

HIRING DECISIONS OF NEW VENTURES ACROSS GROWTH RATES AND AGE

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ABSTRACT

We investigate whom new ventures hire based on their growth rate and age using data on 64,404 hires among growing new ventures in Sweden from 2008 to 2015. We find distinctive differences in new ventures' hires depending on their growth rate and age during their first five years of operations. High-growth new ventures are more likely to hire individuals with higher educational attainment and previous management experience compared to new ventures that are growing more slowly, while we find no support for the hypothesis that high-growth new ventures hire unemployed individuals and those that are outside the labor force. High-growth new ventures are thus more selective in their hiring decisions than new ventures with lower sales growth rates, supporting theories that emphasize the need of investments in human capital among the fastest growing firms. These differences in hiring practices are most prevalent during new ventures' first three years of operation and become more negligible as the ventures age.

Keywords: Firm growth; High-growth firms; New ventures; Scale-ups; Recruitments

JEL-codes: M13; L25

INTRODUCTION

The main emphasis in the literature on new venture growth has been on the factors that lead to growth rather than on *how* these firms grow (McKelvie & Wiklund, 2010). Particularly, within the how firms grow stream of research, there has been little understanding of whom new ventures hire (Chandler et al., 2009; Coad, et al., 2014). This is a major oversight as adding employees to growing new ventures is vital given the key role that many early-stage employees play (Cardon & Stevens, 2004; Greer, Carr, & Hipp, 2015), and the enduring impact these employees might have on the future development of the firm (Barron, Hannan & Burton, 1999; Heneman, Tansky & Camp, 2000; Long, Wood & Bennett, 2022). It is even more troubling as the extant literature has demonstrated a wide heterogeneity in the pace and magnitude of new venture growth (e.g., Delmar, Davidsson & Gartner, 2003; Demir, Wennberg & McKelvie, 2017), but where theorizing and empirical modelling has paid scant attention to the potentially unique hiring needs in place to achieve or sustain these various paces of growth over time.

The issue of new ventures' hiring practices during early stages of their existence is important for two reasons. First, although Penrose (1959) emphasized hiring as an important part of the growth process, there is surprisingly little research that has addressed the issue of whom and when growing new ventures hire – especially in the face of the unique challenges concerning the timing and pacing of scale that these firms face. We therefore have limited understanding of the human capital needs of high-growth new ventures and how the pace of growth relates to the how aspects of growth. Second, new firms often struggle to recruit key employees (Barrett & Mayson, 2006; Greer et al., 2015; Williamson, Cable & Aldrich, 2002), as many more traditional employment opportunities may be viewed as less risky and with greater structure (Cardon & Tolchinsky, 2006; Heneman et al., 2000). Even among high-growth ventures, understanding the

characteristics of the individuals by examining the actual hires they make is essential to understanding the challenges and needs of high-growth new ventures.

Theory has yet to provide us with an unambiguous view on whom new ventures hire as a function of their growth rate. Rather, there appear to be two potential competing perspectives. On one hand, fast-growing new ventures are considered to face greater challenges when hiring compared to start-ups growing at a more moderate pace (Delmar et al., 2003; Demir et al., 2017). High-growth new ventures might thus not be able to exercise patience in waiting for a ‘best match’ to take advantage of their growth opportunities in an expedited manner. Their focus on rate of growth implies that they will hire employees that are more readily available, with less regard to their specific skill sets and prior experience (Coad et al., 2014).

On the other hand, high-growth new ventures have the need for other abilities than slower growing new ventures (Nicholls-Nixon, 2005; Penrose 1959). In order to capture these competencies, high-growth new ventures need to invest more in human capital to obtain and maintain their growth rates (Hözl, 2009). Fast-growing new ventures will thus search for employees with unique abilities and hire individuals with high levels of human capital, including management experience (Nicholls-Nixon, 2005) and the ability to be innovative and fit with a changing firm (Fischer et al., 1997).

There is limited research that has addressed hiring differences as a function of firm size (Barber et al., 1999; Deshpande & Golhar, 1994), and even fewer studies have investigated if hiring differs based on firms’ growth rate and age. One rare exception is Coad et al. (2014), who examined the hiring practices of the highest-growth firms in the Swedish knowledge-intensive service sector, finding that they were more likely to employ younger individuals, those with lower education, first-generation immigrants and those with more days as unemployed. Daunfeldt and

Westerberg (2020) extend Coad et al.'s analyses, finding that high-growth firms also are more likely to hire first-generation immigrants that are unemployed. These studies thus provide evidence that high-growth firms are less selective in their hiring decisions and tend to hire employees that are readily available on the labor market, rather than searching for employees with higher levels of human capital. However, both Coad et al. (2014) and Daunfeldt and Westerberg (2020) use data on all firms, which means that we still lack knowledge on the hiring decisions of new ventures. They furthermore use a dichotomous variable to investigate if the hiring decisions of high-growth firms differ from those of non-growth firms. This means that the latter group consists of very heterogenous group of firms, including firms that have declining growth rates.

We test the competing hypotheses discussed above using a longitudinal matched employer-employee dataset from Statistics Sweden, which allows us to follow all new ventures from 2007 to 2015 and separate them based on their five-year growth rates and time since start-up. In doing so, we contribute to the literature by examining the different rates of growth (Delmar, Davidsson & Gartner, 2003) and the differing challenges that new ventures face as they grow and age (McKelvie & Wiklund, 2010). The richness of the dataset means that we can distinguish between gender, age, educational attainment, managerial experience, and previous labor market status of the newly hired employees. We are thus able to test whether rapidly growing new ventures are more or less likely to hire individuals with high human capital or those who are more readily accessible on the labor market, such as those who are unemployed or outside the labor force. This helps to inform our understanding of the hiring practices of growing new ventures.

