

## Top Management Team Characteristics and Time-To-IPO

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### Abstract

*The focus of this paper is the relationships among a firm's top management team (TMT) characteristics and its time-to-IPO. Specifically, we explore the influences of TMT demographic characteristics and heterogeneity on the time taken by a firm from its founding to its initial public offering (time-to-IPO). Using data from firms that completed an IPO in the pre-packaged software industry, and a hierarchical regression model, we find that increases in TMT demographic characteristics of age, tenure, and size, as well as the TMT's tenure heterogeneity increase time-to-IPO. Results presented in this paper contribute to our understanding of the TMT's role in accomplishing a major milestone of the firm, its IPO.*

Keywords: Top management team characteristics, Strategy, Time-to-IPO

### I. Introduction

The Initial Public Offering (IPO) is a major event in a firm's lifecycle. It is the beginning of the firm's life as a publicly traded entity, along with the many associated advantages and challenges of participating in a public market. Even though the number of IPOs has declined significantly since the bursting of the dot-com bubble in 2000 – especially after the recession in 2008 – when compared to the hot markets of the 1990s, an IPO remains a sought-after milestone for many executives, employees and investors.

There is extensive research addressing various aspects of IPOs (for example, see reviews by Ragupathy, 2011; Certo, Holcomb and Holmes, 2009). For instance, studies have considered time-to-IPO as an outcome or performance measure in relationship to firm characteristics including industry (Giot and Schwienbacher, 2007; Shepherd and Zakarakis, 2001), geographic location (Shepherd and Zakarakis, 2001), location near rivals (Stuart and Sorenson, 2003), relationship with prominent partners and investors (Stuart, Hoang, & Hybels, 1999), angel and venture capital investment (Johnson and

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Sohl, 2012) the reputation of the venture capital firms investing in the firm and that of the firm's alliance partners (Chang, 2004), and the breadth of experience of the founding team (Beckman and Burton, 2008). Other studies have explored time-to-IPO – typically termed “firm age” or “firm age at IPO” – as a variable with the potential to influence either firm outcomes at IPO, such as underpricing (e.g., Ritter, 1998), or the firm's post-IPO market performance or survival (e.g., Fischer and Pollock, 2004; Higgins and Gulati, 2006; Jain and Kini, 2008).

An important aspect of the IPO process is the decision of when to take a firm public, one that is important for the firm's legitimacy, immediate resource needs and, potentially, future performance. In this context, there are equally good reasons for a firm's top management team (TMT) to complete an IPO at the first available opportunity or to wait later in the firm's life. One reason is that the firm's TMT may be motivated to “go public” sooner to improve the firm's reputation, create a currency for acquisitions, or mobilize capital for supporting growth (Braun and Fawcett, 2006), or to signal that it is primed for growth (Chang, 2004). An early IPO also provides an opportunity for founders to “cash out” (Pagano, Panetta and Zingales., 1998) and for venture capitalists and other investors to increase the “real” rate of return on their investment (Shepherd and Zacharakis, 2001, p. 59).

On the other hand, the change from private to public ownership is a significant transformational event and may expose the firm to the liabilities of newness as a publicly traded firm (Fischer and Pollock, 2004). Even though firms going public may not be “new” (i.e., recently founded), they tend to face significant new challenges faced by public firms such as increased scrutiny and the pressures that arise from reporting requirements including Sarbanes Oxley regulations. Not surprisingly, research has shown that a significant number of firms under-perform the market or fail within three to five years after their IPOs (Fischer and Pollock, 2004; Jain and Kini, 2000; Ritter, 1984). Indeed, in answering the question “Why wait?” Jovanovic and Rousseau (2001) suggested that a new firm's TMT makes a trade-off between going public quickly to secure associated advantages, and waiting to learn more about their technologies, products and markets even though there may be an opportunity cost associated with waiting (Clark, 2002).

Accordingly, in this study, we consider time-to-IPO as a strategic decision made by the firm's TMT. Building upon the considerable literature on TMTs, we examine how TMT characteristics influence a firm's time-to-IPO. Specifically, we build on literature that views the TMT as a valuable source of human and social capital based on the team members' knowledge and experience (e.g. Le, Kroll and Walters, 2013; 2012; Carpenter, Gelektanycz and Sanders, 2004; Hambrick and Mason, 1984; Hitt, Bierman, Shimzu and Kochhar, 2001). In doing so, our study complements the analyses offered by Jovanovich and Rosseau (2001) and Clark (2002) on the question of “Why wait?” by answering the related question of “What type of TMT (in terms of composition and characteristics) will choose to wait vs. choose to go public early?” An answer to this question may also be of practical significance to founders and venture capitalists in choosing and steering a firm's TMT to make appropriate and timely decisions.

