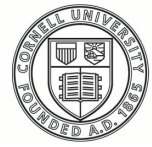
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Walking the Talk: The Impact of High Commitment Values and Practices on Technology Start-ups

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Walking the Talk: The Impact of High Commitment Values and Practices on Technology Start-ups

Abstract
We examine the impact of high commitment work systems (HCWS) on high-technology start-ups. We differentiate two components of a HCWS: the human resource practices and the espoused values of the firm's leadership and demonstrate that both are associated with an increased likelihood of IPO and a decreased likelihood of firm failure. Importantly, there are interactions between practices and values such that the benefit of one tends to amplify the other. Implications of these interactions for future research on high commitment work systems are discussed.

Keywords
high commitment work systems, HCWS, high technology, human resource management

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Walking the Talk:
The Impact of High Commitment Values and Practices on Technology Start-ups [*]

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ABSTRACT

We examine the impact of high commitment work systems (HCWS) on high-technology start-ups. We differentiate two components of a HCWS: the human resource practices and the espoused values of the firm's leadership and demonstrate that both are associated with an increased likelihood of IPO and a decreased likelihood of firm failure. Importantly, there are interactions between practices and values such that the benefit of one tends to amplify the other. Implications of these interactions for future research on high commitment work systems are discussed.

INTRODUCTION

Among organizational scholars, there has been a long-standing interest in understanding why some firms outperform others. Over the past decade a large number of empirical studies have demonstrated that human resource management systems can explain part of the observed variation in firm performance (Becker & Gerhart 1996). In particular, high-commitment work-systems – which are characterized by high-levels of employee involvement, firm-level investments in employees through training and promotions as well as sharing of firm profits, and concern with finding employees who will fit within the organization – outperform firms with other more traditional work systems. The empirical evidence supporting this claim comes from a variety of settings -- everything from manufacturing and service firms to the largest publicly traded firms in the U.S. economy – and demonstrates that, under some conditions, high-commitment work systems (HCWS) are associated with stronger firm financial performance, higher productivity, and lower turnover (Arthur 1992; Huselid 1995; MacDuffie 1995; Ichniowski, Shaw & Prennushi 1997).

However, despite a growing number of studies exploring the linkage between high-commitment work systems and firm performance and an emerging consensus that the association is positive, the evidence remains mixed. Some studies fail to document performance improvements (e.g., Capelli & Neumark, 2001; Godard, 2001). Explanations for these conflicting findings have included suggestions that the effects of HCWS may be context-specific (e.g., dependent on the firm or industry) or contingent on the alignment of bundles of complementary practices rather the effects of separate practices. Others have suggested that the link between HCWS and performance may reflect implicit theories of performance rather than actual outcomes (Gardner, Wright & Gerhart, 2000).

The goal of this paper is to address these questions by exploring how the combination of HCWS practices and the values of the firm may interact to affect firm performance. We argue that employees interpret the meaning of specific human resource management practices (e.g., investment in training or stock options), based on their perception of management's motives for implementing these practices or bundles of practices. In this view, the meaning of specific objective HR practices is seen as conditioned

by, and interpreted in light of, the information provided by senior management that helps employees understand why certain practices have been adopted. Thus, objectively similar practices may be interpreted differently, and have different effects, contingent on their social meaning. We empirically test this claim using data from a sample of high-technology start-ups in Silicon Valley.

THEORETICAL OVERVIEW

In the past decade, there have been a number of important studies documenting the positive impact on firm performance of high-commitment work systems (HCWS). For example, in a seminal study of work practices in the worldwide automobile industry, Womack, Jones and Roos (1990) convincingly demonstrated that so-called "lean manufacturing" practices provided significant productivity and quality advantages over conventional manufacturing processes. At the heart of these lean processes were a set of high-commitment work practices characterized by employee involvement, extensive investment in the training and socialization of members, and an egalitarian culture (MacDuffie, 1995). Similar studies in the apparel, steel, semiconductor, and manufacturing industries provided confirming results for the broad applicability of HCWS (e.g., Arthur, 1992; Bailey, 1993; Ichniowski et al, 1997). These focused industry studies were soon followed by a series of large-scale empirical efforts further documenting how high-commitment practices were linked to firm outcomes. For example, in a landmark study of almost 1,000 firms, Huselid (1995) linked HCWS to firm-level turnover, productivity, and financial performance. Consistent with previous research (Delaney, Lewin & Ichniowski, 1989; Pfeffer, 1994), Huselid defined high-commitment systems in terms of a constellation of practices including careful selection of new employees, pay for performance schemes, employee training, extensive information sharing, the use of teams, and attention to employee attitudes. Subsequent studies have continued to demonstrate that these so-called high commitment practices are consistently related to establishment and firm performance as well as other outcomes such as improved product quality, lower employee turnover and enhanced employee morale (Applebaum, Bailey, Berg & Kalleberg, 2000; Arthur, 1994; Becker, Huselid, Pickus & Spratt, 1997; Youndt, Snell, Dean & Lepak, 1996). More recently,

Barnes and Huselid (2000) have shown that firms with high-commitment practices were less likely to be acquired and also less likely to go bankrupt.

Although the evidence for the positive effects of high-commitment practices is impressive, two ambiguities remain. First, do the benefits of high-commitment practices derive from the practices themselves, or from an overarching system architecture or organizational logic? In this paper, we propose that the answer is "both." High-commitment work practices are beneficial, but there is also an empirically identifiable organizational logic that is distinct from any specific practice that is also beneficial. Furthermore, we hypothesize that a high-commitment organizational logic – or what we describe as high-commitment values – amplifies the benefit of high-commitment practices. Second, there are questions about the generalizability of the empirical findings. Most of the evidence comes from traditional sectors of the economy. In this paper, we extend the empirical investigations of high commitment work systems to include entrepreneurial firms in the high-technology sector.

Practices or Logics?

Researchers purporting to study high commitment work systems often examine different numbers and combinations of practices. For example, Pfeffer (1994) identifies thirteen practices (e.g. employment security, selective recruitment, high wages, etc.) that characterize a high commitment work system. Osterman (1994) cites four practices that identify "transformed" firms: self-directed work teams, job rotation, employee problem-solving groups or quality circles and Total Quality Management. MacDuffie (1995) creates two indices, work systems and HRM Policies. Other researchers offer similar variants in defining high commitment work systems (e.g., Arthur 1992; Cappelli & Neumark, 2001).

Overall, definitions of high-commitment work systems typically involve practices that enhance communication across organizational levels, invest in employees, facilitate long-term relationships, and pay for performance. Furthermore, regardless of the specific method or the system definition, the empirical evidence indicates that consistency among "bundles" of human resources practices matters -- consistent systems have stronger effects than inconsistent systems -- and that commitment-like practices have positive outcomes for organizations. At the same time, it is somewhat troubling that these findings

persist despite differences in definition and measurement. The recurrence of positive findings, despite differing operationalizations, seems to indicate that the benefits of high commitment work systems may derive from an overarching organizational philosophy, rather than any specific practice or combination of practices. However, to date there have been few attempts to empirically examine this possibility.

An important exception is a recent longitudinal study of entrepreneurial high technology firms in Silicon Valley (the *Stanford Project on Emerging Companies*) conducted by Baron, Burton and Hannan (1999). The researchers demonstrated that leaders can have very different implicit or explicit HR models or blueprints in mind when they are designing and building firms. The variation stems from different beliefs about three fundamental dimensions that underlie HR practices: (1) the basis of attachment; (2) the criterion for selection; and (3) the basis by which employees will be monitored and controlled. Using these three dimensions to categorize what they term "employment models", the authors develop five distinct models that typify the firms in their study and demonstrate that these blueprints shape important aspects of organizational evolution, including administrative intensity, the development of the HR function, and even the odds of replacing the founder with a new chief executive officer (Baron, et al. 1999; Baron, Hannan, & Burton 1999a, 1999b; Burton 1995).