We provide two main contributions to the literature. First, we hypothesize about and empirically demonstrate a unique pattern of new venture hiring practices that differ along the growth rate distribution. The fastest growing firms face selectivity gaps as they need to balance

their requirements for attracting and recruiting the right kind of talent to grow their businesses, while also ensuring that they do so at the appropriate pace. As such, they face a timing versus fit dilemma where the most readily available talent, such as currently unemployed individuals or those with limited options on the labor market, with the actual needs of the firm and management capacity to lead growth. Lower-growth firms, in contrast, face lesser pressures for making such hiring decisions. We provide new empirical details into this trade-off, showing that fast growing new ventures are more likely to hire individuals with higher education and managerial experience, which implies that they do not ‘settle’ for employees that are more readily available on the labor market, in line with Penrose’s arguments about growing firms. Hence, hired employees differ between fast and slow-growth new ventures, and the highest-growing new ventures seem less concerned about minimizing search costs and more eager to recruit high potential individuals that can promote future growth (Barringer, Jones & Neubaum, 2005; Fischer et al., 1997).

Second, we examine these issues over time by investigating the hires of growing new ventures during their first five years of operations. As such, we test if the human capital needs and hired employees of new ventures change over time. We thus provide new evidence on one of the potential underlying factors that allow growing new ventures to remain ahead of their peers over time. This helps to illuminate the ‘fit’ aspects between the hiring done and at what stage of firm development (Rutherford, Buller & McMullen, 2003; Nason, McKelvie & Lumpkin, 2015). Interestingly, we find that the differences in employees hired among new ventures with different growth rates are most prevalent during their first three years of operation. These early condition differences might offer new theoretical insights into why some firms are able to scale more rapidly than other more modestly growing firms.

Combined, our empirical evidence contributes to theorizing about the human capital needs of growing new ventures, including the tension between the needs of growing firms to be less selective and simply add individuals to fuel growth or hiring highly educated individuals to manage growth. Our findings indicate that the needs for specific skills and experiences differ across firms of different growth patterns, and that fast-growing new ventures invest more in employees with higher education and managerial experience rather than to recruit individuals that are readily available on the labor market. As such, we contribute to the literature by combining the growing literature on *how* firms grow with the traditional approach that focuses on *how much* firms grow. Our results suggests that these two aspects are interrelated; with the how aspect of growth being heterogeneous and ultimately depending on how much new ventures grow.

THEORY AND HYPOTHESES

New ventures face differing management challenges as they grow (Kazanjian & Drazin, 1990). These obstacles are likely to depend on the growth rates of new ventures, with high-growth start-ups having greater management challenges than more moderate growth new ventures (Delmar et al., 2003; Demir et al., 2017). The fastest growing new ventures face, for example, a unique quagmire regarding the need for more quickly developing an organizational structure and routines as part of their organizational development. Rapidly growing new ventures might also need to add substantial numbers of employees in a short period of time to maintain their high growth rates, which implies a need for more formalized Human Resource Management systems to handle the important task of recruitment and training of new hires (Hambrick & Crozier, 1985).

Rapidly growing new ventures need, for example, to ensure that their employees acclimate to their new positions, and that there is sufficient managerial capability and oversight to ensure that the new hires conduct their work appropriately (Chandler et al., 2009; Demir et al., 2017).

One key aspect when dealing with these challenges is the decision of how many individuals to recruit during the earliest years of development, but also what characterizes those that are hired. These decisions ultimately might determine whether high-growth new ventures are able to sustain their high growth rates over time (Wiklund, Davidsson & Delmar, 2003).

However, theory gives us no clear answer whether and how the hires of high-growth new ventures differ from those start-ups characterized by lower growth. On the one hand, some studies suggest (e.g., Coad et al., 2014) that fast-growing firms are more likely to recruit individuals that have trouble in entering the labor market. The theoretical rationale is that these individuals are marginalized on the labor market and therefore more easily hireable to growing ventures. This suggests that the recruitment of individuals with lower human capital is a deliberate strategy to overcome the concern of accessing talent (Coutu 2014). The first hypothesis that we test is therefore:

Hypothesis 1: Fast-growing new ventures are *more* likely to recruit individuals that are unemployed (H1a), with lower educational attainment (H1b) and less managerial experience (H1c) than new ventures that are characterized by more moderate growth rates.

Hypothesis 1 implies that fast-growing new ventures are more likely to hire employees with lower human capital to sustain their growth pace, and instead provide them with more on-the-job training. This hypothesis is based on the assumption that the matching process on the labor market is characterized by asymmetric information and high search costs (Mortensen & Pissarides, 1999). Employers have more information about the positions that they offer than job seekers, while job seekers have more information about their particular skills. The situation is complicated by the fact that employers have incentives to hide facts from the job seekers to get the best possible set of applicants, whereas employees have incentives to hide information that might prevent them

from getting the position. The time it takes for employers and employees to find each other results in search costs, which ultimately will be determined by how much time and resources employers and employees need to spend in order to get a match. These search costs are higher for fast-growing new ventures because they need to recruit many new employees relatively to more moderate growing new ventures.

However, high-growth new ventures might also have greater need for unique competences and therefore have other recruitment needs than slower growing new ventures. High growth ventures might, for example, need to invest more in human capital to maintain their high growth rates. The logic is that the fast-growth firms will have unique requirements and abilities, and that only individuals with high levels of human capital, including management experience (Nicholls-Nixon, 2005), and the ability to be innovative and fit with a changing firm (Fischer et al., 1997), will be hired.

Already Penrose (1959) emphasized the importance of hiring individuals with higher levels of human capital to deal with the challenges of growth, suggesting that fast growing new ventures spend more time recruiting new employees and managers that can handle fast growth without a fall in productivity. The benefit of this hiring strategy is that managerial attention can be directed towards growth projects since managers are required to do less oversight of new hires. This implies that fast growing firms will hire individuals with high human capital and extensive work experience, and thus be more reluctant to recruit unemployed individuals and those with lower human capital (Penrose, 1959). This suggests that high-growth new ventures focus on hiring individuals with substantial human capital to more effectively cope with any growth challenges that might be faced (Fischer et al., 1997; Huselid, 1995). An alternative hypothesis regarding the hires of high-growth new ventures is therefore:

Hypothesis 2: Fast-growing new ventures are more likely to hire individuals that are employed (H2a), have higher educational attainment (H2b) and previous managerial experience (H2c), as compared to new ventures that are characterized by more moderate growth rates.