The remainder of our paper is organized as follows. We begin with a review of literature on TMTs and develop hypotheses relating TMT characteristics and time-to-IPO. Next, we describe our data and methods. We then present the results of our analysis. Finally, we discuss our results and conclude with suggestions for future research.

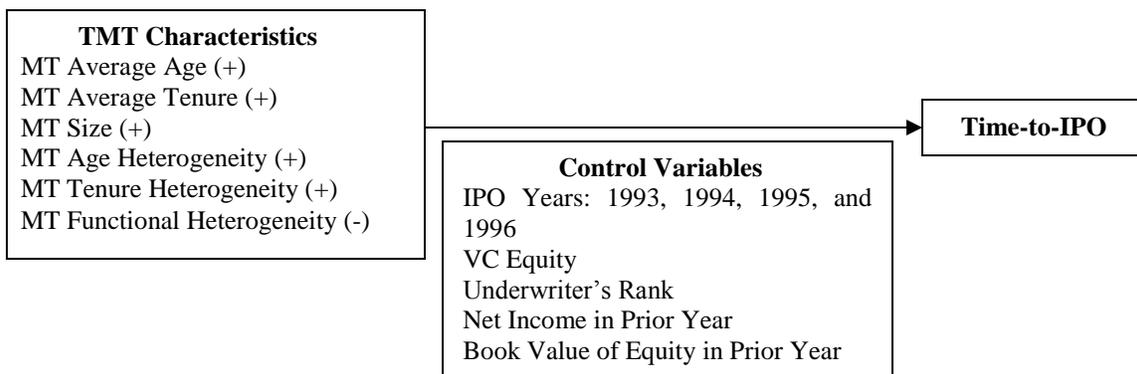
## II. Theoretical Background and Hypotheses

The examination of the link between TMT demographic characteristics, as proxies for the underlying traits, capabilities, and processes of the team, and firm decisions and outcomes enjoys a long tradition in the strategy literature (Li, 2008; for reviews, see Carpenter, *et al.*, 2004; Hambrick, 2007). For instance, Finkelstein, Hambrick, and Canella (2009) addressed the strategic decision-making of TMTs. One such strategic decision, the subject of our paper, is when or how soon to take a firm public. In addition, TMT knowledge and experience are key sources of human and social capital, affording the firm both direct and indirect access to key resources and potentially influencing performance (Le, *et al.*, 2013; Le, *et al.*, 2012, Carpenter, *et al.*, 2004; Fischer and Pollock, 2004; Hambrick and Mason, 1984; Hitt, *et al.*, 2001; Pfeffer, 1994). Indeed, according to Eisenhardt (2013), TMTs are a key aspect of entrepreneurial firms' success.

Hambrick and Mason (1984) argued that TMT demographic characteristics could be used as proxies for the underlying traits, capabilities, and team processes. Also, as Hambrick (2007) notes, there is considerable evidence that TMT characteristics influence a variety of firm behaviors and outcomes. For example, TMT demographic heterogeneity has been shown to significantly influence the propensity for change (e.g., Grimm and Smith, 1991; Wiersema and Bantel, 1992) and firm outcomes such as firm performance (Glick, Miller and Huber, 1993; Hambrick, Cho and Chen, 1996; Kilduff, Anglemar and Mehra, 2000; Simons, Pelled and Smith, 1999). In the entrepreneurship literature as well, TMT demographic characteristics are routinely identified as proxies for variables that potentially influence firm strategy and performance (e.g., Certo, *et al.*, 2009; Cooper and Bruno, 1977; Daily, Certo, Dalton and Roengpitya, 2003; Eisenhardt and Schoonhoven, 1990; Gilbert, McDougall and Audretsch, 2006; Weinzimmer, 1997; Zimmerman, 2008).

In this study, we too use TMT demographic characteristics as proxies for the human and social capital available to the firm which, in turn, influence the strategic decision to take a firm public. Figure 1 offers a preview of our theoretical model. In the remainder of this section, we use pertinent literature to develop our hypotheses on the relationships among the firm's TMT demographic characteristics and time-to-IPO.