Importantly, these employment models are empirically derived through a coding of the espoused values of the senior manager. Thus, in the SPEC studies, employment models reflect the values of the firm's founders. As O'Reilly and Chatman (1996) note, the values of senior managers -- their beliefs about what is important in the organization -- shape the norms that define organizational culture. These values and norms provide informational cues to employees to help interpret events and guide attitudes and behavior (O'Reilly, Chatman & Caldwell, 1991). In this manner, employment models are related to, but empirically distinguishable from the firm's operating HR practices (Baron, Burton & Hannan 1996).

Since an organization's HR practices and the values of its leaders are empirically distinct, a question can be raised about whether the observed benefits of high commitment work systems actually come from a set of high commitment practices, from the underlying organizational values, or from the combination of the two. Distinguishing between these alternatives is important. First, the employment

model espoused by leaders may or may not be consistently implemented in practices. Does an organization that espouses commitment values, but employs none of the practices have a high commitment work system? This type of inconsistency echoes Argyris' (1992) distinction between espoused theories and theories in use. Second, it is well documented that human resource practices diffuse through organizational populations for reasons other than their consistency with organizational values (e.g. Dobbin, Sutton, Meyer & Scott 1994). Does an organization that unintentionally adopts one or more high commitment practices derive benefit? Alternatively, are the benefits of any human resource management practices contingent upon the managerial philosophy?

The importance of the overarching organizational values and culture in providing employees an interpretive frame for evaluating HR practices is conceptually straightforward. Although HR practices may appear to be objective (e.g., incentive pay, performance management systems, etc.), the meaning of such practices to employees is a social construction relying on individual interpretations about the purpose of the practices and why senior management adopted them. As Pfeffer (1981, p. 1) has observed, "Organizations are…systems of shared meanings and beliefs, in which a critical administrative activity involves the construction and maintenance of belief systems which assure continued compliance, commitment, and positive affect on the part of participants…" The impact of any specific HR practice or bundle of practices is likely to reflect employees' inferences about senior management's motives. For example, identical stock option packages may lead to different outcomes depending on whether recipients view them as generous wealth sharing or as an attempt to prevent employee turnover. The same training program may be seen as a signal of the employee's potential and value to the firm or an exercise to "fix" the employee's deficiencies. Previous research has shown how the social construction of objectively similar job characteristics may affect individual attitudes and outcomes (e.g., Griffin, 1983).

The strategic human resource management literature has raised related questions regarding the benefits of HR practices in different contexts. In fact, scholars continue to debate whether high-commitment practices are universally applicable or whether the appropriateness of particular HR practices is contingent upon on the strategy of the business unit and the larger environmental context (Batt 2000;

Delery & Doty 1996; Pfeffer, 1994). Proponents of a "contingency perspective" argue that the effects of HR systems result from interactive effects of congruent practices that are aligned with an appropriate strategy (Becker & Huselid 1998; Lepak & Snell, 1999; Wright & Snell, 1998). For example, a firm pursuing a low-cost, control-oriented strategy might benefit less from a high commitment system than a firm pursuing a strategy of high-end differentiation or service. In contrast, the universalistic logic argues that there are a set of best practices for eliciting commitment and involvement among employees and that these practices may add value regardless of the specific strategy employed. Unfortunately, the evidence for a universalistic or contingency approach is mixed at best. Some studies find that firms pursuing specific strategies were more likely to benefit from adopting congruent HR practices (e.g., Arthur, 1992; Banker, Lee, Potter & Srinivasan, 1996); however, other studies find little evidence for the effects of fit (e.g., Delery & Doty, 1996; Delaney & Huselid, 1996). As Becker and Gerhart (1996, p. 788) note, "The distinction between best practice and contingency models begins to blur."

We propose that a careful differentiation between values and practices may shed light on the debate and account for some of the mixed empirical results in the strategic human resources management literature. As O'Reilly and Pfeffer (2000) argue, it may be that the underlying values of founders and senior managers precede the choice of both strategy and any particular human resource practice. From their in-depth study of high-commitment firms, they conclude that the values of the founders and senior managers lay the foundations for a congruent set of high-commitment HR practices. These values and practices then generate capabilities that form the basis for the firm's strategy. Thus, congruence refers first to the alignment of values and practices and, only then, to the alignment of practices and strategy.

Within the existing literature, the question of context and contingency has been addressed in terms of the broader environment and the firm's strategic positioning rather than as internal to the organization. A focus on values, culture, and employment practices demands attention to both. First, are commitment practices, values, or both important in determining firm performance? In addition to the myriad of studies linking HR practices to commitment (see Meyer & Allen, 1997 for a review), there is evidence showing that employees' commitment can be predicted by congruence with the values or culture

of the organization (O'Reilly, et al, 1991). Consistent with a social constructionist view, Meyer and Smith (2000) found that employees' evaluations of HR practices and organizational commitment were mediated by their perceptions of organizational culture. These studies suggest that both HR practices and organizational culture and values may shape individuals' reactions to high commitment practices.

HCWS for Young High-Technology Firms?

Previous studies of high-commitment work systems have focused disproportionately on large, established firms primarily in the manufacturing sector where firms compete primarily on quality and cost. Although there has been some recent attention to the impact of high commitment work systems in services (e.g. Batt 2000), there are still questions about the generalizability of the results of high commitment practices to smaller and younger high technology firms with less stable environments where innovation is the primary basis of competition. The business press has noted the emergence of alternative forms of work organization in the high tech sector -- "free agency", spot contracts, and contingent arrangements – that are quite the opposite of HCWSs (Cappelli 1999; O'Reilly & Pfeffer 2000).

There are ample reasons why high-commitment work systems might not easily translate to this sector. First, the core employees in high technology companies are highly skilled professionals who come to an employer fully trained and, by virtue of their unique expertise, have a great deal of discretion over how they work (e.g., Friedson 1986). So, while autonomy and discretion can vary dramatically across firms for manufacturing or services employees, the potential variation across firms of professionals is quite small. Thus the performance advantage to high-commitment practices may be attenuated. Furthermore, professionals are, in theory, more intrinsically than extrinsically motivated; thus, the impact of performance-based pay, a key element in HCWSs, should be diminished (Amabile 1996). Second, the technology sector tends to be geographically concentrated leading to stiff labor market competition (Saxenian 1994). A high density of firms in a single region affords employees the opportunity to change employers without incurring the costs of relocation. Because of this, there is less incentive for either employer or employee to invest in a long-term relationship. Third, most technology companies pursue a strategy of innovation as opposed to one of quality, service or cost–the common strategies examined in

previous studies of high-commitment systems. An innovation strategy that relies on the latest information, quick decisions, rapid product development, and assertive market-making appears to be inconsistent with a high- commitment system that demands delegation, information-sharing, consensus and teamwork.

Despite these arguments, the initial evidence for the positive effects of high-commitment systems in smaller, entrepreneurial firms is promising. Baron et. al (1999) find that firms in their Silicon Valley start-up sample that are founded under a commitment model evolve to have fewer managers and administrators per employee over time. Welbourne and Andrews (1996), in a study of start-up firms, found that firms that placed a higher value on HR and used organization-wide incentives had a significantly higher five-year survival rate. Welbourne and Cyr (1999) found that having an HR executive was positively associated with stock price increase for fast-growing firms and positively related to EPS growth for smaller firms. These studies suggest that even small firms may benefit from HCWSs.

