

When Time-Off Sparks Time-At-Work

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Abstract

This paper studies how the adoption of paid vacation as a human resource practice impacts organizations in the context of new ventures. We find that the provision of paid vacation to employees positively affects both short-term venture revenue and long-term survival. We then investigate why. We do not find empirical support that paid vacation helps ventures to attract better talent. Our results are most consistent with an incentive story that paid vacation brings about organizational gains by incentivizing workers to take actual time off which ultimately improves their productivity at work.

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1 Introduction

Research has recognized human capital as a source of sustained competitive advantage (Barney, 1991; Coff and Kryscynski, 2011; Campbell et al., 2012) and highlighted the role of strategic human resource practices in affecting organizational performance (Becker and Gerhart, 1996; Wright and Haggerty, 2005). Traditionally, firms strategize over ways to incentivize workers' *time at work* through devising different compensation models and reward systems (Lazear, 2000; Ittner et al., 2003; Larkin and Leider, 2012; Ederer and Manso, 2013). As modern workers are increasingly valuing benefits and perks not directly associated with pay,¹ a range of practices have received scholar attention, including tuition reimbursement, work-from-home options, and corporate wellness programs (Cappelli, 2004; Bloom et al., 2015; Gubler et al., 2017). However, less well-understood is how *time-off* benefits impact organizations. This gap in the literature warrants particular scrutiny amidst the hype of radical firm innovation with respect to vacation policies. Companies such as Netflix, Twitter, Target, and General Electric have started providing unlimited paid time-off as a perk to their employees. Another trend of “paid” paid vacation is also emerging as bellwethers like Airbnb and Evernote offer travel coupons and vacation subsidy to workers who actually make use of their time-off allowance. However, time-off benefits present additional costs to firms, either in the form of coordination or replacement costs when workers are away or in the form of payouts when workers quit with accrued vacation. Consequently, the trade-off calls for more insights into how paid vacation influences firm outcomes.

Even less well-understood is the importance of paid vacation in the context of small and new businesses who typically do not have formal HR systems to crystallize their vacation policies (Dabić et al., 2011). Nor do they have the capacity to simply have it all — unlike the large, established firms who offer a standard package of perks ranging from 401(k) to health insurance, the small, newly-formed ventures are confined by their constrained resources and hence have to be selective in the provision of perks (Klaas et al.,

¹Fractl (2016). *Employee Benefits Study: The Cost and Value of Employee Perks*. Retrieved from <http://www.fractl.com/employee-benefits-study/>.

2000). Is paid vacation necessary? Should it be prioritized over other perks? How should it be implemented to maximize potential gains? These questions remain unanswered during a time when small entrepreneurial firms continue to prosper, driving job creation and economic growth²³.

This paper aims to fill the gaps in scholarly work and address the practitioner needs by exploring the impact of paid vacation on new venture outcomes. We focus on both revenue and survival to delineate a more complete venture outcome of growth and sustainability. We then investigate why. By inspecting the potential mechanisms underlying the effect of paid vacation, we discuss how vacation policy should be implemented for its optimal use.

Costs and resource constraints aside, paid vacation may benefit organizations either through a sorting effect or through an incentive effect. First, worker-friendly time-off benefits can play an essential role in helping firms attract talent. The offering would make the overall compensation package more appealing to job seekers when compared to that of the competitors who do not have paid vacation. Moreover, high ability candidates may self-select into ventures with paid vacation due to a higher valuation of nonmonetary benefits (Burbano, 2016). Second, apart from changing the quality composition of workers, paid vacation can empower incumbent workers by allowing them to enhance at-work productivities with the opportunity to regain health, recharge mind, or revive creativity through travel (Pressman et al., 2009; Hartig et al., 2013; Leung et al., 2008; Jia et al., 2009). While these two effects are not mutually exclusive, they point to distinct implications. The sorting effect would advocate the need for firms to highlight the benefit during recruitment whereas the incentive effect would stress the importance for firms to make sure workers actually take time-off.

Using data from the largest longitudinal study of newly formed U.S. businesses, Kauffman Firm Survey, we analyze a single-cohort panel that tracks the same group of busi-

²U.S. Small Business Administration. (2018, April 25). *Small Businesses Drive Job Growth in the U.S.* [Press release]. Retrieved from <https://www.sba.gov/advocacy/small-businesses-drive-job-growth-us>.

³Bureau of Labor Statistics (2016). *Entrepreneurship and the U.S. Economy*. Retrieved from <https://www.bls.gov/bdm/entrepreneurship/entrepreneurship.htm>.

nesses from a common starting point (birth in 2004). A fixed effects regression approach suggests that the average effect of paid vacation on new venture revenue is positive. The result is corroborated by an instrumental variable estimation, using the proportion or the lagged proportion of firms in the same 5-digit NAICS industry with paid vacation as the instrument. We further find that firms adopting paid vacation are more likely to survive using Cox proportional hazards models. We then examine the underlying mechanisms. We evaluate the sorting effect by checking whether firms that recruit new employees at the time of paid vacation introduction or firms with higher needs for high ability workers are benefiting more from paid vacation. We assess the incentive effect by verifying whether firms that are more likely to have a hard-working culture in which paid vacation is more likely nominal are benefiting less from paid vacation. We do not find empirical support for the sorting effect but find evidence most consistent with the incentive effect. Interestingly, we find that paid vacation does not affect ventures with varying degrees of resource-constraint differently. Our results suggest that paid vacation contributes positively to new venture outcomes mainly by encouraging workers to actually take time-off and consequently sparking their time-at-work.

This paper makes several contributions. First, the paper adds to the strategic human capital literature by highlighting the importance of an understudied type of benefits — paid vacation — that ultimately sparks workers’ time-at-work. Second, we represent a new consideration for the entrepreneurship and management literature on the subject of micro-level drivers for organizational performance and survival by linking worker benefits to new venture outcomes. Third, our results generate practitioner insights by shedding light on why paid vacation contributes to organizational gains.

