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Employee compensation and new venture performance: does benefit type matter?

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Abstract Using insights from strategic human resource management, we examine how employee benefits affect new venture performance. We hypothesize that two categories of benefits affect new venture performance and might do so differently: benefits that promote stability and flexibility. Using employee benefits data from the Kauffman Firm Survey, we find that new ventures that provide stability benefits—healthcare plans, tuition reimbursement, and retirement plans—have lower rates of exit and higher odds of earning a profit. Conversely, we find that firms that provide flexibility benefits—financial packages, stock ownership, bonus pay, and paid sick and vacation leave—do not affect firm exit rates but, with the exception of stock options, also have higher profits. We use IV methods to control for the possibility of reverse causality—firms that can afford to provide better employee benefits probably have better performance. Our IV results support our findings and suggest that firms that provide better employee benefits have lower exit rates and higher odds of earning a profit.

Keywords Employee benefits · New venture performance · Stability · Flexibility · Kauffman Firm Survey

JEL codes L25 · L26 · M21 · M52

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1 Introduction

It is now widely acknowledged that human capital is a viable source of sustainable competitive advantage for the firm (Pfeffer 1994; Prahalad 1983; Wright et al. 1994; Youndt et al. 1996). Organizations invest in human capital through high-involvement work practices (Guthrie 2001) and invest in high-performance human resource (HR) practices to motivate organizational citizenship (Kehoe and Wright 2013), and ultimately improve corporate financial performance (Huselid 1995). The extant literature strongly supports the notion that HR practices are linked to employee participation and firm performance (Jackson et al. 2014; Kehoe and Wright 2013; Wright et al. 2003)[1] as well as employee-based innovations (Pandher et al. 2017).

Strategic human resource management (HRM) contends that effective HRM contributes to superior firm performance (Jackson et al. 2014). Yet, most studies link constructs like employee motivation (Kehoe and Wright 2013) and formal human resource practices (Sheehan 2014) to firm performance. A notable exception is recent work that links employee motivations as an antecedent of firm performance and finds that start-up employees place lower importance on job security and salary but greater

[1] Recent work also suggests that although some employer policies are intended to prevent employees from leaving to join competitor companies, they may actually encourage employees to become entrepreneurs (Campbell et al. 2017).

importance on independence and responsibility (Sauermann 2018). Despite these advances, little is known about how specific forms of compensation and recruitment such as HR benefits packages affect new venture performance. Strategically, employers might offer attractive benefits to recruit and retain top employee talent with the anticipation that good talent will contribute towards the new venture's performance. Do new ventures that provide employee benefits exhibit superior performance?

The purpose of this paper is to address this question by examining the effect that the provision of employee benefits has on new venture performance. This is especially important because, according to recent Bureau of Labor Statistics (BLS) estimates (BLS 2018), average private-sector spending on employee benefits is roughly a third of total employee costs (30.4%).[2] This is a non-trivial sum that can severely constrain the resource allocation of small start-up firms. Consequently, management practitioners might desire to assess the efficiency of this spending. Moreover, management can provide several different types of benefits from which we delineate two categories: benefits that promote *stability* and benefits that promote *flexibility*. We hypothesize that, while employees will value both benefit types, they will prioritize benefits that promote stability over flexibility.

In carrying out this research, we make several contributions to the literature on strategic HRM and entrepreneurship. First, we examine how the provision of benefit type affects new venture performance. Benefits that promote *stability* include healthcare plans, education tuition reimbursements, and retirement plans whereas benefits that promote *flexibility* include bonus pay plans, sick pay leave, vacation pay leave, and investment plans. Recent work illustrates substantial differences in innovation performance between environments that promote s*tability* and those that promote *flexibility* (Young et al. 2018). Although Young et al. (2018) discuss stability and flexibility at the country level, we believe this distinction has important implications at the founder level for organizational environments and the recruitment and retaining of employee talent. By delving closer into the *type* of benefits offered to employees, we uncover how new ventures can optimize their human resources to enhance firm performance.

Second, our analysis focuses on newly created start-up firms. Using a unique dataset—the Kauffman Firm Survey (KFS)—we examine how the provision of employee benefits affects new venture performance in two ways: (1) risk of business failure and (2) firm profits. It is important to consider multiple performance metrics because relying on one performance measure alone does not adequately capture start-up firm performance. In the context of start-up firms, some can survive without having profits for a long time, and this does not necessarily imply the company is not performing well. After some time, such start-up firms can survive and grow thanks to huge financing rounds.[3] Thus, we focus our analysis on both profit and business failure outcomes to avoid relying too heavily on one performance measure alone. The KFS provides a unique opportunity to examine nascent enterprises that began in 2004 and either exited or survived until the culmination of the study in 2011. This is especially important because the competitive landscape is challenging and difficult to navigate, particularly for small businesses in their formative years (Hannan and Freeman 1988). This has led researchers to coin terms like "liability of newness" (Stinchcombe 1965), "liability of adolescence" (Fichman and Levinthal 1991), and "liability of smallness" (Freeman et al. 1983), which all explain how fledgling, small businesses face substantial obstacles to business generation—one of which is the constraint that comes with hiring employees during a firm's formative years (Deshpande and Golhar 1994; Hornsby and Kuratko 1990; Mathis and Jackson 1991). Importantly, the KFS dataset allows us to distinguish between exit types, which is important because not all exit reasons should be treated the same. Consistent with prior KFS studies (Bates and Robb 2014; Cole and Sokolyk 2018a, 2018b, 2019; Coleman et al. 2013), we examine start-up firm exit. Yet, we distinguish between different reasons for exit and focus on those start-ups that exit due to going out of business.[4]

Finally, our results have the potential to influence management practice and small business policy. Using theoretical insights from strategic HRM and data from the KFS, our findings speak to the relationship between HR practices and new venture performance. Previous studies illustrate how HR practices can encourage employee effort and financial performance (McClean and Collins 2011; Subramony 2009). Our study builds on

[2] https://www.bls.gov/news.release/ecec.nr0.htm

[3] We thank an anonymous reviewer for pointing this out.

[4] Other reasons for exit include (1) temporary closure, (2) sale, and (3) merger or acquisition. Our analysis estimates the odds of failure due to going out of business only, which helps ensure an equal comparison. Refer to the data analysis section for more detail.

this research stream and highlights how employee benefits encourage greater new venture performance. From a practical perspective, HR managers will find our study useful because we identify the benefits offered that have the most potential to optimize start-up firm performance. Policy analysts will also find our results useful because we identify HRM as a viable mechanism for improving start-up firm performance. This is especially important considering that recent evidence suggests that talent development is a better solution for business policy when compared with a policy of choosing winners (Acs et al. 2016). If the provision of benefits packages reduces business failure risks for start-up firms, then policy makers might want to consider how start-up firms can more readily provide valuable benefits to recruit productive employees.

Our findings reveal that new ventures that offer more employee benefits packages experience lower rates of business failure and higher odds of earning a profit. The results also indicate that the type of benefit offered matters. New ventures have a lower rate of business failure when they provide benefits that promote *stability* like healthcare plans, retirement plans, and education tuition reimbursements to employees. In contrast, we find no effect on business failure rates for start-up firms that provide *flexibility* benefits such as bonus pay, investment plans, paid sick leave, and paid vacation leave. Our results also indicate that both benefit categories are associated with higher odds of earning a profit with the largest effect from providing retirement benefits. Interestingly, however, we find that start-up firms that provide stock options actually experience lower odds of earning a profit. We discuss potential explanations for these findings.

2 Theoretical development

2.1 Strategic human resource management

The belief that effective HR practices contributes to increased financial performance is known as strategic HRM (Jackson et al. 2014).[5] Strategic HRM places human capital at the center of the production process, and because investments in human capital are vital to improving firm performance (Barro 1991; Becker et al. 1990; Cooper et al. 1994; Martin et al. 2013), employees are key resources for management (Bakke 1961; Drucker 2012). "Strategic HRM involves addressing long term business needs by achieving a fit between the organization's future human resources, external conditions, and the organization's strategy (Jackson et al. 2014, p. 8)." Consequently, recruiting and talent development becomes a vital concern for aspiring enterprises, and successful strategic HRM will help acquire a sustainable competitive advantage.

For start-up firms to obtain a sustainable competitive advantage, they must acquire resources that are rare, valuable, and difficult to imitate (Barney 1991). The resource-based view (RBV) emphasizes the internal characteristics of the firm—especially the ability to develop distinct resources and capabilities that are difficult to imitate and substitute (Sheehan 2014). From a resource-based perspective, HR practices provide internal or external benefits, or both. Internal benefits theory argues that start-up firms might provide better benefits packages to recruit, invest in human capital, and maintain high performing employees thereby improving financial performance (Branco and Rodrigues 2006). This theory contends that the start-up firms with the best compensation will attract the best employees, and the best employees, in turn, contribute to superior financial performance (Youndt et al. 1996). This occurs because human resource activities can acquire a competitive advantage by developing a skilled workforce to effectively carry out the firm's business strategy (Branco and Rodrigues 2006).

2.2 Benefits as employee recruitment

Start-up firms must be willing to increase their compensation (pecuniary and non-pecuniary) in order to attract talent—especially talent with high human capital endowments (Ang et al. 2002). Microeconomic theory explains the supply and demand for labor where start-up firms demand labor and labor is supplied to the market by workers. Increases in the demand for labor and reductions in the supply of labor both act to increase the prevailing wage. It is in this market that start-up firms must offer the most competitive packages to recruit and retain employees with their desired skillset. This is crucial to the long-run success of the firm

[5] Strategic HRM is defined as "the study of HRM systems (and/or subsystems) and their interrelationships with other elements comprising an organizational system, including the organization's external and internal environments, the multiple players who enact HRM systems, and the multiple stakeholders who evaluate the organization's effectiveness and determine its long-term survival." (Jackson et al. 2014, p. 2).

