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INSTITUTE OF RETAIL ECONOMICS

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HFI WORKING PAPER No 25

RIGHT TIME OR THE RIGHT PERSON? INVESTIGATING THE HIRES OF HIGH-GROWTH NEW VENTURES

Sven-Olov Daunfeldt*, Alexander McKelvie[†] and Hans Seerar Westerberg[‡]

Hiring new employees is an important part of a new venture's growth. However, we still have limited understanding of the human capital needs of high-growth new ventures, and how their pace of growth relates to whom they hire. We contribute to the literature by investigating 64,404 hires among growing new ventures in Sweden from 2008 to 2015, finding that individuals with higher educational attainment and previous management experience are more likely to be hired by high-growth new ventures. In contrast, we find no indications that unemployed individuals or people that are outside the labor force are more likely to be hired by the fastest growing new ventures. High-growth new ventures are thus more selective in their hiring decisions than new ventures with lower sales growth rates, suggesting that 'the right person' is more important than 'the right time'. 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: Hiring; High-growth new ventures; Firm growth; Human capital

JEL classification: D21, D22, J63, L25

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INTRODUCTION

Although Penrose (1959) emphasized hiring as an important part of the firms' growth processes, surprisingly little research has addressed whom and when growing new ventures hire. Consequently, we have limited understanding of the human capital needs of high-growth new ventures, and how their pace of growth relates to the how aspects of growth.

There are two competing perspectives regarding the hires of high-growth new ventures (Coad et al., 2014). On the one hand, these ventures need employees with particular abilities relative to their slower growing counterparts (Nicholls-Nixon, 2005; Penrose 1959). To capture these competencies, high-growth new ventures need to invest more in human capital to obtain and maintain their growth rates (Hölzl, 2009). Fast-growing new ventures 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).

On the other hand, high-growth new ventures face greater challenges when hiring compared to ventures growing at a more moderate pace (Delmar et al., 2003; Demir et al., 2017). They 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 growth therefore implies that they will hire employees that are more readily available, with less regard to their specific skill sets and prior experience compared to slower growing new ventures (Coad et al., 2014).

While these competing perspectives have been raised in the literature, there is limited research that has directly addressed hiring differences as a function of ventures' growth rate and age. One exception is Coad et al. (2014), who examined the hires of high-growth firms in the Swedish knowledge-intensive service industries. They find that these ventures were more likely to employ younger individuals, those with lower education, first-generation immigrants, and individuals who had spent more time being unemployed. Daunfeldt and Westerberg (2020) extended Coad et al.'s analyses, finding that high-growth firms in Sweden also hire unemployed first-generation immigrants to a greater extent. These studies provide evidence that high-growth firms are less selective in their hiring decision, suggesting that they settle for employees that are more readily available on the labor market (illustrating right timing) rather than searching for employees with higher levels of human capital (illustrating right person).

However, both Coad et al. (2014) and Daunfeldt and Westerberg (2020) use data on firms of all ages and levels of growth at one point in time, which means that we still lack knowledge on the specific hiring decisions of new ventures. They furthermore use a dichotomous variable to investigate whether the high-growth firms' hiring decisions differ from those that are not classified as high-growth firms. The latter group consists of very heterogenous group of firms, including firms with declining or no growth,

rather than emphasizing the hires of growing firms. This oversight provides a suboptimal comparison group and thereby misses important heterogeneity among growing ventures of different growth rates.

We investigate whether high-growth new ventures are more or less likely than low-growth new ventures to hire individuals with a strong labor market connection and high human capital, using a longitudinal matched employer- employee dataset from Statistics Sweden. This allows us to follow all new ventures founded between 2007 to 2015, and then separate them based on their five-year growth rates and their age. In doing so, we contribute to the literature by examining the different rates of growth (Delmar et al., 2003) and the differing challenges that new ventures face as they grow and age over time (McKelvie & Wiklund, 2010; Wennberg et al., 2016). Our dataset's richness means that we can distinguish between gender, age, educational attainment, managerial experience, and previous labor market status of newly hired employees.