The paper proceeds as follows. Section 2 summarizes the theoretical perspectives that generate the hypotheses for how paid vacation impacts new venture outcomes. Section 3 describes the data, measures, and empirical strategies. Section 4 presents the main findings and empirical tests of mechanisms. Section 5 concludes by discussing implications and limitations.

2 Theoretical Framework and Hypotheses

2.1 Human Resource Practices and New Venture Outcomes

In recent years, firms are increasingly reliant on various benefits and perks to attract employees and improve productivity.⁴ Scholars have also recognized the importance of human resource management for organizational performance (Grant, 1996; Hitt et al., 2001) and suggested that human capital can be a source of sustained competitive advantage for firms (Barney, 1991; Coff and Kryscynski, 2011; Campbell et al., 2012). The strategic human capital literature has in particular examined how appropriate use of human resource practices can serve as a strategic lever that leads to positive organizational outcomes (Becker and Gerhart, 1996; Wright and Haggerty, 2005). Researchers have been focusing on a broad range of high performance work practices that cover hiring, training, evaluation, rewarding, participation, communication, and work autonomy (Huselid, 1995; Way, 2002; Sun et al., 2007; Kehoe and Wright, 2013). Traditionally, firms devise their compensation models and reward systems to incentivize workers to provide more effort by tying wage to individual outputs (Lazear, 2000; Larkin and Leider, 2012; Ederer and Manso, 2013) or firm outcomes (Ittner et al., 2003). More recently, firms start to adopt a number of unconventional benefits such as tuition reimbursement, work-from-home options, and onsite corporate wellness programs, with the aim to improve on-job productivity, enhance job satisfaction, and reduce employee turnover (Cappelli, 2004; Bloom et al., 2015; Gubler et al., 2017). This strand of work has largely established a positive relationship between the appropriate use of human resource practices and various organizational outcomes.

A relatively overlooked category of HR practices in the existing management literature is time-off benefits, despite its prevalence and practitioner advocacy. While paid vacation time is not mandated by law in U.S., about 76 percent of private industry workers receive paid vacation from their employers, averaging 10 days after 1 year of service.⁵ Variants

⁴Jay Hum, “Why My Company Serves Free Breakfast to All Employees” *Harvard Business Review*, May 1, 2017, <https://hbr.org/>.

⁵Bureau of Labor Statistics (2018). *Private industry workers received average of 15 paid vacation days after 5 years of service in 2017*. Retrieved from <https://www.bls.gov/opub/ted/2018/private-industry->

of vacation policies have also emerged in recent years. Unlimited paid time-off becomes popular among technology firms, retailers, and conglomerates like Netflix, Twitter, Target, and General Electric, which believe that employees would use the vacation policy to the benefit of their firms. Companies like Evernote, Airbnb, Expedia, United Airlines, and TripAdvisor even “pay” for workers’ paid vacation by offering travel coupon, stipend, expense reimbursement, or discount tickets, with the goal to encourage workers to take more time-off.⁶ This paper focuses on paid vacation policy and empirically estimates its contribution to firm outcomes.

We do so in the context of new ventures to fill another gap in existing research — the role of HR practices in affecting entrepreneurial venture outcomes — which is understudied partially because newly formed businesses typically do not have a formal human resource department (Markman and Baron, 2002; Dabić et al., 2011). The scant current work acknowledges that decisions over human resource management is crucial to entrepreneurial success (Heneman et al., 2000; Katz et al., 2000), but provides little direct empirical evidence on how specific practices contribute to firm-level outcomes. While large, established firms may standardize an employee compensation package by including a wide range of benefits and perks such as health insurance, 401(k), paid time-off, bonus, etc., entrepreneurial firms are constrained by their limited resources due to smallness or newness (Klaas et al., 2000; Baker and Nelson, 2005) and face unique HR challenges such as recruiting difficulty, retention problems, lack of legitimacy as an employer organization, staffing issues, and the lack of financial resources to engage in costly practices (see Cardon and Stevens (2004) for a complete literature review). Hence, new ventures need to weigh the pros and cons more carefully when deciding whether or not to adopt a particular HR practice and would require a better understanding of the contingencies in the efficacy of such a practice.

Our paper studies the relationship between paid vacation and new venture outcomes, both regarding short-term performance as measured by revenue⁷ (Jenkins and Johnson,

workers-received-average-of-15-paid-vacation-days-after-5-years-of-service-in-2017.htm.

⁶Emily Moore, “11 Companies That Will Pay for Your Vacation” *Glassdoor*, October 25, 2017, <https://www.glassdoor.com>.

⁷We focus on revenue instead of profits since many firms may be profitable anytime but prefer to invest

1997; Runyan et al., 2008; Crawford et al., 2014) and long-term success as measured by survival (Gimeno et al., 1997; Delmar and Shane, 2004; Dencker et al., 2009). These two measures combined give a more wholistic picture of how the venture is doing. More importantly, we want to understand why. In the following sections, we discuss both the potential benefits and costs of paid vacation and provide a theoretical framework that may be extended to evaluate other HR practices in the context of new businesses.

2.2 Sorting Effect of Paid Vacation

When a new venture offers paid vacation to employees, a potential benefit is that the perk may address the recruiting difficulty faced by many businesses (Cardon and Stevens, 2004). The literatures on the economics of incentives and the strategic management of human capital have well established that careful choices of compensation models can help organizations sort workers of certain kinds (Cadsby et al., 2007; Eriksson and Villeval, 2008; Dohmen and Falk, 2011; Larkin and Leider, 2012). Others have shown that non-pecuniary perks related to the job can attract workers with high ability — examples include general training (Autor, 2001), purpose and meaningfulness at work endowed by corporate social responsibility (Burbano, 2016), and research resources in the context of academia (Agarwal and Ohyama, 2013).

