel and Hambrick 1992, Virany et al. 1992). The top management team has “overall responsibility for the organization” (Mintzberg 1979), and the small mean size of the TMT in our sample (4.5 at the end of the sample period) suggests the operational definition mirrors the conceptual one. Our data sources included: interviews (conducted in 1994-95 and 1996-97), internal company documents (business plans and promotional documents), *Lexis/Nexis* news searches, *Dow Jones Interactive*, *Edgar Archives* (useful for firms about to go public and for top managers that have been involved with public companies), *The San Jose Mercury News* (the local paper has a regular column on promotions, movements and resignations in the Silicon

Valley), and extensive web searches. Over a four-year period we completed at least four complete searches for each person and spent thousands of person-hours collecting career data on team members. In addition, we confirmed, via interview or telephone, the career histories collected through 1996-97 with the person designated by the CEO or the HR person for nearly 50% of the companies. This increased the reliability of the earliest executive team data, the most difficult period to gather consistent data through archival sources. The detailed career histories we obtained are not common in this type of research (Bunderson and Sutcliffe 2002). This intensive, difficult data collection for young, privately held firms is one reason for the scarcity of studies on early TMTs, and our data is the most complete data available on entrepreneurial teams of which we are aware.

Our final database contained information on 161 firms with data on 1,744 executives, beginning with the founding team and following the TMT over time. Firms that were not independent (e.g., wholly owned subsidiaries) or at risk of going public (e.g., non-profit research centers) were excluded. Despite extensive research, we did not obtain complete career histories on all team members. Often the chronology of careers was correct but the dates unclear. This data problem precludes us from constructing duration variables such as years of experience in a particular function, the method typically pursued by demography scholars (Sutcliffe 1994). We conducted numerous checks to fill in missing data. For example, we were able to ascertain the departure of an executive when another firm announced hiring that individual. Because some of our team data may be incomplete, we made a point to control for variables that may impact the completeness of the data (i.e., firm size) as well as the average amount of person data collected by firm.

Of the 161 firms in the sample, we dropped four from the analysis because we had missing data on key variables, giving us a final sample of 157 firms. We collected a mean of two positions for each person, including employer identity and job title, with a maximum of six positions. This includes data for executives (often founders) who we confirmed had no prior work experience (at least 38 founders joined our firm directly from school). These executives worked for 1,948 distinct employers, resulting in 6,643

person-positions. For the analyses presented here, we collapse the data to yearly team-level observations; however, similar results are obtained when analyzed monthly, quarterly, and biannually.

To examine the influence of the founding team on the TMT (H1), we conduct regression analysis on pooled time-series data. We regress measures of TMT experience on the relevant experience of the founding team using the Huber/White/sandwich estimator of error and clustered by firm to correct for repeated events by firm. To examine the impact of team variables on firm outcomes (H2 & H3), we conduct event-history analysis on annual observations and report Cox proportional hazards models using maximum likelihood estimation and robust estimates of standard error (Lin and Wei 1989).¹ The founding year is represented as age = 0 with all of the initial conditions represented as covariates that are updated yearly where appropriate. Firms remain in the sample until the outcome of interest, until they cease to exist as independent entities through failure, merger, or acquisition, or until the end of the sample period.

Dependent Variables

In this research we examine three different dependent variables: (1) demographic composition of the top management team (2) time to receive venture capital (VC); and (3) time to initial public offering (IPO). Our first dependent variables are the TMT experience and team composition measures (see below). These variables, calculated annually, serve as both independent and dependent variables and demonstrate path dependence between founding team composition and TMT composition. The outcome variables of interest for Hypotheses 2 and 3 were obtaining venture capital financing and going public. Obtaining VC funding and going public, together, represent the most significant milestones in the life of a young start-up (Shane and Stuart 2002). Especially during the time period and in the region that we study, both dependent variables are important markers of firm success.

The first outcome dependent variable, VC funding, generated enormous media attention during this time period (especially in Silicon Valley). New firms generally worked hard to gain access to the VC network. Financing data was collected via public and proprietary databases (such as Venture One and

¹ The Cox proportional hazards model assumes that the hazard ratio is proportional over time, and we test the assumption for all of the covariates and globally for each model based.

Venture Economics), SEC filings and annual reports, internal company documents and a survey instrument sent to the most senior finance executive in the firm (see Hellmann and Puri 2002). Of our 161 firms, 27 exited the risk set through IPO, acquisition, merger, or failure without securing VC, and another 14 had not received VC by the end of 2000. Thus, 120 firms (75%) obtained VC funding during our sampling period. At first glance this number seems unusually high; however, the end of our time period (late 1990s) witnessed an explosion of VC investments in entrepreneurial firms in the United States. During 1996, there were over 50% more deals than in the previous year, and the average from 1996 to 2000 was 250% higher than from 1982 to 1995 (using data from Thomson Financial).

Team functional diversity is likely to increase the rate of venture capital financing because management experience and functional diversity are seen by venture capitalists as important signals of potential firm success (Gorman and Sahlman 1989, Davila et al. 2003) and thus are important for firm legitimacy. Further, diverse teams will be able to function more effectively, as the social psychological research suggests (e.g., increased communication), and will be more likely to have the network contacts and knowledge to gain access to VC. We code both the first time that a firm receives VC funding (regardless of the amount) and each successive round of financing; thus, our variable is a measure of whether and when the founding team received any amount of money from a venture capitalist.² Regardless of the prevalence of VC funding in our sample, by modeling time to first VC funding we examine characteristics of the team that allowed the firm to obtain funding more quickly than other firms as well as whether they received VC backing.