Although there is some evidence that high commitment values increase a young firm's likelihood of successfully achieving an IPO (Hannan et al 1996; 2000), the role of congruent values and practices has not been explored. Furthermore the existing body of evidence offers little insight into the question of whether high commitment practices increase the likelihood a young firm will be successful. In this paper we examine two success measures. One is simply survival. Given the notoriously high failure rate among new firms, this is an important performance outcome. Our second measure is achieving an IPO. Given the importance of the IPO as a source of sustaining capital (Welbourne & Andrews, 1996), probability of IPO is a critical performance measure for entrepreneurial companies. The performance outcome was especially salient for the population we study – Silicon Valley high-technology firms in the 1990s.

HYPOTHESES

Drawing upon the literature investigating the effects of HCWSs on firm performance, we posit that high-commitment values enhance firm performance through the efficiency in communication that strong cultures can facilitate (O'Reilly & Chatman, 1996; O'Reilly & Pfeffer, 2000). In addition, high-commitment HR practices such as hiring for fit and socialization may serve to create a more homogeneous workforce thereby further reinforcing a strong shared culture that facilitates communication

efficiency. Other high commitment practices, such as sharing rewards, enhance employee motivation and productivity (Blinder 1990). Sharing information ensures that efforts are appropriately channeled towards organizational goals (O'Reilly & Pfeffer, 2000). Finally, investing in people reinforces the long-term nature of the implicit contract. High-commitment values and practices independently reduce the probability of failure and increase the likelihood of achieving an IPO. Thus, we hypothesize that:

H1a: High-commitment values will reduce the likelihood of firm failure and increase the likelihood of achieving an IPO.

H1b: High-commitment practices will reduce the likelihood of firm failure and increase the likelihood of achieving an IPO.

While there may be independent effects from high-commitment practices and values, we expect that it is the combination of the two working together that should offer the largest benefit to an organization. From a social construction perspective, we expect that leaders who espouse high-commitment values will provide informational and normative cues that help employees view HR practices in a consistent and positive light (Meyer & Smith, 2000; Pfeffer, 1981). Inconsistencies between values and practices, not walking the talk, likely undermine normative cues and degrade firm effectiveness. Thus, we predict a positive interaction whereby the presence of one amplifies the other.

H2: There is a positive interaction between high-commitment values and high-commitment practices that will reduce the probability of firm failure and increase the likelihood of achieving an IPO.

METHOD

The data for this research are drawn from the *Stanford Project on Emerging Companies* (SPEC). SPEC is a longitudinal panel study of young, high-technology firms in Silicon Valley that examines the origin and evolution of employment practices, organizational designs, and business strategies (Baron, et. al 1996; Burton 1995; Hannan et. al 1996). The firms in the sample operate in a range of high-technology industries including computer hardware and software, networking and telecommunications, semiconductors, medical devices, biotechnology, and other electronics or technology sectors. Data on

each firm were gathered through a combination of survey, interview, and archival methods (see Burton, 1995). In 1994-95 trained MBA and doctoral students conducted semi-structured interviews with both a founder of each of the firms as well as the current CEO. These informants were asked to describe their model of the employment relationship and the kind of culture that they intended to build in the organization. Interviews were also conducted with a senior executive responsible for human resources management who was asked to provide information about human resource policies and practices. The human resources informant, the senior-most executive designated by the CEO as responsible for human resources management, was also asked to complete a pencil and paper survey that sought details about workforce demographics and a variety of employment practices including recruitment, selection, and compensation practices for seven occupational categories (senior managers, other managers and administrators, scientists and engineers, sales and marketing personnel, clerical, skilled labor, and unskilled labor). The survey also includes whether and when specific formalized human resource practices, such as job descriptions and performance evaluations were implemented.

Independent Variables

Employment Models

Qualitative analyses of interviews with the founders and CEOs of each company that were used to identify the model or blueprint of the employment relation of the firm indicated that interviewee's images regarding how work and employment should be organized varied along three main dimensions — *attachment*, *selection,* and *coordination/control* – each characterized by three or four fairly distinct options or approaches from which organizational architects seemed to be selecting. While these dimensions emerged from an inductive coding process, they each have long traditions in theory and research about organizations and employment. It is also important to note that the employment model was coded from interviews with organizational leaders and a conscious effort was made to make coding decisions based on espoused values rather than actual organizational practices (see Baron et al. 1996; 1999; 1999a; 1999b for more information regarding the coding method).

While prior research using these data and coding scheme has identified five archetype models, in this paper we are particularly interested in one -- the commitment model. As defined in the prior SPEC research, the commitment model presumes that employees have an intense emotional and familial bond with the organization. The primary basis of attachment under a commitment model is the love of the organization rather than the nature of the work or the monetary rewards. Under a commitment model, leaders value fit over current skills or talents when selecting new employees. Finally, in commitment model firms, leaders plan to rely upon normative and cultural forces to control and coordinate efforts as opposed to relying upon direct managerial oversight or formal control systems. Again, in the SPEC research program, employment models are coded from interviews with leaders based on their espoused values. Although there is some evidence that employment models are correlated with particular human resource management practices, they are by no means collinear (Baron et al. 1996).

In this paper we focus on the commitment model because the broader literature points us towards human resource management practices that should be associated with these organizational values. Unfortunately, this literature distinguishes only two categories of human resource management practices: high-commitment and "traditional." Ideally, we would explore the interaction of employment models and human resource management practices for all five of the archetypes identified by the SPEC research team; however, the literature offers few guidelines as to the type of employment practices associated with these alternative employment models. As we discuss below, this limits the power of our analyses and the strength of our claims since the pure form of the commitment model is relatively rare in the SPEC sample. Only 7% of the firms in the study conform to each of the three dimensions.

HR Practices

To assess HR practices independent of the espoused commitment model, we rely upon responses to the human resource management survey. We specifically considered four general measures of high-commitment work practices: sharing rewards, sharing information, investing in people and hiring for fit. These were developed to be complementary with previous research on high-commitment work systems suggesting that these systems characteristically have high employee involvement, broad distribution of

rewards, emphasis on developmental opportunities for employees, and are more likely to attend to social and emotional needs of the work force (Becker & Huselid, 1998).

In the survey, practices are measured in two different ways: 1) as a date when a policy or system was implemented; and 2) as a description of the firm at the time of the survey. The first type are treated as time-varying variables and include stock options, skill-based pay, mission or values statement, company-wide meetings, orientation, training. The second type is not technically time-constant; however it is treated as such. These measures include promotion from within, peer involvement in hiring, employee referral hiring, and fit as an important selection criterion. These practices were measured at the time of the survey (1994 or 1995) and assumed to be constant over time.

Sharing rewards - Building on research by Welbourne and colleagues we assess whether and when a firm adopted employee stock options. Stock options are the typical way in which Silicon Valley technology firms distribute rewards. We also include a measure of whether and when a firm implemented a skill-based pay scheme since having a legitimate and meritocratic means for rewarding performance has been argued to be an important component of a high commitment work system.

Sharing information - We include three indicators for how the firm shares information: a written mission or values statement, regular company-wide meetings, and an orientation program for new hires. All of these variables are measured as the year in which the practice was implemented.