A reasonable expectation is that offering paid vacation as a benefit to workers would have a positive impact on venture outcomes, both in terms of short-term growth and long-term survival, as the benefit lures capable candidates to the recruitment pool. For instance, the availability of paid vacation at a firm can signal a more structural HR system, thus helping the firm establish the legitimacy as an employer organization that many new ventures lack (Williamson et al., 2002). Furthermore, the presence of paid vacation, unlike stock options or bonuses that are designed to make people work more, may signal a worker-friendly working environment and particularly appeal to the modern workers who increasingly care about things other than pay such as workplace culture and work-life balance.

money back into the venture to keep steady growth in terms of sales and revenue. This is especially true for startups or tech companies.

2.3 Incentive Effect of Paid Vacation

Apart from potentially affecting the quality of candidates attracted to the recruitment pool, paid vacation may also benefit new ventures by improving the productivities of incumbent workers. Psychology and sociology research has shown that vacation improves overall worker health and invokes positive emotions (Pressman et al., 2009; Hartig et al., 2013) and thus can make returning workers more productive, with evidence both from workers' subjective perception⁸ and from supervisors' actual year-end performance ratings.⁹ Such views are backed up by findings that happier workers are more productive (Böckerman and Ilmakunnas, 2012; Oswald et al., 2015) and wellness programs that promote worker health lead to productivity gains (see Gubler et al. (2017) for a complete literature review of such programs). Moreover, vacation time to workers can be particularly beneficial to firms caring about the creativity of the human capital they possess. Vacation not only allows the employees to rest and replenish but also gives them more opportunities to travel and experience, potentially benefiting creative problem solving (Leung et al., 2008; Jia et al., 2009).

This effect on productivity, unlike the sorting effect, hinges upon actual vacation use rather than nominal entitlement. Typically, we think of “incentive effect” as an effect that motivates people to work more — here, we propose that paid vacation has an “incentive effect” of motivating people to take time off work, which ultimately can bring about productivity gains.

2.4 Costs of Paid Vacation and Resource Constraints

One possible pushback for the provision of paid vacation is that paid vacation is costly and thus may be ill-suited for resource-constrained new ventures (Klaas et al., 2000; Baker and Nelson, 2005). A number of costs are associated with the particular use of paid vacation. Paid vacation may present communication and coordination costs

⁸Monica Appelbe, “The Small Business Owner’s Guide to Taking a Vacation,” *QuickBooks*, <http://quickbooks.intuit.com/>.

⁹Tony Schwartz, “Relax! You’ll Be More Productive,” *The New York Times*, February 9, 2013, <http://www.nytimes.com/>.

when some workers are away from work. It may even lead to end-of-year chaos when employees all rush to make use of their unused granted vacation days¹⁰ Such issues can be especially troublesome for new ventures which typically lack the ability to maintain staffing flexibility (Cardon, 2003). Additionally, paid vacation can exacerbate the financial burden of newly formed businesses when their workers quit the job with accrued unused vacation. This again is alarming to new ventures as they are more likely to face challenges in retaining talent (Cardon and Stevens, 2004). If these operational costs are substantial, we would then expect more resource-constrained firms to benefit less from the adoption of paid vacation.

2.5 A Conceptual Model

We first summarize the aforementioned mechanisms through which paid vacation can impact new venture outcomes, both positively and negatively, by providing a unifying conceptual model that connects macro-implications with micro-drivers in Figure 1. We then present our hypotheses formally.

—————Insert Figure 1—————

As illustrated in the model, venture HR policy brings about both productivity gains and operational costs that ultimately impact venture outcomes. Ex ante, we do not know the net effect of paid vacation on venture revenue and survival. Nevertheless, we present the first hypothesis in a positive light just to form a basis for testing, keeping in mind that the sign is in fact ambiguous.

Hypothesis 1. *Paid vacation has a positive effect on venture outcomes.*

We move on to examine how paid vacation can improve venture outcomes through enhanced worker productivity. The first possible mechanism is a sorting effect — paid vacation would help new ventures to attract more productive workers. The alternative explanation is an incentive effect — paid vacation incentivizes workers to take time off work which in turn benefits their productivity. The next two hypotheses follow:

¹⁰Sarah Landrum, “Unlimited Vacation for Employees: Does It Really Work?” *Business.com*, September 28, 2015, <http://www.business.com>.

Hypothesis 2. *Paid vacation has a positive effect on venture outcomes by attracting more productive workers to the venture.*

Hypothesis 3. *Paid vacation has a positive effect on venture outcomes by encouraging workers to improve productivity through taking time off work.*

Finally, given the operational costs associated with the implementation of paid vacation, we expect that more resource-constrained ventures are unable to benefit as much from paid vacation as their resource-abundant counterparts.

Hypothesis 4. *More resource-constrained ventures benefit less from paid vacation than less resource-constrained ventures.*

In a nutshell, we aim to resolve the ambiguity about the net effect of paid vacation on new venture outcomes and provide evidence for the underlying mechanisms.

3 Data, Measures, and Empirical Strategies

A difficulty in the study of HR practices in the context of entrepreneurship is the lack of linked employer-employee longitudinal data across a representative set of new ventures. While administrative datasets like Longitudinal Employer-Household Dynamics (LEHD) link employees to employers, such datasets rarely have information regarding the detailed HR practices adopted by the employers, leaving researchers no choice but to rely on survey or private industry data. If a researcher wants to go beyond one or a few firms as the sample, individual-level data are hardly available for the direct tests of micro-drivers underlying the effect of a particular HR practice.

Our paper circumvents the data challenge by using firm-level data exclusively but carefully examining the organizational implications from the underlying forces that involve individual responses. We discuss whether findings at organizational level are consistent or inconsistent with the proposed mechanisms.

3.1 Data

The analyses in this paper use the sample from the Kauffman Firm Survey (KFS), the largest longitudinal study (2004-2011) of newly formed businesses (Farhat and Robb, 2014). Because no single comprehensive national business register of newly formed businesses is available as a frame, the Dun and Bradstreet (D&B) database was chosen as the sampling frame source for KFS. The population of interest was stratified based on industrial technology level and gender, and oversampled within high- and medium-tech industries. The data provide a single-cohort panel that tracks the same group of businesses from a common starting point (birth in 2004). The definition of a new business is a business that started as independent business, through the purchase of an existing business, or by the purchase of a franchise in the 2004 calendar year in the United States.