We provide new empirical evidence on the timing versus fit dilemma of high-growth new ventures, showing that high-growth new ventures are more likely to hire individuals with higher education and managerial experience compared to new low-growth ventures. This finding 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, hires differ between high and low-growth new ventures, and high-growth new ventures seem less concerned about minimizing search costs and more eager to recruit high potential individuals that can promote future growth (Barringer et al., 2005; Fischer et al., 1997).

We also examine if the human capital of the new hires of high-growth new ventures changes during their first five years of operation, providing new evidence on one of the potential underlying factors that allow growing new ventures to remain ahead of their peers over time (Rutherford et al., 2003; Nason et al., 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. We do not find significant differences in the two years following.

Our empirical evidence contributes to theorizing about the hires of growing new ventures, including the tension between the needs of growing firms to be less selective and simply add individuals to fuel growth versus hiring high human capital 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 tend to 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 highest 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. They may 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). High-growth 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). Consequently, the characteristics of the new hires that are brought into the new venture should reflect the needs of the ventures.

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 may ultimately determine whether high-growth new ventures are able to sustain their high growth rates over time (Wiklund et al., 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, high-growth new ventures may have greater need for unique competences to reflect the pace of their growth and therefore have other recruitment needs than slower growing new ventures. Faster growing ventures might, for example, need to invest more in human capital to maintain their high growth rates or managerial abilities to guide the structural development of the venture. The logic is that high-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.

Penrose (1959) was the first to emphasize the importance of hiring individuals with greater 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 reduction in productivity. The benefit of this hiring approach 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 they may face (Fischer et al., 1997; Huselid, 1995). Our first hypothesis is therefore:

Hypothesis 1: *Compared to slower-growing new ventures, high-growth new ventures are more likely to hire individuals that are employed (H1a), have higher educational attainment (H1b) and previous managerial experience (H1c).*

On the other hand, some studies (e.g., Coad et al., 2014) argue that high-growth ventures are more likely to recruit individuals that have trouble in entering the labor market. Matching on the labor market is typically characterized by asymmetric information and high search costs (Mortensen & Pissarides, 1999), with employers having more information about the positions that they offer, while job seekers have more information about their skills. 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 to get a match. These search costs are higher for high-growth new ventures because they need to recruit more new employees than slower growing new ventures.

Thus, high-growth new ventures are more likely to hire employees with lower human capital to sustain their growth pace, a strategy that likely entails the need to provide them with more on-the-job training. This suggests that the recruitment of individuals with lower human capital is a deliberate strategy to overcome the concern of accessing talent (Coutu 2014). Our second hypothesis is therefore:

Hypothesis 2: *Compared to slower-growing new ventures, fast-growing new ventures are more likely to hire individuals that are unemployed (H2a), individuals with lower educational attainment (H2b), and individuals with less managerial experience (H2c).*

DATA AND DESCRIPTIVE STATISTICS

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 several 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.