(Pandher et al. 2017). Start-up firms that are not able to recruit highly productive employees might develop inferior structures, internal processes, and human resources relative to their competitors (Shane and Stuart 2002). While salaries and wages are often the driving force behind hiring decisions (Ang et al. 2002), there is a more recent phenomenon that start-up firms are using to attract talent.

An alternative to monetary (i.e., pecuniary) compensation is to provide incentives and benefits packages (Bryant and Allen 2013). Now more than ever, employees are increasingly interested in the benefits offered by prospective employers. According to the 2013 Aflac Work Forces Report, "nearly 1-in-2 U.S. employees say that improving their benefits options is one thing their employer can do to keep them in their job" (Aflac 2013, p. 1). So-called talent attractors (i.e., start-up firms that offer benefits packages above the US national average) observe a significant correlation between benefits and other important human resources outcomes like job satisfaction, loyalty to employer, willingness to refer a friend, and workforce productivity (Aflac 2013). The report goes further and finds that employees who work for talent attractors are "more than twice as likely to agree strongly or very strongly that their organization's profitability is due in part to offering a robust benefit package. It's clear that these companies benefits as part of their overall business strategy to achieve bottom line results" (Aflac 2013, p. 3). Echoing this sentiment, a survey conducted by the Society of Human Resource Management found that 35% of employers cited bigger benefits packages compared with 28% in the previous year, and job seekers frequently place greater importance on benefits such as health care coverage, flexible work schedules, and other benefits beyond their base salary (Bloomberg 2015). While benefits often come at the expense of salary increases, many employees place greater emphasis on benefits due to concerns such as rising healthcare costs (Bloomberg 2015).

Despite the favorable light of these surveys, many employers opt not to provide certain benefits to employees. Under US law, employers must provide employees with benefits like time off to vote, FICA tax withholding, paying state and federal unemployment taxes, contributing to state short-term disability programs, and complying with the Federal Family and Medical Leave (FMLA) act. Employers are not, however, required to provide paid leave (e.g., holidays and sick days), retirement plans, health plans,[6] dental or vision plans, or life insurance plans (Entrepreneur 2005). In practice, many US employers provide benefits to employees, though this varies greatly by establishment size. For example, although 88% of workers in large establishments[7] and 83% of workers in medium-sized establishments[8] receive medical care benefits, only 55% receive medical care benefits in small establishments[9] (BLS 2018).

Empirical evidence supports these surveys. Research suggests that stock options (Dunford et al. 2008) and insurance and retirement benefits (Sutton 1985) reduce employee turnover. Employees are increasingly placing values such as independence and flexibility above other benefits (Sauermann 2018), and moreover, flexible benefit arrangements have been linked to higher employee and job satisfaction (Barber et al. 1992). Job satisfaction, in turn, corresponds to higher rates of employee retention (Hausknecht et al. 2009) and has a positive influence on business outcomes (Koys 2001).

2.3 Benefits that promote stability vs. flexibility

Recent work illustrates substantial differences in innovation performance between institutional environments that promote *stability* and those that promote *flexibility* (Young et al. 2018). This work uses the crucial distinction between risk and uncertainty (Knight 1921) to theorize how certain institutional arrangements facilitate an entrepreneur's ability to assess risk whereas other arrangements support an entrepreneur's ability to respond to uncertainty (Young et al. 2018). Although this framework is developed at the country level of analysis, we believe this distinction has several important implications for start-up firms as well. There are several reasons for this belief. For starters, several academic studies indicate that employee benefits can be an innovative strategic practice for start-ups[10] (Balkin and Logan 1988; Carraher and Whitely 1998; Wells et al. 2003). Start-up firms might desire to offer employee

[6] Except in Hawaii

[7] 500 employees or more

[8] Between 100 and 499 employees

[9] Fewer than 100 employees

[10] Wells et al. (2003) found that growth-oriented business owners were more likely than the maintenance-oriented to offer 13 of the 14 benefits listed. The maintenance-oriented owners were nearly twice as likely to offer no benefits at all. Balkin and Logan (1988) reinforce that specific benefits, like lump-sum pay structures, encourage a greater entrepreneurship mentality among employees.

benefits to recruit and retain top employee talent; however, there is no reason to believe that employees value all benefits equally. Employee benefit surveys often identify a preference of some benefits over others. The Aflac Work Forces Report, for example, identifies health care as a priority for employees and businesses looking to seek and attract top talent. It also identifies Employee Assistance Programs (EAP) and flextime benefits that many employees find attractive. Other reports, such as the Corporate Voices for Working Families, find that employees greatly value flexibility, which also has benefits for employers to retain and reward employees (Tarkan 2011). Based on these surveys and the academic literature (Barber et al. 1992; Sauermann 2018), it is clear that employees find benefits attractive and employers might benefit from these employee benefits too. Moreover, employee benefits provide greater stability and/or flexibility, which we further explain in the following paragraphs.

Employers can choose to provide many different types of benefits to their employees. Employees will then decide how much they value these benefits, and if they are willing to accept the terms of employment. Some benefits are valuable to employees because they promote stability in the employees' personal life. For instance, healthcare benefits promote stability by reducing the financial and economic risks an employee faces when becoming ill or injured. In the event of such illness or injury, the employee has better assurance that life will continue as normal as possible. This protection promotes stability. In a similar vein, retirement benefits also promote stability. The life cycle theory of consumption (Fisher 1930; Friedman 1957; Ramsey 1928) explains how individuals prefer to smooth their consumption throughout the life cycle. This means individuals would prefer to not have significant disruptions to their lifestyles if they can avoid it. Retirement benefits promote the stability of lifecycle consumption by ensuring that the employee has savings to continue to consume in the future. Lastly, employer-provided education benefits also promote stability. Tuition reimbursements for education, for instance, allow for employees to increase their education at a lower cost than they would face if they were completely responsible for their entire education expenses. Since education has been shown to promote social mobility (Haveman and Smeeding 2006), which ensures enhanced financial stability and greater pathways to life success (Shim et al. 2009), better access to education should promote stability. For these reasons, we propose our first hypothesis:

> H1a: *By attracting employee talent, start-up firms that provide benefits that promote stability have a lower risk of business failure.*
> H1b: *By attracting employee talent, start-up firms that provide benefits that promote stability are more likely to earn a profit.*

In contrast, some benefits promote *flexibility.* Flexibility is important to provide options or provide a greater work-life balance (Eaton 2003; Peters et al. 2009). This is consistent with a vast research stream on *flexible work options,* which highlights how employees value flexibility in the workplace and often improves firm performance (Eaton 2003; Peters et al. 2009; Sheridan and Conway 2001; Valverde et al. 2000). Moreover, the entrepreneurship literature explains the importance of flexibility to entrepreneurs—it is a desirable trait that pulls people into self-employment and entrepreneurship (Carraher and Buckley 2005; Shane 2008; Wooden and Warren 2004).

These options could, for instance, provide additional income or time off from work. For instance, additional income is a valuable benefit to employees because it provides options. The extra income could allow for an individual to have more purchasing power—like a bonus—during the holidays (which is often a stressful time for many). Another possibility is that the income could be used to pay down debts, and yet another possibility is that the income could be saved for the future. The point here is that additional income provides *flexibility* because it provides many options for the employee.

Another benefit that promotes flexibility is the option to take time off from work. Paid sick leave and paid vacation leave fall into this category. Paid sick leave, for instance, provides for additional flexibility in the employee's personal life. The ability to be paid while taking time off from work is a valuable option to employees. In a similar vein, paid vacation leave also provides an employee the benefit of taking a vacation and not having to worry about losing income from the time off.

Start-up firms might find several advantages to providing flexible benefits to employees. For one, surveys indicate that employees are more satisfied with their job when their company offers flexible work options

(Tarkan 2011). When workers are more satisfied with their job, they are more likely to stay put and not look for another job. This lowers hiring and search costs, which allows for start-up firms to improve performance. An additional reason is that flexibility allows employees to find their most suitable work hours in a flexible work options arrangement. This flexibility has been linked to an improvement in firm performance (Eaton 2003; Peters et al. 2009; Sheridan and Conway 2001; Valverde et al. 2000). Lastly, the flexible benefit types mentioned in this study—paid sick leave, paid vacation leave, bonuses, and investments—enhance overall productivity. Failing to provide vacation leave leads to employee burnout (Etzion 2003; Etzion et al. 1998; Westman and Eden 1997). Not providing sick leave exposes other employees to unnecessary illnesses due to the opportunity cost of calling in sick and foregoing wages or salary. Providing bonuses and stock options when tied to performance metrics can enhance overall productivity (Clinch 1991; Hall 2000; Morgan and Poulsen 2001; Sesil and Lin 2011). Thus, providing these benefits is likely to be appreciated by employees and lead to overall increases in productivity and start-up firm performance. For these reasons, we propose our second hypothesis:

> H2a: *By attracting employee talent, start-up firms that provide benefits that promote flexibility have a lower risk of business failure.*
> H2b: *By attracting employee talent, start-up firms that provide benefits that promote flexibility are more likely to earn a profit.*

While we expect benefits that promote stability and flexibility to be important antecedents of start-up firm performance, we also argue that they might not affect performance equally. Maslow's hierarchy of needs would place benefits that promote stability at a higher need than benefits that promote flexibility (Maslow 1943). According to Maslow (1943), human motivation can be described by a pattern of moving through five levels or stages in order to attain a final sixth level or stage: self-transcendent needs. Humans move through the following stages (in descending order of importance): physiological (tier 1), safety (tier 2), love/belonging (tier 3), esteem (tier 4), and self-actualization (tier 5). Maslow's hierarchy of needs would place benefits that promote stability in the safety category (level 2 from the bottom) whereas benefits that promote flexibility would be placed in the social belonging category (level 3 from the bottom) (Maslow 1943).