DATA AND METHOD

We draw upon a comprehensive employer-employee dataset from Statistics Sweden (SCB), covering almost all firms and their employees in Sweden. The data on the employees are obtained from LISA (*Longitudinell Integrationsdatabas för Sjukförsäkrings- och Arbetsmarknadsstudier*), a database that covers all legal residents of Sweden that are at least sixteen years old. The information in LISA is generated from a number of sources, including tax registers, birthplace registries, and school records. This means that we have access to information about the educational attainment of the employees, their management experience, age, and gender. We can also distinguish between Swedish-born employees with at least one parent born in Sweden, second-generation immigrants (born in Sweden, with both parents born abroad), immigrants from western countries, and non-western immigrants. LISA also includes data from the Swedish Public Employment Service (*Arbetsförmedlingen*), which means that we have information on whether the employees were unemployed or outside the labor force before being hired.

We combine all information from LISA with firm-specific data from *Företagsdatabasen* (FTG) using a firm identification number of the primary employer of each employee. The matched dataset provides us with longitudinal data covering every employee in all limited liability firms in Sweden on a yearly basis. We define ‘employees’ as new recruitments the first time we observe their individual-specific identification number located with a firm-specific identification number.

We restrict our analyses to new ventures because it allows us to investigate whether the hiring decisions differ among firms that started their businesses during the same year, but thereafter grow at a different pace. The focus on new ventures also means that we can investigate whether hires of new ventures change along their early lifecycle and age. We treat a firm as entering the market when we first observe its firm identification number in the data, and we only include active firms in our sample, i.e., firms that have positive sales.

To ensure our sample consists of new ventures and organic growth rates, we restrict our analyses to new ventures that had that had no more than ten employees at the time of founding. We then use data from the database *Företagens och arbetsställets dynamik* (FAD) to identify firms that engaged in a merger or acquisition during the study period. These firms are excluded from our analyses since we want to focus on organic growth, i.e., employees that are added to the new venture when it grows organically. We focus on the hires of new ventures during their first five years of business, which means that we follow the growth process of 16,639 new ventures that started up their business in 2007, 2008, 2009 and 2010. These firms hired a total of 64,404 employees from 2008 to 2015.

Next, we use new ventures placement in the growth rate distribution to rank them based on their five-year sales growth rate. Following Tornqvist et al.'s (1985) recommendation, we use the log difference in sales to calculate new ventures' growth rates during their first five years of operations. The growth rate distribution is displayed in Figure 1, showing that it follows the familiar tent-shaped Laplace distribution (Bottazzi & Secchi 2006; Stanley et al., 1996).

[Insert Figure 1 about here]

Note that we focus exclusively on growing firms, i.e., the right-hand side of the growth rate distribution, rather than all new ventures in the economy. There is a substantial number of

firms in the economy that remain small over time and never grow. We are not interested in them since we want to investigate what characterizes growing new ventures hires, depending on their growth rate and years since start-up. More specifically, we divide growing new ventures into growth quintiles based on their five-year sales growth rates, where Q²⁰ includes the 0-19 percent of the slowest growing firms; Q⁴⁰ the 20-39 percent of the slowest growing firms; Q⁶⁰ include the 40-59 percent of the median growing firms; Q⁸⁰ the 60-79 percent fastest growing firms; and Q¹⁰⁰ the 20 percent fastest growing firms. Our approach thus allows us to compare hires of new ventures with notably high growth rates with those with more moderate growth rates.

Following Mörk et al. (2014), we define an individual as employed if she has a yearly income from paid work that at least equals the national income base amount (66,800 SEK \approx 6,900 USD), and is not registered as for full-time unemployment or participating in a labor market program. To investigate the timing of the recruitments of fast-growing new ventures, we first identify their recruitments during their first year of operation following the founding year (year 2) and relate them to the ventures' five-year sales growth rate. Next, we investigate the hires of new ventures during their second and third year of operation (year 3-4) and their fourth and fifth year of operation (year 5-6), relating them to their sales growth rates after five years of existence. The five-year cut-off is important as many new ventures have erratic early growth (Coad et al., 2013; Coad et al., 2018; Davidsson, Delmar & Gartner, 2003), and there is variability across industries (Daunfeldt et al., 2015; Delmar et al., 2013).

Our approach implies that we can investigate if the hires of new ventures are dependent on their growth rates, and if the fast-growing new ventures change their hiring practices over time compared to lower growth new ventures. This allows us to avoid some common methodological

challenges in studying high-growth ventures, such as inconsistent growth patterns (Daunfeldt & Halvarsson, 2015, Flamholtz & Randle, 1990).

Table 1 highlights the numbers of recruitments into new ventures in the five growth quintiles during their start-up year (i.e., the new recruitments that we observe during their second year of operation), and during their third, fourth, fifth, and sixth year of operation, respectively.

[Insert Table 1 about here]

Note that the firms in the 20 percent slowest growing quintile recruit only 11 percent of all new employees, while the share of all recruitments for the 20 percent fastest growing new ventures represents 35 percent of all new employees hired. This empirical observation very much falls in line with studies that show that most jobs are created by a selected number of fast-growing firms (Coad et al., 2014; Henrekson & Johansson, 2010).

Dependent variable: Our dependent variable ranks from 1 to 5 based on the growth rate of the new venture during the five-year growth period, which means that it takes the value 1 for firms in the lowest growth quintile (Q²⁰) and the value 5 if the firm is among the 20 percent fastest growing firms (Q¹⁰⁰). We primarily focus our analyses on Q80 and Q100 since these quintiles represent the highest growing new ventures. As such, we test our hypotheses based on comparing the recruitments for these highest growth ventures (i.e., Q80 and Q100) with those at the lower end of the growth distribution (i.e., Q20).