The second outcome dependent variable, initial public offering, also received tremendous popular press attention in part due to the extraordinary wealth that was being created in Silicon Valley. Data on the occurrence of an IPO were obtained from interviews, press releases, newspaper articles and the CRSP US Stock database. Of the 161 firms in the study, 88 (55%) went public during our sample period. Again, although this is a high percentage of firms going public, the equity market was very favorable late in our

² We focus our event-history analysis on time to first venture capital funding similar to past research because future rounds are based on more direct knowledge about the firm than the first VC financing (Shane and Stuart 2002).

period; in fact, more U.S. firms went public in 1996, 1999, and 2000 than at any other point in recent history. Although comparable statistics are difficult to find, 72% of all IPOs in 1996 had VC backing (Florin forthcoming). In our sample, across all years, 90% of our firms that went public were venture backed, and two out of three firms that went public in 1996 were VC backed (67%). The proportion of VC backed firms that go public in our sample is similar to other studies. That said, it is possible that firms in this study are more likely to go public than all other firms founded in this time period. However, in this study we are interested in the relative performance among a set of comparable firms. By choosing IPO as our dependent variable, we can compare the performance of firms across multiple industries—a task that is quite difficult using accounting-based measures of profitability. Recent studies have examined IPO as an outcome variable indicating firm success (Welbourne and Andrews 1996; Stuart et al. 1999, Certo et al. 2001, Hannan et al. 2001, Shane and Stuart 2002, Gulati and Higgins 2003). IPOs generate higher returns than merger or acquisition (96% of the IPOs vs. 59% of the acquisitions examined by Barry et al. 1990 generated positive returns). Financially, IPO is the preferred exit option.

We argue that founding and TMTs with both the requisite skills and diversity of experience to function effectively will reach IPO more quickly than other firms. As we argued for venture capital, diverse and experienced teams will both operate better as a team, and, by nature of their diverse experience, will be more likely to have the specific knowledge and network contacts that increase the rate of IPO. Functional assignment diversity gives firms the structure needed to ensure that all critical roles are filled and the team is thus “complete,” which may have both substantive and symbolic effects. These types of diversity signal legitimacy and competence to the underwriters and investors deciding whether to support a firm in its efforts to go public. Finally, it is important to note that for both IPO and VC our intent is to confirm relationships already suggested or demonstrated in the literature. Our purpose is to examine the founding team and TMT simultaneously not to develop new markers of firm success. These dependent variables, although not without flaws, are well-established entrepreneurial firm milestones.

Independent Variables

We coded the career histories for each person in the sample including human-capital experience such as whether the team member had prior start-up experience (i.e., the person was a founder of a previous firm), prior senior management experience (i.e., vice-president or higher rank), or prior finance experience. From prior research we know that start-up and senior management experience are the most relevant variables (Burton et al. 2002, Shane and Stuart 2002). We also examined experience in six functional areas (sales and marketing, administration/human resources, science/R&D/engineering, operations, business development/strategic planning and finance) because past functional experience has been found to be important for firm strategy (Boeker 1988). Finance experience has been noted as important to venture capitalists (Goslin and Barge 1986) and is likely to be helpful in managing the intricacies of going public. Therefore, we created three prior human-capital experience variables – start-up, senior management and finance– and summed the number of team members with each. We coded initial founding team experience and updated TMT experience each year.

Functional background diversity focuses on the range of prior experiences and requires work histories of individuals, and functional assignment diversity examines the range of functional categories represented by current positions in the firm (Bunderson and Sutcliffe 2002). At founding, assignment diversity captures the range of organizational positions created in the firm and background diversity captures the work experience of the founders. We examine both background and assignment diversity using an entropy-based measure of heterogeneity appropriate for categorical variables (Ancona and Caldwell 1992). The measure of heterogeneity, sometimes referred to as the Shannon index, is $-\sum P_i(\ln P_i)$, for $i = 1$ to x , where x is the number of categories and P_i is the proportion of team members in category i . In our case, assignment diversity captures the completeness of the current team's functional assignments across six possible functional categories. Background diversity captures the team's aggregate prior functional experience, so background diversity is similar for teams with six single function experts and for teams whose executives have experience in all functional areas. Both background and assignment diversity are calculated for the founding team and updated yearly for the TMT.

We controlled for cumulative entrances and exits to the TMT team, from founding. We included founding team size, so the cumulative entrance and exit variables capture change and growth in the teams. We also examined the percentage of the TMT positions held by founders, which represents the extent to which the founder is likely to dominate the team. All TMT variables were updated yearly.

We controlled for industry to capture market forces. Medical devices and biotechnology firms (combined as medically-related) was the only significantly different industry. We also controlled for firm size, measured as the number of employees at the end of a given year and scaled by 100. We included the cumulative number of rounds of VC funding that the firm had obtained because such firms are more likely to go public (Gompers and Lerner 1999) but obtain similar results when we use a simple dummy variable (e.g., equal to one when the firm obtains venture capital).³ We controlled for whether the firm had an innovation strategy because strategy has been linked to venture capital financing in prior research (Burton et al. 2002). An innovation strategy was coded from interviews with the CEO and focused on the distinction between innovators and incrementalists (incrementalist firms seek advantage through extending existing products or services). The number of IPOs in each industry by year controls for industry-specific variation in rates of IPO, and the number of VC deals by year, scaled by 100, controls for financial resources available to firms. We included year dummy variables for the first 10 years of the firm's life in the pooled time-series regressions. Finally, we controlled for the amount of firm-level team data collected by including the average number of prior positions collected for each person in the firm. This allows us to control for the possibility that we have more data on individuals in successful firms.

