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Acquiring talent: does ownership help?

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Acquiring Talent: Does Ownership Help?

Abstract

Purpose – The study examines individual- and firm-level factors that influence the likelihood of receiving an ownership stake in the firm during recruitment.

Design/methodology/approach – We employ a logistic regression model to identify factors associated with the likelihood of acquiring an ownership share in the year of recruitment. We use unique linked owner-employer-employee data from Finland for the years 2007-2019. In addition to traditional individual-level characteristics, we control for previous employment in high-productivity firms and a wide array of variables related to the current firm.

Findings – The results suggest that ownership is used to attract a skilled workforce and sometimes to compensate for less competitive salaries. Ownership is offered during recruitment to a narrow group of individuals, typically highly educated, by small and young startup firms operating in the knowledge-intensive service sector. The firms are also often growing rapidly. The owner-employees, currently working as managers or professionals, have previously worked in high-productivity firms, thus enabling inter-firm knowledge transfer. They also appear to be more risk tolerant than employees in general.

Originality – This study is one of the first to provide empirical evidence on individual-targeted employee ownership offers. Most previous studies have examined broad-based employee stock ownership plans and utilised survey data. Our study uses rich registry data instead.

Keywords Recruiting, Firms, Employee ownership, Human capital

Paper type Research paper

JEL: J24, J26, J54

1. Introduction

Acquiring a skilled workforce is increasingly critical for the success and growth of firms. Traditionally, firms have relied on incentives such as wage increases, bonuses, and fringe benefits to motivate and retain employees. More recently, ownership shares and stock options have emerged as increasingly popular ways to attract, motivate, and retain employees. While employee stock ownership plans (ESOPs) and similar schemes distribute ownership broadly among employees, direct ownership has become a more targeted strategy, particularly among firms that heavily rely on human capital. These firms, typically small, young, and innovation-driven, represent a dynamic part of the economy and play a pivotal role in job creation and economic growth (e.g., Henrekson and Johansson, 2010). The strategic importance of ownership-based incentives has become even more pronounced with the structural shift toward intangible capital-intensive production models (Haskel and Westlake, 2018). As competitive advantage increasingly derives from intellectual property and human expertise rather than physical assets, developing effective mechanisms for securing human capital has become essential for sustained economic performance.

Previous research has primarily focused on broad-based ESOPs (e.g. Blasi and Kruse, 2023; Hennig *et al.*, 2023; Kim and Ouimet, 2014; O’Boyle *et al.*, 2016; Pendleton and Robinson, 2022). In contrast, relatively little is known about the use of direct ownership shares in the recruitment process, or the characteristics of job applicants targeted with such offers. This study contributes to the literature by providing novel empirical evidence on individual-targeted employee ownership offers. In addition, while most previous studies apply survey data, our analysis is based on rich registry data (e.g., Del Sordo and Zattoni, 2024). To our knowledge, using a wide array of individual- and firm-level variables is relatively uncommon in the literature.

A prospective recruit’s tacit knowledge and previous experience in high-productivity firms may increase a firm’s willingness to offer ownership. Employers can incentivise this knowledge transfer by offering recruits a share of the potentially unlimited upside of the company’s performance. Some previous studies provide evidence on inter-firm knowledge spillovers through labour mobility (e.g., Ali-Yrkkö *et al.*, 2024; Castillo *et al.*, 2019; Maliranta *et al.*, 2009; Stoyanov and Zubanov, 2012). Moreover, in some cases, offering equity can substitute wages when recruiting firms face financial constraints (Core and Guya, 2001; Kim and Ouimet, 2014). These issues have increased with the growth of intangible capital in the firms (Haskel and Westlake, 2018; Corrado *et al.*, 2022).

From the employees' perspective, accepting an ownership offer involves financial risk, particularly in young and small firms with uncertain futures. Thus, individuals with lower risk aversion may be more likely to accept such offers (Ittner *et al.*, 2003; Kruse *et al.*, 2021). Furthermore, ownership can be more attractive to workers with high skills because they have a greater ability to take actions that increase the value of their ownership shares (Ittner *et al.*, 2003). Individual characteristics, such as age, gender and educational level, have been shown to influence both share ownership (Brickley and Hevert, 1991; Bryson and Freeman, 2010) and entrepreneurial decisions (e.g., Pekkala Kerr *et al.*, 2018; Simoes *et al.*, 2016).

In this study, we investigate the characteristics of recruits who become employee-owners and the characteristics of recruiting firms that offer employee ownership. Finland provides an ideal setting for this analysis, as broad-based employee ownership plans are relatively uncommon (Jones *et al.*, 2012), making it easier to identify individually targeted offers. We utilise unique linked owner-employer-employee data from Finland for the period 2007-2019. The register-based microdata contains multifaceted information on firms, owners, and employees. For example, we can determine previous work history and whether the recruited employee has worked in a high-productivity firm. We employ a logistic regression model to determine the individual- and firm-level factors that influence the likelihood of employee ownership in the recruitment year.

Our findings demonstrate that direct ownership is offered to a select group of workers by a specific type of firm during recruitment. We provide evidence that employee ownership is used to attract a skilled workforce, particularly among small and young startups operating in knowledge-intensive services. These firms are also often experiencing rapid growth. In some cases, employee ownership is also used to compensate for less competitive wages. Moreover, the results imply that those who become employee owners are more likely to be highly educated individuals. Previous work experience in a high-productivity firm also increases the likelihood of becoming an employee owner, highlighting the importance of inter-firm knowledge transfer. We also show that risk tolerance may play a role in employee ownership, reflecting the inherent uncertainty associated with equity-based compensation structures.