Independent variables: We test our hypotheses by including indicator variables for ‘educational attainment’ (=1 if at least three years of higher education) and ‘managerial experience’ (=1 if at least one-year experience as a manager) as proxies of the human capital of the newly hired employees. We capture the ‘unemployment status’ (=1 if the individual was registered as unemployed and actively seeking a job the year before being hired) to test if the

employees were readily available on the labor market before being recruited by the new venture. We also include an indicator variable ‘labor force participation’ (=1 if the individual was outside of the labor force the year before being hired by the firm) to take into account that many that who are outside the labor market (e.g., students) on short notice can enter the labor market.

Control variables: We control for a number of individual-specific characteristics to test if new ventures along the growth rate distribution hire employees with certain characteristics. Information on region of birth is included to control for the immigration status of the employees. We here distinguish between first-generation immigrants that are born in non-western countries (‘non-western’ = 1 if from Africa, Asia, and South America) and western countries (‘western’=1 if from North America, Europe and Australia). Most of the non-western immigrants in Sweden are refugees or relatives of refugees (Calleman & Herzfeld Olsson, 2015), and they have documented difficulties in establishing themselves on the Swedish labor market (Lundborg, 2001; Daunfeldt et al., 2019). We also use information on whether the employee is a ‘second-generation’ immigrant (i.e., =1 if the employee is born in Sweden, but both parents are born abroad). Finally, we control for ‘age’ (in years) and ‘gender’ (=1 if woman).

In addition, we control for firm-specific characteristics that might be correlated with the growth rates of new ventures and the characteristics of their employees. Specifically, we capture whether the individual recruited comes to a corporate group or not as a binary dummy that equals one if the individual is recruited by a new venture that belongs to a corporate group, and zero otherwise. We label this variable ‘Establishment’. Urban spaces also tend to promote better matching between employer and employees, suggesting that unemployed individuals can more easily find a job match in larger cities (Andersson et al., 2007). To control for such spatial determinants, we include a dummy for the three major metropolitan areas in Sweden (=1 if the

individual is registered in Stockholm, Malmö, or Gothenburg). This control variable is labeled as ‘Metropolitan’. All results remain qualitatively similar if we instead use municipality-specific fixed effects (not reported, but available upon request).

We furthermore include a measure of the employment growth of the firm, based on the change in number of employees during the growth period under study. The latter variable is included because sales growth and employment growth tend to be correlated (Daunfeldt et al., 2014), and we want to produce an estimate of how likely growing ventures are of hiring certain employees given the number of employees that they are recruiting. We label this variable ‘Employment growth’.

Finally, we include founding year-specific and industry-specific fixed effects in all regressions, but we do not present these in our tables due to space constraints. The founding year-specific fixed effects capture all time-variant factors that can explain whether the recruitment strategies along the growth rate distribution are different for firms started in 2007, 2008, 2009, and 2010. This cohort model based on firm founding captures a number of country and macro-specific variations (Delmar, et al., 2013). Industry-specific fixed effects are included to control for time-invariant factors that might explain why hires by firms across growth quintiles differ across industries (at the two-digit industry code levels).

Descriptive statistics for the variables included in the empirical analysis for each growth quantile and period under study are presented in Table 2.

[Insert Table 2 about here]

RESULTS

To investigate whether firms growing at different rates have different hired employee characteristics, we estimate an ordered logit model. The model produces an estimation of the odds

of being above each growth category (Capelleras & Rabetino, 2008). We present the estimated coefficients as predicted probabilities, also known as marginal effects, which means they can be interpreted as the instantaneous rate of change. We can thus investigate whether the recruitments change for high-growth new ventures compared to those new ventures that have more moderate growth rates.

The results regarding whom new ventures hire based on their growth rate are presented in Table 3-5 below. The growth quintiles illustrate varying growth patterns, where Q^{20} shows the hiring practices for the slowest growing new ventures, and Q^{100} the 20 percent fastest growing new ventures. All results are presented as marginal effects from estimating an ordered logit model.

[Insert Tables 3-5 about here]

Our results show a pattern of hires among new ventures that differs along the growth rate distribution and time since founding. New ventures with high growth rates are less likely to hire unemployed individuals and individuals outside the labor force than those new ventures that are growing more slowly. The probability of hiring unemployed individuals that are actively seeking a job during the ventures' third and fourth years of operation decreases, for example, by 3 percentage points for the fastest growing new ventures

We also find that high-growth new ventures are more likely to hire individuals that have completed higher education and have previous managerial experience compared to new ventures that have lower sales growth rates. The probability of hiring individuals with higher education in the middle of the growth period (i.e., year three and four), for example, increases by 3 percentage points for the fastest growing new ventures. High-growth new ventures are also more likely to recruit individuals with previous managerial experience during their first three years of operation compared to new ventures that are growing more slowly.

Hence, we find no support for the hypotheses (H1a-c) that high-growth new ventures are less selective in their hiring decisions regarding availability on the labor market, educational attainment, and managerial experience. On the contrary, high-growth new ventures seem more selective in their hiring decisions when it comes to educational background and management experience. This provides support for Hypothesis 2 (H2a-c).

Turning to our control variables, we find no indications that first-generation immigrants are more (or less) likely to be hired by high-growth new ventures. However, being a second-generation immigrant is associated with a 5% increase in the probability of being recruited by a new venture in the highest growth quintile during the last two years of the growth period. Our results also reveal that an individual's age is negatively related with the probability of being hired by a high-growth new venture during the start-up year. This suggests that fast growing new ventures are more likely to hire young individuals at an early stage of operations. We also find that high-growth new ventures are less likely to recruit females after two years than those new ventures that are growing more slowly. This suggests that employers in faster growing companies are more likely to make discriminatory decisions when it comes to gender during the earliest years of firm existence, or that women are less likely to search for jobs in new ventures that are growing more rapidly.

The results also reveal a large and significant effect of being part of a corporate group, except during the first year of operation. Employees that are recruited to a firm that is part of a corporate group increases their probability by 12-14 percentage points to be hired by a high-growth new venture. Finally, being recruited to a firm that is located in a metropolitan area increases the probability of being hired by a fast-growing new venture by 5-8 percentage points, depending on the age of the firm.