We argue that benefits that promote stability should be placed in the safety category (level 2). Safety needs arise after physiological needs have been relatively satisfied. The safety category includes the need for physical security, health and well-being, and financial security. Financial security provides job security whereas health and well-being provide protection against the adverse impacts from accidents and illness (Maslow 1943). Benefits that promote flexibility, on the other hand, should be placed in a lower tier (in terms of importance) when compared with the benefits that promote flexibility.

Benefits that promote flexibility should be placed in the category above the safety category, which is known as love and belonging. Flexible benefits should be placed in this category because of their ability to promote healthy relationships. Employees will likely find benefits like paid vacation and paid sick leave to be important for the ability to cultivate relationships with friends and family. Paid vacation allows for an employee to spend more time with family and friends, which reinforces human needs to be loved. Similarly, paid sick leave allows for an individual to take time off from work and possibly be cared for by others. Because Maslow places the most fundamental tiers at the bottom, however, we argue that employees will value benefits that promote stability over benefits that promote flexibility.

Survey evidence supports this preference among benefit types. In an IBM survey of 42,000 employees in 79 countries, employees rated benefits and compensation as the leading reason for potentially leaving IBM. They placed work-life balance—of which flexibility is a significant component—as the second leading reason (Tarkan 2011). Moreover, if employees prefer traditional benefits that promote stability to those that enhance flexibility, than we might expect a stronger effect on new venture performance. That is, while employees find both benefit types attractive for recruitment, job satisfaction, and job performance, we expect the most preferred benefits to exert the largest effects on job and new venture performance. Based on these reasons, we propose our third and final hypothesis:

> H3a: *By attracting employee talent, benefits that promote stability will be associated with larger reductions in start-up business failure rates when compared with benefits that promote flexibility.*

H3b: *By attracting employee talent, benefits that promote stability will be associated with larger increases in start-up profits when compared with benefits that promote flexibility.*

3 Data and methods

3.1 Sample and data description

Our study uses data from several different sources to test our hypotheses. The KFS provides individual and organization level data (Ballou et al. 2008). The survey used a multi-mode design, including a web survey and computer-assisted telephone-interviewing follow-up. Our sample consists of 2368 new businesses (i.e., start-ups) starting in 2004 with annual follow-up through 2011 (i.e., 6421 firm-year observations). The initial survey response rate was 43% with a follow-up response rate of over 80%. These data provide a perfect opportunity to observe start-up survival, since researchers can easily ascertain when respondents go out of business. Not only does the KFS track when start-ups go out of business, but it also tracks the reason *why* start-ups close their doors.

We gather county-level data from a variety of sources. The US Census Bureau provides income data. We collect data on the intensity of competition at the county level using three-digit NAICS codes. The number of organizations in each industry is collected from the US county business patterns and comprises our measure of competition or organization density (Hannan and Freeman 1988). Table 1 is a summary of data. The data consists primarily of small businesses in all 50 states. California, Texas, and Michigan have the largest presence in the KFS with 9.85, 7.41, and 5.85% of observations, respectively, while 23 states each comprise less than 1% of all observations. The data also consists of a wide range of geographical concentration including both rural and urban regions, e.g., the median population density is 507 people per square mile. High- and low-growth environments are also both well represented in the data; the bottom quartile experienced a 1% decline in economic growth, and the upper quartile realized a 2.5% increase in growth. For example, 44% of all businesses list their home as their primary location and sole proprietorships account for 20% of business structures. The mean owner in the data sample has 13 years of experience and is 47 years old. In addition, 86% of owners are white and 73% are female.

3.2 Variables

3.2.1 Dependent variables

We measure new venture performance using two indicators—(1) business failure and (2) firm profit. *Business failure* is an especially important measure of the performance for young organizations (Stinchcombe 1965). During the KFS questionnaire, volunteers ask respondents whether they are still operating or whether they have exited. If the respondent answers "exit," then they are asked to clarify whether the reason for exit was due to (1) a sale, (2) merger or acquisition, (3) a temporary shutdown, or (4) a permanent closure (i.e., going out of business). A temporary shutdown is most likely a profitable decision, since the marginal costs likely exceed marginal benefits for certain times of a day or seasons in a year. A merger or acquisition may imply that a business was failing and was sold to pay back investors and debtors. But, this is not necessarily true. Mergers, acquisitions, and sales may be the best option for an otherwise thriving venture. Start-up owners may desire retirement and have no kin to inherit the business. Entrepreneurs will sometimes focus on building start-ups only to sell them once they become profitable. Therefore, this category is not a good indicator of true business failure. Therefore, we are left with one remaining category, exit due to going out of business (i.e., permanent closure). A competing risk model only considers failure when a business responds yes to this final category (Coleman et al. 2013). Thus, for the survival models, we perform a competing risk analysis, which only considers exit due to (4) going out of business. All other reasons for exit were excluded from the analysis.[11]

Despite the importance of business failure as an indicator of firm performance, analyzing the risks of failure without the accompanying financial indicators is akin to observing that a runner has finished the race but not knowing the amount of time it required. In other words, not only do we want to know if the firm survives, but we also want to know how well the firm has performed. Consequently, we include a second financial performance indicator—*profit*—as an additional measure of firm performance. *Profit* is a dummy variable coded as 1 if the firm has a positive net profit and 0 otherwise. We use a dummy coded measure of profit

Table 1 Summary statistics and correlation matrix

Variables	Mean	SD		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Firm characteristics													
Home based	0.44	0.50	[1]	1									
Sole proprietorship	0.20	0.40	[2]	0.17*	1								
Credit risk	3.02	0.91	[3]	0.11*	0.10*	1							
Profit	0.61	0.49	[4]	0.01	0.02*	−0.10*	1						
Assets (log)[b]	10.34	3.15	[5]	−0.36*	−0.22*	−0.22*	0.09*	1					
Initial assets (log)	9.55	3.39	[6]	−0.33*	−0.19*	−0.15*	0.03*	0.68*	1				
Total employees	5.03	9.93	[7]	−0.37*	−0.10*	−0.13*	0.08*	0.45*	0.34*	1			
Owner characteristics													
Education	0.53	0.50	[8]	−0.01	−0.06*	−0.07*	0.01	0.03*	0.02*	0.03*	1		
Work experience	12.76	9.90	[9]	−0.03*	−0.02*	−0.06*	0.08*	0.09*	0.06*	0.12*	0.04*	1	
Age	47.41	10.19	[10]	0.02*	0.02*	−0.07*	−0.01	0.06*	0.07*	−0.06*	0.08*	0.29*	1
White	0.86	0.33	[11]	−0.00	−0.03*	−0.06*	0.04*	0.08*	0.09*	−0.02*	−0.04*	0.06*	0.11*
Female	0.73	0.37	[12]	−0.06*	0.05*	−0.00	0.04*	0.11*	0.09*	0.11*	0.10*	0.21*	−0.00
County characteristics													
Income per capita	38,246	11,630	[13]	0.02*	−0.05*	−0.06*	0.04*	0.03*	−0.01	0.04*	0.21*	0.06*	0.02*
Competitive density	1.35	3.41	[14]	0.11*	−0.01	−0.03*	0.05*	−0.10*	−0.08*	−0.00*	0.17*	0.08*	−0.04*
Employee benefits													
Summary measure	1.49	1.78	[15]	−0.33*	−0.22*	−0.18*	0.11*	0.43*	0.33*	0.48*	0.07*	0.13*	−0.04*
Provide healthcare?	0.30	0.46	[16]	−0.23*	.16*	−0.16*	0.11*	0.37*	0.30*	0.41*	0.09*	0.14*	−0.02*
Provide retirement?	0.14	0.35	[17]	−0.14*	−0.12*	−0.15*	0.14*	0.26*	0.19*	0.26*	0.13*	0.14*	0.03*
Provide tuition reimbursement?	0.08	0.28	[18]	−0.09*	−0.07*	−0.06*	0.05*	0.15*	0.11*	0.17*	0.05*	0.07*	−0.01
Provide bonuses?	0.23	0.42	[19]	−0.23*	−0.14*	−0.11*	0.10*	0.32*	0.23*	0.41*	0.07*	0.09*	−0.07*
Provide stock options?	0.07	0.26	[20]	−0.06*	−0.12*	−0.04*	−0.06*	0.10*	0.05*	0.07*	0.09*	0.04*	−0.02*
Provide paid sick leave?	0.30	0.46	[21]	−0.29*	−0.17*	−0.15*	0.07*	0.37*	0.26*	0.41*	0.11*	0.11*	−0.03*
Provide paid vacation?	0.36	0.48	[22]	−0.37*	−0.20*	−0.17*	0.09*	0.45*	0.34*	0.51*	0.07*	0.13*	−0.04*

Variables	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
Firm characteristics												
Home based												
Sole proprietorship												
Credit risk												
Profit												
Assets (log)[b]												
Initial assets (log)												
Total employees												

Table 1 (continued)

Variables	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
Owner characteristics												
Education												
Work experience												
Age												
White	1											
Female	0.05*	1										
County characteristics												
Income per capita	−0.08*	0.05*	1									
Competitive density	−0.14*	0.05*	0.49*	1								
Employee benefits												
Summary measure	0.05*	0.12*	0.02*	−0.02*	1							
Provide healthcare?	0.02*	0.10*	0.12*	0.06*	0.63*	1						
Provide retirement?	−0.00	0.08*	0.10*	0.09*	0.45*	0.37*	1					
Provide tuition reimbursement?	−0.02*	0.05*	0.03*	0.05*	0.36*	0.21*	0.21*	1				
Provide bonuses?	−0.00	0.11*	0.05*	0.04*	0.57*	0.34*	0.26*	0.26*	1			
Provide stock options?	−0.05*	0.03*	0.09*	0.02*	0.25*	0.13*	0.12*	0.10*	0.12*	1		
Provide paid sick leave?	0.00	0.11*	0.11*	0.05*	0.70*	0.44*	0.29*	0.24*	0.40*	0.14*	1	
Provide paid vacation?	0.02*	0.13*	0.07*	−0.00*	0.76*	0.50*	0.32*	0.24*	0.46*	0.11*	0.77*	1

$N = 6421$

* $p < 0.05$

rather than the actual profit amounts because start-up firms' bookkeeping records are often very opaque. Accounting information from these start-up firms is often very unreliable because they are not subject to the scrutiny of public markets like larger, more established firms. Therefore, we rely on a simpler measure of firm profitability, which captures whether the firm has earned a profit or not.