The remainder of this paper is organised as follows. Section 2 briefly reviews the previous empirical literature, focusing on small business and entrepreneurship, and derives the hypothesis of this paper. Section 3 presents the data and provides a descriptive analysis.

Section 4 presents the empirical strategy and reports estimation results. Section 5 concludes the paper.

2. Previous literature and hypotheses

Empirical evidence on the determinants of direct employee ownership in hiring decisions is scarce. Most previous studies have examined broad-based ESOPs, which involve companies offering their shares through a trust to most of their employees (e.g. Brickley and Hevert, 1991; Kim and Ouimet, 2014; Kruse *et al.*, 2021; Hennig *et al.*, 2023; O’Boyle *et al.*, 2016). A broad body of literature also exists on stock options, where employees, often managers or other key personnel, have the right to purchase company shares at a predetermined price (see, e.g., Pukthuanthong and Walker, 2006). This study examines the determinants of direct employee ownership, which enables employees to hold shares directly and own them outright. Thus, employee owners have voting rights and can participate in the firm’s governance, unlike with stock options or ESOPs.

The theoretical literature states that ESOPs can enhance the identification with the firm, fostering greater motivation, effort, commitment, and productivity. When employee-owners participate in decision-making, they can influence working conditions, leading to higher job satisfaction, reduced turnover and more stable employment (e.g. Mygind and Poulsen, 2021). These theoretical claims are supported by substantial empirical evidence (e.g., Bryson and Freeman, 2018; Hennig *et al.*, 2023; Kruse *et al.*, 2010; Kurtulus and Kruse, 2017; Lampel *et al.*, 2010; O’Boyle *et al.*, 2016; Park *et al.*, 2004). While the incentives identified in the theoretical literature may also apply to direct employee ownership, additional factors must be considered since direct ownership focuses on a narrower group of workers. This paper considers the perspectives of employees and employers on providing and acquiring ownership shares during recruiting.

Worker-related factors and employee ownership

Share ownership entails a decision made under uncertainty, yet one with the potential for substantial financial rewards. In this regard, it closely resembles entrepreneurial choice, a topic extensively explored in the literature. Empirical studies conclude that entrepreneurial engagement is often driven by non-economic reasons, such as desire for flexibility and enhanced job satisfaction (e.g., Hyytinen and Ruuskanen, 2007; Van Praag and Versloot,

2007). Nevertheless, economic incentives also play a role. Few studies adopting a broader definition of entrepreneurship, including incorporated self-employment, indicate that entrepreneurs, on average, tend to earn more than their salaried counterparts (Berglann *et al.*, 2011; Levine and Rubinstein, 2017).

A range of individual-level factors influences the decision to engage in entrepreneurial activity, including gender, age, education, experience, family-related characteristics, and personality traits (Pekkala Kerr *et al.*, 2018; Simoes *et al.*, 2016). Empirical evidence suggests that men and married individuals are more likely to pursue entrepreneurship. Moreover, managerial experience, sector-specific expertise, and prior entrepreneurial involvement are positively associated with entrepreneurial entry. However, the relationship between educational attainment and entrepreneurial propensity remains inconclusive, as existing studies present conflicting findings regarding its role (Simoes *et al.*, 2016). In contrast, employee share ownership may be particularly appealing to highly skilled individuals, as it enables them to take actions that increase the value of firm outcomes and, consequently, the value of their ownership shares (Kim *et al.*, 2025; Ittner *et al.*, 2003). This appeal is likely stronger in cases of direct ownership, since broad-based ESOPs, while attracting skilled workers, may deter top talent due to the diffusion of rewards.

Among personality traits, risk tolerance has been established as a key determinant of entrepreneurial engagement (Pekkala Kerr *et al.*, 2018). Similarly, share ownership involves exposure to financial risk, especially in early-stage firms with a substantial likelihood of business failure. Employee-owners, therefore, face idiosyncratic risk, the impact of which calls for a large, diversified portfolio (Michelacci and Schivardi, 2013; Mueller, 2011). Kruse *et al.* (2021) argue that employee share owners exhibit higher risk tolerance and greater financial literacy, enabling them to navigate the complexities associated with equity-based compensation more effectively. Using Norwegian administrative data, Fagereng *et al.* (2020) demonstrate that individuals with lower risk aversion accept portfolios with higher return variance.

Based on earlier literature, we derive and empirically test the following worker-related hypotheses:

- Hypothesis 1. Those who become employee owners are more likely to be highly skilled.

- Hypothesis 2. Those who become employee owners are more likely to be risk tolerant.

Firm-related factors and employee ownership

Earlier findings suggest that inter-firm labour mobility is an important channel for knowledge spillovers (e.g. Ali-Yrkkö *et al.*, 2024; Castillo *et al.*, 2019; Maliranta *et al.*, 2009; Maliranta and Nurmi, 2019; Stoyanov and Zubanov, 2012). Firms can acquire tacit knowledge and expertise that workers have obtained in their former employment, potentially enhancing the performance of the hiring firm. For instance, Maliranta *et al.* (2009) show that recruiting workers with prior research and development (R&D) experience can boost firm productivity and profitability, while Castillo *et al.* (2019) find that hiring individuals with prior experience in innovation projects enhances firm performance. Consequently, employers may be incentivised to attract skilled workers, especially from high-productivity firms, with employee ownership serving as a strategic recruitment tool. Moreover, under asymmetric information in the hiring process, formal education serves a dual role: it signals unobservable worker ability (Spence, 1973) and reflects an investment in productivity-enhancing human capital (Becker, 1964; Mincer, 1974).