Results

Table 1 tests Hypothesis 1 and reports regressions testing the association between founding team and TMT characteristics (for descriptive statistics and correlations, see the Appendix). Models 1–5 each have a different TMT characteristic as the dependent variable; however, the logic of the analysis is similar. In each model we include firm-level controls of industry, firm size, and strategy. We also control

³ We obtain similar results with a simple dummy variable (e.g., equal to one when the firm obtains venture capital).

for venture capital, changes to the team composition, and the average number of person-positions. Among the control variables, we see that venture capital increase TMT experience. We also see that executive entrances increase and exits decrease TMT experience. Firm growth increases TMT experience. Finally, we see that, for all but prior senior management experience, having founders represent a large percentage of the TMT reduces subsequent TMT experience. This is likely due to the fact that these teams are not growing as quickly as other firms. By controlling for turnover on the team, we can show that founding teams shape TMTs net of firm growth.

Insert Table 1 about here

In Table 1 we see strong support for Hypothesis 1 and consistent evidence of an association between initial founding team experience and subsequent TMT experience. In every model, the founding team characteristic coefficient is positive and statistically significant in predicting the TMT characteristic, and the F-statistic comparing models with and without the founding team characteristic are significant for all but Model 5. This demonstrates a strong and clear linkage between the founding team and TMT. Not only are these effects consistent across types of experience, they are also substantively meaningful. A firm who has a founding team with no functional assignment diversity has 21% less TMT assignment diversity than other firms. These effects are somewhat larger for background diversity. A firm whose founding team background diversity is one standard deviation above the mean has 30% more TMT background diversity. The magnitude of these effects is even larger for prior senior management experience. Thus, in general, diverse and experienced founding teams bring more experienced team members onboard, and these effects last over time. In supplementary analyses, we find similar results for panel regressions at firm ages four and eight; this suggests these effects remain strong many years into a firm's life (over one standard deviation above the average firm age).

We argued that multiple mechanisms—stability, homophily, experience, and structural precedent—might drive a relationship between founding team and TMT. We ruled out stability alone by demonstrating that the founding team and TMT relationship exists controlling for founder representation

and team change. Explanations involving teams seeking homophily and teams seeking experience are difficult to disentangle. However, all founding team experiences influence TMT experience, regardless of whether the experience is needed for the firm. That is, a founding team's prior start-up experience (Table 1, Model 4) predicts TMT start-up experience, and there are few team-based reasons why start-up experience is necessary in the TMT. This suggests, although teams may seek experienced executives, the type of experience valued may be influenced by homophily.

Table 2 shows the influence of founding team and TMT characteristics on the timing of two different outcomes: obtaining venture capital and completing an initial public offering. For the rate of VC financing, Model 1 examines founding team variables, Model 2 examines TMT variables, and Model 3 examines both simultaneously. We repeat these analyses in Models 4-6 for the rate of IPO. We report hazard ratios, so numbers larger than one indicate an increase in the rate and numbers smaller than one indicate a decrease in rate of achieving the firm outcomes. We see little evidence that the control variables are significant for the VC analyses. Firm strategy is not significant once controlling for cumulative entrances. In Model 1, we see that the rate of VC is 18% higher for each executive that joins the team, but this effect is due to the changed composition of the TMT (cumulative entrances are not significant in Models 2 and 3).

The control variables have larger effects on the rates of IPO. In Models 4-6, we see evidence that the firm's rate of IPO increases roughly two-fold when more data is collected on team members in a firm. This confirms that we have more data for firms that go public and helps control for our data collection limitations. Firms in medical-related industries go public five times more quickly than firms in other industries, and firms in industries with a high number of IPOs go public more quickly than firms in other industries. We also see a small influence of venture capital on IPO. The number of VC deals and the cumulative rounds of VC both increase the rate of IPO but these effects are substantively small, especially compared with the team composition variables. In addition, we see that the effect of turnover has two countervailing effects on rates of IPO: firms benefit from entrances and are hindered by exits. That is, team entrances increase the rate of going public by 20% whereas team exits slowed the speed firms went

public by 20%. Finally, we see that the larger the number of founders on the TMT, as a measure of relative founder dominance, the lower the rate of IPO. This variable captures the lack of team growth for some firms (cumulative entrances and proportion of founders on the TMT are correlated at $-.60$).

Insert Table 2 about here

Hypothesis 2 predicts the human-capital experiences of founding and TMTs will have a positive effect on firm outcomes. Contrary to expectations, the human-capital characteristics of the founding team do not predict venture capital financing or going public. In supplementary analyses, we see prior senior management experience on the founding team increases the rate of VC by 34% but these effects are wiped out once the background and assignment diversity measures are included. We do, however, see evidence that TMT senior management experience predicts rate of IPO as well as has a marginal effect on rate of VC. TMT prior finance experience increases the rate of IPO by 70-90%. Contrary to our expectation, but consistent with Florin (forthcoming), having a TMT with prior start-up experiences reduces the rate of VC by 25-30%. This may be due to VC reluctance to invest in firms that are growing through executives with start-up (as opposed to more traditional) experience, experienced entrepreneur resistance to ceding control to VCs, or experienced founders having access to alternative sources of capital. Across both outcomes and teams, these results suggest mixed support for Hypothesis 2. Founding team human-capital experience does not have lasting effects on firm outcomes, but TMT human-capital experience does have a significant effect. In particular, TMT prior senior management and finance experience increase the rate of IPO and prior start-up experience decreases the rate of VC.