Note also that the hired employees of new ventures differ across their first five years of operations. The likelihood of being hired by the fastest growing new ventures is highest (as compared to lower growth firms) only during ventures' first three years of operation. Subsequently, we find little statistically significant evidence of differences across venture growth rates as the ventures age. We find, for example that high-growth new ventures are more likely to recruit highly qualified individuals during their first three years of operation, while these differences are not present during their fifth and sixth year of business.

DISCUSSION

While growth and scaling are hallmarks of entrepreneurial ventures, there have been limited in-roads into understanding the implications of differing rates of growth (DeSantola & Gulati, 2017) and the ability of new ventures to recruit new talent (Nyström, 2021). In this study, we examine the differing hiring patterns of growing new ventures by employing a longitudinal dataset that accounts for both the characteristics of the hiring firm and the individual characteristics of the employees.

Despite the potential importance of adding employees, the question of whom new growing ventures hire has been left largely unexplored, although there are theoretical reasons to believe that this question is of crucial importance for understanding the growth process of new ventures. We are thus able to shed new light on this important aspect of new venture growth, which Penrose (1959) emphasized but where scholars still have limited understanding.

Our study adds to a limited but growing stream of research that addresses the important question of how firms grow, rather than purely on how much firms grow. In fact, we combine these two streams of work, finding that the *how* aspect of growth is quite heterogeneous across the spectrum of *how much* new ventures grow. Notably, we find no evidence that high-growth new ventures are more likely to hire marginalized labor, such as job seekers and those that are outside

the labor force, at all. On the contrary, these ventures are less likely to hire employees that are readily available on the labor market, but more likely to hire individuals with higher levels of education and greater managerial experience. High-growth new ventures are thus selective in their hires regarding investments in human capital, but the differences in hiring patterns between high-growth and low-growth new ventures lessen over time.

Our findings support theories that emphasize that high-growth firms hire specific types of human capital. There are several potential implications for future theorizing from this empirical observation. First, there is a recurring theme in the high-growth and scaling literature that new ventures possessing high levels of human capital are more likely to experience high levels of growth (Demir et al., 2017). While the literature on founding conditions among high growth firms has tended to focus on the initial conditions and the role of founders (Bamford et al., 2003, Geroski et al., 2010; Lee, 2014), our findings might indicate that even the quality of the earliest hires may be vital in ensuring the on-going development and growth over time (Almus, 2002).

Second, we find that prior managerial experience is an important component of the human capital of the new hires. Research on high-growth firms has illustrated the importance of prior industry connections, understanding ‘the rules of the game’, and ability to navigate growth issues among founders (Brüderl & Preisendorfer, 2000). If nothing else, having additional employees with managerial experience may help to offset any risks of facing a ‘managerial capacity’ effect (Penrose, 1959), help to overcome any lacking experience of the founders, and also help the firm navigate through any managerial challenges (Baum & Bird, 2010). Indeed, the ability of new employees to leverage their education and managerial experience may reflect what Penrose describe as resource versatility that can be developed and deployed as the venture emerges (Nason & Wiklund, 2018).

Third, and relatedly, the perspective we have adopted is that of being able to simply hire new employees from a labor market – i.e., that these employees can be ‘selected’. However, this approach speaks marginally to the ability of the new venture to attract those individuals to the firm and overcome the challenges that new ventures face when hiring (Moser, Tumasjan & Welp, 2017; Nyström, 2021). As employees with higher education and experience may have multiple employment options, and new ventures historically do not have the capacity to offer above-market competitive financial compensation packages (Hand, 2008), there may be other non-pecuniary aspects to hire a new employee. The fact that high-growth new ventures are more successful in hiring high human capital individuals may offer insights into a set of attractive work-related challenges or an attractive work environment. Our finding that younger individuals are more likely to be hired by high-growth new ventures may, for example, suggest that growing or scaling new ventures are particularly attractive workplaces for young employees (Moser, et al., 2017; Parker, van den Broeck & Holman, 2017).

Nevertheless, our results contradict Coad et al.’s (2014) findings that high-growth firms tend to hire individuals that are accessible on the labor market. This is likely explained by some underlying differences in methodology. First, Coad et al. (2014) focus their analyses on all ventures, rather than new ventures. They also exclusively focus on hires in knowledge-intensive industries, while we investigate all new hires across a large spectrum of industries. Finally, our comparison group is slower-growth firms, whereas they compare high-growth firms with all other firms, irrespective of their growth rate.

One concern among entrepreneurs is the impact on organizational culture of adding new employees (Wiklund et al., 2003; McKelvie et al., 2021). Given the impact of one new employee to a smaller organization, as well as the likelihood that a new hire in a slow growing firm may be

required to wear multiple hats, it was somewhat surprising that the slower growth firms seemed to ‘settle’ for employees that have a lower levels of education, have less experience, are more readily available on the labor market and therefore may not clearly fit the organization (Fischer et al., 1997; Lepak & Snell, 1999). One potential explanation is that hiring reflects the limited power lower growth new ventures have on the labor market, where they have a more difficult time attracting and recruiting the best talents due to lack of fit or an inability of matching the compensation packages or excitement of high-growth new ventures. The consequence may be a recurring growth lag, where new hires among the slower growers may lack the aspirations, talent, or experience to achieve higher growth.

We find that the differences in hires between high-growth new ventures and those new ventures that are growing at a slower pace lessen after their third year of operations. Although these types of firms may be facing differing internal challenges at that time (i.e., Levie & Lichtenstein, 2010), the decreasing differences may reflect that high-growth new ventures at that time have required the infrastructure for growth and thereby no longer need as highly valuable employees (i.e., with higher education and experience). This may signal a shift in organizational development from that of start-up to establishment, and the changing recruiting patterns reflects a critical shift in needs (Kaulio, 2003; Kazanjian & Drazin, 1990). To that end, high-growth new ventures may have lesser need for high human capital individuals to sustain growth, and where the impact of one additional employee on a “larger” firm becomes less disruptive. These findings also provide support for studies that have emphasized the need for investments in human capital and the importance of HRM practices in sustaining high growth rates (Demir, et al., 2017).