Employee ownership offered during recruitment can also serve as a form of compensation, particularly when a firm requires talent but must allocate its cash flow to growth investments. Startups or other smaller and younger firms are often cash-constrained (e.g., Hadlock and Pierce, 2010; Kim and Ouimet, 2014). Kim and Ouimet (2014) argue that such firms use employee ownership shares as a substitute for wages when access to external financing is limited. Similarly, Core and Guay (2001) find that firms grant stock options to non-executive employees to incentivise performance and as a means of internal financing. Empirical evidence also suggests that startups tend to pay lower wages than comparable established firms (Brixy *et al.*, 2007), and employees in startups typically earn less at the time of hiring than their counterparts in incumbent firms (Burton *et al.*, 2018; Nyström and Elvung, 2014; Ouimet and Zarutskie, 2014; Sorenson *et al.*, 2021). Moreover, Burdin (2016) finds that compensation structures in worker-managed firms are more compressed than in conventional firms, indicating a flatter wage hierarchy.

Different firms may pursue employee ownership for various reasons during the recruitment process. For instance, Ortlieb *et al.* (2016) show that foreign-owned firms

prioritise employee performance, non-public SMEs focus on financial objectives, and large firms aim to enhance their corporate image when providing employee ownership. Nonetheless, all firms value employee attraction and retention equally, underscoring a shared understanding of their importance for firm survival and success. Hiring patterns also differ across fast-growing firms: newly established high-growth firms tend to recruit more highly educated individuals and those with managerial experience compared to slower-growing counterparts (Daunfeldt *et al.*, 2023). In addition, studies indicate that employee retention is a primary motivation for providing stock options, particularly among new economy firms (e.g., Ittner *et al.*, 2003; Oyer and Schafer, 2005).

Recruits and the firm's best offer

In this study, we will demonstrate that employee ownership is an integral part of the firm's recruitment strategy, used to acquire certain types of workers. We recognize at least three different types of recruits and scenarios, where the firm's best offer varies between salary and employee ownership (Table 1):

- 1) Low-skill: Salary is usually offered to low-skill recruits. In some cases, such as hairdressers and other service workers, contract entrepreneurship or self-entrepreneurship may be relevant.
- 2) Average-skill: Salary is offered to average-skill recruits, such as factory workers. Recruits do not possess special skills or knowledge that firms want to acquire, and there is less competition for them in the labour market.
- 3) High-skill: Salary and/or ownership are offered to high-skill recruits, such as managers and professionals, who often possess prior experience in high-productivity firms. The tacit knowledge and expertise obtained through their previous employment may contribute positively to the performance of the hiring firm. Firms are also motivated to retain such talent, given intensified competition for skilled labour in the market. Moreover, firms that offer ownership shares are often young or undergoing rapid growth and may face financial constraints. Employee ownership can be a strategic compensation mechanism to offset lower salary levels. For example, startups often offer 'sweat equity', whereby employees receive minority share ownership instead of full monetary compensation.

There are also other special cases in which ownership shares may be offered to an employee, but these fall outside the scope of our analysis. Such cases include, for instance, ownership transfers within family firms or partnership offers during the formation of a new startup firm.

Based on earlier literature and Table 1, we will derive and empirically test the following firm-related hypothesis:

- Hypothesis 3. Skilled workers (talent) are acquired via employee ownership, especially from high-productivity firms.
- Hypothesis 4. Young and small firms, that is, startup firms, more often use employee ownership.
- Hypothesis 5. Employee ownership is used to compensate for lower wages.

Table 1. Different types of recruits and the firm’s best offer in these cases

Type of recruit	Firm’s best offer	Ownership share	Firm’s financial position	Firm age	Firm growth rate	Example of the recruit
low-skill	salary (or self-entrepreneurship)	nil	no effect	all	no effect	service workers (e.g., hairdressers)
average-skill	salary	nil	normal	all	no effect	factory workers (e.g., plant and machine operators)
high-skill	salary and/or ownership	minority	weak	young	high	managers, professionals and technicians who have worked especially in high-productivity firms (e.g., science and engineering professionals)

Special cases						
family firm member	ownership	majority	strong	old	no effect	family member
startup partners hip	ownership	majority	weak	young	no effect or high	friend, acquaintance, familiar professional or technician

3. Data and descriptive evidence

3.1 Data

Linked employer-employee data offer substantial potential for empirical research in entrepreneurship and labour economics (e.g. Goetz *et al.*, 2015). In this study, we examine the determinants of employee ownership using longitudinal Finnish owner-employer-employee data (FLOWN) spanning the years 2007-2019. FLOWN is an extended version of the linked employer-employee datasets used in earlier research and provides exceptionally detailed information on firms, business owners, and ownership shares.

The dataset covers private limited liability companies and draws from multiple administrative sources. Ownership information is obtained from the registers of the Finnish Tax Administration, while firm-level information comes from Statistics Finland’s business register and financial statement database. Initially developed for research purposes by Maliranta and Nurmi (2019), FLOWN is available as a ready-made dataset from Statistics Finland. We have restricted the dataset to person owners, excluding corporate owners. [1]

The data can be further enriched by linking it to other administrative registers through unique identifiers at the firm and individual levels. We matched employees to the FLOWN data using firm identifiers from Statistics Finland’s employment registers. Additionally, we merged a rich set of individual-level characteristics for both employees and owner-employees using individual identifiers from various administrative sources, including

population registers, employment registers, tax records, and education registers maintained by Statistics Finland.