We find mixed and weak support for Hypothesis 3a which predicts founding team and TMT functional background diversity will increase the rates of VC and IPO. Both founding team and TMT functional background diversity increase the rate of IPO by 40% when entered separately, but when both are in the model simultaneously neither is significant. There are significant correlations between TMT and founding team variables (from $.39$ to $.47$); thus the statistical power of individual hazard ratios may be reduced due to collinearity. This is to be expected given our expectation that founding team

composition shapes TMT composition, but it makes disentangling the direct effects of team composition on firm outcomes difficult. In supplementary analyses, we regress TMT experience and diversity variables on founding team variables and calculated the residuals. We reran Models 3 and 6 in Table 2 using the residuals as independent variables. This reduces the collinearity among the independent variables, and we find that founding team background diversity increases the rate of VC financing but the residual TMT background diversity (that diversity not accounted for by the founding team diversity) does not. This suggests that founding team background diversity is more influential on the rate of VC than TMT background diversity. For all other models, the supplementary analyses are substantively the same as the models reported in Table 2. For the IPO analysis, in Model 6, we see that founding team background diversity has a negative influence on the rate of IPO and TMT background diversity has no effect. The negative effect of founding team background diversity is not significant, however, when entered into the model alone. Overall, these results suggest that founding team functional background diversity has a positive effect on VC financing but a weak and negative effect on the rate of IPO.

Hypothesis 3b examines the influence of functional assignment diversity, and here we find strong support. TMT assignment diversity increases the rate of achieving firm outcomes almost three-fold in Model 3 and two and a half times in Model 5; thus, complete TMT teams, with a wide range of functional positions, likely give the firm both legitimacy and expertise in order to obtain VC financing and go public. These variables have the largest effect across all models (with the exception of being in a medical-related industry in the IPO analysis). The functional assignment diversity of the founding team is also a significant predictor of going public (increasing the rate of going public by 60%); firms that begin with a clear allocation of functional roles go public more quickly. In general, the functional assignment diversity variables are more important than the functional background diversity variables which suggest that creating a broad array of organizational roles and developing clear functional structures is more important than bringing executives with varied backgrounds. Interestingly, the effect of founding team assignment diversity is negative once controlling for TMT assignment diversity. Two possibilities come to mind. First, teams that begin with functional assignment diversity may be more sophisticated and not desire or

need VC funding at least initially. Second, teams that begin with assignment diversity have a more complicated organizational structure, with more set parameters, which may be unattractive to VCs.

A key conclusion from the analyses reported in Table 2 is that while the impact of TMT assignment diversity and human-capital experience on firm outcomes is stronger than the founding team, some founding team effects persist. Furthermore, functional assignment diversity has more explanatory power than human capital or background diversity, suggesting benefits to examining the initial structure and allocation of responsibilities in entrepreneurial teams.

We were concerned about several possibilities that could have influenced our results. First, our effects may be skewed by the bubble market of the late 1990s. In supplementary analyses, we examine the possibility that our results arise from period effects rather than our theorized mechanisms. We ran the models in Table 2 and found our VC financing results to be robust even when only considering VC financing events prior to 1993 (before the market began to heat up) with the exception of prior TMT start-up experience becoming marginally significant. For the IPO analysis, the results are the same when only looking at IPOs prior to 1996 (the first year that IPO jumps significantly), except for TMT functional assignment diversity becoming marginally significant.

Second, adding executives prior to IPO can be an example of window dressing. Firms add experienced executives just prior to going public to signal readiness to potential investors. Thus, team growth can occur for several reasons. Teams may grow in order to develop the expertise needed to achieve their objectives, and teams may grow in order to signal to the financial community that they are legitimate. To some extent, team members serve both a substantive and a signaling influence. However, we can attempt to differentiate them to the extent that window dressing arguments are more likely to apply in the time immediately preceding IPO, when there has been less opportunity for substantive contribution. Similarly, venture capitalists may make closing financing deals contingent on top management team changes. Again this would be counter to our argument. To rule out this alternative explanation, in supplementary analyses we examined both cumulative team changes and team changes in the year prior to both the IPO and financing event. The results for our hypothesized variables are the same

in these supplementary analyses. Since we have announcement dates and not dates when these discussions commenced, we cannot completely rule out the possibility of reverse causality. However, the overall influence of founding team assignment diversity is consistent across model specifications suggesting a long term influence of the founding team.

Table 2 demonstrates assignment diversity (structure) has a larger impact on outcomes than background diversity, but in Table 3 we consider more explicitly whether teams seek experience or are shaped by structural precedent. We present descriptive statistics on TMTs and firms with different starting points (different amounts of initial assignment diversity and background diversity). This allows us to further understand and interpret the results from Tables 1 and 2. We split the sample into four cells: firms whose founding teams have no assignment or background diversity (Cell 1), those whose founding teams have background but not assignment diversity (Cell 2), those whose founding teams have assignment but not background diversity (Cell 3), and those whose founding teams have both assignment and background diversity (Cell 4). This categorization is a median split, but a mean split finds basically the same division (only 1 firm changes cells).