3.2.2 Independent variables

We utilize several different measures of employee benefits to examine whether providing benefits is associated with greater firm performance. These measures are separated into two broad categories to better gauge whether benefits that promote *stability* or *flexibility* are more important for firm performance. In other words, does the benefit type matter? Benefits that promote stability include employer-provided healthcare, retirement plans, and tuition reimbursement. On the other hand, benefits that promote flexibility include employer-provided stock and bonus plans as well as paid sick leave and paid vacation. Each benefit is dummy coded as 1 if the firm provides the benefit and 0 otherwise. In the 2SLS analysis, we also include a measure of employee benefits calculated as the number of benefits—by type—that a firm provides. There is considerable variation between employers for these benefit provisions in our data. For instance, while 30% of employers provide healthcare plans and 36% provide paid vacation, only 7% of employers offer stocks to employees and only 8% provide tuition reimbursement programs.

3.2.3 Controls

Based on a review of recent findings utilizing the KFS database (see Farhat et al. (2018) for a review), we include several controls that might affect the performance of new ventures. At the owner level, we include measures for education, work experience, age, gender, and race. Recent research using the KFS data highlights how highly educated entrepreneurs are more likely to operate in an urban setting with a more educated workforce and high education regions have more entrepreneurship (Doms et al. 2010). Thus, we include a measure for the entrepreneur's education. *Education* is the number of years of formal higher education of the owner. Research findings with the KFS database identify prior entrepreneurial experience as an antecedent of early entrepreneurial internalization (Amin Zargarzadeh et al. 2014) and as a predictor of entrepreneurial forecast performance (Cassar 2014). Accordingly, we include work experience as an important control variable. *Work experience* is the number of years in the labor force of the owner. *Age* of the owner is also included. These continuous variables are included to capture the degree of experience, and to some extent, the tacit knowledge of the organization owner. When owners are experienced, older, and more educated, they may be able to leverage their skills and experience and access social networks to increase the likelihood of organizational survival (Shane 2003). We also include characteristics of gender and race. *Female* is a dummy coded 1 if female and 0 if male. Studies have found that female-owned businesses have lower survival rates than male-owned businesses due to less start-up capital, social networks and work experience (e.g., Fairlie and Robb 2009). Similarly, other studies (Fairlie and Robb 2007; Robb and Robinson 2014) find differences in funding sources and organization outcomes based on race and ethnicity. *White* is a dummy coded 1 if Caucasian and 0 otherwise. Research finds that minority owned businesses, particularly African Americans and Hispanics, face worse business outcomes than their Caucasian counterparts (Robb 2002).

We also include controls at the organization level. *Home based* is a dummy coded 1 for owners who base their business at home and 0 otherwise. *Sole proprietorship* is a dummy with a value of 1 for businesses that are organized as a sole proprietorship and 0 otherwise. For instance, (Robb and Robinson 2014) find that home-based businesses are more likely to rely on owner financing rather than from outside lending sources more commonly used by partnerships, corporations, and LLCs. These organizations may also differ in their social networks leading to a variance in the liability of newness (Stinchcombe 1965).

Credit risk is a discrete variable measured on a scale from 1 to 5 where 1 indicates the organization has very little credit risk and five indicates the organization is at a very high risk based on its credit. The KFS extracted these data from credit reports provided by Dun and Bradstreet. *Assets(log)* is the natural logarithm of an organization's total assets, and *Initial assets (log)* is the natural logarithm of an organization's total assets in the year of firm birth (i.e., 2004). These organization variables are included to capture the risk and financial positions of the organization, which have been shown to be important antecedents of

entrepreneurship (Black et al. 1996; Boudreaux and Nikolaev 2018; Holtz-Eakin et al. 1994; Lindh and Ohlsson 1996; Robb and Robinson 2014). Importantly, we use a firm's initial total assets to capture the initial resource endowment of the firm, which has been shown to be an important antecedent of firm growth (Cooper et al. 1994). Our a priori expectations are that organizations with a high credit risk, low profits, and fewer assets are in worse positions to survive the competitive business environment and face higher odds of failure and lower abilities to earn a profit.

In addition to owner and organization characteristics, there is substantial geographical variation across the USA that may influence rates of organizational exit (Acs et al. 2007). We include several county-level controls for these differences. *Income* per capita is the county-level per capita personal income provided by the US Census Bureau. This variable is included to capture the effect that income may have on the business climate. Higher disposable income and the demand for goods and services are positively correlated which should lead to more profitable opportunities. We measure *competitive density* as the number of organizations in a 3-digit industry divided by 1000. This variable serves as our measure of the amount of competition that a business owner faces, which has been shown to harm start-up survival rates (Pe'er and Keil 2013) and negatively moderate the ability of entrepreneurs to utilize new knowledge (Plummer and Acs 2014). We also include year and industry dummies to account for important time and industry differences (Boudreaux 2019).

3.3 Analysis

3.3.1 Cox proportional hazard model

To examine the effect of employee benefits on the risk of firm exit, we use Cox proportional hazard models. Cox proportional hazard models take the following form:

$$h(t) = h_0(t)\, e^{(\beta X)} \quad (1)$$

where $h(t)$ is the hazard rate for business failure,[12] $h_0(t)$ is an unspecified baseline hazard function, X is a vector of predictors, and β is the estimated coefficient for these predictors. An advantage of the Cox proportional hazard model is that it requires no parametric assumptions for the hazard function. This is useful in new organizations where the shape of hazard curve may not be monotonic in shape (e.g., Fichman and Levinthal 1991). This is particularly applicable to our data as the dependent variable is a dichotomous variable with a large percentage of non-events. Additionally, the Cox proportional hazard model can account for the lack of independence in the multiple-year organizational observations. We used robust standard errors clustered by organization. Finally, the Cox models account for right-censoring issues in the data; some organizations have not failed by the end of the study (Cleves et al. 2010). Estimates are reported as hazard ratios (e^{β}) with numbers above 1 indicating an increased likelihood of failure and numbers below one a reduced likelihood of failure.

Typical survival analysis relies on the assumption that each subject has the same chance of selection into the sample. However, as is the case with the KFS data, the probably of any given subject selected into the sample is based on a complex survey design. The target population in the study is all new businesses started as an independent business in 2004 in the USA. If the firm existed before the initial interview, the start-up firms were dropped from the survey. While the KFS might originally include franchises or subsidiaries of an existing business, they were removed from the study. The KFS also does not include non-profit organizations in its study. The Kauffman Foundation had an interest in high technology, medium technology, and woman-owned businesses and thus created the KFS to examine their research questions. Thus, the KFS is a stratified sample based on industrial technology and gender. The KFS oversampled high-technology and medium-technology businesses in order to improve the precision of cross sectional and longitudinal analyses of these subgroups. The KFS employed sampling weights due to this disproportionate stratified sampling procedure taking into consideration the survey design procedure described in the KFS.[13] In addition, for any missing data, we used Rubin's (2004) multiple imputation simulation-based procedure as suggested by the Kauffman Firm Survey design guide.

[12] Interpretation of hazard rates is often counterintuitive to those who are unfamiliar with these estimation methods. A hazard rate $h(t) < 1$ indicates that increases in the variable are associated with a reduced hazard of failure while hazard rates $h(t) > 1$ indicate an increased hazard of failure.

[13] For more information, see (Cleves et al. 2010; Cochran 2007; Korn and Graubard 2011; Levy and Lemeshow 2013). The first is a useful guide for researchers using Stata.

Moreover, the data are coded such that researchers assign an id to each business and complete an annual survey to follow-up on the status of the enterprise. The key indicator for start-up firm exit is whether the business is still operating or not. The KFS codes a business as 0 if it is still in operation. On the other hand, the KFS codes four reasons for start-up firm exit including (1) a respondent has sold the business, (2) a business merger, (3) a temporary shutdown, and (4) exit due to going out of business. In our analysis, we only include the fourth reason for failure—going out of business—as the reason for organizational exit. All other reasons are ignored for the purposes of the examination. This is important because all reasons for exit are not necessarily failure. For instance, a temporary shutdown, merger, or sale can all indicate a successful start-up, especially if the purpose of starting the venture was to sell it at a later time for a higher value. Thus, we only code a value of 1 if the firm exits due to going out of business.