**Figure 1: Theoretical Model: TMT Characteristics and Time-to-IPO**



## II.1 TMT Age and Time-to-IPO

One frequently studied TMT demographic characteristic is age. Hambrick and Mason (1984) argued that age is related to status quo and the willingness to accept change. According to Vroom and Pahl (1971), older managers are more risk-averse than younger managers, and Pegels and Baik (2000) noted that younger managers seek strategic change. Yang, Zimmerman, and Jiang (2011) found that the age of one specific member of the TMT, the CEO, is positively related to a firm's time-to-IPO. They argued that, because going public is a complex strategic change for a firm, younger CEOs are more likely to take their company public earlier in the firm's life than older CEOs.

TMT age has been positively associated with higher levels of experience (Sandberg and Hofer, 1987; Sapienza and Grimm, 1997). Experience, a critical attribute associated with human capital, can potentially increase the capacity of the TMT to combine existing knowledge and resources productively (Hitt, *et al.*, 2001). Experience can also increase confidence and self-efficacy, i.e., the belief that one can successfully accomplish a task (Bandura, 1997).

The age of TMT members also has been used in TMT research as a proxy for networks and affiliations (e.g., Richard and Shelor, 2002) and, more generally, social capital. Social capital enables TMTs to have access to sources of valuable information and knowledge outside the firm (Fischer and Pollock, 2004). From this perspective, it can be argued that older TMTs are likely to have a more network ties to external individuals and organizations when compared to younger TMTs. Such network ties can be a resource to the firm, especially a new firm, which positively influences firm performance (Stuart, *et al.*, 1999).

These positive attributes associated with age suggest that, all else being equal, older TMTs may be able to weigh the pros and cons of completing an IPO earlier versus later in the firm's existence, more inclined to avoid risky decisions than their younger counterparts (Miller and Shamsie, 2001; Vroom and Pahl, 1971), and, in turn, avoid the risk of a failed IPO (Ling, Simsek, Lubatkin and Viega, 2008). Furthermore, older TMTs are likely to take time to develop the organizational capabilities to position the firm to perform well, and to avoid acting hastily to complete an IPO too early in the life of the firm. Accordingly, we hypothesize:

*H1: TMT age is positively related to a firm's time-to-IPO.*

## II.2 TMT Tenure and Time-to-IPO

TMT tenure, the length of time during which members have been part of the firm's TMT, is an important characteristic (Epstein, 2013; Pfeffer, 1981) that offers insight into the behavior of TMTs on issues pertaining to strategic change (Boeker, 1989; Wiersema and Bantel, 1992). Long-tenured TMT members form cohesive networks with other members and develop a unique pattern of interactions (Fischer and Pollock, 2004). With time, the TMT members may accumulate deep firm-specific knowledge, and discern the value of their respective competences. Furthermore, team members with relatively long tenure may perceive a high level of personal "investment" in the firm. All of these considerations may enable them to develop a "collective mindset" and a common perspective of the firm, thereby resulting in TMT cohesion, consistent decisions and consistent behaviors (Hambrick and Mason, 1984).

While there are benefits to having a long-tenured TMT, there are some disadvantages. According to Finkelstein and Hambrick, "...firms led by long-tenured

executives will tend to have (1) persistent, unchanging strategies, (2) strategies that conform closely to industry averages, and (3) performance that conforms to industry averages” (1990, p. 486). Therefore, long-tenured TMTs may be associated with risk averseness and a strong commitment to a course of action, which may compromise the ability of the firm to change course and adapt as necessary. In the case of an IPO, a potentially risky strategic change, a long-tenured team may be prone to delaying the firm’s IPO. Based on the above arguments, we hypothesize as follows:

**H2:** *TMT tenure is positively related to a firm’s time-to-IPO.*

### **II.3 TMT Size and Time-to-IPO**

TMT size is another frequently studied TMT characteristic. A large TMT means that more resources are available to the firm (Hambrick and D’Aveni, 1992), and more information can be processed and brought to bear on problems, thereby resulting in potentially better decisions (Cummings, Huber and Arendt, 1974; Haleblan and Finkelstein, 1993). Several entrepreneurship studies have found that a larger TMT contributed to more effective problem solving and firm performance compared to smaller TMTs (Cooper and Bruno, 1977; Eisenhardt and Schoonhoven, 1990; Song, Podoyntsyna, van der Bij and Halman, 2008).