I first restrict the sample to observations with non-missing information in total number of employees, location, and industry, and further restrict the sample to observations with at least one full-time employee excluding owner(s). The final sample consists of 7,649 firm-year observations with 2,123 unique firms covering 50 states as well as Washington, D.C. The resulted sample is an unbalanced panel due to two reasons. First, some firms drop out of the sample due to closure. This feature allows us to examine survival. Second, some firms may not appear in the sample during certain years due to lack of important information relevant for analysis.

3.2 Measures

We focus on two dependent variables to evaluate venture outcomes. We use revenue to measure short-term venture performance (Jenkins and Johnson, 1997; Runyan et al., 2008; Crawford et al., 2014). This choice is not arbitrary since the KFS population is oversampled within high- and medium-tech industries — tech companies typically prefer to invest money back into the business to pursue growth even though this would mean net losses on their income statement. Therefore, revenue, which allows us to gauge growth, serves a more appropriate short-term outcome measure in our context. As is common in the finance literature, we use the natural logarithm of revenue, calculated

as $\log(0.01 + \text{revenue})$, to diminish the impact of outliers. Moreover, we use survival to measure long-term venture success (Gimeno et al., 1997; Delmar and Shane, 2004; Dencker et al., 2009). Our data precisely tell us whether a venture drops out of the sample because of closure, allowing us to create a binary indicator of closure.

The main independent variable is the adoption of paid vacation for full time employees. A range of interaction effects are explored to examine underlying forces, which involves variables including a binary indicator of high tech venture, increase in total number of full time employees from the previous year, average weekly working hours by primary owner or all owner-operators, and equity injection in a year or in all years as a proxy for the financial resources a venture has. We also include a set of time-varying binary indicator variables to control for other concurrent HR practices including paid sick leave, health plan, retirement plan, stock ownership, bonus plan, tuition reimbursement, and flex time or job sharing. Note that while our dataset also contains information about HR practices for part-time employees, we focus exclusively on HR practices for full-time employees. In addition, we control for the number of total employees as a proxy for firm size.

Table 1 provides the descriptive statistics of all the variables used in our analyses. These new ventures are small in size, with an average number of 8 total employees. 15% of the observations are in high tech status. Paid vacation is the most common human resource practice adopted (52% of the observations), followed by flex time or job sharing, paid sick leave, and health plan.

—————**Insert Table 1**—————

3.3 Empirical Strategies

We first examine the net effect of paid vacation on venture revenue with two approaches. We start by exploring intra-venture variation with fixed effects models which control for firm-specific and year-specific unobservables. To further deal with the concerns about firm-year level unobservables and make full use of inter-venture variation, I resort to instrumental variable estimation using either the proportion or the lagged propor-

tion of competitors that have paid vacation as an instrument for adopting paid vacation. Competitors are defined as having the same 5-digit NAICS industry code (Forman et al., 2005, 2008). The adoption decision by competitors do not directly affect venture revenue, but can nudge the venture to choose a similar decision adopted by the majority to avoid losing competitiveness in the demand-side of the labor market. On one hand, benchmarking organization’s benefits against others in the same industry is a common practice¹¹. Indeed, we find evidence for the relevance condition for the instrument as shown by Table 2 — the proportion or the lagged proportion of competitors who adopt paid vacation positively predicts whether or not the focus venture adopts paid vacation in the first stage of the two stage least squares (2SLS) regression. On the other hand, we find evidence for the exclusion condition that the proportion or the lagged proportion of competitors who adopt paid vacation does not directly affect venture revenue. One possible channel through which the adoption decision by competitors may affect the focus venture directly is that competitors who have paid vacation are more likely to attract talent away from the focus venture. If this is the case, then a higher proportion of competitors with paid vacation should negatively impacts the focus venture. However, we do not find a negative relationship between the instrument and venture revenue — the correlation between the two is 0.20 (concurrent proportion) or 0.19 (lagged proportion). In both approaches, we cluster standard errors at the venture level to account for potential serial correlation of observations within the same venture.

————— **Insert Table 2** —————

We then investigate the net effect of paid vacation on venture survival through event history analysis. More specifically, we resort to the Cox proportional hazards model due to a few advantages. First, it leaves the baseline survival function unspecified (Blossfeld et al., 2012). Second, it allows for easy inclusion of time-varying variables (Hosmer et al., 2011). Third, it effectively deals with survival time with ties (Collett, 2015).

¹¹Society for Human Resource Management (2017). *2017 Employee Benefits: Remaining Competitive in a Challenging Talent Marketplace*. Retrieved from <https://www.shrm.org/hr-today/trends-and-forecasting/research-and-surveys/Documents/2017%20Employee%20Benefits%20Report.pdf>.

To test our hypotheses regarding the mechanisms that underlie the effect of paid vacation, we turn to a number of models with interaction terms. First, to test whether paid vacation has a sorting effect as stated in Hypothesis 2, we look at ventures' need for high skill workers and the recruitment of new employees. If paid vacation helps ventures to attract better workers, then ventures with a stronger need for highly skilled workers, such as high tech ventures, would benefit more from paid vacation. Moreover, ventures with an increase in the total number of full-time employees should see larger benefits from paid vacation. Paid vacation is interacted with the high tech indicator or the increase in the number of full time employees in the regression specifications that aim to test the sorting effect. Second, to test Hypothesis 3 that paid vacation incentivizes workers to actually take time off and consequently improves their productivity, we gauge the degree of vacation utilization by looking at how hard the venture owners work. Many workers may sit on unused vacation days due to career concerns and workplace norms.¹² Vacation utilization is likely low when a hard-working culture is instilled by bosses who work hard. Therefore, ventures with more hard-working owners are likely to benefit less from paid vacation policy when workers are not incentivized to take actual vacation. We interact paid vacation with the average number of weekly hours worked by the primary owner or all owner-operators in our model. Finally, we test Hypothesis 4 regarding how resource-constraint may play a role in evaluating the costs associated with paid vacation. We proxy a venture's financial resources using equity injection in dollars in a given year or in all years. We include the interaction between paid vacation and equity injection in the model to test whether more resource constrained firms benefit less from paid vacation.