The microdata allows us to observe individuals recruited to firm y in year t and those who became new owners at firm y in the same year. By combining this information, we identify individuals who were both hired and acquired an ownership stake at firm y in year t . We refer to these individuals as *owner-employees*, while those recruits who did not receive ownership are referred to simply as *employees*. As our focus is on newly recruited workers into firms during the observation period, we retain only one observation per individual, corresponding to their year of recruitment ($t = 2007, 2008, \dots, 2019$). To make our analysis more plausible, we excluded individuals classified as entrepreneurs rather than wage earners during the recruitment year. [2]

Firms can offer ownership to employees either immediately upon recruitment or after a probationary period has been completed. For instance, a firm might delay ownership until a worker's suitability for the organisational culture has been assessed. [3] In this study, we focus exclusively on ownership acquired in the year of recruitment and do not consider ownership granted in subsequent years. Furthermore, to exclude cases of founder ownership, we omit observations from each firm's first year of operation.

In this study, we are especially interested in the productivity of the previous employer and whether it affects the likelihood of employee ownership. To analyse this, we traced each employee's most recent employment spell during the ten years preceding the recruitment. The relative productivity of the previous employer (firm) was classified into four categories - low, medium-low, medium-high, and high – based on industry- and year-specific productivity quartiles, defined at the 2-digit NACE level. Firm-level productivity is measured as value added per full-time equivalent employee. [4]

The FLOWN data employed in this study provides a uniquely rich and multifaceted source of linked administrative information; however, certain limitations in the ownership records should be acknowledged, as they are comprehensive but subject to reporting thresholds that may introduce undercoverage. Since 2006, Finnish limited liability companies have been required by law to report shareholder information to the Finnish Tax Administration. Nevertheless, for firms with more than ten shareholders, disclosure is mandatory only for those holding at least 10 per cent of the company's stock. While it is common for firms to disclose information also on owners with smaller stakes voluntarily,

the completeness of such voluntary reporting cannot be fully verified. However, closer inspection of firms with more than ten shareholders indicates that a) having more than ten shareholders is quite rare, and b) incomplete reporting is relatively uncommon. [5] The ownership distribution observed in the data also suggests that underreporting of minority shareholders is unlikely to pose a significant concern (see Figure 2). Approximately 40 per cent of reported shareholdings fall below the 10 per cent threshold, indicating that many firms do report minority ownership stakes voluntarily. Thus, although the data may not capture all individuals with minority ownership, the bias introduced by this reporting rule is expected to be limited and unlikely to affect the analysis materially.

The second limitation of the data is that we cannot observe individuals who were offered employee ownership but chose to decline it. For instance, some employees may reject ownership offers for tax-related reasons, as acquiring shares in the employing firm is typically treated as taxable income. The register data only captures accepted offers, cases where the recruited individual became a registered shareholder. The estimation results can be biased if systematic selectivity is involved in accepting an ownership offer. [6] Unfortunately, there is no available external information that would allow us to assess the extent of this potential selectivity bias.

Dependent variable

We use a dummy variable for employee ownership as the dependent variable. If the worker has received ownership at the firm in the year of recruitment = 1, otherwise = 0.

The following dependent variables were also used in the additional analyses:

- A dummy variable for the size of ownership: if the ownership share is at least 10 per cent = 1, and = 0 otherwise.
- Four categories for the size of ownership: up to 5, over 5 to up to 10, over 10 to up to 20, and over 20 per cent.

Independent variables

Following the literature, we included several control variables that are believed to be associated with employee ownership. For example, individual characteristics such as age, gender, marital status, number of children, and wealth influence the probability of stock ownership (Brickley and Hevert, 1991; Bryson and Freeman, 2010) and the likelihood of

entrepreneurial entry (Simoes *et al.*, 2016). Immigrants typically have a greater propensity to become self-employed; therefore, we also control for the foreign background of the worker (e.g., Pekkala Kerr *et al.*, 2018; Simoes *et al.*, 2016). To test our hypothesis 1 (“those who become employee owners are more likely to be highly skilled”), we also control for the educational level of the worker.

Not all employees want ownership due to factors such as risk aversion or family-related reasons. Previous studies show that employee-owners are more tolerant of risk than employees (Kruse *et al.*, 2021; Kruse *et al.*, 2010) and that women are more risk-averse than men (e.g. Blau and Kahn, 2017; Hryshko *et al.*, 2011). To test our hypothesis 2 (“those who become employee owners are more likely to be risk tolerant”), we try to capture an individual’s risk tolerance by including the following variables in the estimation model: capital income during the previous year, standard deviation of capital income during the previous five years (Hvide and Panos, 2014; Fagereng *et al.*, 2020), self-employment during the previous year (Pekkala Kerr *et al.*, 2018; Simoes *et al.*, 2016), and the number of prior employment relationships during the past ten years (Argaw *et al.*, 2017; Van Huizen and Alessie, 2019). We assume that a higher amount of capital income, a larger standard deviation of capital income, self-employment experience and a higher number of previous employment relationships indicate higher risk tolerance.

To test our hypothesis 3 (“skilled workers are acquired via employee ownership, especially from high-productive firms”), we control for the previous employer's productivity level. We also control the worker's occupation because it might provide additional information on the acquired talent. In addition, to test our hypothesis 4 (“young and small firms, that is, startup firms, more often use employee ownership”), we included firm age and size, which we use both as categorical and continuous variables. We assume that younger firm age and smaller firm size are indicative of startup firms. However, we also include a separate dummy variable to identify startups: firms under five years old with fewer than 50 employees (see, e.g., Sorenson *et al.*, 2021). We also control the annual revenue and industry of the current firm. Measures for average years of education and the share of women in the firm’s personnel were also included. To our knowledge, using a wide array of firm-level variables is relatively uncommon in the literature. To test our hypothesis 5 (“employee ownership is used to compensate for lower wages”), at the second stage of the analysis, we

restrict our sample to owner-employees only and investigate factors associated with the size of ownership.