Investing in people - Offering training and opportunities for advancement were two ways in which firms could invest in people. Survey respondents were asked to indicate when, if ever, they began to offer in-house training. This measure does not capture whether or not the firm is willing to pay for training for its employees. Instead, it only captures the extent to which a firm has developed an internal training capability. It is a relatively weak measure of investment in training; however it is the only one available. Interview respondents were asked to indicate which strategies they used for recruitment for seven categories of personnel (e.g., senior management, other managers and administrators, engineers and scientists, etc.). For each category in which the firm reported having employees, respondents could indicate a range of options from promote from within to the use of employee referrals, newspaper

advertising, and employment agencies. To create our "promote from within" variable, we first counted the number of personnel categories where respondents indicated they promoted from within. Because not every firm had employees in all seven categories, we normalized this sum by dividing by the number of categories in which the firm reported having employees.

Hiring for fit - In assessing the degree to which firms hire for fit, we used three indicators from the survey. First, we measure the degree to which the firm relied on fit when making hiring decisions for each of the relevant categories of employees from senior management to unskilled workers. As above, the question offered a range of selection criteria including credentials, experience, and company or group fit. However, here respondents were instructed to indicate the most important criteria. We sum the number of occupational categories in which the respondent indicated that "company or group fit" was the most important criteria. Again, because not all firms employ people in all seven occupational categories, our variable is the normalized sum of these responses is our measure for fit. The second measure of fit is derived from the recruitment and selection portion of the survey. Here we use the normalized sum the number of occupational categories where employees are recruited by getting referrals from current employees. Finally, the third indicator of hiring for fit was the extent to which peers and colleagues were involved in hiring decisions. Here the question was, "who routinely participates in decisions to hire the following kinds of employees?" For six occupational categories (senior management was excluded from this question as it was assumed that the hiring process might be idiosyncratic), respondents indicated whether the following types of people participated: senior management; personnel specialist; supervisor; direct reports; peers/colleagues. This measure is a normalized sum across six possible occupational groups where the respondent indicated that peers/colleagues were routinely involved.

Control Variables

In order to assess the effects of HR models and practices on the likelihood a firm survives or is able to achieve its IPO, three possible confounding effects must first be controlled or eliminated. The first is age. Recall that we are looking at firms that went public between the time the firm was surveyed (either 1994 or 1995) and 1999. While the typical firm in the study was approximately 7 years old at the time of

the survey, they range from 2 years old to 14 years old. We expect that the likelihood of failure and IPO vary with age; hence we control for the firm's age in our analyses. The founding date of each firm is defined as the earliest possible date among three possible events that can, and do, occur in any sequence: legal incorporation, sale of a product, and the hiring of a full-time employee.

Second, although it may or may not be directly related to achieving an IPO, firm size may also have an effect on the presence or absence of HR practices; that is, independent of the underlying HR blueprint, larger firms may be more likely to develop an HR function and implement more formalized HR practices. Firm size is measured as the number of employees at the end of a given year. For the founding year firm size is the number of members on the founding team. Firm size for the first year of operation and the year of the survey were reported on the HR survey. The number of employees for all other years, and for firms who failed to provide the data on the survey, was collected from a variety of secondary sources including SEC filings, published news releases and corporate directories. When possible, we replaced missing data by interpolated between known intervals. This procedure was used when the gap was only one or two years and size data were available for the surrounding years.

Third, it is well established that firms with venture capital financing are more likely to go public (Gompers and Lerner 1999), thus we need to control for the presence of venture capital. Venture capital financing data was collected from a combination of survey and public sources (Hellman and Puri, 1999).

Finally, we need to control for strategy. Based on our earlier review of the literature, the traditional contingency logic suggests that firms pursuing an innovation strategy, where speed and flexibility are critical, may benefit less from adopting a high-commitment work system than those pursuing strategies emphasizing sales, service, and cost. For example, selecting people based on fit to a template may reduce group heterogeneity and lead to less innovation (Amabile, 1996). However, while superficially reasonable, a more careful consideration of the benefits of a HCWS suggests that even firms pursuing an innovation strategy may benefit from high-commitment systems. For instance, high-commitment values and practices may facilitate more effective communication and team dynamics (O'Reilly & Chatman, 1996) as well as be associated with higher levels of motivation and lower levels of

turnover, both of which may enhance speed and flexibility. If this logic is correct, a HCWS may reduce the likelihood of firm failure and increase the likelihood of an IPO. Because of this theoretical uncertainty, we treat strategy as a control variable and empirically determine whether the impact of high commitment values and practices varies by strategy.

Our strategy operationalization is based on a qualitative coding of firm information. Trained MBA and doctoral students conducted semi-structured interviews with a founder of each of the firms asking him or her to describe the core competence of the firm at founding. The open-ended response (supplemented in some cases by early press reports, product announcements, business plans and prospectuses) comprised the raw data that was used to categorize each of the firms into one of five strategic archetypes: Innovators, Enhancers, Marketers, Technology/Marketing Hybrids and Low-Cost Producers (see Hannan et al 1996). Innovators are firms that seek to gain first-mover advantages by winning a technology race. Enhancer firms seek to produce a product similar to other companies, but employ a general modification or enhancement to gain competitive advantage. Marketers seek competitive advantage through superior sales, marketing or customer service. Hybrids identified a marketing orientation but also indicated a technological component -- either innovation or enhancement. Finally, Low Cost Producers are firms that seek cost advantages through efficient production techniques, relationships with suppliers, or economies of scale. The four latter strategies all revolve around extending existing products or services. For our analyses, we collapse these four into one category – Incrementalists -- thereby focusing on the distinction between pure Innovators and other types of strategists.

Dependent Variables

One of the challenges of working with a sample of young high-technology firms is that there are few obvious performance metrics that are both comparable and available. Traditional performance measures such as revenues or sales are difficult to obtain for small, privately-held firms. Furthermore, these accounting measures are difficult to compare across industry sectors. Account ratios, such as return on assets or investments are also quite difficult to compare for young firms in the industries under

consideration as the amount and the time frame for investments can vary dramatically. As a consequence, we rely on two different performance metrics: likelihood of having an IPO and likelihood of failing.

IPO - An initial public offering of stock is a significant event in the life of a young firm and in this paper we are equating an IPO with initial success. This study was conducted during a period when there was a great deal of popular attention on entrepreneurial companies, IPOs, and the extraordinary wealth that was being created in Silicon Valley. In this study, we make the strong assumption that all of the firms in the sample are striving to achieve an IPO. Given the timing of the study, and the Silicon Valley context, we believe that this is a reasonable assumption. Initial public offerings are closely monitored by the Securities Exchange Commission and widely covered in the press. The year in which the firms had their IPO was collected from these sources. In our sample 51 of 101 firm achieve an IPO.

Failure - Tracking entrepreneurial firms and determining success or failure is not a straightforward task. There are obvious firm failures where the business press reports that the company has declared bankruptcy and the assets are sold or the firm appears in the "inactive companies" database in Lexis/Nexis. These types of failures are straightforward and easily dated. When firms "disappeared" -- no phone number, no listed address, no web address and no press coverage – we dated the failure the year following the year of last known existence. For those firms that were acquired or merged, members of the research team analyzed the business press and coded the outcome as either a clear success, a clear failure, or indeterminate. For this research we combine the clear failures and disappearances (N=7) with the obviously failed mergers and acquisitions (N=8) to have a total of 15 failures among our 101 sample firms. In supplementary analyses we reverse our approach and analyze the likelihood of a success. Here we treat both IPOs and successful mergers and acquisitions of private firms (N=18) as successes.