Large TMTs, however, tend to experience higher transactions costs, more coordination problems, and more disagreements than small TMTs (Bruderl, Preisenderfer and Ziegler, 1992; Gilbert, *et al.*, 2006; Koeller and Lechler, 2006), and may take longer to make decisions (Thomas and Fink, 1963). In the context of a firm considering an IPO, TMT size may affect the decision to go public. The potential diversity of opinions within large TMTs may result in a longer time taken to agree on a decision to undertake an IPO and the firm going public later in its life. In other words, a larger TMT may make better decisions than a smaller TMT, but take longer to make it. Accordingly, we hypothesize:

**H3:** *TMT size is positively related to a firm’s time-to-IPO.*

### **II.4 TMT Age Heterogeneity and Time-to-IPO**

There is extensive literature examining TMT heterogeneity and its implications for decision making and performance (Zimmerman, 2008). One frequently-studied form of heterogeneity is age heterogeneity. TMT age heterogeneity results from differences in the respective ages of team members. If age is a proxy for perspectives, belief systems, networks and affiliations (Richard and Shelor, 2002), heterogeneity in age implies access to a broader set of perspectives and information (Williams and O’Reilly, 1998) and potentially more creativity in addressing strategic issues (Richard and Shelor, 2002; Wiersema and Bantel, 1992). Indeed, greater TMT age heterogeneity has been linked to better firm outcomes (Kilduff, *et al.*, 2000; Richard and Shelor, 2002; Wiersema and Bantel, 1992).

While there are many positive aspects of age heterogeneity, there are negative consequences too. For instance, age heterogeneity may result in conflict, and conflict may lead to poor decision processes (Amason, 1996; Jehn, 1995; Jehn, Northcraft and Neale, 1999), slower decisions, (Miller, Burke and Glick, 1998). In the context of an IPO, such conflicts may delay the decision to take the company public. Accordingly, we hypothesize:

**H4:** *TMT age heterogeneity is positively related to a firm’s time-to-IPO.*

## II.5 TMT Tenure Heterogeneity and Time-to-IPO

A second form of TMT heterogeneity is that of heterogeneity in team members' tenure. Heterogeneity in TMT tenure implies that TMT members were hired at different times. In a firm preparing for an IPO, some TMT members may be founders of the firm while others are recruited to bring in skills and experience critical to strategic flexibility and emergent demands such as those related to an IPO (Bantel and Jackson, 1989; Certo, 2003; Wiersema and Bantel, 1992; Zimmerman, 2008). Tenure heterogeneity within the TMT has been found to benefit firm performance and strategic change (Hambrick, *et al.*, 1996; Murray, 1989; Wiersema and Bantel, 1992).

Negative aspects of TMT tenure heterogeneity include less social integration, higher turnover, and poorer communication than teams with less heterogeneity (Bantel and Jackson, 1989; Williams and O'Reilly, 1998). Bantel (1993) argued that teams with higher tenure *homogeneity* form a cohort that influences consensus and is positively related to reaching a consensus in a strategic decision. In addition, as in the case of age heterogeneity, tenure heterogeneity may lead to conflicting perspectives and slower decisions which in the context of an IPO may delay the IPO event. Accordingly, we hypothesize:

*H5: TMT tenure heterogeneity is positively related to a firm's time-to-IPO.*

## II.6 TMT Functional Heterogeneity and Time-to-IPO

A third frequently studied form of TMT heterogeneity is that of functional heterogeneity. Although top managers are thought to have a generalist's perspective (Hambrick and Mason, 1984), many top managers have a functional specialization (Gupta, 1984). Hambrick and Mason (1984) argued that a top manager's functional experience provides a functional orientation that influences his/her decisions. In new firms, the founding team members were found to have emphasized the functional areas in which they were experienced (Boeker, 1989). Researchers have argued that greater heterogeneity in the functional backgrounds of team members increases variety in the environmental scanning alternatives and effective decision making, influences competitive action and response, leads to creativity and innovation, influences strategic decision making, and improves firm performance (Bantel and Jackson, 1989; Glick, *et al.*, 1993; Hambrick and Mason, 1984; Hambrick, *et al.*, 1996; Lant, Millikan and Batra, 1992; Murray, 1989; Roure and Keeley, 1990; Weinzimmer, 1997; Williams and O'Reilly, 1998; Zimmerman, 2008). In addition, Buyl, Boone, and Matthyssens (2012-13) posited that knowledge diversity enables a TMT to offer a balanced attention on exploratory and exploitive issues.

Eisenhardt and Schoonhoven (1990) found that a TMT with more functional heterogeneity can better address strategic opportunities and better enable the firm to grow, and Eisenhardt (2013) argued that large, diverse teams which have worked together in the past are positively related to firm performance. A team experienced across functional areas (e.g., finance, human resources, marketing, operations, technology) enables the firm to respond to challenges and opportunities more effectively than a team focused in one functional area (e.g., technology). Heterogeneity in the top managers' functional background provides a signal to investors about the quality of an IPO firm, and firms with a management team with greater functional background heterogeneity were found to raise more money at IPO than those with a less heterogeneous team (Zimmerman, 2008).