4 Results

4.1 The Net Effect of Paid Vacation

We start by evaluating Hypothesis 1 regarding the net effect of paid vacation on venture outcomes. Two approaches are used to examine how venture revenue is impacted

¹²Project: Time Off (2018). *State of American Vacation 2018*. Retrieved from <https://projecttimeoff.com/wp-content/uploads/2018/05/StateofAmericanVacation2018.pdf>.

by the adoption of paid vacation. First, simple OLS regression and fixed-effects regression models are considered in Table 3. Columns (1) and (2) present results from simple OLS regressions. Columns (3) and (4) show results after firm fixed effect and year fixed effects are included to control for unobservables at the firm or year level. Across all specifications, paid vacation consistently has a positive effect on venture revenue. The magnitude of the effect is also sizable — having paid vacation suggests a 68% increase in venture revenue according to Column (4). In comparison, other HR practices have a much smaller positive association (e.g., health plan, retirement plan, bonus plan, flex time/job sharing) or even a negative association (e.g., stock ownership) with venture revenue when we do not control for heterogeneity at the firm or year level, as shown in Column (2). After firm or year fixed effects are controlled in Columns (3) and (4), many of these practices do not appear to consistently have a statistically significant effect on venture revenue. Only bonus plan and paid sick leave both affect revenue positively in both specifications, but to a smaller degree (38-45% or 52-56% increase in revenue) when compared with paid vacation.

————— **Insert Table 3** —————

Second, to further deal with concerns about firm-year level unobservables, two instruments are considered for paid vacation - the proportion of competitors¹³ that adopt paid vacation and the lagged version of this proportion. Results from the 2SLS estimation are shown in Table 4. Consistent with the findings from fixed-effects analysis, we find that paid vacation positively affects venture revenue regardless of the instrument we use. Note that the magnitude of the coefficients is much higher in the 2SLS model than in the Table 3 models. There are two main factors leading to this discrepancy. First, the 2SLS estimation uses a smaller subset of ventures which have at least more than one competitor. The effect of paid vacation on this subsample can be stronger as these ventures face more competition and can gain more from the recruiting benefits or productivity gains that paid vacation brings about. Second, our 2SLS coefficients are estimated using both inter-venture and intra-venture variation while the fixed-effects models only resort to variation

¹³Results are robust to different definitions of competitors based on 2-digit, 3-digit, 4-digit, or 5-digit NAICS industry code.

within-venture and naturally would produce smaller estimates as many ventures do not switch their vacation policy over time.

—————**Insert Table 4**—————

We then examine Hypothesis 1 in the context of venture survival. Table 5 shows the results from Cox proportional hazards models. We find that paid vacation has a statistically significant negative effect on the likelihood of venture closure. According to Column (2), adopting paid vacation reduces the venture failure rate by 20% (calculated from $1 - \exp(-0.219)$).

—————**Insert Table 5**—————

Together, we find a positive net effect of paid vacation on both short-term revenue and long-term survival, which reconciles the ambiguous sign ex ante that Hypothesis 1 aims to address. Such a positive effect is statistically significant across a range of modeling approaches and specifications.

4.2 Mechanisms for the Positive Effect of Paid Vacation

We now investigate the possible mechanisms that lead to the positive net effect of paid vacation on venture outcomes. Specifically, Hypothesis 2 argues that the net effect is driven by a sorting effect and Hypothesis 3 predicts an underlying incentive effect. To test these hypotheses, we include the interaction between paid vacation and a range of variables into our previous models. Table 6 and Table 7 present the findings.

We first evaluate the mechanisms in light of venture revenue based on results in Table 6. If paid vacation positively affects venture revenue through a sorting effect as stated by Hypothesis 2, we should find that ventures with the need for highly skilled workers such as high tech ventures would benefit more from paid vacation than those ventures that do not rely heavily on skilled workers. Moreover, ventures with an increase in the total number of full time employees should see larger benefits from paid vacation as the newly recruited workers should be the better quality talent that the ventures without

paid vacation fail to attract. However, we do not find evidence for either argument in Columns (1) and (2) as the coefficients are not statistically significant for the interaction terms. On the other hand, if paid vacation incentivizes workers to actually take them off and consequently improves their productivity according to Hypothesis 3, we would expect ventures with more hard-working owners to benefit less from paid vacation since they are less likely to have a culture that promotes more vacation utilization. This is indeed the case as shown in Columns (3) and (4). For instance, ventures that adopt paid vacation will only benefit from the practice if their owners are not too overworked. A venture with owner-operators who on average work 94 hours (4.231/0.045) per week no longer benefits from paid vacation, likely because of a hard-working culture that prohibits vacation utilization despite its nominal presence. Therefore, we do not find evidence, at least in our context, for the sorting effect predicted by Hypothesis 2, but our results are consistent with Hypothesis 3 that paid vacation exerts its positive influence when workers are actually taking time off.

—————**Insert Table 6**—————

Results in Table 7 regarding venture survival tell a similar story. We do not find that the negative effect of paid vacation on venture closure is stronger for high tech ventures or ventures with more newly recruited employees as shown in Columns (1) and (2), but this negative effect is weaker if a venture has a primary owner who works hard as shown in Column (4). Paid vacation no longer reduces venture failure rate when the primary owner works more than 88 hours (0.53/0.006) per week. Coefficient for the interaction between paid vacation and average working hours by all owner-operators, however, is not statistically significant. Nevertheless, the findings for the effect of paid vacation on survival present some evidence in support of the incentive story in Hypothesis 3 but not of the sorting story in Hypothesis 2.

—————**Insert Table 7**—————

In summary, we find that paid vacation has a positive net effect on venture outcomes (both revenue and survival) mainly through the incentive effect channel. Ventures with

overworked owners likely instill a hard-working culture that discourages actual vacation utilization, thus limiting the gains venture can acquire through the adoption of paid vacation.