Individual-level characteristics

- Age: Age of the worker in years.
- Age2: Age of the worker in years squared.
- Female: If the worker is female = 1; otherwise, = 0.
- Foreign background: If the worker has a foreign background = 1; otherwise, = 0.
- Education: Level of education of workers. There are four categories: primary, upper secondary, lowest-level tertiary, and higher-degree tertiary.
- Married: If the worker is married = 1; otherwise, = 0.
- Children under seven years old: If the worker has children (at least one) under seven years old = 1; otherwise, = 0.
- Annual income (previous year, log): The logarithm of the worker's annual income during the previous year, in Euros.
- Capital income (previous year, log): The logarithm of the annual capital income of the worker during the previous year, in Euros. Capital income includes income obtained from wealth, such as, dividends or rental income.
- Standard deviation of capital income (5 previous years, log): The logarithm of the standard deviation of worker's annual capital income during the previous five years, in Euros.
- Self-employed in previous year: If the worker was self-employed during the previous year = 1; otherwise, = 0.
- Employment relationships: The number of previous employment relationships during the past ten years.
- Productivity of previous employers: Relative productivity of the previous employer (firm) by industry-specific (2-digit NACE) productivity quartiles (see, e.g., Maliranta and Nurmi, 2019). Five categories were used: low, medium-low, medium-high, high, and unknown.
- Occupation: The workers' occupation during the recruiting year. Eight categories were used: managers; professionals; technicians and associate professionals;

clerical support workers; service and sales workers; craft and related trades workers; plant and machine operators, and assemblers; other, or unknown.

Firm-level characteristics

- Firm age: Firm age in years. Four categories: 1-4, 5-9, 10-14, and 15 and above. We also use firm age as a continuous variable.
- Firm size: Firm size is based on the number of full-time personnel. Four categories: under 5, 5-9, 10-49, and 50 and over. We also use firm size as a continuous variable.
- Annual revenue (log): The logarithm of a firm's annual revenue in Euros.
- Industry: Firm–industry dummies (2-digit NACE). Six categories: manufacturing (5-39), construction (41-43), sales (45-47), professional, scientific, and technical activities (69-75), information and communication (58-63), and other (1-3, 49-56, 64-68, 97-99).
- Educational years: Average years of schooling of the workers in the firm. The workers' education levels were converted to school years: primary = 9, upper secondary level = 12, lowest-level tertiary = 14, and higher-degree-level tertiary = 16-21 years.
- Share of women: The share of women among the workers in the firm.
- Startup: If the firm is under five years old and has fewer than 50 employees = 1; otherwise, = 0.

3.2 Descriptives

Owner-employees over time

Between 2007 and 2019, almost 1.2 million new employees were recruited by the limited liability firms in the data (see Table 1). Only approximately 3,700 individuals - less than one per cent - received an ownership stake at the recruiting firm. A closer look at the number of owner-employees over time shows a subtle increase during the last few observation years (Figure 1). The number of owner-employees increased from 250 to 350 between 2007 and 2019. However, the share of owner-employees among all employees has remained relatively stable at 0.3 per cent annually. This suggests that the increased number of owner-employees is most likely due to the economic upswing at the end of the 2010s.

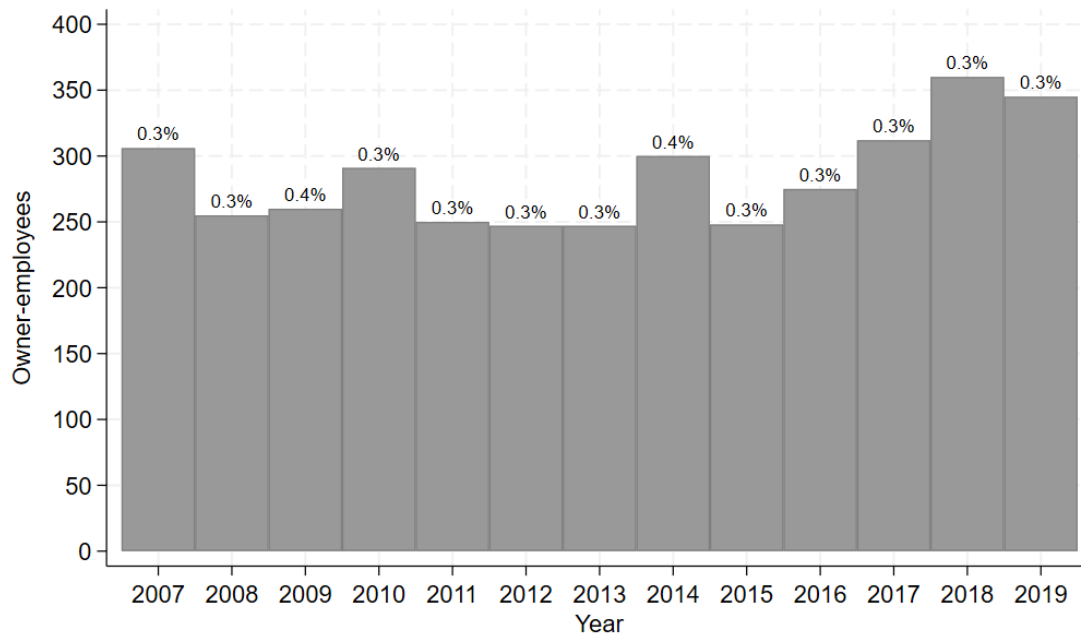


Figure 1. Number and share of owner-employees during the years 2007–2019.

Notes: This figure illustrates the number of owner-employees from 2007 to 2019. The share of owner-employees among all employees during each year is depicted above the bars.

Source: Authors’ own work based on Statistics Finland’s register data.