Data Structure

Because we have both constant and time-varying explanatory variables, we structured our data so that we have an observation (spell) for each year from the firm's birth. The founding year is represented as age=0 and each subsequent year is represented as an annual spell. Firms remain in the sample until the event of interest, either an IPO or a failure, occurs. Firms that persist as private companies over the entire

observation period (through 1999) are considered censored; thus, consistent with the event history analysis analytic framework, these firms remain in the risk pool for the entire period. Firms drop out of the sample if they cease to exist as independent entities either through failure, merger or acquisition. The effect of time is captured by the age variable.

Of the 173 firms that took part in the original SPEC study, 101 returned a human resource management survey (58% response rate). As reported in prior research, there were no systematic biases evident in who responded (Baron et al 1999b, Appendix); thus, we use this sample for our study. Table 1 presents the descriptive statistics for the study sample.

Insert Table 1 here

Table 2 presents the pairwise correlation matrices for the independent and control variables. Correlations that are statistically significant at the .05 level are indicated with asterisks (*).As expected, there are significant correlations with age and size across virtually all of the practices suggesting that most of these human resource management practices are scale and time dependent. The presence of venture capital financing is also positively associated with most of the formal practices, which lends credence to the claim that venture capitalists professionalize the management of their portfolio firms. Consistent with the theory of high commitment work systems, there are strong correlations among the individual practices, implying that these practices tend to be adopted as a bundle.

Insert Table 2 about here

Among the 101 firms analyzed in this paper, only 8 are coded as having been founded under a commitment employment model. This small number of commitment model firms accounts for the weak and negative correlations between "commitment values" and the high commitment work practices. However, as Table 3 indicates, there is variation in both the incidence and age at which different high commitment work practices are adopted. We use this variation to test our hypotheses. As shown in Table

3, firms founded as a commitment model tend to have a higher incidence of high commitment practices and, with the exception of formal training programs, these firms adopt the practices at a younger age.

Insert Table 3 here

In this paper we rely upon the models described retrospectively by founders instead of the current model espoused the CEO. We make this choice based on both theoretical and pragmatic reasons. First, we believe that initial conditions create indelible imprints on organizations (Stinchcombe 1965). Second, there is evidence from the SPEC project that the founding employment model is imprinted on the organization (Baron et al, 1999). Furthermore, from an empirical standpoint, we seek to maintain temporal consistency. One of the limitations of the SPEC data is that the information about employment models was collected for only two points in time: at founding, and at the time of the interviews. This panel approach captures the fact that some firms change their employment model over time; however, there is no information about when the change occurred. Thus, we have no way of knowing whether practices were adopted before or after the model changed. Fortunately, for our research, although some firms abandon the commitment model, very few firms change into a commitment model (Baron, Hannan and Burton 2000). This means that by relying upon the employment model espoused by the founder and examining the adoption of practices going forward, we are able to use the maximum available information about each firm. In supplementary analyses (available from the authors) we conduct all of the analyses using the CEO model rather than the founder model that yield findings consistent with those reported. In fact, the impact of espoused commitment values is stronger when the CEO description is used. This likely reflects the fact that these firms were founded under a commitment model and did not change models. The weaker findings we report here include firms whose founders espoused commitment values initially later abandoned those values. However, since we do not know the timing of these changes we cannot make use of this information under our current analytic strategy.

Estimation

We have two outcomes of interest: failure and IPO. Ideally, an empirical test of our hypotheses would be a straightforward modeling exercise; however, the reality of our data presents some challenges. First, we have only 8 firms with an espoused commitment model as compared to 93 firms without a commitment model. Second, the founding employment model is a constant; thus, we are limited in our ability to use analytic tools such as fixed-effects regression models. Finally, and most problematic, is the fact that none of the commitment model firms ever fail. This implies that for the failure analysis the key independent variable – having an espoused commitment model – is collinear with the outcome of interest: (non)failure. In our analyses we go to great lengths to overcome these data limitations and still provide compelling evidence in support of our hypotheses.

We are interested in the probability that a given firm has an IPO or fails at age *t*, given that the firm is still at risk for the event. This probability, P(t), which controls both the incidence and the timing of the event, is known as the hazard rate. In our sample, the risk set for each increment of firm age is the number of firms that have not yet had an IPO, been merged, acquired, or failed. As IPOs occur and as firms drop from the sample because they cease to exist as independent entities the risk set decreases. Since we are interested in examining the independent and interactive effects of models and practices, we report a set of linear probability models used to estimate outcomes. We have an observation for each year the firm is at risk for the event of interest and have variables which take the value 0 for a firm in every year in which the firm does not have an IPO (or does not fail for the likelihood of failure regression), and take the value 1 when the event of interest occurs. The observations are organized into panels according to firm age and pooled together into a single data file. After the event, firms are removed from the sample; thus, the data for these analyses are an unbalanced annual panel of firms.

Because we have multiple observations per firm, we generate Huber/White/sandwich estimators of the variance. This estimator deals with correlated observations and produces "robust" — corrected – standard errors. The advantage of our approach is that we can use the same analytic framework to estimate the impact of the independent variables on both IPOs and firm failures. The results are easy to

interpret and do not rely upon functional form restrictions. There is also growing consensus that the substantive findings of linear probability and logistic regression models are the same (See Angrist 2001). The disadvantage of this approach is it does not fully exploit the information contained in the data about the timing of events and requires the expenditure of many degrees of freedom to control for time. In separate analyses (available from the authors) we conducted the event history analyses of IPOs in order to verify that the pattern of findings are similar to those obtained using simple linear probability models. The results of these analyses are consistent with what we report below.

The independent variables for our analyses are a dummy variable for commitment values, dummy variables for various human resource practices – some of which are time-varying for a given firm. In addition, as controls, we include firm age and size (measured as number of employees). We also include two additional controls: whether the firm had obtained venture capital financing and whether the firm was pursuing an innovation strategy. Both of these have been shown to be associated with increased likelihood of IPO. We report our baseline models in Table 4.

Insert Table 4 about here

The results for the baseline models reveal that age increases both the likelihood of IPO and the likelihood of failure. Size has no impact on the likelihood of IPO; however, smaller firms are less likely to fail. Venture capital financing positively influences the likelihood of a firm having an IPO, but does not impact its survival. In addition, the positive coefficient for innovation strategy in Panel A indicates that innovators are more likely to have an IPO than incrementalists. Furthermore, the age and venture capital effects on both IPOs and failure are robust across different model specifications.

Model 2 in Table 4 is the first explicit test of Hypothesis 1a. Consistent with our predictions, high commitment values both increase the likelihood of IPO and decrease the likelihood of failure. Models 3 and 4 add additional controls in order to examine the robustness of this result. The patterns remain consistent, although the impact of commitment values on failure loses statistical significance upon the addition of both industry and time controls.

We interpret the results from Tables 4 (and from our unreported event history analyses of IPOs) to be broadly consistent with our predictions; however, we must be cautious in making inferences. It is possible that espoused values – as measured by the employment model – simply proxy for a set of human resource management practices. In Table 5 we explicitly examine this possibility.

Insert Table 5 about here

In Table 5 we present a set of linear probability models that independently and then simultaneously assess the impact of values and practices on firm performance. Again, we have two measures of firm performance, likelihood of IPO (Panel A) and likelihood of failure (Panel B). As is apparent from the table, commitment values are associated with better firm performance – a decreased likelihood of failure and an increased likelihood of IPO – even when high commitment human resource practices are included in the model. This supports our claim that these are distinct and separable constructs. Second, we see little benefit associated with high commitment practices. While stock options appear to decrease the likelihood of failure, they have no impact on the likelihood of IPO. Conversely, employee referral hiring appears to increase the likelihood of IPO, but has no measurable impact on the likelihood of failure. Both orientation and promotion from within are marginally associated with an increased likelihood of IPO; however, only orientation operates in the predicted direction. Promotion from within – a classic high commitment practice – actually serves to decrease the likelihood of IPO.