We anticipate that functional heterogeneity will provide the TMT with breadth of perspective, effective decision making, and better address strategic opportunities such as taking a firm public and will enable the firm to go public earlier in the life of the firm. Accordingly, we hypothesize:

**H6:** *TMT functional heterogeneity is negatively related to a firm's time-to-IPO.*

### III. Data and Variables

To test our hypotheses, we analyzed a sample of firms in the pre-packaged software industry (SIC code 7372) that completed their IPO during the period of January 1, 1993 through December 31, 1997. Researching a single industry has the methodological advantage of isolating industry effects from confounding relationships between the independent and dependent variables (Dess, Ireland and Hitt, 1990). The pre-packaged software industry was selected because a large number of firms in this industry completed their IPO during a period of significant IPO activity preceding the dot-com bubble. According to the IPO Reporter and IPO Data, 243 US based software firms completed their IPOs during the period between January 1, 1993 and December 31, 1997.

The primary data source for the study was the prospectus issued at the time of the firm's IPO. We were able to obtain IPO prospectuses for 172 of the 243 firms. Nevertheless, our sample was representative of the population of pre-packaged software firms that completed their IPO between 1993 and 1997. The average IPO value of the population was \$30.6 million and the average IPO value of firms in our sample was \$32.7 million.

For each of the firms, we collected the following data:

#### III.1 Dependent Variable

**Time-to-IPO.** Time-to-IPO was measured as the time (in years) elapsed from a firm's date of incorporation to the date of the IPO.

#### III.2 Independent Variables

For the purposes of this study, the TMT comprised the individuals listed in the prospectus as the management team (Shrader, Oviatt and McDougall, 2000). This includes all of the top officers and the key decision makers of the company such as the Chief Executive Officer, Chief Financial Officer, Chief Operating Officer, as well as all the managers listed in the management section of the IPO prospectus (Murray, 1989). Data on TMT demographic characteristics and heterogeneity were collected from the biographies of the members in the IPO prospectus and S1 and SB-2 filings with the SEC.

**TMT average age** was calculated as the sum of the individual TMT members' age divided by the number of TMT members.

**TMT average tenure** was measured using the average time in years between an individual TMT member's hire date and the IPO date. A lower number indicates that the team has been put together close to the date of the IPO, and a higher number indicates that the team was put in place earlier in the life cycle of the firm.

**TMT size** was calculated as the number of members in the firm's TMT.

**TMT age heterogeneity.** Age heterogeneity was computed as the coefficient of variation of the team members' age (Murray, 1989; Richard and Shelor, 2002). The coefficient of variation is calculated by dividing the standard deviation by the mean. A

high score indicates age heterogeneity and a low score indicates lack of age heterogeneity. The coefficient of variation, being scale-invariant, has been used by researchers in preference to other measures such as standard deviation because of its superior psychometric properties (Allison, 1978; Kilduff et al., 2000).

**TMT tenure heterogeneity.** Tenure heterogeneity was calculated as the coefficient of variation of the top managers' tenure (Murray, 1989), where a high score indicates tenure heterogeneity and low score indicates lack of tenure heterogeneity. As in the case of age heterogeneity, we used the coefficient of variation to measure tenure heterogeneity instead of other measures such as standard deviation because of its superior psychometric properties.

**TMT functional heterogeneity.** Functional heterogeneity was calculated using Blau's (1977) heterogeneity index  $(1 - \sum i^2)$ , where  $i$  is the proportion of TMT members with a background in a given functional area, e.g., finance, human resources, general management, marketing, operations, R&D, information technology, and legal (see Boeker, 1989; Tihanyi, Ellestrand, Daily and Dalton, 2000; Zimmerman, 2008). A high score indicates a high level of heterogeneity in the functional backgrounds of team members, whereas a low score indicates a lack of functional heterogeneity.

### III.3 Control Variables

To control for the effects, if any, of the IPO market environment and other aspects of the firm itself on its performance, we treated the following as control variables:

**IPO year.** The period covered by the study (1993-1997) witnessed varying capital market conditions, with 1993 and 1996 being regarded as "hot markets" for IPOs (Zimmerman, 2008). To control for the effects of these varying conditions on IPO activity, we created the following dummy variables: IPOyear1993, IPOyear1994, IPOyear1995 and IPOyear1996. If a firm completed its IPO in 1993, the IPOyear1993 dummy will have a value 1 and all other IPOyear dummy variables will have a value of 0. If a firm completed its IPO in 1994, the IPOyear1994 dummy will have a value 1 and all other IPOyear dummy variables will have a value of 0. IPOyear1995 and IPOyear1996 were coded in the same manner. If a firm completed its IPO in 1997, all of the IPOyear dummy variables were calculated as 0.