As with all research, ours has some limitations. We believe that these limitations lay the groundwork for future research to build upon. To begin with, our focus is on early stage ventures

and we focus on the firm growth rate over a five-year period and with the use of quintiles. However, we do not parse out more precise effects or challenges that these firms face. For instance, there may be other firm-specific conditions that also affect hiring decisions that may be based on immediate challenges they are facing. Are there specific conditions at the firm development level, aside from growth rate, that impact hiring decisions? Does the achievement of a certain milestone – such as the completion of technology development, achieving a baseline financial performance (like breakeven or first sale), or even the establishment of a physical presence – affect hiring decisions? Determining differences over a longer temporal period (e.g., over the first ten years of existence), or when examining differing growth metrics (i.e., growth in something other than sales) or categories (i.e., not necessarily quintiles), may lead to novel insights inasmuch as new ventures' growth has tremendous variability, and over time. One example may be to employ a 'power laws' logic to capture extreme outliers reflecting the absolute highest growth firms, such as those that meet select definitions of 'scale up' firms (OECD, 2007). Relatedly, we do not examine the dynamics involved in hiring or changes over time. For example, are the hiring decisions for new ventures related to growth in previous periods? Do high-growth firms that hire more highly educated employees have higher future growth rates than those that hire less educated personnel?

Although we find some distinct hiring patterns given new ventures' growth rates, we readily acknowledge that growth, and especially high growth, tends to be a temporary state rather than a permanent pattern (Daunfeldt & Halvarsson, 2015; Levie & Lichtenstein, 2010). This means that few firms sustain their very high growth rates over longer periods of time. As a consequence, very high growth firms may be a 'moving target' over time and may face retrenchment or even exit following substantial growth experiences. This offers an opportunity for future research to examine the different temporal patterns and more specifically the consistency throughout the

growth process during which hiring is done. We assert that our five-year window constitutes an important first step in this stream of work.

Furthermore, although we capture industry differences by control variables, we do not delve into industry-specific challenges. For instance, although high-growth ventures appear in many industries and not solely high-tech (Daunfeldt et al., 2015), the needs for specific types of human capital among new hires may differ. One example is comparing the human capital needs of a fast-growing retail firm versus that in pharmaceuticals. Many scaling ventures are also prevalent in low skilled labor industries (Daunfeldt et al., 2015), such as retail, where there may be less need for specific human capital. Third, we focus on demographic variables that are accessible through official databases, such as age, gender, and education. This represented the common trade-off of having broad, generalizable findings for a large set of new ventures versus richer data concerning a smaller subset of firms. Digging deeper into the specific human capital needs of the new ventures and the more specific abilities of those being hired may lead to unique lessons learned.

Finally, we recognize the unique institutional circumstances that Sweden offers in its approach to entrepreneurship and new venture hiring. While studying these types of ventures in Sweden has been highly influential on scholarship (Daunfeldt et al., 2015; Delmar et al., 2013; Wiklund et al., 2003), we do acknowledge that new ventures in other institutional contexts may yield differing results inasmuch as there may be differences in a firm's ability to make personnel adjustments (e.g. hire, fire) over time. Our study begins to shed light on some of these differences in hiring practices of new ventures, but we believe that there is potential in a longer stream of studies that examine these questions.

CONCLUSIONS

In this study, we address and combine the important issues of how and when new ventures grow via hiring new employees. Our approach compares the fastest growing and slower growth

firms. Our findings that new ventures' different growth rates have distinctly dissimilar hiring patterns based on employees' educational attainment and prior managerial experience offer new empirical insights that speak to Penrose's thinking of being 'selective' in new recruits and may have implications for other areas of new venture scholarship, such as imprinting, founding conditions and recruitment practices. Our study helps to unlock the growing literature that focuses on *how* firms grow with the traditional approach that focuses on *how much* firms grow. We conclude that these two aspects are interrelated; with the how aspect being heterogeneous and ultimately depending on how much new ventures grow.

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Figure 1: Sales growth rate distribution across all new ventures and all growing new ventures from 2008-2015, 5-year sales growth period