While the results presented in Table 5 are consistent with our arguments about employment models, they do not allow us to determine whether there is an interaction between model and practices. For this we turn to Tables 6A and 6B. In Tables 6a and 6b we take advantage of the time varying nature of our practices and assess the extent to which the adoption of a particular high commitment management practice is associated with enhanced firm performance alone or only in combination with a broader high commitment employment model. The pattern of results in Table 6A suggest that most of the benefit of a high commitment work system derives from the values rather than the practices. The coefficient for having commitment values is always in the predicted direction and most of the time is statistically

significant. In contrast, with the exception of stock options modestly decreasing the likelihood of failure, there are no statistically significant benefits associated with the human resource management practices.

Most important, for the argument in this paper, are the interaction terms presented at the bottom of the table. Here we see the benefit associated with "walking the talk." It is most vivid in the failure analysis where four of six practices have a statistically significant interaction term. These coefficients, which represent the effect of a practice when it is implemented in the context of a commitment employment model, reveal that mission or values statements, company-wide meetings, orientation and training – all of which can be seen as efforts to socialize and acculturate employees – are associated with a decrease in the likelihood that a firm will fail when they are implemented in the context of a set of explicit high commitment values; that is, both values and practices are required..

These practices are also positively associated with increasing the likelihood of IPO; however, the coefficient is statistically significant in only one -- mission or values statement – of the four acculturation practices. Interestingly, the incentive practices – stock options and skill-based pay – do not appear to interact with the commitment employment model. In fact, the only practice that has an independent main effect on either IPO or failure is stock options. In this sample of Silicon Valley firms, stock options are associated with a decreased likelihood of failure.

While the results presented in Table 6A are supportive of the hypothesis that we put forward, they are open to the criticism that we may merely be picking up unobserved differences across the firms in our sample that are associated with both the adoption of a commitment model as well as subsequent firm performance. We attempt to mitigate this concern by replicating our analyses using fixed effects models. This approach takes advantage of the time-varying nature of our employment practices and allows us to examine the set of commitment firms that adopt specific practices while controlling for unobserved (and unobservable) firm differences. Unfortunately, fixed effects models preclude us from independently assessing the benefit of commitment values. In our data, this is a firm fixed effect. However, with this approach we can in examine the benefit of having both practices and models. This is a much more rigorous specification; however it is conceptually comparable to the results presented in Table 6A. Again,

we see that there is little independent benefit associated with high commitment practices. Instead, the benefit is derived when practices are adopted in settings of high commitment values. Furthermore, our results suggest that the culturally oriented high commitment work practices – training, orientation, meetings, and mission statements – are more beneficial than those associated with financial incentives.

DISCUSSION

This study was designed to explore the independent and interactive effect of high-commitment values and practices on the probability of firm success or failure among small high technology firms. The general hypothesis was that a combination of a high-commitment employment model as espoused by the firm's leadership and a set of HCWSs would have positive effects on firm survival and the likelihood that entrepreneurial firms were able to achieve an IPO--an important milestone for successful entrepreneurial ventures. The results are supportive of this hypothesis. At a given age and size, firms that are founded with high-commitment values and that adopt high-commitment HR practices are more likely to survive and to successfully execute an IPO than those that do not have high-commitment values and practices. Importantly, the study also shows that the combination of values and practices is especially powerful. These results extend the findings of previous research on high-commitment work practices in several ways. First, we show that HCWS practices are separate from and have more positive effects when complemented by leader values (O'Reilly & Pfeffer, 2000). Second, the findings demonstrate the utility of HCWSs in entrepreneurial high technology firms, extending previous research that has concentrated on larger manufacturing and service organizations.

We also offered an empirically tractable approach for assessing the fit between values and practices. Our research moves us a step closer towards considering a broader human resource logic rather than a focus on specific practices (Becker and Gerhart, 1996). As suggested by Baron et al (1996), we show that both the values of the organizational founder and the adoption of specific HR policies and practices interact to affect firm outcomes.

Chadwick's (2000) observation of the importance of alignment to a superordinate goal and the strong findings for the founder's model or values from the current study suggest a possible reason for the

contradictory evidence for contingency and universalistic approaches. Previous studies focusing on the alignment of strategy and practices may have produced mixed results because they fail to recognize the need to align values and practices. Objective HR practices have little meaning by themselves, but rather, they achieve their effect through a social construction. In other words, to understand the effect of specific HR practices, one must understand whether the practices are aligned with the underlying values as well as with the strategy. For example, when stock is provided to employees in a context of commitment values and psychological ownership, they may have positive effects on motivation and morale. The same stock options provided under a more bureaucratic regime may be seen as a blatant attempt by management to lock in employees and reduce turnover with very different effects on motivation and morale (Klein 1987). O'Reilly and Pfeffer (2000) illustrate how equivalent performance management systems may have contradictory effects depending on the underlying values and strategy of the firm.

Understanding that the effect of a given HR practices in contingent on employees' interpretations may help explain why previous studies have produced inconsistent findings. The context in which employees interpret the meaning of HR practices may be conditioned by the underlying values held by management. This effect may be more important than the firm's strategy. For example, a meritocratic reward system that promotes wage dispersion may have positive effects in an employment system where the values of individual autonomy and achievement characterize the firm, while the same reward system may have negative effects in a high-commitment system. Alternatively, if the same reward system is used to promote equity and wage compression, it may have positive effects even in a high-commitment system (Henderson & Frederickson, 2000). A firm may pursue a particular strategy, for example cost leadership, and achieve that through different HR practices. For instance, lower costs may be achieved through the strict top-down control of a bureaucratic model or the continuous improvement of a team-based *kaizen* approach. Even knowing the firm's strategy, considering the effects of HR practices on firm outcomes without understanding the underlying values is likely to provide contradictory results. In this sense, the results of the current study underscore the importance of understanding both values and HR practices.

While consistent with previous research on high-commitment systems, there are several important limitations to this study that may limit the generalizability of the findings. First, although the sample includes only entrepreneurial high technology firms, these companies are still heterogeneous with respect to type of industry (e.g., computers, biotech) and strategy. Additional analyses did not find obvious effects from these differences, but it remains important to recognize that the sample is heterogeneous in ways that may affect the results. Second, all firms in this study were located in Silicon Valley and its environs. This is an interesting but potentially atypical labor market, with a high density of co-located firms and a culture that may promote more labor mobility than more conventional labor markets.

Overall, this study complements earlier findings documenting the positive effects of high-commitment work practices on firm performance. Unlike previous studies that show how certain practices or bundles of practices can affect organizational performance, we show that the combination of high-commitment values and practices can have significant effects on organizational outcomes. Although the processes that lead to an increased likelihood of IPO are not examined directly, the results are consistent with substantial earlier research documenting the positive effects of culture and group dynamics on performance (e.g., Chatman, Polzer, Barsade & Neale, 1998). Insofar as high-commitment values and practices increase a sense of common identity and reduce dysfunctional conflict, it is likely that they improve both communication efficiency and the ability to make decisions quickly, a valuable attribute for all organizations. Based on the findings presented here, further research exploring the interactions of values, practices, and culture seems promising. An important unanswered question is why some leaders choose the high commitment work system. Is it that good managers both choose this style of management and are better able to lead their firm? Alternatively, is it that leaders of firms who are "sure bets" for success can afford to be generous to employees? We hope that future research will be especially attentive to the mechanisms and dynamics of how and when practices and values are implemented in addition to their consequences.