**VC equity.** Past research has demonstrated the critical role played by venture capitalists' (VC) support in ensuring that a firm raises sufficient capital through an IPO (e.g., Brav and Gompers, 1997; Chang, 2004; Gompers, 1995; Gulati and Higgins, 2003). We measured VC involvement as the percentage of equity held by VCs, as declared in the firm's IPO prospectus.

**Underwriter reputation.** Past research has shown that the reputation of the lead underwriter influences the capital raised by the firm through an IPO (Beatty and Ritter, 1986; Gulati and Higgins, 2003; Lange, Bygrave, Nishimoto, Roedel and Stock, 2001). We measured underwriter reputation using the index created by Carter, Dark and Singh (1998). A value of 0 denotes the lowest reputation, whereas a value of 9 denotes the highest reputation.

In addition, we used two variables to control for the prior performance of firms:

**Net income during prior year** was measured as the net income declared by the firm for the full financial year immediately preceding the IPO date.

**Book value of equity during prior year** was measured as the book value of equity declared by the firm for the full financial year immediately preceding the IPO date. The book value of equity can be either a positive or a negative value, depending on whether

the firm has accumulated retained earnings or losses during its lifespan prior to the IPO. Accordingly, it can serve as a cumulative or summary record of firm performance.

#### IV. Results

We present the descriptive statistics and bivariate correlations in Table 1. To test the relationships between TMT variables and time-to-IPO, we estimated hierarchical regression models with Time-to-IPO as the dependent variable, and the TMT variables and the control variables as the independent variables. In Model 1, we regressed only the control variables against Time-to-IPO. In Model 2, we included the three TMT demographic variables (TMT Average Age, TMT Average Tenure and TMT size) along with the control variables. In Model 3, we included the three TMT heterogeneity variables (TMT Age Heterogeneity, TMT Tenure Heterogeneity and TMT Functional Heterogeneity) with the rest of the variables. We present the results of this analysis in Table 2.

*Table 1: Summary Statistics and Correlations for Key Variables*

Variables	Mean	Std. Dev.	1	2	3	4	5	6	7
1.TMT Average Age	43.25	4.41	1.00						
2.TMT Average Tenure	3.49	2.27	0.08	1.00					
3.TMT Size	6.54	2.34	-0.22**	-0.04	1.00				
4.TMT Age Heterogeneity	0.15	0.05	-0.07	0.05	-0.01	1.00			
5.TMT Tenure Heterogeneity	0.74	0.31	-0.12	-0.21**	0.25**	0.00	1.00		
6.TMT Functional Heterogeneity	0.69	0.14	-0.21**	-0.14	0.44**	0.02	0.32**	1.00	
7.Time-to-IPO	7.80	4.44	0.09	0.63**	0.18*	0.02	0.19*	0.09	1.00

N = 155

\*\* indicates significance at  $p < 0.01$  (two tailed)

\* indicates significance at  $p < 0.05$  (two-tailed)

**Table 2: Models of Relationships among TMT Characteristics and Time-to-IPO**

<b>Dependent variable: Time-to IPO</b>	<b>Model 1 Beta coeff.</b>	<b>Model 2 Beta coeff.</b>	<b>Model 3 Beta coeff.</b>
(Constant)			
IPO-year 1993	-0.01	0.04	0.04
IPO-year 1994	-0.06	-0.04	-0.06
IPO-year 1995	-0.06	0.04	0.00
IPO-year 1996	-0.14	-0.14	-0.13
VC Equity	-0.01	0.00	0.02
Underwriter's Rank	0.08	0.03	-0.01
Net income prior year	0.18*	0.11 <sup>†</sup>	0.10
Book value of equity prior year	0.05	0.04	0.03
TMT Average Age		0.11 <sup>†</sup>	0.12*
TMT Average Tenure		0.62**	0.69**
TMT Size		0.23**	0.15*
TMT Age Heterogeneity			0.00
TMT Tenure Heterogeneity			0.26**
TMT Functional Heterogeneity			0.07
Adjusted R-squared	0.02	0.46	0.52
Change in R-squared		0.43	0.07
F statistic	1.39	12.94**	13.11**
N	155	155	155

\*\* indicates significance at  $p < 0.01$

\* indicates significance at  $p < 0.05$

<sup>†</sup> indicates significance at  $p < 0.10$

Among the control variables, only Net Income during the prior year appears to influence Time-to-IPO significantly in Models 1 and 2; however, it is not a significant influence on Time-to-IPO in the full model (Model 3).