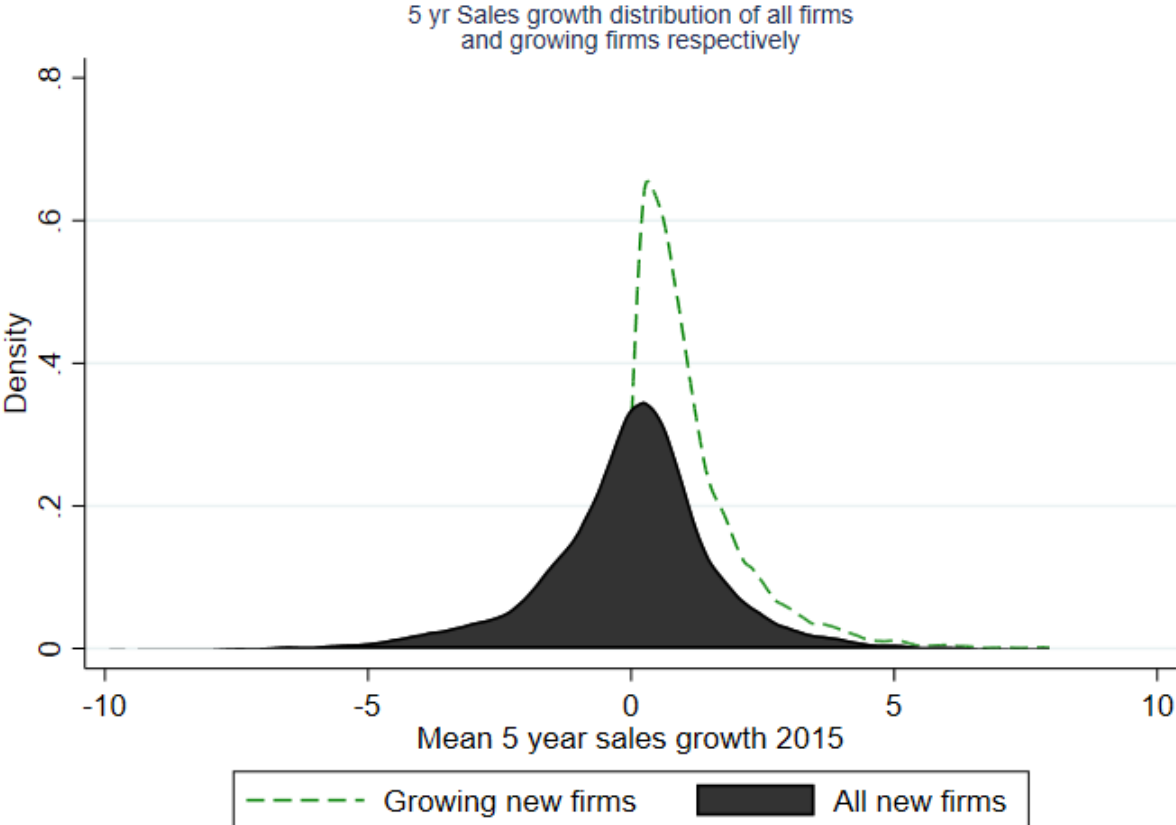


Table 1: Average sales growth and number of recruitments of new ventures across growth rates and age, 2008-2015

	Q20	Q40	Q60	Q80	Q100
Average sales growth	.154 (.082)	.454 (.096)	.815 (.121)	1.35 (.208)	2.86 (1.14)
<u>Recruitments</u>					
Year 2 (N=17,535)	2,374	2,839	3,223	4,007	5,092
Year 3-4 (N=23,086)	2,447	3,121	4,119	5,031	8,368
Year 5-6 (N=23,783)	2,210	3,069	3,851	5,313	9,340
Total hires (N=64,404)	7,031	9,029	11,193	14,351	22,800

Table 2: Descriptive statistics for the hires during year 2, 3-4, and 5-6, respectively across the sales growth distribution defined for five-year growth periods divided into growth q

	Year 2					Year 3-4					Year 5-6		
	Q20	Q40	Q60	Q80	Q100	Q20	Q40	Q60	Q80	Q100	Q20	Q40	Q60
<i>Academic degree</i>	.262 (.44)	.249 (.432)	.258 (.438)	.261 (.439)	.315 (.465)	.232 (.422)	.217 (.412)	.246 (.431)	.262 (.44)	.296 (.456)	.238 (.426)	.228 (.419)	.251 (.434)
<i>Manager experience</i>	.132 (.339)	.124 (.329)	.131 (.337)	.126 (.332)	.138 (.345)	.1 (.3)	.0795 (.271)	.0796 (.271)	.0906 (.287)	.104 (.306)	.091 (.288)	.0749 (.263)	.0735 (.261)
<i>Hired_unemployed</i>	.0598 (.237)	.074 (.262)	.0735 (.261)	.0734 (.261)	.0632 (.243)	.087 (.282)	.0897 (.286)	.0828 (.276)	.0801 (.271)	.0795 (.27)	.0814 (.274)	.0886 (.284)	.0808 (.272)
<i>Hired_outside</i>	.275 (.447)	.26 (.438)	.273 (.446)	.247 (.431)	.21 (.407)	.306 (.461)	.315 (.465)	.313 (.464)	.289 (.454)	.265 (.441)	.316 (.465)	.306 (.461)	.3 (.458)
<i>Non-western</i>	.0531 (.224)	.0623 (.242)	.0717 (.258)	.0631 (.243)	.0705 (.256)	.0593 (.236)	.0718 (.258)	.0806 (.272)	.0727 (.26)	.0816 (.274)	.0738 (.261)	.085 (.279)	.0761 (.265)
<i>West</i>	.0783 (.269)	.0877 (.283)	.0912 (.288)	.105 (.307)	.0933 (.291)	.0948 (.293)	.0955 (.294)	.1 (.3)	.0992 (.299)	.103 (.303)	.101 (.302)	.101 (.302)	.103 (.304)
<i>Second</i>	.0392 (.194)	.0359 (.186)	.0422 (.201)	.0454 (.208)	.0583 (.234)	.0499 (.218)	.042 (.201)	.0357 (.186)	.0491 (.216)	.0486 (.215)	.038 (.191)	.0375 (.19)	.0415 (.2)
<i>Age</i>	.344 (.475)	.342 (.474)	.333 (.471)	.314 (.464)	.372 (.483)	.385 (.487)	.389 (.488)	.361 (.48)	.356 (.479)	.371 (.483)	.414 (.493)	.399 (.49)	.373 (.484)
<i>Female</i>	39.1 (12.9)	37.6 (12.8)	37.4 (12.4)	37.5 (12.3)	37.2 (12.4)	35.8 (13.6)	34.2 (13.2)	34.6 (12.5)	34.6 (12.6)	34.6 (12.3)	35 (13.9)	34.6 (13.6)	34.5 (13.1)
<i>Establishment</i>	.0733 (.261)	.0852 (.279)	.0754 (.264)	.146 (.353)	.178 (.382)	.124 (.33)	.143 (.35)	.162 (.369)	.189 (.391)	.353 (.478)	.139 (.346)	.209 (.407)	.187 (.39)
<i>Employment growth</i>	.655 (1.83)	1.13 (2.12)	1.89 (4.12)	7.97 (22.5)	26 (54.3)	.709 (1.77)	1.05 (2.3)	1.82 (5.56)	4.23 (10.7)	26.3 (64.2)	.576 (1.75)	.942 (3.05)	1.56 (4.3)
<i>Metropolitan</i>	.401 (.49)	.376 (.484)	.442 (.497)	.444 (.497)	.559 (.497)	.398 (.49)	.391 (.488)	.446 (.497)	.496 (.5)	.572 (.495)	.408 (.492)	.397 (.489)	.434 (.496)
N	2374	2839	3223	4007	5092	2447	3121	4119	5031	8368	2210	3069	3851

Table 3: Estimation results, characteristics of new ventures' hires at age two across growth quantiles, 2008-2015.