Characteristics of owner-employees

Table 2 provides descriptive statistics (means) for employees and owner-employees during the recruitment year. The mean values were calculated for the years 2007 to 2019. Table 2 demonstrates that owner-employees are more likely to be male, older (on average 38 years of age), and highly educated than employees. The share of foreign background does not vary much: most employees and owner-employees are natives. Moreover, owner-employees are more likely than employees to be married and have children under the age of seven.

The average annual income of owner-employees in the year prior to recruitment was over twice as much as that of employees. Owner-employees also have more capital income prior to recruitment (the previous year). Moreover, the standard deviation of capital income during the previous five years is larger for owner-employees than for other employees. This could indicate that owner-employees might be more risk tolerant or require diversified portfolios to accept idiosyncratic risk. Furthermore, there were more self-employed individuals among owner-employees (13 %) than among employees (3 %) in the year preceding recruitment.

Regarding prior work experience, owner-employees are more likely to have worked in high-productivity firms than employees. [7] Previous work experience in a high-productivity firm and the soft knowledge that the worker may bring to the firm might increase the hiring firm's willingness to offer ownership. Owner-employees work more often as managers, professionals, technicians, or associate professionals than employees. By contrast, employees work more often as service and sales workers, craft and related trades workers, or plant and machine operators and assemblers.

Descriptive statistics also indicate that individuals have received ownership during recruitment, particularly in young (1-4 years old) and small (under 5 employees) firms, as well as in firms with lower annual revenue. This finding implies that employee ownership could be more prevalent in startup firms. Additional anecdotal evidence is provided by the observation that employee ownership is more prevalent in the service sector, specifically in professional, scientific, and technical activities, as well as in information and communication. Startups often operate in these sectors in Finland (see, e.g., Maliranta *et al.*, 2018). In owner-employee firms, personnel are, on average, more educated, and the share of women is lower.

The average share of employee ownership is quite large: 13 per cent of the company's stock. One explanation for the large share is the limitations of the data, which may prevent us from observing all minority shareholders. However, according to the distribution of share ownership, this seems to be a minor problem (see Fig. 2). A second explanation is that employees might attempt to negotiate at least 10 per cent ownership of the firm. According to the Finnish Limited Liability Companies Act (624/2006, later FCA), minority shareholders who own at least 10 per cent of the company's stock have the right to demand a minority dividend distribution. In this case, half of the company's revenue must be distributed among all the owners during the accounting period. Moreover, owning more than 10 per cent of a company's shares grants the shareholder other essential rights, including the ability to request an extraordinary general meeting, demand a special audit, request the company be placed into liquidation, and bring a derivative action against management or auditors for damages. (FCA 5:4§, 7:7§, 20:1§, 22:6§.)

Table 2. Descriptive statistics (means) for owner-employees and employees in the year of recruitment

	Owner-employees	Employees
Observations	3,696	1,231,337
Ownership, % of stock	0.13	0
Individual-level characteristics		
Age	38.3	32.1
Female	0.19	0.39
Foreign background	0.04	0.07
Education		
primary level	0.10	0.22
upper secondary level	0.34	0.58
lowest-level tertiary	0.09	0.05
higher-degree-level tertiary	0.48	0.16
Married	0.55	0.26
Children under seven years old	0.29	0.16
Annual income, previous year, euros ^a	51,444	19,037
Capital income, previous year, euros ^a	6,524	940
Standard deviation of capital income, previous 5 years, euros ^a	16,414	869
Self-employed, previous year	0.13	0.03
Number of previous employment relationships	7.4	4.3
Productivity of previous employer		
low	0.12	0.11
medium-low	0.20	0.21
medium-high	0.27	0.22
high	0.24	0.13
unknown	0.16	0.33
Occupation		
managers	0.22	0.14
professionals	0.27	0.09
technicians and associate professionals	0.14	0.10
clerical support workers	0.04	0.05
service and sales workers	0.09	0.21
craft and related trades workers	0.08	0.19
plant and machine operators, and assemblers	0.04	0.13
other or unknown	0.12	0.21
Firm-level characteristics		
Number of owners in a firm	7.8	3.1

Number of owners in a firm, previous year	4.4	3.0
Firm age		
1–4	0.49	0.26
5–9	0.20	0.22
10–14	0.14	0.20
15 and over	0.16	0.32
Firm age in years	7.3	10.9
Firm size, number of personnel	16.6	84.2
Firm size		
under 5	0.42	0.19
5-9	0.23	0.17
10–49	0.29	0.39
50 and over	0.06	0.25
Startup firm	0.48	0.21
Annual revenue, euros ^a	3,090,774	15,700,000
Industry		
manufacturing	0.11	0.13
construction	0.12	0.15
sales	0.12	0.16
professional, scientific, and technical activities	0.21	0.09
information and communication	0.20	0.05
other	0.23	0.42
Educational years, firm-level	13.8	12.3
Share of women, firm-level	0.25	0.37

Notes: This table presents descriptive statistics (means) for owner-employees and employees in the recruitment year. The mean values were calculated for the years 2007 to 2019. ^a For these variables, we report the absolute values, whereas, in the regression analysis, the natural logarithm of these variables is used. Source: Authors' own work based on Statistics Finland's register data.

3.3 Share of ownership among owner-employees

We take a closer look at ownership stakes among owner-employees. The share of ownership is measured by the percentage of firm stock and is divided into five per cent categories up to 50 per cent. The ownership stake of at least 50 per cent falls into one broad category due to the low number of observations. Figure 2 indicates that the share of ownership is at least 10 per cent of the company's stock in half of the cases. The ownership stake is under 5 per cent in around a third of the cases and between 5 and 9 per cent in around a sixth of the cases.