3.3.2 Logistic regression with random effects

As an alternative measure of financial performance, we also examine the relationship between employee benefits and firm profitability. To examine this relationship, we use a random effects logistic regression model of the form:

$$\text{Prob (Profit} = 1) = \ln\left(\frac{p}{1-p}\right) = \phi(\alpha + \beta_{it}X_{it} + \varepsilon_{it}) \quad (2)$$

where ϕ is the cumulative distribution function of the standard normal distribution, X is a vector of predictors, β is the estimated coefficient for these predictors, and $\varepsilon \sim N(0,1)$. This logit model examines the effect of employee benefits on the likelihood (or odds) of obtaining a profit (i.e., Prob (Profit = 1)). Furthermore, the random effects design allows us to estimate this relationship for each start-up firm over time, which captures the longitudinal design of the KFS study better than cross-sectional logit models. We considered using a fixed-effect logistic regression design, but using firm fixed effects in a non-linear model such as logit introduces the incidental parameters problem (Lancaster 2000; Neyman and Scott 1948). Thus, to avoid this biased estimation (Greene 2004), we estimate the model using a random effect logistic regression. We used the Hausman test (Greene 2003, Chapter 9) to check whether random effects are appropriate for our model, and the results support the choice of random effects over fixed effects ($\chi^2 = 13.36$; $p = 0.861$).[14] Lastly, estimates are reported as odds ratios (e^{β}) with numbers above 1 indicating increased odds of earning a profit and numbers below 1 indicate reduced odds of earning a profit.

3.3.3 Instrumental variables

One potential criticism of our study is that providing benefits to employees is expensive, and therefore, any relationship between employee benefits and firm performance might be picking up a firm's resource endowment. In other words, start-up firms that survive longer and are more likely to earn a profit are also in a better position to afford to provide benefits to their employees. While we have attempted to control for this concern by including initial resource endowments and profits as explanatory variables in our models, which have been shown to be important for subsequent firm growth (Cooper et al. 1994), our analysis might not control for the possibility of reverse causality leading to an endogeneity bias in our parameter estimates. To examine this possibility, we allow the relationship between employee benefits and firm performance to be endogenously determined, and we adopt an identification strategy that uses instrumental variables regression estimation.

Our identification strategy is to use instrumental variables estimation in a two-stage least squares (2SLS) regression model. For this method, we need to find an instrumental variable that is correlated with our endogenous regressor (i.e., employee benefits), is uncorrelated with the error term, and only affects the dependent variable through its effect on the endogenous regressor (Wooldridge 2010). Our instrument takes advantage of the region's provision of employee benefits, rather than those offered by the firm. For a given firm, we take the average level of employee benefits offered within the metropolitan statistical area (MSA), and then we subtract the firm's measure of employee benefits from this MSA average. We then repeated this step for every year

[14] The Hausman test checks whether the idiosyncratic errors (in our case firm-specific errors) are correlated with the model's predictors. The null hypothesis is that they are not correlated, which supports the choice of random-effect regression. A rejection of the null hypothesis (i.e., $p < 0.05$) would instead support fixed-effect logistic regression. We do not reject the null hypothesis so we can be confident that the random-effect model is appropriate (and in fact more efficient).

and region in the sample. This instrument is highly correlated with the firm's measure of employee benefits and should only affect firm performance through our endogenous employee benefits measure. We utilize this identification strategy for both benefit types (i.e., stability and flexibility) and for both new venture performance measures (i.e., profit and business failure).

The first-stage regression equation is estimated as follows:

$$\text{Benefits}_{\text{it}} = \alpha_0 + \alpha_1 B_{ijt} + \beta_{it} X_{it} + \theta_t + \varepsilon_{it} \quad (3)$$

where $B_{ijt} = \left(\frac{1}{n}\sum_{i=1}^{n} Benefits_{ijt}\right) - \text{Benefits}_{ijt}$ for start-up i in region j and year t. This measure follows recent studies (Jha and Cox 2015; Boudreaux 2018) to adopt an identification strategy that captures the average amount of employee benefits offered within the region and subtract the firm's amount of employee benefits from this measure. The estimates from the first-stage regression equation are then placed into the second-stage regression equation as follows:

$$New\ Venture\ Performance_{\text{it}} = \alpha_0 + \alpha_1 \widehat{Benefits}_{it} + \beta_{it} X_{it} + \theta_t + \varepsilon_{it} \quad (4)$$

For our profit regressions, we estimate the models using IV Probit (Table 2). For the business failure (i.e., survival) regressions, we estimate the models using IV Poisson. The reason we choose IV Poisson regression is twofold: (1) there is no well-known adjustment for endogeneity using Cox proportional hazard models and (2) there is a well-known equivalence between Cox proportional hazard models and Poisson models that allows one to transform the Cox proportional hazard model into a Poisson model (Royston and Lambert 2011, p. 61; Whitehead 1980, pp. 269–270). After transforming our Cox proportional hazard model into a Poisson regression model, we use the well-developed IV Poisson methods available in Stata 14.[15]

4 Results

4.1 Business failure rates

Model 1 of Table 3 presents our baseline results, which we estimated using Cox proportional hazard models. The baseline model includes all controls but excludes the measures of employee benefits. We note that many of our control variables conform to our a priori expectations. Start-up firms that earn a profit, for example, have a 39.4% (1.000–0.606; $p < 0.001$) lower rate of exit than their peers who do not earn a profit, and start-up firms with a higher credit risk, more density of competition, and smaller assets have higher exit rates. Additionally, we find that, while home based businesses do not face different rates of exit than other businesses, sole proprietorships have lower exit rates than partnerships and other forms of ownership.

Models 2–5 of Table 3 augment the baseline model to include our measures of benefits that provide stability—healthcare benefits, retirement plans, and tuition reimbursement benefits.[16] Model 2 reports the estimates using a summary measure of stability benefits and Models 3–5 report the estimates for each benefit type. Overall, the evidence suggests that start-up firms that offer stability benefits have 67% lower odds of exit (1.00–0.33; $p < 0.001$). More specifically, our results indicate that start-up firms that provide healthcare benefits have a 44% (1.00–0.56; $p < 0.001$) lower rate of exit, start-up firms that provide retirement benefits have a 31% (1.00–0.69; $p < 0.10$) lower rate of exit, and start-up firms that provide tuition reimbursement benefits have a 38% (1.00–0.62; $p < 0.10$) lower rate of exit. In other words, benefits that promote *stability* are associated with lower rates of exit. These results provide support for hypothesis 1a.

We also examine the effect of benefits that promote *flexibility* on firm exit rates. Models 6–10 of Table 4 augment the baseline model (model 1 of Table 3) to include our measures of benefits that provide flexibility—bonuses, stock options, paid sick leave, and paid vacation. Our results indicate that there is no substantial relationship between the benefits that promote

[15] The transformation follows three steps: (1) estimate a Poisson regression with the failure indicator as the response variable, (2) add time dummies, and (3) create an exposure variable that records the length of each time span.

[16] In additional robustness tests, we also included all employee benefits in one regression model. This adjusts for the fact that some start-up firms provide multiple benefits to employees. The results are very similar to those reported here and are available upon request.

Table 2 First-stage regression results for IV models

Variables	Stability Model 1 β	SE	Flexibility Model 2 β	SE
Firm characteristics				
Home based	-0.006^{*}	(0.003)	-0.015^{***}	(0.003)
Sole proprietorship	0.0005	(0.003)	-0.009^{**}	(0.003)
Credit risk	-0.005^{***}	(0.001)	-0.006^{***}	(0.001)
Profit	0.009^{***}	(0.002)	0.003	(0.002)
Assets (log)	0.002^{***}	(0.0005)	0.003^{***}	(0.0005)
Initial assets	0.001^{***}	(0.0004)	0.001^{***}	(0.0004)
Total employees	0.002^{***}	(0.000)	0.002^{***}	(0.000)
Owner characteristics				
Education owner	0.017^{***}	(0.002)	0.011^{***}	(0.003)
Work experience	0.001^{***}	(0.0001)	0.001^{***}	(0.0001)
Age	-0.0004^{***}	(0.0001)	-0.0004^{***}	(0.0001)
White	-0.014^{***}	(0.004)	-0.008^{*}	(0.004)
Female	0.0003	(0.0003)	0.004	(0.0003)
County characteristics				
Competitive density	0.0002	(0.0002)	0.0008^{*}	(0.0004)
Income per capita	0.0001^{***}	(0.0001)	0.0001^{***}	(0.0001)
Instruments				
Stability	0.938^{***}	(0.005)		
Flexibility			0.940^{***}	(0.005)

This table reports the estimates from the first-stage regression in the IV models reported in Table 7. Estimates are reported as coefficients (β) and standard errors reported in parentheses and adjusted for survey sampling due to the KFS design. Two-digit NAICS industry fixed effects included in all specifications and year fixed effects included in all models. $N = 6421$ observations and 2368 start-up firms (two-tailed tests). Models 1 and 2 report the first stage results for stability benefits and flexibility benefits, respectively. The first stage is the same for the IV Poisson and IV Probit models reported in Table 7. Thus, we only report the first stage results once. The instrument for the benefits index is the average benefits provided by other start-up firms in the same county as the start-up

$^{+}p < 0.10$; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$

flexibility and firm exit rates. Our evidence, thus, does not support hypothesis 2a.