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TABLE 1
Descriptive Statistics

Variable		Failure Sample (N=1033) Mean	Failure Sample (N=1033) St.Dev	IPO Sample (N=751) Mean	IPO Sample (N=751) St.Dev
Failure		.01	.10	.01	.08
IPO		.27	.44	.06	.24
Age		5.94	4.17	4.54	3.41
Size		177.15	900.04	64.14	131.62
VC		.54	.50	.52	.50
Innovation Strategy		.50	.50	.48	.50
Commitment Values		.09	.28	.07	.26
Stock Options	(binary, time-varying)	.62	.48	.55	.50
Skill-based Pay	(binary, time-varying)	.36	.48	.27	.45
Mission Statement	(binary, time-varying)	.52	.50	.43	.49
Meetings	(binary, time-varying)	.58	.49	.51	.50
Orientation	(binary, time-varying)	.44	.50	.32	.47
Training	(binary, time-varying)	.36	.48	.27	.44
Promotion from within	(continuous, constant) [1]	.51	.34	.49	.34
Peer-based hiring	(continuous, constant) [1]	.50	.38	.50	.38
Selection on Fit	(continuous, constant) [1]	.32	.35	.33	.36
Referral Hiring	(continuous, constant) [1]	.75	.32	.73	.34

[1] Because of the weighting procedure and incomplete data on the categories of employees, the sample size is reduced for four practices: 1) promotion from within; 2) peer-based hiring; 3) selection on fit; and 4) referral hiring to 967 spells for the failure analysis and 703 spells for the IPO analysis.

TABLE 2
Correlation Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) Failure	1.00																
(2) IPO	0.05	1.00															
(3) Age	0.12*	0.57*	1.00														
(4) Size	-0.00	0.20*	0.22*	1.00													
(5) VC	0.04	0.43*	0.34*	0.11*	1.00												
(6) Stock Options	-0.01	0.35*	0.40*	0.10*	0.51*	1.00											
(7) Skill-based Pay	0.03	0.16*	0.27*	-0.02	0.06*	0.23*	1.00										
(8) Mission Statement	0.06	0.33*	0.29*	0.10*	0.44*	0.29*	0.09*	1.00									
(9) Meetings	0.04	0.30*	0.41*	0.10*	0.25*	0.45*	0.29*	0.29*	1.00								
(10) Orientation	0.03	0.44*	0.45*	0.16*	0.35*	0.45*	0.18*	0.41*	0.46*	1.00							
(11) Promote from within	0.03	0.34*	0.40*	0.16*	0.16*	0.19*	0.22*	0.24*	0.38*	0.53*	1.00						
(12) Training	0.00	0.09*	0.06	0.12*	0.14*	0.18*	-0.04	0.07*	-0.06	0.10*	-0.00	1.00					
(13) Peer-based hiring	0.02	0.01	0.01	-0.09*	0.07*	-0.04	-0.13*	0.02	-0.00	0.03	0.05	-0.13*	1.00				
(14) Selection on Fit	-0.03	-0.05	-0.05	-0.07*	-0.09*	-0.07*	0.11*	0.11*	0.08*	0.07*	-0.08*	-0.00	-0.02	1.00			
(15) Referral Hiring	-0.03	0.03	-0.06	0.06*	0.13*	0.29*	-0.06*	0.05	0.09*	0.06	0.05	0.40*	-0.00	-0.02	1.00		
(16) Commitment Values	-0.03	0.11*	-0.01	0.01	-0.01	0.03	0.00	-0.05*	-0.00	0.12*	0.05	0.00	-0.11*	-0.01	-0.06	1.00	
(17) Innovation Strategy	0.00	0.14*	-0.02	0.04	0.19*	0.12*	-0.22*	0.10*	0.09*	0.05	0.13*	0.03	0.16*	-0.02	0.05	-0.05	1.00

TABLE 3
Prevalence of High Commitment Work Practices
In Firms Whose Founders Do and Do Not Espouse Commitment Values.

	No Commitment Values (N=93)		Commitment Values (N=8)	
	Percent of Firms with Practice	Mean Age at Implementation	Percent of Firms with Practice	Mean Age at Implementation
Stock Options	78.5%	1.89	87.5%	1.31
Skill-based Pay	41.9%	2.00	50.0%	1.21
Mission Statement	77.4%	2.23	62.5%	1.27
Meetings	81.7%	2.62	87.5%	2.51
Orientation	65.6%	3.70	100.0%	2.97
Training	53.8%	3.70	75.0%	3.93
Promotion from Within	69.9%	-	62.5%	-
Peer-based Hiring	69.9%	-	50.0%	-
Selection on Fit	47.3%	-	62.5%	-
Referral Hiring	83.9%	-	87.5%	-

TABLE 4

Espoused High Commitment Values and Firm Outcomes: Linear Probability Models with Robust Standard Errors

	Panel A Likelihood of IPO				Panel B Likelihood of Failure			
	(1) Baseline	(2) Commit. Values	(3) Industry Controls	(4) Time Controls	(1) Baseline	(2) Commit. Values	(3) Industry Controls	(4) Time Controls
Constant	-0.046***	-0.054***	-0.071***	-0.020	-0.007	-0.006	-0.008	-0.002
	(0.011)	(0.011)	(0.014)	(0.013)	(0.006)	(0.005)	(0.007)	(0.008)
Age	0.011***	0.011***	0.013***	0.009***	0.003*	0.003*	0.003*	0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)
Size	0.000	0.000	0.000	0.000	-0.000**	-0.000	-0.000	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
VC Financed	0.099***	0.102***	0.093***	0.081***	0.000	0.003	0.001	-0.001
	(0.018)	(0.018)	(0.017)	(0.018)	(0.006)	(0.007)	(0.006)	(0.006)
Innovation Strategy	0.027*	0.027*	0.023	0.020	-0.001	-0.000	-0.003	0.001
	(0.016)	(0.015)	(0.015)	(0.015)	(0.005)	(0.006)	(0.006)	(0.006)
Commitment Values		0.077***	0.084***	0.087***		-0.010***	-0.007*	-0.012**
		(0.021)	(0.022)	(0.022)		(0.003)	(0.004)	(0.005)
Industry Dummies			YES	YES			YES	YES
Annual Dummies				YES				YES
R-squared	0.09	0.10	0.11	0.15	0.014	0.015	0.017	0.037
Observations	756				1042			
(Firms)	(96)				(101)			

TABLE 5
Espoused High Commitment Values & High Commitment HR Practices and Firm Outcomes: Linear Probability Models with Robust Standard Errors