Results from Model 2 show that TMT average tenure and TMT size are highly significant (at  $p < 0.01$ ) predictors of Time-to-IPO, whereas TMT average age is somewhat less so. However, the coefficients of all three variables have positive signs, thereby offering support for our Hypotheses 1, 2 and 3 (i.e., TMT average age, TMT average tenure and TMT size respectively will be positively associated with Time-to-IPO).

Results from Model 3 indicate that among the TMT heterogeneity variables, only TMT tenure heterogeneity has a significant ( $p < 0.01$ ) and positive association on Time-to-IPO. This result offers support for our Hypothesis 5, that TMT tenure heterogeneity will be positively associated with Time-to-IPO. However, the coefficients of the variables

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TMT age heterogeneity and TMT functional heterogeneity are not significant. In other words, the regression results do not offer support for our Hypothesis 4 (i.e., TMT age heterogeneity will be positively associated with Time-to-IPO) and Hypothesis 6 (i.e., TMT functional heterogeneity will be negatively associated with Time-to-IPO).

## V. Discussion

The focus of this paper is the set of relationships among a firm's TMT characteristics and its time-to-IPO. We found that the firm's TMT's demographic characteristics and heterogeneity are related to its time-to-IPO. The results presented in this paper contribute to our understanding of the TMT's role in achieving a major milestone in a firm's life, viz., IPO, specifically, time-to-IPO, and its determinants. The fact that we obtained these results – that TMTs with specific characteristics choose to wait longer – in the pre-packaged software industry, an industry that is susceptible to network effects and first-mover advantages, is notable.

Some TMTs may need more time to prepare the firm to face the changes associated with transitioning from a privately held firm to a publicly held one, as well as in managing the attendant risks. The pre-IPO time period involves learning on the part of the TMT members about the intricacies of their firm's technologies, products and markets. Such learning has the potential to significantly enhance profitability after the firm becomes public, and thereby mitigate the opportunity cost of waiting to complete the IPO. This is part of the trade-off that Jovanovic and Rousseau (2001) refer to when they raised the question: "why wait" to complete IPO?

Our findings include that of a positive relationship between TMTs' age and time-to-IPO. An IPO is a risky strategy for the firm. Hambrick and Mason (1984), Vroom and Pahl (1971), among others, have argued that older TMTs tend to be more risk-averse than younger TMTs and tend to favor *status quo*. Along the same as the above, Yang, et al. (2011) found that relatively older CEOs are more likely to complete an IPO later in the firm's life rather than earlier. Our results reinforce these findings and indicate that teams composed of older members waited longer in the life of the firm to go public.

In part, this study is about TMTs that were in place at the firm's IPO. Beckman, Barton and O'Reilly (2007) tracked TMT membership changes, i.e., entrances and exits, which had occurred in "early teams" of 161 firms in multiple industries. Their findings showed that human capital, e.g., functional diversity, and social capital, e.g., background diversity in terms of the number of firms with which the top managers were previously associated, were positively related to the likelihood of their firms reaching major milestones, e.g., completing a successful IPO. Our finding that TMT team tenure was positively related to time-to-IPO adds depth to the findings of Beckman, *et al.* (2007). Long tenured teams can be thought of as potentially comprising members who were present at "creation" or very early in the life of the firm, have a "vision" for the firm, and have firm-specific knowledge of the firm. Longer tenured teams develop human and social capital they acquire over their team tenure; they may take the time necessary to learn what the firm needs to transition from a privately held firm to a publicly held one.

The environment within firms looking to achieve an IPO tends to be rather turbulent. The environment calls for learning on the part of the TMT – readying the firm to become a successful public firm, learning to deal with the uncertainties surrounding the IPO event, and adapting to the expectations of the new stakeholders. Halbelian and Finkelstein (1993) showed that, in turbulent environments, benefits associated with the ability of relatively large teams to deal with the challenges of the environment outweigh

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the costs and inefficiencies often associated with such teams. The results presented in this study offer yet another aspect of the TMT size effect: in the turbulent environment of firms contemplating IPO, the process-related friction associated with relatively large teams may stretch out the IPO calendar.