4.3 Do Resource Constraints Matter?

We find that on average, the worker productivity gains from paid vacation outweigh the operational costs associated with the adoption of the practice. Is it still true for particularly resource-constrained ventures? To evaluate Hypothesis 4 that resource-constrained ventures benefit less from paid vacation, we examine a model with the interaction between paid vacation and a proxy for financial resources (equity injection in the current year or in all years). Results are shown in Table 8. Interestingly, we find that more resource-constrained ventures are not statistically significantly differentially affected by paid vacation when compared to their less resource-constrained counterparts. In fact, the coefficients for the interaction terms are estimated to be near zero in Columns (1)-(3), suggesting that instead of not finding an effect, we find a null effect in those three specifications. One way to interpret the null effect is that the operational costs associated with the adoption of paid vacation may be really low in comparison with other business operation costs. The potential coordination and replacement costs are likely mitigated by modern technology as workers away from work are still readily available via email or instant messaging. Payouts for accrued unused vacation upon job termination are also likely not substantial given the small size of new ventures who are unlikely to see an exodus of workers. We do not find evidence for Hypothesis 4 and in fact find that resource-constraints should not be a concern for ventures hoping to adopt paid vacation.

—————**Insert Table 8**—————

5 Discussion and Conclusion

Human capital is the most critical asset of nascent ventures and employee perks play an important role in attracting and incentivizing workers. This paper focuses on

how and why paid vacation affects new ventures. Guided by a conceptual model that connects macro-implications with micro-drivers, we find a positive net effect of paid vacation both on short-term venture revenue and on long-term venture survival. We do not find empirical support that such an effect is driven by the acquisition of better workers but find evidence most consistent with an incentive story — paid vacation incentivizes workers to take time off work that ultimately improves their productivity at work. We also find that the operational costs associated with the adoption of paid vacation are relatively small when compared with the gains, even for the more resource-constrained ventures.

The setting of small and nascent ventures is also ideal for examining the effect of human resource on firm outcomes since new ventures are the petri-dish for experimentation and have more flexibility in terms of adjusting the human resource practices to specific needs. In contrast, large traditional firms typically have various human resource practices in place, especially standard paid vacation policy, and are unlikely to experience changes in the adoption of these practices. Therefore, the KFS sample provides a great opportunity to study how paid vacation impacts organization with considerable inter-firm and intra-firm variation to be explored by the empirical analyses.

Our findings provide a number of managerial implications. First, for ventures hoping to attract better talent from competitors, offering paid vacation may not be sufficient to ensure that they will acquire a pool of workers who are necessarily more productive. Ventures may be better off using the traditional monetary incentives such as bonus or stock options to crystallize performance expectation during the recruitment process so as to screen out low productivity workers who cannot meet such expectation. Second, to successfully implement paid vacation as an HR practice and maximize the gains, ventures need to avoid nominal vacation days and cultivates a workplace norm that encourages vacation utilization. Third, resource-constrained ventures should not be intimidated by the potential operational costs with the adoption of paid vacation as they are likely minimal compared to the benefits.

A few limitations are worth discussing. First, the positive net effect observed might

be underestimated as people may not fully make use of the paid vacation. For instance, in the 2016 survey conducted by the International Foundation of Employee Benefit Plans, the average utilization rate of paid vacation is found to be 83.5%. Second, while we aim to circumvent the lack of individual-level data, our results only allow us to make inference about the underlying mechanisms as we do not have the data on worker productivity and actual vacation use. Future work should be complemented with more nuanced or qualitative evidence for (or against) the mechanisms. Third, our discussion is centered around revenue and survival as the outcome variables. While the goal is to provide a more wholistic view of venture success, venture success is a multi-faceted construct. Future research should extend to a wider range of outcome measures such as innovation and social impact.

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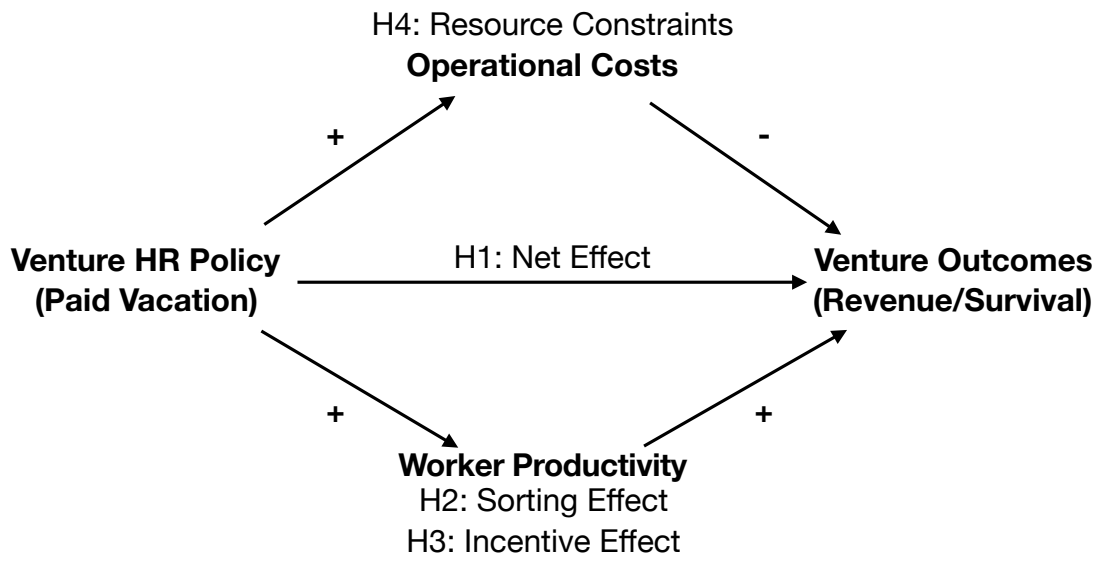


Figure 1: A Conceptual Model

Table 1: **Summary Statistics.** This table presents the summary statistics for the sample. Due to data confidentiality, minimum and maximum values are not reported. Binary variables are indicated with (0/1).