Insert Table 3 about here

First, Table 3 demonstrates that assignment diversity and background diversity are clearly distinct concepts, since there are a number of firms in each cell, and assignment and background diversity do not always go hand-in-hand. To be sure, firms with neither assignment nor background diversity (Cell 1) are disadvantaged on many fronts: they start smaller, do not grow as much, and are less likely to receive venture capital or go public than firms with the most diverse teams (Cell 4). Table 3 also suggests the combination of initial background and assignment diversity is important (Cell 4: Complete and Experienced Teams) because these firms achieve critical milestones more quickly than other firms. In supplementary analyses, we confirm this with an event-history model where founding teams with assignment and background diversity above the median increase rates of VC and IPO. This occurs partially because teams that start more diverse continue to attract experience and diversity. Teams lacking

assignment and experience diversity never catch up, and thus the “rich get richer” (TMT experience in Cell 1 never catches up to TMT experience in Cell 4). Interestingly, the least diverse teams (Cell 1) are older than the most diverse teams (Cell 4) at the end of the sample period because they do not exit the risk set at as high a rate. Even with another year and a half of observation, the least diverse firms cannot catch up. This is another demonstration of path dependence: firms that do not begin with diverse founding teams have difficulty attracting experienced others.

The caveat is that structure may be easier to add than experienced executives, since firms that start with a simple structure and experienced teams (Cell 2) do not have significantly less TMT assignment diversity than those that started with both structure and experience (Cell 4). Conversely, firms that start with complete structures but no experience (Cell 3) never catch up in terms of TMT background experience (Cell 4). We explored these descriptive results in supplementary analyses where we regressed TMT background diversity on founding team assignment diversity and TMT assignment diversity on founding team background diversity (using the same controls as in Table 1). Consistent with Table 3, founding teams with functional assignment diversity are less likely to end up with a TMT high in background diversity. This suggests experienced people are less likely to join teams with a full complement of roles. The reverse is not true: founding team background diversity has no impact on TMT assignment diversity. These analyses find no significant interactions which suggest the benefits of diversity are additive and not multiplicative. Founding teams with initial assignment diversity but no background diversity may never achieve high levels of background diversity; structure hampers the ability of a team to attract experience and not the other way around. This suggests that initial experience is more important than initial structure in attracting experienced executives. That said, we know from Table 1 that firms are slower to reach IPO when they do not start with initial structures, so, clearly, the most advantaged firms have both.

In addition, Table 3 helps us explore whether, rather than diversity increasing the ability of the firm to reach important milestones, experienced TMT members are drawn to firms that look like winners. Thus, the causality could go the other way: good firms attract good people rather than good people create

good firms. Although we cannot rule out this possibility, we can control for several measures of firm quality. In addition to controlling for size and strategy, we conducted supplementary analyses including whether the firm had a product or patent (ever or early in the firm's life) as controls. We also see that the exit rates and proportion of founders on the TMT across these four cells in Table 3 are not significantly different. On average 1.6 executives leave the firm and founders account for over 50% of the TMT. This suggests firm quality is difficult to observe because otherwise executives and founders would leave low quality firms at higher rates. Of course, the entrance rates are significantly different across these cells. The founding teams with both experience and structure grow more rapidly than all other firms but it appears these changes in composition are driven by founding team composition.

Discussion

Our results suggest that founding teams exert a lasting influence on firms, and this influence occurs through multiple paths. Founding teams with background and assignment diversity leave an imprint that influences firm outcomes over and above that of the incumbent TMT. Of course, the TMT composition and diversity also predict rates of IPO and VC. However, most of the research on functional diversity does not differentiate between background and assignment diversity (Bunderson and Sutcliffe 2002). Our research reveals that they are conceptually distinct and have different (and sometimes opposing) effects. Assignment diversity captures the completeness of the team structure while background diversity captures the experience that team members bring with them when they join the firm. One explanation for our pattern of results is that venture capitalists and potential recruits who are close to the firm attend to people (founder background diversity), while underwriters and more distant investors look for complete organizational structures (TMT and founding assignment diversity).

Importantly, the structures, or lack thereof, put in place by the founding team imprint the firm. This is consistent with ecological research and suggests that team structure may be more influential than team composition in the long run; however, our findings also run counter to ecological research in that we find structure can be added later. We see that 20% of our teams begin with complete organizational structures but inexperienced people, and they never catch up in terms of the experience of team members.

Perhaps firms that begin with more complete team structures choose team members with narrower sets of experiences. Alternately, perhaps team members with diverse prior experiences are not attracted to firms where there are multiple incumbent executives with narrow portfolios. Yet, it is firms founded with more complete structures *and* by more experienced people that reach firm outcomes more quickly.

Another key finding is that founding teams strongly influence the TMT through path dependence. Founding teams that begin with diverse backgrounds and structures are more likely to grow and attract experienced executives. This path dependence, where the founding team shapes the subsequent TMT, occurs both through homophily and through diverse founding teams attracting experienced top managers. Diverse, experienced teams have advantages on multiple fronts: they grow more, they go public and receive venture capital at higher rates. We see cumulative advantage, as high-quality founding teams become high-quality TMTs and less well-endowed other teams never catch up.