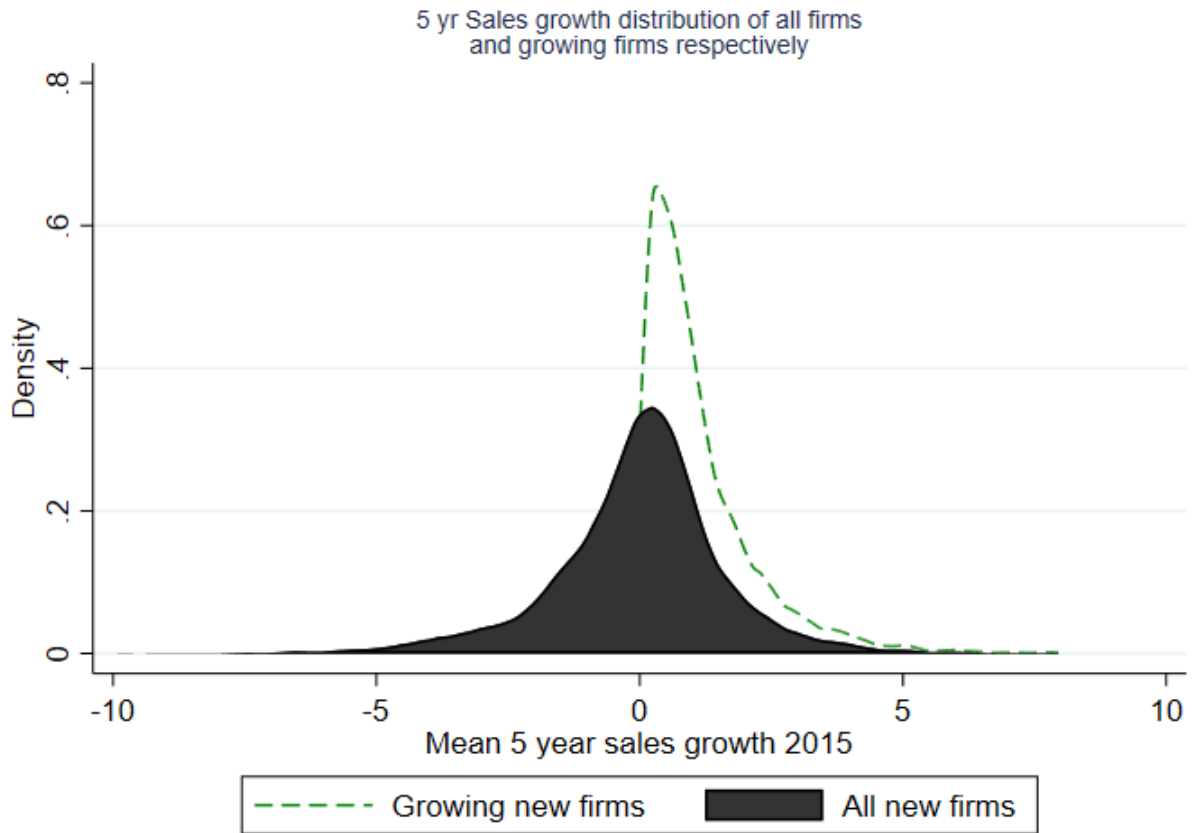
We combine all information from LISA with firm-specific data from *Företagsdatabasen* (FTG) using a firm identification number of the primary employer of each employee. The matched dataset provides us with longitudinal data covering every employee in all limited liability firms in Sweden on a yearly 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 no more than ten employees at the time of founding. We then use data from the database *Företagens och arbetsställenas 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 Törnqvist 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).

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



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 the hires of growing new ventures, 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 the first quantile (Q^{20}) includes the 0-19 percent of the slowest growing firms; the second quantile (Q^{40}) includes the 20-39 percent of the slowest growing firms; the third quantile (Q^{60}) includes the 40-59 percent of the median growing firms; the fourth quantile (Q^{80}) includes the 60-79 percent fastest growing firms; and the fifth quantile (Q^{100}) includes the 20 percent fastest growing firms. The latter quantile thus includes our group of high-growth new ventures, and as part of hypothesis testing, we compare hires of these firms with those with slow growth rates, i.e., new ventures included in the first growth quantile.

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 for full-time unemployment or participating in a labor market program. To investigate the timing of the new hires of the high-growth new ventures, we first identify their hirings during their second year of operation (year 2) and relate them to the ventures' five-year sales growth rate. Next, we investigate the hires of new ventures during their third and fourth year of operation (year 3-4) and their fifth and sixth year of operation (year 5-6), relating them to their sales growth rates after six years of existence. The six-year cut-off is important as many new ventures have erratic early growth (Coad et al., 2013; Coad et al., 2018), 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 differ based on their growth rates, and if the high-growth new ventures change the type of individuals they hire during their first years of operation 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 second year of operation, and during their third, fourth, fifth, and sixth year of operation, respectively. The results show that new ventures in the first growth quintile recruit only 11 percent of all new employees, while the share of all new hires 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 high growth firms (Coad et al., 2014; Henrekson & Johansson, 2010).