VARIABLE	COUNT	MEAN	MEDIAN	STD. DEV.
<i>Dependent Variables</i>				
Revenue (Logged)	7,505	9.64	12.10	6.45
Closure (0/1)	7,649	0.23	0.00	0.42
<i>Independent Variables</i>				
Paid Vacation	7,623	0.52	1.00	0.50
Increase in Total Number of Full Time Employees	5,129	0.33	0.00	0.47
High Tech Indicator (0/1)	7,649	0.15	0.00	0.36
Average Weekly Working Hours by Primary Owner	7,516	48.03	50.00	22.27
Average Weekly Working Hours by All Owner-Operators	7,639	45.74	50.00	18.53
Equity Injection in Dollars in a Year	7,476	75515.81	0.00	1255927.00
Equity Injection in Dollars in All Years	7,497	279688.70	30000.00	2874468.00
<i>Controls</i>				
Paid Sick Leave	7,623	0.42	0.00	0.49
Health Plan	7,634	0.41	0.00	0.49
Retirement Plan	7,631	0.21	0.00	0.41
Stock Ownership	7,606	0.07	0.00	0.26
Bonus Plan	7,613	0.33	0.00	0.47
Tuition Reimbursement	7,617	0.12	0.00	0.32
Flex Time or Job Sharing	7,625	0.44	0.00	0.50
Total Number of Employees	7,649	7.66	4.00	14.26

Table 2: **Paid Vacation and Revenue — Instrumental Variable Regression First Stage.** This table presents the first stage regression results for examining the effect of paid vacation on venture revenue with instrumental variable approach. Sample includes all firm-year observations with more than one competitor. Robust standard errors are in parentheses. * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$.

	Paid Vacation	
	(1)	(2)
Proportion of Competitors that Adopt Paid Vacation	0.402*** (0.025)	
Lagged Proportion of Competitors that Adopt Paid Vacation		0.350*** (0.029)
Constant	0.303*** (0.014)	0.405*** (0.017)
Observations	5651	3920
R^2	0.042	0.035

Table 3: **Paid Vacation and Venture Revenue.** This table presents the fixed effects regression results for examining the net effect of paid vacation on venture revenue, in support of Hypothesis 1. Robust standard errors are in parentheses, clustered at the firm level. * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$.

	Revenue (Logged)			
	(1)	(2)	(3)	(4)
Paid Vacation	3.802*** (0.189)	2.198*** (0.257)	1.066*** (0.325)	0.680** (0.298)
Total Number of Employees		0.035*** (0.008)	0.053*** (0.010)	0.035*** (0.008)
Health Plan		1.203*** (0.205)	0.331 (0.287)	0.242 (0.263)
Retirement Plan		1.011*** (0.216)	1.080*** (0.291)	0.252 (0.275)
Stock Ownership		-1.037*** (0.388)	0.465 (0.379)	0.862** (0.362)
Bonus Plan		0.901*** (0.193)	0.451** (0.215)	0.380* (0.201)
Tuition Reimbursement		0.241 (0.249)	0.052 (0.295)	-0.252 (0.280)
Paid Sick Leave		0.090 (0.238)	0.518* (0.289)	0.560** (0.276)
Flex Time or Job Sharing		0.497*** (0.178)	0.176 (0.203)	0.288 (0.195)
Constant	7.670*** (0.151)	6.994*** (0.166)	7.822*** (0.195)	5.654*** (0.280)
Firm Fixed Effects	No	No	Yes	Yes
Year Fixed Effects	No	No	No	Yes
Observations	7485	7390	7390	7390

Table 4: **Paid Vacation and Venture Revenue — Instrumental Variable Regression.** This table presents the instrumental variable regression results for examining the net effect of paid vacation on venture revenue, in support of Hypothesis 1. Model 1 shows the results using proportion of competitors that adopt paid vacation as the instrument. Model 2 shows the results using lagged proportion of competitors that adopt paid vacation as the instrument. Robust standard errors are in parentheses, clustered at the firm level. $*p < 0.10$ $**p < 0.05$ $***p < 0.01$.

	Revenue (Logged)	
	(1)	(2)
Paid Vacation	12.731*** (3.167)	12.607*** (3.683)
Total Number of Employees	0.011 (0.009)	0.007 (0.009)
Health Plan	-0.669 (0.602)	-0.674 (0.686)
Retirement Plan	0.774** (0.311)	0.456 (0.338)
Stock Ownership	-0.817* (0.484)	-0.363 (0.527)
Bonus Plan	-0.379 (0.488)	-0.457 (0.543)
Tuition Reimbursement	0.057 (0.360)	-0.070 (0.388)
Paid Sick Leave	-6.418*** (1.987)	-6.125*** (2.163)
Flex Time or Job Sharing	0.089 (0.272)	-0.153 (0.318)
Constant	5.909*** (0.379)	6.445*** (0.615)
Observations	5470	3794

Table 5: **Paid Vacation and Venture Survival.** This table presents the Cox proportional hazards model results for examining the net effect of paid vacation on venture survival, in support of Hypothesis 1. Standard errors are in parentheses. Coefficients are displayed instead of hazard ratios. * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$.

	Event of Venture Closure	
	(1)	(2)
Paid Vacation	-0.496*** (0.048)	-0.219*** (0.077)
Total Number of Employees		-0.006** (0.003)
Health Plan		-0.334*** (0.061)
Retirement Plan		-0.326*** (0.073)
Stock Ownership		0.651*** (0.083)
Bonus Plan		-0.001 (0.061)
Tuition Reimbursement		-0.151* (0.090)
Paid Sick Leave		-0.009 (0.076)
Flex Time or Job Sharing		-0.100* (0.052)
Observations	7623	7526

Table 6: **Mechanisms for the Effect on Venture Revenue.** This table presents the tests of Hypotheses 2 and 3. Standard errors are in parentheses. * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$.