4.2 Firm profits

We also examine the effects of employee benefits on the profits of start-up firms. Model 1 of Table 5 reports the baseline model, which was estimated using a Logit model with random effects to account for the longitudinal nature of the data.[17] The baseline model includes all control variables and excludes our measures of employee benefits. All model estimates are reported as odds ratios (e^{β}) where numbers above 1 indicate an increase in the odds of earning a profit and numbers below 1 indicate a decrease in the odds of earning a profit. We find that several controls have important relationships with firm profits. Sole proprietors, firm assets (log), and entrepreneurs' work experience are all associated with increased odds of earning a profit. Conversely, higher credit risk is associated with lower odds of earning a profit. These controls are consistent with our a priori predictions.

Models 2–5 of Table 5 augment the baseline model to include our measures of benefits that promote *stability*—health care plans, retirement plans,

[17] Non-linear fixed effects models (e.g., logit with firm fixed effects) suffer from the incidental parameters problem. Thus, we rely on random effects panel data models for estimation. The Hausman test supports the choice of random effects over fixed effects ($\chi^2 = 13.36$; $p = 0.861$).

Table 3 Hazard ratios predicting the effect of benefits that promote stability on new venture survival rates

Variables	Model 1 (baseline)		Model 2		Model 3		Model 4		Model 5	
	e^{β}	SE	e^{β}	SE	e^{β}	SE	e^{β}	SE	e^{β}	SE
Firm characteristics										
Home based	0.978	(0.12)	0.938	(0.11)	0.91	(0.11)	0.96	(0.11)	0.96	(0.11)
Sole proprietorship	0.721*	(0.10)	0.694***	(0.09)	0.70*	(0.10)	0.71*	(0.10)	0.72*	(0.10)
Credit risk	1.318***	(0.09)	1.301***	(0.09)	1.30***	(0.09)	1.31***	(0.08)	1.31***	(0.09)
Profit	0.606***	(0.07)	0.63***	(0.07)	0.63***	(0.07)	0.62***	(0.07)	0.61***	(0.07)
Assets (log)	0.936***	(0.02)	0.941***	(0.02)	0.95***	(0.01)	0.94***	(0.01)	0.94***	(0.01)
Initial assets (log)	1.006	(0.02)	1.007	(0.02)	1.012	(0.019)	1.007	(0.019)	1.007	(0.019)
Total employees	1.000	(0.01)	1.01	(0.01)	1.01	(0.01)	1.00	(0.01)	1.00	(0.01)
Owner characteristics										
Education	0.933	(0.11)	0.941	(0.11)	0.95	(0.11)	0.94	(0.11)	0.94	(0.11)
Work experience	0.996	(0.01)	0.996	(0.01)	1.00	(0.01)	1.00	(0.01)	1.00	(0.01)
Age	0.999	(0.01)	0.999	(0.01)	1.00	(0.01)	1.00	(0.01)	1.00	(0.01)
White	1.154	(0.19)	1.154	(0.19)	1.14	(0.18)	1.13	(0.18)	1.14	(0.19)
Female	1.131	(0.17)	1.144	(0.17)	1.11	(0.16)	1.11	(0.16)	1.10	(0.16)
County characteristics										
Income per capita	0.999	(0.01)	0.999	(0.00)	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)
Competitive density	1.051***	(0.02)	1.05***	(0.02)	1.05**	(0.01)	1.05**	(0.02)	1.05**	(0.01)
Benefits										
Stability benefits			0.33***	(0.10)						
Provide healthcare?					0.56***	(0.08)				
Provide retirement?							0.69+	(0.14)		
Provide tuition reimbursement?									0.62+	(0.16)
F test	***		***		***		***		***	

We estimate Cox proportional hazard models in all specifications. Estimates are reported as hazard ratios (e^{β}). Hazard ratios above 1 (below 1) indicate that the variable increases (decreases) the risk of firm exit. The magnitude of the effect can be interpreted by differencing from 1. Standard errors reported in parentheses and adjusted for survey sampling due to the KFS design. Two-digit NAICS industry fixed effects included in all specifications. $N = 6421$ observations and 2368 start-up firms (two-tailed tests)

$^{+}p < 0.10$; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$

and tuition reimbursement benefits. Overall, our evidence suggests that start-up firms that provide stability benefits to employees have higher odds of earning a profit (3.763–1.000; $p < 0.001$), and we find that all three benefits are associated with an increase in the odds of earning a profit. More specifically, start-up firms that offer healthcare plans have a 59.9% higher odds (1.599–1.000; $p < 0.001$), start-up firms that offer a retirement plan have a 159.9% higher odds (2.599–1.000; $p < 0.001$), and start-up firms that offer tuition reimbursement plans have a 46.8% higher odds (1.468–1.000; $p < 0.001$). These findings support hypothesis 1b.

Models 6–10 of Table 6 augment the baseline model (model 1 of Table 5) to include our measures of benefits that promote *flexibility*—bonuses, stock options, paid sick leave, and paid vacation. Overall, the evidence suggests that start-up firms that offer benefits that promote flexibility have higher odds of earning a profit (1.814–1.000; $p < 0.001$). Start-up firms that offer bonuses have a 55.6% higher odds (1.556–1.000; $p < 0.001$) of earning a profit, start-up firms that offer paid sick leave have a 32.3% higher odds (1.323–1.000; $p < 0.001$) of earning a profit, and start-up firms that offer paid vacation leave have a 57.8% higher odds (1.578–1.000; $p < 0.001$) of earning a profit. Conversely, stock options have a

Table 4 Hazard ratios predicting the effect of benefits that promote flexibility on new venture survival rates

Variables	Model 6		Model 7		Model 8		Model 9		Model 10	
	e^{β}	SE	e^{β}	SE	e^{β}	SE	e^{β}	SE	e^{β}	SE
Firm characteristics										
Home based	0.953	(0.117)	0.956	(0.114)	0.979	(0.118)	0.952	(0.116)	0.952	(0.116)
Sole proprietorship	0.711***	(0.099)	0.713*	(0.099)	0.733*	(0.102)	0.721	(0.101)	0.704*	(0.098)
Credit risk	1.312***	(0.085)	1.303***	(0.084)	1.308***	(0.084)	1.311***	(0.085)	1.311***	(0.085)
Profit	0.609***	(0.067)	0.614***	(0.067)	0.610***	(0.067)	0.614***	(0.067)	0.610***	(0.067)
Assets (log)	0.939***	(0.017)	0.943***	(0.017)	0.940***	(0.017)	0.941***	(0.017)	0.944***	(0.017)
Initial assets (log)	1.007	(0.019)	1.006	(0.018)	1.006	(0.019)	1.006	(0.019)	1.007	(0.018)
Total employees	1.002	(0.008)	1.003	(0.008)	1.000	(0.008)	1.001	(0.008)	1.002	(0.008)
Owner characteristics										
Education	0.941	(0.108)	0.941	(0.108)	0.916	(0.105)	0.929	(0.105)	0.917	(0.104)
Work experience	0.996	(0.006)	0.996	(0.006)	0.995	(0.006)	0.995	(0.006)	0.996	(0.006)
Age	0.999	(0.006)	1.000	(0.006)	1.001	(0.006)	1.000	(0.006)	1.000	(0.005)
White	1.154	(0.191)	1.117	(0.180)	1.154	(0.189)	1.127	(0.182)	1.129	(0.185)
Female	1.144	(0.172)	1.122	(0.165)	1.109	(0.164)	1.114	(0.165)	1.129	(0.168)
County characteristics										
Income per capita	1.000	(0.000)	1.000	(0.000)	1.00	(0.000)	1.000	(0.000)	1.000	(0.000)
Competitive density	1.05***	(0.015)	1.050**	(0.015)	1.051**	(0.015)	1.049**	(0.015)	1.050**	(0.015)
Benefits										
Flexible benefits	0.784	(0.177)								
Provide bonuses?			0.789	(0.123)						
Provide stocks?					1.220	(0.282)				
Provide paid sick leave?							0.917	(0.127)		
Provide paid vacation?									0.857	(0.118)
F test	***		***		***		***		***	

We estimate Cox proportional hazard models in all specifications. Estimates are reported as hazard ratios (e^{β}). Hazard ratios above 1 (below 1) indicate that the variable increases (decreases) the risk of firm exit. The magnitude of the effect can be interpreted by differencing from 1. Standard errors reported in parentheses and adjusted for survey sampling due to the KFS design. Two-digit NAICS industry fixed effects included in all specifications. $N = 6421$ observations and 2368 start-up firms (two-tailed tests)

$^{+}p < 0.10$; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$

45% lower odds (1.000–0.550; $p < 0.001$) of earning a profit. With the exception of stock options, these results support hypothesis 2b.

In summary, because benefits that promote stability are associated with lower rates of failure and benefits that promote flexibility have no statistical effect on failure rates, we conclude that stability benefits have stronger effects on business failure rates than flexibility benefits, which supports hypothesis 3a. A simple *t* test that compares the difference in the values between benefit types further supports this hypothesis. Conversely, and with the exception of retirement benefits, we find little statistical difference between benefits that promote stability and flexibility regarding their effect on firm profits. This finding does not support hypothesis 3b.