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

EMPIRICAL METHOD

We estimate an ordered logit model to investigate if individuals hired by high-growth new ventures have different characteristics compared to those hired by new ventures with lower growth rates. The estimated model can be specified as follows:

$$y_i = \beta' \mathbf{x}_i + \gamma' \mathbf{z}_i + \delta' \mathbf{v}_j + \theta_t + \mu_m + \epsilon_i$$

Our unit of analysis is the individual employee, and we categorize them based on the five-year growth rate of the new venture that hires them as follows:

$$y_i = 1 \text{ if } y_i^* \leq Q^{20}$$

$$y_i = 2 \text{ if } Q^{20} < y_i^* \leq Q^{40}$$

$$y_i = 3 \text{ if } Q^{40} < y_i^* \leq Q^{60}$$

$$y_i = 4 \text{ if } Q^{60} < y_i^* \leq Q^{80}$$

$$y_i = 5 \text{ if } y_i^* > Q^{80}$$

Hence, our dependent variable takes the value 1 for individuals that are hired by new ventures in the first, lowest growth quintile, the value 2 for those hired by new ventures in the second lowest growth quantile, and so forth. The dependent variable thus takes the value 5 if the individual is hired by a high-growth new venture. We primarily focus our analyses on individuals hired by the fastest growing new ventures by comparing them with the hires of the slowest growing new ventures.

The vector \mathbf{x}_i includes variables measuring the human capital of the newly hired employees. More specifically, it includes an indicator variable for ‘educational attainment’ (=1 if at least three years of higher education), and another for ‘managerial experience’ (=1 if at least one-year experience as a manager). We also include ‘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. Finally, we 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) in the vector to capture that many who are outside the labor market (e.g., students) on short notice can enter the labor market.

We control for several other individual-specific characteristics in vector \mathbf{z}_i to test if high-growth new ventures 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 (Daunfeldt et al., 2019; Lundborg, 2013). 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 hires in vector v_j . Specifically, we capture whether the individual hired 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 an individual is to be hired by high-growth new venture given the number of employees that they are recruiting. We label this variable 'Employment growth'.

In addition, we include founding year-specific (θ_t) and industry-specific fixed effects (μ_m) 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 hires along the growth rate distribution are different for individuals hired by firms started in 2007, 2008, 2009, and 2010. This cohort model based on firm founding captures country and macro-specific variations that can explain why individuals are hired by high-growth new ventures (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). Finally, ϵ_i is the disturbance term.

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

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 quintiles.

	Year 2					Year 3-4					Year 5-6				
	Q20	Q40	Q60	Q80	Q100	Q20	Q40	Q60	Q80	Q100	Q20	Q40	Q60	Q80	Q100
<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)	.26 (.439)	.294 (.456)
<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)	.0881 (.283)	.0824 (.275)
<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)	.0789 (.27)	.0923 (.289)
<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)	.277 (.448)	.285 (.452)
<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)	.073 (.26)	.0884 (.284)
<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)	.112 (.315)	.112 (.315)
<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)	.0474 (.213)	.0602 (.238)
<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)	.354 (.478)	.381 (.486)
<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)	35 (13.0)	34.1 (12.4)
<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)	.278 (.448)	.367 (.482)
<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)	2.16 (5.45)	18.4 (52)
<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)	.484 (.5)	.613 (.487)
N	2374	2839	3223	4007	5092	2447	3121	4119	5031	8368	2210	3069	3851	5313	9340

RESULTS

The results regarding whom new ventures hire based on their growth rate are presented in Table 3-5 below. Note that the estimated 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 human capital of new hires differ between high-growth new ventures compared to those new ventures that have lower growth rates.