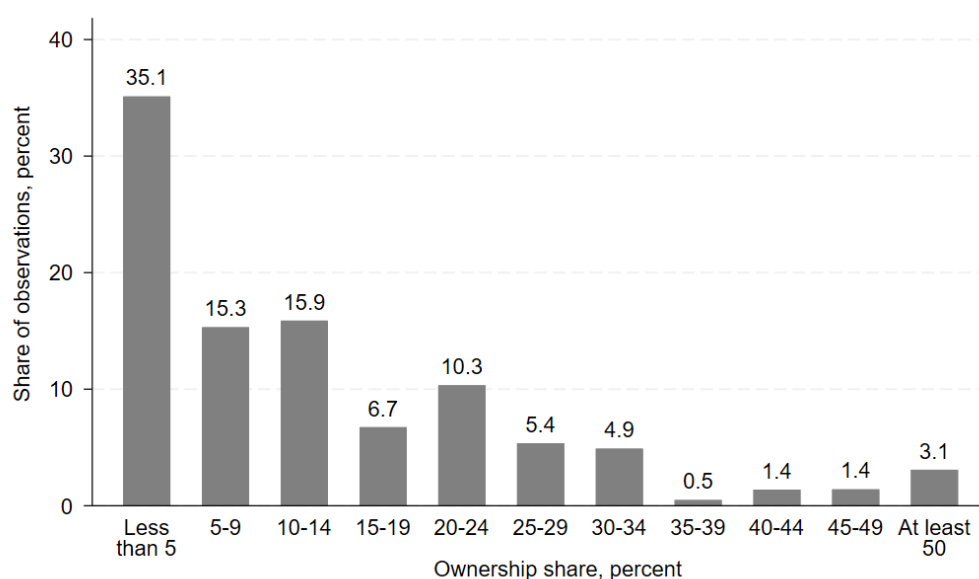


Figure 2. Distribution of ownership share among owner-employees during the years 2007-2019.

Notes: This figure depicts the distribution of ownership shares among owner-employees from 2007 to 2019. The share of ownership is measured by the percentage of firm stock and is divided into 5 per cent categories, up to 50 per cent. The ownership share of at least 50 per cent falls into one broad category due to the low number of observations.

Source: Authors' own work based on Statistics Finland's register data.

Figure 3 illustrates that the average ownership stake among owner-employees has decreased over time. Between 2007 and 2010, the average ownership increased from 16 per cent to 19 per cent. In 2011, however, there was a clear drop in the average ownership share to 13 per cent, and the share has even slightly decreased thereafter. In 2018 and 2019, the average ownership among owner-employees was 9 per cent. Similarly, the median ownership stake also depicts a decreasing trend over time. However, there was an exceptional rise in median ownership stake during 2009 and 2010, right after the 2008 global financial crisis. This could imply that ownership might have been used as part of the remuneration package for employees in firms that were cash-constrained due to the economic downturn. When the financial situation improved and the economy recovered, ownership stakes were used less frequently as compensation.

Interestingly, the average ownership stake decreases as the annual income of the owner-employees increases (Fig. 4). This could be seen as a further indication that in some cases, ownership might be used as a part of the remuneration package in firms that are cash-constrained or need to use their cash flow to finance growth. Some previous evidence

suggests that employee ownership can be used as a substitute for wages when a firm is cash-constrained and has limited access to external financing (Kim and Ouimet, 2014). Smaller and younger firms are more often cash-constrained (Hadlock and Pierce, 2010; Kim and Ouimet, 2014), and small growth firms often face difficulties acquiring external financing (Coad and Srhoj, 2020; Brown *et al.*, 2009).

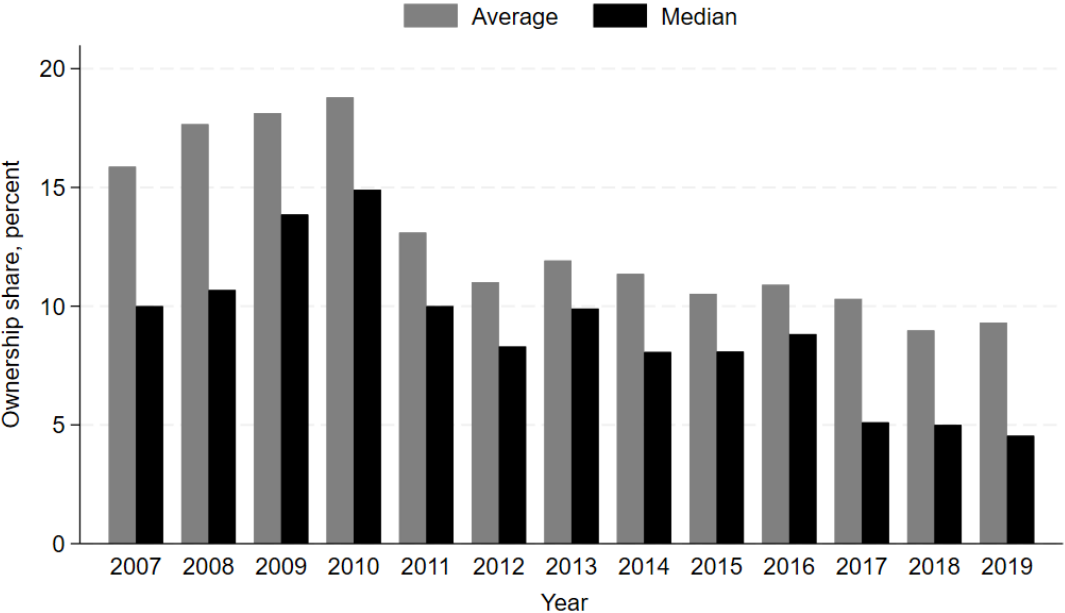


Figure 3. Average and median ownership among owner-employees during the years 2007-2019.