4.3 Instrumental variables

4.3.1 2SLS—instrumental variables

Table 7 illustrates the relationship between employee benefits and firm performance using the identification strategy described above. Models 1–3 of Table 7

Table 5 Odds ratios predicting the effect of benefits that promote stability on the profits of new ventures

Variables	Dependent variable = Profit (0,1)									
	Model 1 (baseline)		Model 2		Model 3		Model 4		Model 5	
	e^{β}	SE	e^{β}	SE	e^{β}	SE	e^{β}	SE	e^{β}	SE
Firm characteristics										
Home based	1.035	(0.099)	1.119	(0.099)	1.083	(0.100)	1.070	(0.099)	1.032	(0.100)
Sole proprietorship	1.526***	(0.114)	1.624***	(0.114)	1.580***	(0.115)	1.589***	(0.114)	1.542***	(0.115)
Credit risk	0.796***	(0.043)	0.819***	(0.044)	0.809***	(0.044)	0.817***	(0.044)	0.798***	(0.044)
Assets (log)	1.078***	(0.015)	1.065***	(0.015)	1.069***	(0.015)	1.069***	(0.015)	1.075***	(0.015)
Initial assets (log)	0.999	(0.016)	0.984	(0.016)	0.987	(0.016)	0.988	(0.016)	0.992	(0.016)
Total employees	1.009	(0.009)	1.000	(0.005)	1.004	(0.005)	1.003	(0.005)	1.008	(0.005)
Owner characteristics										
Education	1.022	(0.095)	0.969	(0.095)	0.999	(0.095)	0.966	(0.095)	1.014	(0.095)
Work experience	1.014***	(0.014)	1.011*	(0.005)	1.012*	(0.005)	1.011*	(0.005)	1.014*	(0.005)
Age	0.996	(0.005)	0.997	(0.005)	0.997	(0.005)	0.996	(0.005)	0.996	(0.005)
White	1.234*	(0.134)	1.239	(0.139)	1.231	(0.139)	1.263+	(0.139)	1.257	(0.140)
Female	1.026	(0.125)	1.005	(0.125)	1.008	(0.125)	1.018	(0.125)	1.257	(0.126)
County characteristics										
Income per capita	1.005+	(0.000)	1.000	(0.000)	1.004	(0.000)	1.004	(0.000)	1.005	(0.000)
Competitive density	0.977	(0.015)	0.979	(0.015)	0.979	(0.015)	0.979	(0.015)	0.976	(0.015)
Benefits										
Stability benefits			3.763***	(0.184)						
Healthcare plan?					1.599***	(0.101)				
Retirement plan?							2.599***	(0.133)		
Tuition reimbursement?									1.468***	(0.149)
Log likelihood	− 3941.46		− 3914.56		− 3930.57		− 3914.24		− 3938.08	
LR test	–		***		***		***		***	
Wald chi^2 (p value)	148.26***	(0.000)	193.25***	(0.000)	167.87***	(0.000)	193.01***	(0.000)	153.73***	(0.000)

We estimate random-effect logit models in all specifications. Estimates are reported as odds ratios (e^{β}). Odds ratios above 1 (below 1) indicate that the variable increases (decreases) the odds of obtaining a profit. The magnitude of the effect can be interpreted by differencing from 1. Standard errors are reported in parentheses and adjusted for survey sampling due to the KFS design. Two-digit NAICS industry fixed effects included in all specifications. $N = 6421$ observations and 2368 start-up firms (two-tailed tests)

[a] LR test is the likelihood ratio test calculated as $-2 \times \ln$ [ll(baseline) − ll(model)]

$^{+}p < 0.10$; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$

present the results for firm exit rates (i.e., survival) and models 4–6 of Table 7 present the results for firm profit. To control for the possibility of reverse causality, models 2, 3, 5, and 6 of Table 7 present the estimates for our instrumental variable estimation. We provide the baseline models (models 1 and 4) for comparison. Models 2 and 3 present the instrumental variables estimates for the firm survival model using IV Poisson, and models 5 and 6 presents the instrumental variables estimates for firm profit using IV Probit. Overall, the findings from the instrumental variables estimation support our earlier findings. More specifically, the estimates from these models suggests a 2% lower risk of exit (1.000–0.98; $p < 0.01$) for every additional stability-type benefit offered to employees and an 80% increase in the odds of earning a profit (1.801–1.000; $p < 0.001$) for every additional stability-type benefit offered to employees. Consistent with our previous findings, flexible benefit types are associated with a 25.8% increase in the odds of earning a profit (1.258–1.000; $p < 0.001$), but they have no effect on the survival odds.

Table 6 Odds ratios predicting the effect of benefits that promote flexibility on the profits of new ventures

Variables	Dependent variable = Profit (0,1)									
	Model 6		Model 7		Model 8		Model 9		Model 10	
Firm characteristics	e^{β}	SE	e^{β}	SE	e^{β}	SE	e^{β}	SE	e^{β}	SE
Home based	1.114	(0.102)	1.073	(0.100)	1.024	(0.099)	1.081	(0.102)	1.136	(0.102)
Sole proprietorship	1.591***	(0.115)	1.563***	(0.114)	1.470***	(0.114)	1.559***	(0.115)	1.588***	(0.115)
Credit risk	0.806***	(0.044)	0.803***	(0.043)	0.795***	(0.043)	0.802***	(0.044)	0.810***	(0.044)
Assets (log)	1.069***	(0.015)	1.070***	(0.015)	1.080***	(0.015)	1.072***	(0.015)	1.066***	(0.015)
Initial assets (log)	0.988	(0.016)	0.990	(0.016)	0.991	(0.016)	0.990	(0.016)	0.988	(0.016)
Total employees	1.005	(0.005)	1.005	(0.005)	1.010+	(0.005)	1.007	(0.005)	1.005	(0.005)
Owner characteristics										
Education	1.001	(0.095)	1.005	(0.095)	1.040	(0.095)	1.011	(0.095)	1.003	(0.096)
Work experience	1.013	(0.005)	1.013*	(0.005)	1.014**	(0.095)	1.014**	(0.005)	1.012*	(0.005)
Age	0.997	(0.005)	0.998	(0.005)	0.995	(0.005)	0.996	(0.005)	0.997	(0.005)
White	1.238	(0.140)	1.247	(0.139)	1.221	(0.138)	1.239	(0.140)	1.238	(0.140)
Female	0.998	(0.126)	0.998	(0.125)	1.032	(0.125)	1.009	(0.126)	0.994	(0.126)
County characteristics										
Income per capita	1.000	(0.000)	1.005	(0.000)	1.006	(0.000)	1.004	(0.000)	1.004	(0.000)
Competitive density	0.978	(0.015)	0.977	(0.015)	0.977	(0.015)	0.978	(0.015)	0.978	(0.015)
Benefits										
Flexible benefits	1.814***	(0.161)								
Provide bonuses?			1.556***	(0.101)						
Provide stocks?					0.550***	(0.149)				
Provide paid sick leave?							1.323**	(0.098)		
Provide paid vacation?									1.578***	(0.099)
Log likelihood	− 3934		− 3931		− 3933.25		− 3937.42		− 3930.83	
LR test	***		***		***		***		***	
Wald chi^2 (p value)	159.65		165.83***	(0.000)	165.25***	(0.000)	155.08***	(0.000)	166.42***	(0.000)

We estimate random-effect logit models in all specifications. Estimates are reported as odds ratios (e^{β}). Odds ratios above 1 (below 1) indicate that the variable increases (decreases) the odds of obtaining a profit. The magnitude of the effect can be interpreted by differencing from 1. Standard errors reported in parentheses and adjusted for survey sampling due to the KFS design. Two-digit NAICS industry fixed effects included in all specifications. $N = 6421$ observations and 2368 start-up firms (two-tailed tests)

[a] LR test is the likelihood ratio test calculated as $-2 \times \ln$ [ll(baseline) − ll(model)]

$^{+}p < 0.10$; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$

To assess instrument validity, we follow the well-known rule of thumb that specifies the first-stage F statistic should exceed 10 (Staiger and Stock 1997). Our evidence suggests the instrument is indeed valid since the F statistic exceeds this benchmark in all models. Next, we test the exogeneity assumption using a Durbin chi-squared test, where the null hypothesis assumes exogeneity. The results indicate that our models do *not* suffer from endogeneity—the test fails to reject the null hypothesis of exogeneity in model 2 ($p = 0.316$), model 3 ($p = 0.755$), model 5 ($p = 0.637$), and model 6 ($p = 0.632$). Based on these tests, we conclude that our instrument and identification strategy is valid and our models do not suffer from endogeneity bias. This provides additional evidence in favor of our prior models that assume exogeneity (Tables 3, 4, 5 and 6).

Table 7 Adjusting for potential endogeneity bias using instrumental variable regressions