Little research in organizational demography has examined changes in teams over time, much less from founding, and the major contribution of this paper is the detailing of the relationship between the founding team and TMT. We demonstrate that the founding team exerts an influence on the firm not only through directly influencing firm outcomes, but also by shaping the very nature of the organization. An ahistorical account of the TMT will overstate the ability of the TMT to change; whereas, in fact, future teams may be best understood by a detailed examination of the teams that have come before. This finding limits the role of agency and suggests sharp deviations from the initial path are unlikely (and probably risky, see Hannan et al. 1996). Thus, an important contribution of our paper is beginning to unpack the source of demographic diversity. Organizational demography research has not focused on developing dynamic models or explaining the source of demographic distributions in organizations (Lawrence 1997). Our work begins to address this weakness in the demographic approach by exploring the path dependence process that results in continued heterogeneity or homogeneity among teams. To date, others have not followed the broader call of Lawrence (1997). This is not to say that organizational demography research has not moved in important directions. To the contrary, critical work examines the team processes generated by diversity (Knight et al. 1999, Pelled et al. 1999, Reagans and Zuckerman

2001, Ensley et al. 2002) and the difficulties of using indirect measures of demographic composition rather than direct measures of social networks to predict firm performance (Reagans et al. 2004).

In the entrepreneurial literature, our research suggests that the relevance of founding teams is more significant than has been acknowledged. Not only do founding teams directly impact firm outcomes, but, through a process of path dependence, the founding team shapes the TMT. Entrepreneurship research often focuses on the individual entrepreneur, but understanding the teams that come together and evolve is essential to understanding the performance of entrepreneurial firms. We advocate more studies with longitudinal data as well as a focus on team diversity in addition to team human capital. Also important, but unexplored in this paper, is the impact of venture capital in shaping the top management team. Longitudinal data would build on recent research in an attempt to understand how VC influences the TMT (Baum and Silverman 2004, Florin forthcoming).

We have taken a first step in understanding TMT evolution with rich longitudinal data. Of course, our study has several limitations. First, the data are not as complete as data for more established firms, and we may have been unable to find data on TMT members who were not successful during their career. However, ours is the first study to our knowledge to attempt such a detailed look at the career histories of private firms, and such an examination almost by definition involves problems with missing data. Furthermore, we have controlled for the potential problem to the extent possible in all analysis. Second, our sample has a success bias since the firms survived on average five years before we contacted them. We believe, however, that the benefits of the sample far outweigh the concerns, and our data is the best longitudinal data currently available on private companies.

A more significant limitation is our inability to be certain that founding teams attract TMTs rather than “good” firms attract both experienced founding teams and TMTs. This concern of unobserved heterogeneity is a common issue in empirical work, and we have done what we can to explore this possibility that people are attracted to firms and not to other people. Prospective TMT members may have an easier time assessing the quality of the existing team than the firm itself because the quality of the firm (independent of people) is hard to assess. In addition, there may be an “escalation of commitment” (Staw

1976), whereby current team members remain with the firm despite lower potential returns. Finally, to suggest it is the quality of the firm that drives the selection of executive denies what we know about the role of individual knowledge in the discovery of entrepreneurial opportunities (Shane 2000).

Much more remains to be understood about entrepreneurial teams. How does a team attract diverse founders when we know diversity is atypical (Ruef et al 2003)? Given the long-term effects of these initial choices, such an exploration would be very useful. We know founding is not truly the beginning, because entrepreneurs bring experience and networks with them (Burton et al. 2002; Shane and Stuart 2002). A qualitative assessment of how people, ideas, experiences and structures come together to create a firm would be an important contribution. In addition, delving into individual executive roles in the organization would help us understand in more detail the mechanisms that result in path dependence.

Despite the remaining questions, we are encouraged by the consistency of our results, how it contributes to and reflects current theories, and by the potential rewards of examining teams over time in this rich research setting of entrepreneurial firms. We demonstrate that founding teams matter—both directly and indirectly—largely through a process of path dependence. This sociological and evolutionary approach demonstrates how initial teams have a lasting impact on the firm. We hope to have a similar impact on future research on founding and TMTs in that research will follow the path we have described and consider the evolutionary nature of entrepreneurial teams.

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Table 1: Regression Results with robust standard errors: Effect of Founding Team on TMT*

	(1) TMT FBD	(2) TMT FAD	(3) TMT Exec Exp	(4) TMT Fndg Exp	(5) TMT Fin. Exp
Cumulative VC	.04** (.01)	.04** (.01)	.07** (.03)	.01 (.02)	.02* (.01)
Medical Industry	.17* (.07)	.11 (.09)	.09 (.14)	.11 (.13)	.09 (.06)
Firm Size	.02 (.02)	.00 (.02)	-.03 (.03)	-.06 (.04)	-.02 (.01)
Innovation Strategy	.00 (.04)	.02 (.04)	-.00 (.10)	.10 (.07)	-.04 (.05)
Average number of person-positions	.05** (.02)	-.02 (.01)	.20** (.04)	.11** (.04)	.03 (.02)
Founding Team Size	.01 (.01)	-.00 (.01)	-.13** (.04)	.01 (.02)	.00 (.02)
Proportion of Founders on TMT	-.07* (.03)	-.08* (.03)	.12* (.05)	-.02 (.04)	-.01 (.02)
Cumulative TMT Entrances	.15** (.01)	.13** (.01)	.42** (.04)	.07* (.03)	.10** (.02)
Cumulative TMT Exits	-.16** (.02)	-.17** (.02)	-.32** (.05)	-.08* (.04)	-.11** (.02)
FT Background Div. (FBD)	.32** (.05)		-.27 (.21)		
FT Assignment Div. (FAD)		.38** (.05)			
FT with Executive Experience			.60** (.06)		
FT with Founding Experience				.46** (.08)	
FT with Finance Experience					.44** (.13)
Constant	-.18** (.07)	.28** (.10)	-.74** (.15)	-.33** (.12)	-.16** (.06)
F-Statistic	70.76	34.66	35.81	5.90	8.69
(df)	(18)	(18)	(18)	(18)	(18)
Number of Obs.	1266	1266	1266	1266	1266