	Revenue (Logged)			
	(1)	(2)	(3)	(4)
Paid Vacation	1.857*** (0.260)	2.270*** (0.225)	4.231*** (0.425)	3.409*** (0.384)
Increase in Total Number of Full Time Employees	0.283 (0.325)			
Paid Vacation \times Increase in Total Number of Full Time Employees	-0.191 (0.383)			
High Tech (0/1)		0.674** (0.311)		
Paid Vacation \times High Tech (0/1)		-0.523 (0.403)		
Average Weekly Working Hours by Owner-Operators			0.049*** (0.005)	
Paid Vacation \times Average Weekly Working Hours by Owner-Operators			-0.045*** (0.008)	
Average Weekly Working Hours by Primary Onwer				0.035*** (0.004)
Paid Vacation \times Average Weekly Working Hours by Primary Onwer				-0.027*** (0.006)
Total Number of Employees	0.025*** (0.005)	0.035*** (0.005)	0.035*** (0.005)	0.034*** (0.005)
Health Plan	1.099*** (0.187)	1.190*** (0.172)	1.061*** (0.171)	1.169*** (0.172)
Retirement Plan	0.783*** (0.199)	1.007*** (0.192)	1.035*** (0.191)	1.055*** (0.192)
Stock Ownership	-0.662** (0.308)	-1.104*** (0.284)	-0.994*** (0.278)	-1.090*** (0.280)
Bonus Plan	0.799*** (0.183)	0.907*** (0.172)	0.838*** (0.171)	0.875*** (0.172)
Tuition Reimbursement	0.150 (0.242)	0.238 (0.234)	0.260 (0.233)	0.259 (0.234)
Paid Sick Leave	0.159 (0.220)	0.089 (0.211)	0.064 (0.209)	0.053 (0.211)
Flex Time or Job Sharing	0.373** (0.167)	0.473*** (0.152)	0.446*** (0.151)	0.439*** (0.152)
Constant	7.996*** (0.160)	6.922*** (0.121)	4.941*** (0.238)	5.499*** (0.226)
Observations	4970	7390	7385	7273

Table 7: **Mechanisms for the Effect on Venture Survival.** This table presents the tests of Hypotheses 2 and 3. Standard errors are in parentheses. * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$.

	Event of Venture Closure			
	(1)	(2)	(3)	(4)
Paid Vacation	-0.170 (0.110)	-0.248*** (0.078)	-0.385** (0.149)	-0.530*** (0.137)
Increase in Total Number of Full Time Employees	0.143 (0.124)			
Paid Vacation \times Increase in Total Number of Full Time Employees	0.045 (0.154)			
High Tech (0/1)		-0.209** (0.104)		
Paid Vacation \times High Tech (0/1)		0.228 (0.141)		
Average Weekly Working Hours by Owner-Operators			-0.001 (0.002)	
Paid Vacation \times Average Weekly Working Hours by Owner-Operators			0.004 (0.003)	
Average Weekly Working Hours by Primary Onwer				-0.001 (0.001)
Paid Vacation \times Average Weekly Working Hours by Primary Onwer				0.006*** (0.002)
Total Number of Employees	-0.005* (0.003)	-0.006** (0.003)	-0.006** (0.003)	-0.007** (0.003)
Health Plan	-0.266*** (0.080)	-0.335*** (0.061)	-0.328*** (0.061)	-0.316*** (0.062)
Retirement Plan	-0.244*** (0.091)	-0.326*** (0.073)	-0.328*** (0.073)	-0.328*** (0.074)
Stock Ownership	0.648*** (0.111)	0.665*** (0.085)	0.659*** (0.083)	0.668*** (0.083)
Bonus Plan	0.008 (0.079)	-0.001 (0.061)	-0.003 (0.061)	0.029 (0.062)
Tuition Reimbursement	-0.172 (0.113)	-0.149* (0.090)	-0.161* (0.090)	-0.143 (0.090)
Paid Sick Leave	0.021 (0.097)	-0.011 (0.076)	-0.010 (0.076)	-0.013 (0.077)
Flex Time or Job Sharing	-0.184** (0.072)	-0.092* (0.053)	-0.101* (0.053)	-0.113** (0.053)
Observations	5050	7526	7517	7398

Table 8: **Paid Vacation and Resource Constraints** This table presents the test of Hypothesis 4. Standard errors are in parentheses. * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$.

	Revenue (Logged)		Event of Venture Closure	
	(1)	(2)	(3)	(4)
Paid Vacation	2.071*** (0.223)	2.224*** (0.224)	-0.191** (0.078)	-0.219*** (0.079)
Equity Injection	-0.000*** (0.000)		0.000*** (0.000)	
Paid Vacation \times Equity Injection	0.000*** (0.000)		-0.000*** (0.000)	
Equity Injection in All Years		0.000** (0.000)		-0.000 (0.000)
Paid Vacation \times Equity Injection in All Years		-0.000** (0.000)		0.000 (0.000)
Total Number of Employees	0.036*** (0.005)	0.036*** (0.005)	-0.006** (0.003)	-0.006** (0.003)
Health Plan	1.244*** (0.173)	1.225*** (0.173)	-0.365*** (0.062)	-0.352*** (0.062)
Retirement Plan	0.979*** (0.194)	1.005*** (0.193)	-0.313*** (0.075)	-0.323*** (0.075)
Stock Ownership	-1.040*** (0.286)	-1.081*** (0.285)	0.621*** (0.085)	0.650*** (0.085)
Bonus Plan	0.893*** (0.173)	0.900*** (0.173)	-0.002 (0.062)	-0.005 (0.062)
Tuition Reimbursement	0.242 (0.236)	0.254 (0.236)	-0.156* (0.091)	-0.158* (0.091)
Paid Sick Leave	0.146 (0.212)	0.137 (0.212)	-0.022 (0.078)	-0.028 (0.078)
Flex Time or Job Sharing	0.503*** (0.153)	0.476*** (0.153)	-0.095* (0.053)	-0.093* (0.053)
Constant	7.067***	6.956***		
Observations	7247	7265	7363	7382