Variables	Firm survival						Firm profit					
	Cox proportional hazard		IV Poisson				Random-effect logit		IV Probit			
	Model 1 (baseline)		Model 2		Model 3		Model 4 (baseline)		Model 5		Model 6	
	e^{β}	SE	e^{β}	SE	e^{β}	SE	e^{β}	SE	e^{β}	SE	e^{β}	SE
Firm characteristics												
Home based	0.978	(0.118)	0.995	(0.005)	0.995	(0.005)	1.035	(0.099)	1.067	(0.037)	1.063	(0.038)
Sole proprietorship	0.721*	(0.101)	0.988**	(0.005)	0.988**	(0.005)	1.526***	(0.114)	1.211***	(0.042)	1.194***	(0.042)
Credit risk	1.318***	(0.085)	1.010***	(0.002)	1.010***	(0.002)	0.796***	(0.043)	0.898***	(0.019)	0.890***	(0.019)
Profit	0.606***	(0.067)	0.977***	(0.004)	0.976***	(0.004)	–		–		–	
Assets (log)	0.936***	(0.016)	0.997***	(0.001)	0.996***	(0.001)	1.078***	(0.015)	1.032***	(0.007)	1.035***	(0.007)
Initial assets (log)	1.006	(0.019)	1.001	(0.001)	1.001	(0.001)	0.991	(0.016)	0.995	(0.006)	0.997	(0.006)
Total employees	1.000	(0.009)	1.000	(0.0002)	1.000	(0.0002)	1.009	(0.005)	0.999	(0.002)	1.001	(0.002)
Owner characteristics												
Education	0.933	(0.107)	0.995	(0.005)	0.995	(0.005)	1.022	(0.095)	0.938	(0.035)	0.953	(0.035)
Work experience	0.996	(0.006)	1.000	(0.0002)	1.000	(0.0002)	1.014*	(0.005)	1.004***	(0.002)	1.005***	(0.002)
Age	1.000	(0.006)	1.000	(0.0002)	1.000	(0.0002)	0.996	(0.005)	0.997	(0.002)	0.997	(0.002)
White	1.154	(0.191)	1.005	(0.007)	1.005	(0.007)	1.234	(0.139)	1.091	(0.05)	1.087	(0.05)
Female	1.131	(0.168)	1.009	(0.006)	1.009	(0.006)	1.026	(0.125)	1.036	(0.046)	1.033	(0.046)
County characteristics												
Income per capita	1.000	(0.005)	1.000	(0.000)	1.000	(0.000)	1.000	(0.004)	1.000	(0.000)	1.000	(0.000)
Competitive density	1.051***	(0.015)	1.002***	(0.001)	1.002***	(0.001)	0.977	(0.015)	0.991	(0.005)	0.991	(0.005)
Employee benefits												
Stability benefits			0.980**	(0.01)					1.801***	(0.079)		
Flexibility benefits					0.994	(0.009)					1.258***	(0.071)
Model fit												
F test	344.63***	(0.000)	3.38***	(0.000)	3.39***	(0.000)	–		–		–	
Wald test	–		–		–		148.26***	(0.000)	297.10***	(0.000)	254.53***	(0.000)
Instrument tests												
First-stage *F* stat			80.39***	(0.000)	67.82***	(0.000)	–		1360***	(0.000)	1507***	(0.000)
Test of exogeneity (*p* value)[a]	–		0.316		0.755				0.637		0.632	

We estimate a Cox proportional hazard model in model 1 and random-effect logit model in model 4. Estimates are reported as hazard ratios (e^{β}) in models 1–3 and odds ratios (e^{β}) in models 4–6. Odds ratios and hazard ratios above 1 (below 1) indicate that the variable increases (decreases) the risk of exit or odds of obtaining a profit. The magnitude of the effect can be interpreted by differencing from 1. Standard errors reported in parentheses and adjusted for survey sampling due to the KFS design. Two-digit NAICS industry fixed effects included in all specifications. $N = 6421$ observations and 2368 start-up firms (two-tailed tests). Models 2 and 3 are estimated using an instrumental variable panel Poisson with firm-level fixed effects. This is equivalent to a Cox proportional hazard model and permits estimation based on instrumental variables. The instrument for the benefits index is the average benefits provided by other start-up firms in the same county as the start-up. Models 5 and 6 are estimated using instrumental variables Probit using the same instrument as in models 2 and 3

[a] Durbin chi-squared test statistic is used as the test for endogeneity using Stata post estimation command, estat endogenous

$^{+}p < 0.10$; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$

In sum, these findings suggest that start-up firms that provide more employee benefits have lower rates of exit and higher odds of earning a profit. We use instrumental variables regression techniques to control for the possibility that more profitable and successful start-up firms might be more likely to provide employee benefits compared with less successful start-up firms. By controlling for initial resource endowments, profits, and potential reverse causality concerns, the analysis in Table 7 provides more robust evidence that start-up firms experience greater performance due to the benefits they provide and not for reasons attributed to alternative omitted factors. Additionally, the instrument and exogeneity tests indicate that our instrument is valid and that the models do not suffer from an endogeneity concern. Overall, these robustness tests support our findings that new ventures that provide benefits to employees—especially those that promote stability—exhibit superior performance through lower rates of exit and higher odds of earning a profit.

5 Discussion

5.1 Summary

Studies often assume that employee benefits are always beneficial for firm performance (Wells et al. 2003). Though this may seem obvious at first glance, it might not always be the case. Providing benefits is not costless to the start-up firm. Benefits can quickly become expensive and although providing benefits beyond what is required is a nice gesture, there is no guarantee the benefits will incentivize performance. Our results show that there is indeed heterogeneity in benefits' effects on new venture performance. We find that some benefits—namely stability benefits—lead to lower rates of business failure and higher odds of earning a profit. Benefits that provide flexibility, however, only lead to higher odds of earning a profit.

We theorize that this effect arises from the ability to recruit and retain high performing employees. These findings support the linkage between investments in human capital and a new venture's financial performance, and more importantly, the findings suggest that employee benefits and employee compensation should be important considerations for firm performance and new venture survival, though all benefits are not created equal. Start-up firms that offer benefits that promote

stability such as retirement, healthcare, and education benefits packages have the highest rates of survival (i.e., lowest rates of failure). This finding is consistent with our intuition because advice for job seekers often suggests that some superior jobs offer not just highly competitive salaries, but also highly competitive healthcare benefits. Private surveys support this argument since they find that workers are more likely to be satisfied in their job if it has a competitive benefits package (Aflac 2013) and much of the increased spending on benefits packages are employee-driven (Bloomberg 2015). In contrast, we find little evidence in favor of our hypothesis that *flexible* benefits affect the rate of exit, but these benefits, with the exception of stock option plans, do in fact increase the odds of earning a profit.

5.2 Implications and limitations

Our findings have important implications for management practice and small business policy. HR managers will find our study useful because we identify how employer-provided benefits are associated with greater firm performance. Moreover, benefits that promote stability have the most potential to help reduce new venture failure rates. In contrast, benefits that promote flexibility have little effect on the failure rates of new ventures. Because small start-up firms generally have more stringent financial constraints, our findings suggest that managers should prioritize healthcare, retirement, and tuition reimbursement benefits. However, with the exception of stock options, all benefit provisions are associated with higher odds of firm profits. Therefore, managers can experience greater financial performance by offering more benefits to their employees.

Our findings also have important implications for business policy. Our results identify HRM as a viable mechanism for improving start-up firm performance. This is especially important considering that recent evidence suggests that talent development is a better solution for business policy when compared with a policy of choosing winners (Acs et al. 2016). If the provision of benefit packages reduces the failure rates of start-up firms and increases the odds of profit, then policy makers might want to consider how start-ups can more readily provide valuable benefits to recruit productive employees.

Inevitably, our study does have some limitations. The KFS provides firm-level and founder-level data to researchers. While this is a rich source of data, it does not include employee-level data, which might help enrich our understanding of how employee benefits affect employee-level motivation directly. Based on extant research (Jackson et al. 2014; Kehoe and Wright 2013; Wright et al. 2003), we know that HR practices can successfully motivate organizational culture, employee motivation, and firm performance. Nevertheless, employee-level data would provide richer detail into our analysis. Moreover, data on employees' human capital and business experience would enrichen our study. Our study posits that providing benefits to employees is one way to attract and maintain productive employees, which can ultimately improve the performance of the start-up firm. Unfortunately, although the KFS has information on the founder's business experience and human capital, data on employees' human capital and business experience is absent. Future research might consider investigating the relationship between employee benefits and start-up performance while considering the heterogenous effects of employees' human capital.

In addition, our study focuses on two performance metrics—business failure and firm profit. We believe we can acquire a better understanding of how employee benefits affect new venture performance when investigating a multitude of outcomes. Nevertheless, it is possible to examine other outcomes such as sales growth, innovation, and local economic impact. Future research might consider how employee compensation and benefits affects these other measures of new venture performance.

6 Conclusion

We use the KFS to examine how the provision of employee benefits affects profits and business failure rates of exit for new ventures. Using insights from strategic HRM, we argue that start-up firms that provide highly sought after benefits to their employees will experience greater performance. Start-up firms that do offer valuable benefits to employees—especially those that offer benefits above and beyond their competitors[18]—are able to reap the benefits of superior firm performance.

Our findings reveal that the provision of employee benefits is associated with lower failure rates for start-up firms and higher odds of earning a profit. The results,

[18] This can be seen from the instrumental variable regressions reported in Table 6.

however, indicate that the type of benefit provided matters. We find that start-up firms that provide benefits that promote *stability*—healthcare plans, retirement plans, and education tuition reimbursement benefits—are associated with lower rates of firm exit. Specifically, we find that new ventures have a 44% lower rate of exit, start-up firms that provide retirement benefits have a 31% lower rate of exit, and start-up firms that provide tuition reimbursement benefits have a 38% lower rate of exit. On the other hand, we find little evidence to support our hypothesis that benefits that promote *flexibility* are associated with lower firm exit rates. In other words, we find no effect on the rate of new venture survival for benefits like bonus pay, stock options, paid sick leave, and paid vacation leave. We also find that both benefit types—stability and flexibility—are associated with higher odds of obtaining profits. However, stock options are associated with lower odds of obtaining a profit. While surprising, one potential explanation is that stock options are quite expensive. Consequently, offering stock option plans might reduce the profitability of start-up firms. We do not have enough detailed information on the costs of these plans, but we encourage future research to examine this issue in more detail. Lastly, we also find that all benefit plans are associated with higher odds of earning a profit, and there is little difference between benefits that promote stability and flexibility.

While our study examines the failure rates of start-ups due to going out of business, it might also be interesting to examine the *positive aspects of exit*, such as a sale or acquisition. In this case, start-up firms that exit due to a sale or acquisition might actually be successful. Better benefits packages might affect acquisition rates if a firm hires better employees. By actively attracting and retaining talented employees through the provision of employee benefits, a start-up firm might increase its value for purchase by larger firms in the industry. Though beyond the scope of this paper, we believe it is a worthy extension of our study.

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