The time cycle over which TMTs have come together, namely in a short hiring cycle or rather long hiring cycle, as reflected in TMT's tenure heterogeneity, also seemed to matter. Each new addition to the TMT tends to add a member with a different frame of reference. Such additions to the TMT seemed to make a difference. An IPO is a strategic change and involves restructuring. Learning to initiate and successfully complete the change can be critical to the success of newly public firms. Findings presented in this paper with respect to TMT tenure heterogeneity lend further support to the findings of Wiersema and Bantel (1992) that TMT tenure heterogeneity was positively related to strategic change. The results presented in this paper extend Wiersema and Bantel (1992) to early stage firms and to IPO-related decisions.

The lack of significant relationships between age heterogeneity and time-to-IPO as well as between functional heterogeneity and time-to-IPO merit some explanation. The absence of a significant relationship between age heterogeneity and time-to-IPO may be due to the relative homogeneity in the age of the TMT members in the population of firms examined in our study. This may be indicative of the way the teams come to form, viz., members seek out other members from the same age cohort, in this industry. Along the same lines as the above, a relatively high level of functional homogeneity may be expected in TMTs that are about to go public. The firms need a requisite amount of functional bandwidth to cope with the diversity of challenges the firms will face around the IPO event. The firms consequently may look like each other with respect to the functional diversity of the members. Accordingly, we find no significant relationship between functional heterogeneity and Time-to-IPO. It is possible that the tendency to form a TMT within the same age cohort and for firms to assemble members with high functional homogeneity is particularly likely in the sample of firms (i.e., from the pre-packaged software industry) that we examined and may not be generalizable to other industries.

Our study has several other limitations as well. We focused our attention on TMT characteristics and the decision to take the firm public. However, the decision to take the firm public is often influenced by the strategic decisions of the venture capital firms and underwriters. For example, the VC firms have exit plans for their portfolio companies. Though we have attempted to indirectly account for these aspects by including controls pertaining to the equity held by VCs and underwriter rank, it would be useful to include measures that address these issues directly. Also, in studying TMT tenure heterogeneity it is important to note that many firms replace the founding and/or early stage CEO with a seasoned CEO just prior to the public offering in order to provide a sign of competence and experience to the equity market. Thus shorter tenure may be influenced by a strategic decision of the board to strengthen the company. Finally, we note that our study was based on a sample of firms in one industry, viz., the pre-packaged software industry. As the pre-IPO learning process and, consequently, the time-to-IPO tends to vary significantly from industry to industry, we suggest caution in extending the conclusions of our study to other industries.

## VI. Conclusion

In this study, using a sample of technology firms in the pre-packaged software industry that completed their IPO during the mid-1990s, we explored how a firm's TMT demographic characteristics and heterogeneity influenced its time-to-IPO. Our analysis revealed the key influences of TMT age, tenure, size, and tenure heterogeneity on the venture's Time-to-IPO.

Though our results increase our understanding of antecedents of the time it takes for a firm to go public, they still do not open the "black box" of the decision to go public or the consequences of this decision. Accordingly, we identify four distinct and related issues for future research. These are implicitly referred to in the literature on IPOs and alluded to in this paper.

The first one focuses on a firm's readiness for an IPO. What are the attributes of a firm that is IPO-ready? What attributes are more important for readiness, and what attributes are less important? What is the sequence in which successful entrepreneurs and top executives proceed to build IPO-ready firms? A better understanding of the pre-IPO process would be valuable.

A second issue pertains to the question of whether a firm's TMT should take the firm public sooner rather than later in its life to improve the firm's performance. Does the readiness of the firm matter for its IPO or long-term performance, or is it better to take advantage of windows of opportunity in the financial markets to go public and then use the newly acquired capital and resources to "muddle" through to success? In other words, what role does time-to-IPO play in moderating (or mediating) the relationships between TMT characteristics and time-to-IPO? Indeed, as Daily *et al.*, (2003) noted, there may be unidentified moderating influences on the performance of new firms.

A third area for potential future research relates to a question that is raised by Chemmanur and Fulghieri (1999), viz., when is it optimal for a firm to go public instead of financing its growth through a private placement of equity? Chemmanur and Fulghieri (1999, p. 252) demonstrate through their model that:

"...(i)n equilibrium, firms go public only when a sufficient amount of information about them has accumulated in the public domain (so that the costs to outsiders of assessing true firm value becomes sufficiently small); younger firms, which entail a greater information acquisition cost, choose the venture capitalist in equilibrium."

A fourth area is that of some newly minted public firms taking a U-turn and going private. From time to time in business history, "going private" waves have occurred – the most recent wave being in 2006-2007. Leveraged buyouts, management buyouts, and corporate restructurings form a separate stream of research dealing with relatively old firms and firms in special situations. Yet, there may be some parallels between "going public" and "going private," decisions that are worth exploring.

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