Our results show a pattern of hires among new ventures that differs along the growth rate distribution and time since founding. Individuals that have completed higher education and have previous managerial experience are more likely to be hired by high-growth new ventures than by new ventures with lower sales growth rates. Individuals with higher education are, for example, 3 percentage points more likely to be hired by the high-growth new ventures during their third and fourth year after start-up (Table 4). The probability of being hired by a high-growth new venture also increases for individuals with previous managerial experience during their new ventures' first three years of operation compared to new ventures that are growing more slowly.

Unemployed individuals and individuals outside the labor force are less likely to be hired by new ventures with high growth rates than by new ventures that are growing more slowly. For example, unemployed individuals that are actively seeking a job during the ventures' third and fourth years of operation (Table 4) are 3 percentage points less likely to be hired by the highest growing new ventures.

Hence, high-growth new ventures seem more selective in their hiring decisions when it comes to educational background and management experience compared to slower growing new ventures, providing support for Hypothesis 1 (H1a-c). However, we find no support for Hypotheses H2a-c, i.e., that high-growth new ventures are less selective in their hiring decisions regarding availability on the labor market, educational attainment, and managerial experience.

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.

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 (Table 5). Our results in Table 3 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 young individuals are more likely to be hired by fast growing new ventures at an early stage of operations. Females are also less likely to be hired by high-growth new ventures than those new ventures with lower growth. This suggests that employers in faster growing new ventures either are more likely to make discriminatory decisions when it comes to gender, 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 new venture 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 (Tables 3-4). Subsequently, we find little statistically significant evidence of differences across venture growth rates as the ventures age. Highly qualified individuals are, for example, more likely to be recruited by fast growing new ventures during their first three years of operation, while these differences are not present during the following two years of business.

DISCUSSION

New ventures often struggle to recruit key employees (Mayson & Barrett, 2006; Greer et al., 2015; Williamson et al., 2002), as many more traditional employment opportunities may be viewed as less risky (Cardon & Tolchinsky, 2006; Heneman et al., 2000). 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.

In this study, we examine the characteristics of the new hires 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. 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 job seekers and those that are outside the labor force are more likely to be hired by high-growth new ventures. On the contrary, employees that are readily available on the labor market are less likely to be hired by high-growth new ventures, while individuals with higher levels of education and greater managerial experience are more likely to be hired by these firms. High-growth new ventures are thus selective in their hires regarding investments in human capital, although these differences in hiring patterns between high-growth and low-growth new ventures lessen over time.

Our findings support theories that emphasize the needs for high-growth new ventures to hire individuals with 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 firm 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). Although we are not able to answer this question since we are not able to disentangle the longer-term impact of the individuals brought into these to growing new ventures, and our emphasis is on the differences among hires in ventures of different growth rates, we believe better understanding the role of key hires for future performance to be a highly important topic for further research.

Second, we find that prior managerial experience is an important component of the human capital of the hires by high-growth new ventures. 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 help the firm navigate through any managerial challenges (Baum & Bird, 2010). 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’ by high-growth new ventures. 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 et al., 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 human capital individuals are more likely to be hired by high-growth new ventures 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 suggest that growing new ventures are particularly attractive workplaces for young employees (Moser, et al., 2017; Parker, et al., 2017).

Nevertheless, our results contradict Coad et al.'s (2014) findings that individuals who are more accessible on the labor market are more likely to be hired by high-growth firms. 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 (McKelvie et al., 2021; Wiklund et al., 2003). 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.

We find that the differences in hires between high-growth new ventures and those new ventures that are growing at a slower rate 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.

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 new 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).

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. High growth new ventures may thus be a 'moving target' over time, facing 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 growing 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 result as there may be differences in a firm's ability to adjust personnel 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 individuals hired by the highest and lowest growing new ventures. Our findings that new ventures' hire individuals with different educational and managerial backgrounds based on their differential growth rates 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. Overall, it suggests that getting the 'right person' might be preferred to 'the right time'. 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. Our findings thereby show 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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