**p<.01; *p<.05

*Firm age dummy coefficients not reported

Table 2: Event History Analysis: Effect of Founding Team on Firm Outcomes*

	Venture Capital			Initial Public Offering		
	(1)	(2)	(3)	(4)	(5)	(6)
Firm Size	1.82 (.60)	1.67 (.55)	1.88† (.65)	1.06 (.09)	1.03 (.09)	1.02 (.08)
Medical-related industry	1.46 (.32)	1.39 (.31)	1.25 (.30)	5.86** (1.72)	5.58** (1.54)	5.69** (1.71)
Industry IPOs				1.11** (.03)	1.08** (.03)	1.09** (.03)
Venture Capital Deals	.99 (.05)	1.00 (.05)	1.00 (.05)	1.02 (.02)	1.04† (.02)	1.05* (.02)
Innovation Strategy	1.35 (.23)	1.36† (.23)	1.29 (.21)	.84 (.16)	1.11 (.21)	1.09 (.21)
Cumulative VC				1.07* (.04)	1.06 (.04)	1.05 (.04)
Avg. person-positions	1.12 (.08)	1.20* (.09)	1.20 (.09)	2.14** (.28)	1.85** (.26)	1.79** (.26)
Founding Team (FT) Size	.99 (.05)	.95 (.06)	.98 (.06)	.97 (.06)	1.20* (.10)	1.20* (.11)
FT Prior Management Exp.	1.18 (.15)		1.06 (.14)	1.05 (.16)		.94 (.15)
FT with Prior Founding Exp.	.85 (.11)		1.06 (.14)	1.02 (.18)		1.20 (.22)
FT with Prior Finance Exp.	.86 (.32)		.78 (.31)	1.40 (.58)		1.03 (.44)
FT Functional Assignment Div.	.91 (.19)		.47** (.14)	1.68* (.39)		1.60* (.37)
FT Functional Background Div.	1.41* (.27)		1.29 (.26)	.73 (.19)		.53* (.15)
Proportion of founders on TMT		1.17 (.13)	1.15 (.12)		.40* (.16)	.45* (.18)
Cumulative TMT Entrances	1.18** (.07)	1.04 (.09)	1.05 (.09)	1.68** (.09)	1.26* (.12)	1.22* (.11)
Cumulative TMT Exits	.91 (.12)	1.06 (.17)	1.12 (.16)	.61** (.04)	.79** (.07)	.79** (.07)
TMT Prior Management Exp.		1.17† (.13)	1.13 (.13)		1.17* (.11)	1.18* (.11)
TMT Prior Founding Exp.		.74* (.10)	.68** (.11)		.94 (.13)	.94 (.13)
TMT Prior Finance Exp.		1.11 (.23)	1.21 (.29)		1.71** (.26)	1.91** (.38)
TMT Functional Assignment Div.		1.74** (.37)	2.99** (.97)		2.59* (1.17)	2.29* (1.03)
TMT Functional Background Div.		1.41† (.32)	1.11 (.27)		.73 (.26)	.96 (.35)
LR Chi-Square (df)	37.28 (12)	62.02 (13)	74.98 (18)	271.29 (13)	340.59 (15)	340.70 (20)

** p<.01; * p<.05; † p<.10; one-tailed test for team variables; hazard ratio and standard errors reported

* 157 firms; 117 events and 626 observations for VC analysis; 86 events and 1150 obs. for IPO analysis

Table 3: Descriptive Statistics for Founding Teams with Different Categories of Assignment and Background Diversity

	(1) Simple Structure (Low Assignment Diversity) Inexperienced Team (Low Background Diversity)	(2) Simple Structure (Low Assignment Diversity) Experienced Team (High Background Diversity)	(3) Complete Structure (High Assignment Diversity) Inexperienced Team (Low Background Diversity)	(4) Complete Structure (High Assignment Diversity) Experienced Team (High Background Diversity)	(4) versus (1)	(4) versus (2)	(4) versus (3)
Number of Firms	60	13	35	49			
Mean Fndg. Team size	2.25	2.69	2.63	3.61	21.89**	3.80*	8.64**
Cumulative Entrances	4.75	4.77	5.34	6.61	8.76**	3.27†	3.08†
Cumulative Exits	1.45	1.69	1.37	1.94	n.s.	n.s.	n.s.
Mean TMT Size	3.8	3.77	4.34	5.57	12.34**	4.86*	4.49*
Firm age at end of obs.	7.93	7.43	7.63	6.58	4.35*	n.s.	n.s.
Proportion achieve IPO	.52	.31	.51	.67	2.72†	5.64**	n.s.
Proportion VC-backed	.70	.69	.63	.90	5.77**	n.s.	8.09**
Prop. Fndr. on TMT	.55	.56	.55	.55	n.s.	n.s.	n.s.
TMT Div. - Assignment	.91	.98	1.06	1.10	4.53*	n.s.	n.s.
TMT Div. - Background	.75	.99	.77	1.03	6.66**	n.s.	4.19*

**p<.01; *p<.05; †p<.10; two-tailed tests for F-statistic

Appendix: Table A Descriptive Statistics (N=157)