	Panel A Likelihood of IPO			Panel B Likelihood of Failure		
	Commitment Values	Commitment Practices	Commitment Values & Practices	Commitment Values	Commitment Practices	Commitment Values & Practices
Constant	-0.020	-0.051	-0.042	-0.002	-0.002	0.004
	(0.013)	(0.035)	(0.034)	(0.008)	(0.018)	(0.018)
Age	0.009***	0.012***	0.013***	0.001	0.001	0.001
	(0.003)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)
Size	0.000	0.000	0.000	0.000**	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
VC Financed	0.081***	0.056*	0.063***	-0.001	-0.002	-0.001
	(0.003)	(0.021)	(0.021)	(0.006)	(0.007)	(0.007)
Innovation Strategy	0.020	0.028*	0.023+	0.001	0.000	0.001
	(0.015)	(0.017)	(0.015)	(0.006)	(0.006)	(0.006)
Commitment Values	0.087***		0.089***	-0.012**		-0.015*
	(0.022)		(0.024)	(0.005)		(0.008)
Stock Options		-0.022	-0.027		-0.018*	-0.018*
		(0.022)	(0.022)		(0.011)	(0.011)
Skill-based Pay		0.026	0.024		0.001	0.001
		(0.025)	(0.025)		(0.001)	(0.001)
Mission or Values Statement		0.030	0.031		0.009	0.009
		(0.028)	(0.027)		(0.008)	(0.009)
Company-wide Meetings		0.007	0.011		0.006	0.005
		(0.024)	(0.024)		(0.013)	(0.013)
Orientation		0.056+	0.052+		-0.003	-0.002
		(0.035)	(0.035)		(0.011)	(0.011)
Promotion from within		-0.038+	-0.041+		0.009	0.009
		(0.026)	(0.025)		(0.009)	(0.009)
Training		-0.037	-0.031		-0.010	-0.011
		(0.038)	(0.038)		(0.012)	(0.012)
Peers involved in hiring		-0.012	-0.005		-0.001	-0.001
		(0.023)	(0.021)		(0.009)	(0.009)
Fit as a selection criteria		-0.013	-0.010		-0.010	-0.010
		(0.025)	(0.025)		(0.010)	(0.010)
Employee referral hiring		0.059**	0.065**		-0.006	-0.007
		(0.026)	(0.022)		(0.013)	(0.012)
Industry Dummies	YES	YES	YES	YES	YES	YES
Annual Dummies	YES	YES	YES	YES	YES	YES
R-squared	0.149	0.157	0.164	0.037	0.049	0.101
Observations	693			954		
(Firms)	(86)			(91)		

TABLE 6A: The Interaction of Espoused High Commitment Values and High Commitment HR Practices and Firm Outcomes: Linear Probability Models with Robust Standard Errors

	Panel A: Likelihood of IPO						Panel B: Likelihood of Failure					
	Stock Options	Skill Pay	Mission Statement	Company Meetings	Orientation	Training	Stock Options	Skill Pay	Mission Statement	Company Meetings	Orientation	Training
Constant	0.017	0.034^{+}	-0.021^{+}	0.030*	0.020	0.022	-0.004	-0.003	-0.002	-0.003	-0.003	-0.003
	(0.019)	(0.020)	(0.014)	(0.018)	(0.017)	(0.017)	(0.008)	(0.008)	(0.008)	(0.009)	(0.008)	(0.009)
Age	0.009***	0.009***	0.009***	0.009***	0.009***	0.009***	0.001	0.001	0.001	0.001	0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)
Size	0.000	0.000	0.000	0.000	0.000	0.000	0.000**	0.000**	0.000*	0.000*	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
VC Financed	0.078***	0.078***	0.075***	0.077***	0.073***	0.079***	0.004	-0.001	-0.002	-0.001	0.000	0.000
	(0.019)	(0.018)	(0.018)	(0.018)	(0.019)	(0.019)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Innovation	0.017	0.021	0.017	0.020	0.022	0.019	0.003	0.001	0.001	0.001	0.001	0.001
Strategy	(0.015)	(0.015)	(0.015)	(0.015)	(0.016)	(0.015)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Commitment	0.085***	0.089***	0.043***	0.064*	0.030	0.074**	-0.013^{+}	-0.011**	-0.010*	-0.003	-0.001	-0.004**
Values	(0.034)	(0.024)	(0.016)	(0.037)	(0.036)	(0.033)	(0.008)	(0.005)	(0.005)	(0.004)	(0.003)	(0.004)
Stock Options	0.007						-0.014^{+}					
	(0.017)						(0.009)					
Skill-based		0.022						-0.002				
Pay		(0.021)						(0.008)				
Mission or			0.018						0.005			
Values			(0.021)						(0.007)			
Statement												
Company-wide				0.020						0.001		
Meetings				(0.018)						(0.008)		
Orientation					0.028						-0.003	
					(0.026)						(0.009)	
Training						0.000						-0.003
						(0.030)						(0.009)
Values X	0.004	-0.007	0.172*	0.058	0.176	0.078	0.002	-0.004	-0.003*	-0.019*	-0.019**	-0.022*
Practice	(0.040)	(0.055)	(0.096)	(0.071)	(0.111)	(0.133)	(0.010)	(0.010)	(0.096)	(0.011)	(0.009)	(0.012)
Industry Dum.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Annual Dum.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	0.146	0.147	0.158	0.149	0.157	0.147	0.040	0.038	0.037	0.038	0.039	0.039
Observations	751						1033					
(Firms)	(95)						(100)					

TABLE 6B: The Interaction of Espoused High Commitment Values and High Commitment HR Practices and Firm Outcomes: Linear Probability Models with Firm Fixed Effects and Robust Standard Errors

	Panel A: Likelihood of IPO						Panel B: Likelihood of Failure					
	Stock Options	Skill Pay	Mission Statement	Company Meetings	Orien-tation	Training	Stock Options	Skill Pay	Mission Statement	Company Meetings	Orien-tation	Training
Constant	0.059***	0.036**	0.034*	0.033*	0.032*	0.033*	0.020**	0.020	0.019**	0.018	-0.018	-0.017*
	(0.024)	(0.019)	(0.018)	(0.018)	(0.018)	(0.019)	(0.010)	(0.011)	(0.008)	(0.009)	(0.008)	(0.009)
Age	0.018**	0.019***	0.017*	0.017*	0.016***	0.016*	0.003+	0.003+	0.003*	0.003	0.004*	0.004*
	(0.009)	(0.010)	(0.009)	(0.010)	(0.009)	(0.009)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
Size	0.000	0.000	0.000	0.000	0.000	0.000	0.000**	0.000**	0.000*	0.000*	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
VC Financed	0.074**	0.062**	0.051*	0.059**	0.049***	0.057**	-0.002	-0.003	-0.004	-0.004	-0.001	-0.003
	(0.028)	(0.027)	(0.029)	(0.026)	(0.026)	(0.027)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)	(0.008)
Innovation	-0.115	-0.091	0.034	-0.081	-0.078	-0.083	0.018	0.027+	0.017	0.019	0.032	0.020
Strategy	(0.175)	(0.179)	(0.079)	(0.174)	(0.165)	(0.174)	(0.016)	(0.018)	(0.011)	(0.016)	(0.020)	(0.016)
Commitment Values	-	-	-	-	-	-	-	-	-	-	-	-
Stock Options	-0.044*						-0.002					
	(0.027)						(0.010)					
Skill-based Pay		-0.026						-0.001				
		(0.035)						(0.014)				
Mission Statement			0.023						0.002			
			(0.036)						(0.011)			
Meetings				-0.004						0.007		
				(0.030)						(0.012)		
Orientation					0.052						-0.007	
					(0.045)						(0.010)	
Training						0.004						-0.013
						(0.048)						(0.011)
Values X Practice	0.056	0.044	0.291*	0.127	0.242*	0.205	-0.018*	-0.017	-0.017*	-0.034***	-0.022**	-0.024**
	(0.044)	(0.070)	(0.154)	(0.101)	(0.133)	(0.194)	(0.010)	(0.014)	(0.009)	(0.014)	(0.010)	(0.012)
Firm Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	0.235	0.233	0.246	0.235	0.250	0.237	0.132	0.132	0.132	0.134	0.134	0.237
Observations	751						1033					
(Firms)	(95)						(100)					