	Q ²⁰	Q ⁴⁰	Q ⁶⁰	Q ⁸⁰	Q ¹⁰⁰
<i>Educational attainment</i>	-0.00 (0.01)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.01 (0.01)
<i>Manager experience</i>	-0.02*** (0.01)	-0.02*** (0.00)	-0.01*** (0.00)	0.01*** (0.00)	0.03*** (0.01)
<i>Unemployment status</i>	-0.00 (0.01)	-0.00 (0.01)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.01)
<i>Labor force participation</i>	0.02** (0.00)	0.01** (0.00)	0.00** (0.00)	-0.01*** (0.00)	-0.02** (0.01)
<i>Non-western</i>	-0.01 (0.01)	-0.01 (0.01)	-0.00 (0.00)	0.01 (0.00)	0.02 (0.02)
<i>Western</i>	-0.01 (0.01)	-0.00 (0.01)	-0.00 (0.00)	0.00 (0.00)	0.01 (0.01)
<i>Second-generation</i>	-0.02* (0.01)	-0.02* (0.01)	-0.01* (0.00)	0.01* (0.00)	0.03* (0.01)
<i>Age</i>	0.01*** (0.00)	0.01*** (0.00)	0.003*** (0.001)	-0.02*** (0.00)	-0.002*** (0.002)
<i>Gender</i>	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.01 (0.01)
<i>Establishment</i>	-0.01 (0.02)	-0.01 (0.01)	-0.00 (0.00)	0.01 (0.01)	0.02 (0.03)
<i>Metropolitan</i>	-0.04*** (0.01)	-0.03*** (0.01)	-0.01*** (0.00)	0.02*** (0.00)	0.06*** (0.01)
<i>Employment growth</i>	-0.00* (0.00)	-0.00* (0.00)	-0.00* (0.00)	0.00 (0.00)	0.01* (0.00)

Note: Estimated marginal effects of ordered Logit regression per growth quintile over a five-year growth period (N=17,535). Standard errors in parenthesis. Industry-specific and year-specific fixed effects included. *** statistically significant at the 1% level; **statistically significant at the 5% level; and * statistically significant at the 10% level.

Table 4: Estimation results, characteristics of new ventures' hires at age three and four, across growth quantiles, 2009-2015.

	Q ²⁰	Q ⁴⁰	Q ⁶⁰	Q ⁸⁰	Q ¹⁰⁰
<i>Educational attainment</i>	-0.02*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	0.00** (0.00)	0.03*** (0.01)
<i>Manager experience</i>	-0.01* (0.01)	-0.01* (0.00)	-0.01** (0.00)	0.00* (0.00)	0.03** (0.01)
<i>Unemployment status</i>	0.02** (0.00)	0.01** (0.00)	0.01** (0.00)	-0.00* (0.00)	-0.03** (0.01)
<i>Labor force participation</i>	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	-0.00** (0.00)	-0.03*** (0.01)
<i>Non-western</i>	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.00)	0.00 (0.00)	0.03 (0.02)
<i>Western</i>	-0.00 (0.01)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.01 (0.01)
<i>Second-generation</i>	0.01 (0.01)	0.01 (0.01)	0.00 (0.00)	-0.00 (0.00)	-0.01 (0.01)
<i>Age</i>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
<i>Gender</i>	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	-0.00*** (0.00)	-0.03*** (0.01)
<i>Establishment</i>	-0.06*** (0.01)	-0.05*** (0.01)	-0.03*** (0.01)	0.02*** (0.00)	0.12*** (0.03)
<i>Metropolitan</i>	-0.02*** (0.01)	-0.02*** (0.01)	-0.01*** (0.00)	0.01*** (0.00)	0.05*** (0.01)
<i>Employment growth</i>	-0.00** (0.00)	-0.00** (0.00)	-0.00** (0.00)	0.00* (0.00)	0.01** (0.00)

Note: Estimated marginal effects of ordered Logit regression per growth quintile over a five-year growth period (N=23,086). Standard errors in parenthesis. Industry-specific and year-specific fixed effects included. *** statistically significant at the 1% level; **statistically significant at the 5% level; and * statistically significant at the 10% level.

Table 5: Estimation results, characteristics of new ventures' hires at age at age five and six, across growth quantiles, 2010-2015.

	Q ²⁰	Q ⁴⁰	Q ⁶⁰	Q ⁸⁰	Q ¹⁰⁰
<i>Educational attainment</i>	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.01)
<i>Manager experience</i>	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.01)
<i>Unemployment status</i>	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.01)
<i>Labor force participation</i>	0.01** (0.00)	0.01** (0.00)	0.01** (0.00)	-0.00 (0.00)	-0.02** (0.01)
<i>Non-western</i>	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.00)	0.00 (0.00)	0.03 (0.02)
<i>Western</i>	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.00)	0.00 (0.00)	0.03 (0.01)
<i>Second-generation</i>	-0.02** (0.01)	-0.02** (0.01)	-0.01** (0.00)	0.00 (0.00)	0.05** (0.02)
<i>Age</i>	0.036* (0.001)	0.004** (0.001)	0.002* (0.001)	-0.000 (0.000)	-0.009* (0.003)
<i>Gender</i>	0.01* (0.00)	0.01* (0.00)	0.01* (0.00)	-0.00 (0.00)	-0.02* (0.01)
<i>Establishment</i>	-0.06*** (0.01)	-0.06*** (0.01)	-0.04*** (0.01)	0.00 (0.00)	0.14*** (0.02)
<i>Metropolitan</i>	-0.03*** (0.01)	-0.03*** (0.01)	-0.02*** (0.00)	0.00 (0.00)	0.08*** (0.02)
<i>Employment growth</i>	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)

Note: Estimated marginal effects of ordered Logit regression per growth quintile over a five-year growth period (N=23,783). Industry-specific and year-specific fixed effects included. *** statistically significant at the 1% level; **statistically significant at the 5% level; and * statistically significant at the 10% level.