Variable	Mean	SD	Min	Max
1. Firm size (number of employees divided by 100)	.48	1.00	0.01	17.5
2. Medical industry	0.11	0.31	0	1
3. Innovation strategy	0.43	0.50	0	1
4. Total VC deals (divided by 100)	9.23	5.52	0.43	33.67
5. Total IPOs by industry	3.07	3.16	0	18
6. Cumulative rounds of venture capital	1.88	2.34	0	11
7. Average number of prior person positions	2.03	0.94	0	6
8. Cumulative entrances to TMT	3.46	2.65	0	18
9. Cumulative exits to TMT	0.66	1.52	0	15
10. Firm age (years)	5.12	3.59	1	25
11. Initial public offering (IPO)	.07	.26	0	1
12. Founding team size	2.75	1.64	1	10
13. Founders with functional background diversity	0.33	0.45	0	1.39
14. Founders with functional assignment diversity	0.43	0.46	0	1.39
15. Founders with prior executive experience	0.44	0.69	0	3
16. Founders with prior start-up experience	0.38	0.64	0	3
17. Founders with prior finance experience	0.09	0.28	0	1
18. TMT with functional background diversity	0.56	0.56	0	1.79
19. TMT with functional assignment diversity	0.82	0.53	0	1.79
20. TMT with prior executive experience	1.14	1.30	0	8
21. TMT with prior start-up experience	0.40	0.67	0	4
22. TMT with prior finance experience	0.24	0.47	0	2
23. Proportion of founders on TMT	0.75	0.31	0	1

Appendix: Table B Correlation Matrix*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Firm size	1.00																		
2. Medical industry	-0.06	1.00																	
3. Innovation strategy	-0.09	0.22	1.00																
4. Total VC deals	0.20	-0.04	-0.04	1.00															
5. Total IPO by industry	0.06	0.01	0.03	0.10	1.00														
6. Rounds of venture capital	0.20	0.01	0.16	0.14	0.11	1.00													
7. Average # of prior person pos.	0.02	0.04	0.12	-0.05	0.04	0.04	1.00												
8. Cumulative entrances to TMT	0.27	-0.14	0.20	0.05	0.13	0.53	-0.11	1.00											
9. Cumulative exits to TMT	0.23	-0.09	0.12	0.28	0.15	0.35	-0.12	0.69	1.00										
10. Firm age	0.29	-0.12	-0.15	0.54	0.14	0.27	-0.17	0.29	0.40	1.00									
11. IPO	0.12	0.09	0.07	0.04	0.23	0.23	0.10	0.36	0.12	0.09	1.00								
12. Founding team size	-0.00	0.08	0.06	-0.01	0.01	0.10	-0.24	0.26	0.17	-0.06	0.04	1.00							
13. FT background diversity	0.06	-0.11	0.04	0.03	0.05	0.11	0.00	0.24	0.15	-0.07	0.02	0.36	1.00						
14. FT assignment div	0.08	-0.18	-0.09	-0.04	-0.02	-0.01	-0.15	0.25	0.10	-0.05	0.04	0.29	0.40	1.00					
15. FT prior exec. exp.	0.06	-0.11	-0.02	-0.02	-0.01	0.09	0.11	0.20	0.09	-0.08	0.05	0.02	0.34	0.25	1.00				
16. FT prior start-up exp.	-0.03	-0.07	0.06	-0.05	0.02	-0.05	0.19	0.09	0.05	-0.07	0.04	0.02	0.28	0.00	0.22	1.00			
17. FT prior finance exp.	0.03	-0.03	0.04	0.01	-0.01	-0.03	-0.01	0.14	0.14	-0.06	-0.00	0.21	0.45	0.19	0.08	0.24	1.00		
18. TMT background div	0.20	0.01	0.18	-0.11	0.06	0.48	0.09	0.63	0.18	0.02	0.32	0.20	0.39	0.18	0.26	0.17	0.15	1.00	
19. TMT assignment div	0.18	-0.05	0.10	-0.16	0.05	0.38	-0.07	0.57	0.10	0.08	0.27	0.15	0.25	0.43	0.17	0.00	0.11	0.67	1.00
20. TMT prior exec. exp.	0.19	-0.10	0.15	-0.08	0.10	0.42	0.16	0.66	0.24	0.05	0.44	0.02	0.19	0.12	0.47	0.15	0.06	0.71	0.56
21. TMT prior start-up exp.	0.02	0.02	0.18	-0.07	-0.02	0.07	0.24	0.25	0.06	-0.08	0.09	0.03	0.15	0.00	0.13	0.56	0.06	0.30	0.18
22. TMT prior fin. exp.	0.10	0.00	0.08	-0.09	0.08	0.27	0.03	0.41	0.10	0.03	0.36	0.14	0.23	0.18	0.09	0.06	0.24	0.56	0.45
23. Proportion founders on TMT	-0.30	0.14	-0.12	-0.05	-0.10	-0.36	0.02	-0.60	-0.31	-0.31	-0.28	0.32	-0.03	-0.01	-0.13	-0.03	0.02	-0.50	-0.51

* Correlations greater than .06 are significant; based on 1156 observations

Appendix: Table B Correlation Matrix*
 (continued)

Variable	20	21	22	23
20. TMT with prior executive experience	1.00			
21. TMT with prior start-up experience	0.36	1.00		
22. TMT with prior finance experience	0.49	0.09	1.00	
23. Proportion of founders on TMT	-0.56	-0.16	-0.31	1.00

* Correlations greater than .06 are significant; based on 1156 observations