Notes: This figure depicts the average and median ownership share among owner-employees from 2007 to 2019. The share of ownership is measured by the percentage of firm stock.

Source: Authors’ own work based on Statistics Finland’s register data.

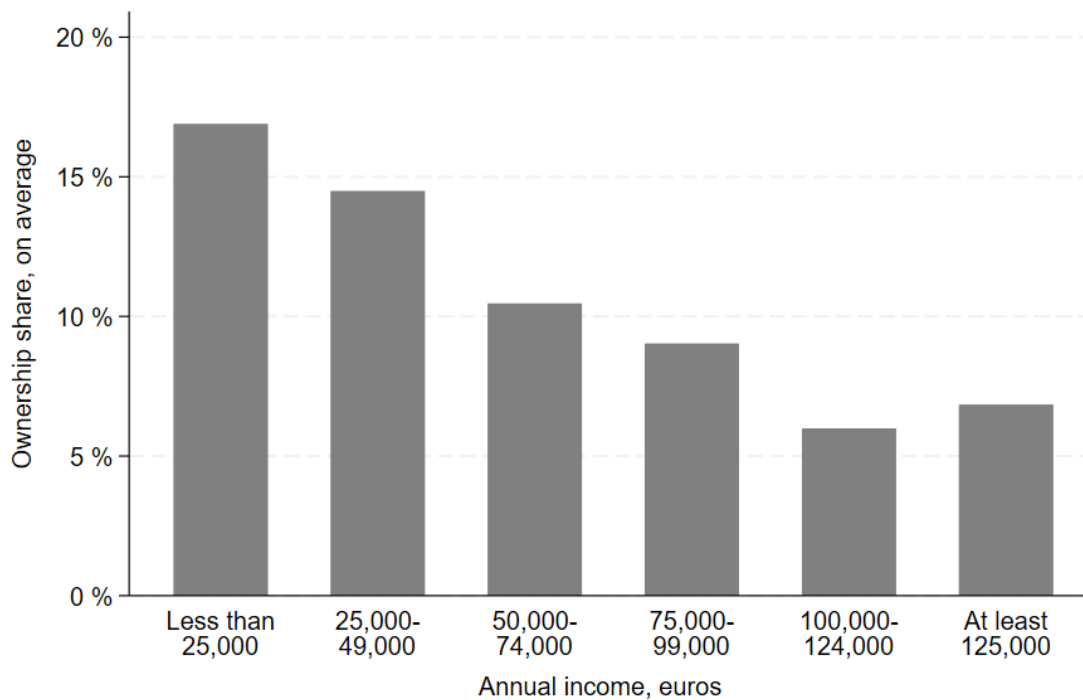


Figure 4. The average share of ownership by annual income level.

Notes: This figure illustrates the average ownership share among owner-employees from 2007 to 2019 according to the annual income level. The annual income (in euros) is divided into six categories. The share of ownership is measured by the percentage of firm stock.

Source: Authors' own work based on Statistics Finland's register data.

We also investigated whether the industry, firm size, or firm age of the current employer, or the productivity level of the previous employer, might influence the share of ownership (Appendix 1). Most ownership stakes are for firms with under five employees (see Table 2), but it is essential to note that the share of ownership is more marked in smaller than in larger firms. There is no clear relationship between firm age and average ownership share, although most ownership stakes are for young firms operating for 1 to 4 years (Table 2). Moreover, smaller shares are more common when the previous employer's relative productivity is high. In contrast, larger shares are somewhat more common when productivity is low or unknown.

Ownership stakes are most common in professional, scientific, and technical activities, as well as information and communication (Table 2). However, the average ownership in these industries is the lowest of the six industries, ranging from 7 to 11 per cent (Appendix 1). The average ownership among owner-employees is highest in construction: 18 per cent.

3.4. Number of owners in the recruiting firms

Deepening knowledge of the firms that have used employee ownership during recruitment is crucial. As indicated in Section 3.2, employee ownership may be more common in startup firms. Figures 5 and 6 provide insights into this dynamic. Figure 5 shows the number of owners within a firm during the recruitment year, and Figure 6 depicts the number of owners in the year preceding recruitment. Both figures present the number of owners in firms separately for owner-employees and employees. The figures categorise the number of owners into five groups: 1, 2, 3 to 5, 6 to 9, and 10 or more. Through this kind of comparative analysis, we can identify potential distinctions in ownership structures between firms that offer ownership at recruitment and those that do not.

Figure 5 reveals a notable trend: firms that offer ownership during recruitment typically have more owners than those that do not. Specifically, firms that offer ownership usually have 3 to 5 or more owners during the recruitment year, whereas firms that do not offer ownership more frequently have only 1 or 2 owners. Notably, there are no solopreneur firms among owner-employee's firms during the recruitment year. This absence is attributable to the exclusion of the first operating year of each firm from the data to avoid the influence of founding team memberships on the results (see Section 3.1).

Furthermore, Figures 5 and 6 suggest that firms hiring owner-employees tend to experience an increase in the number of owners over time. In the year preceding recruitment, there is a higher prevalence of firms with 1 or 2 owners among those offering ownership compared to the recruitment year. This trend supports hypothesis 4, which posits that employee ownership is often more prevalent in startup firms.

Finally, we also examined the number of owner-employees hired by firms within the same year of observation (figure not shown). The majority, 85 per cent, of the firms hired only one owner-employee. Approximately 11 per cent recruited two, while recruiting three or more owner-employees within the same year was relatively uncommon, accounting for just 4 per cent of the firms.

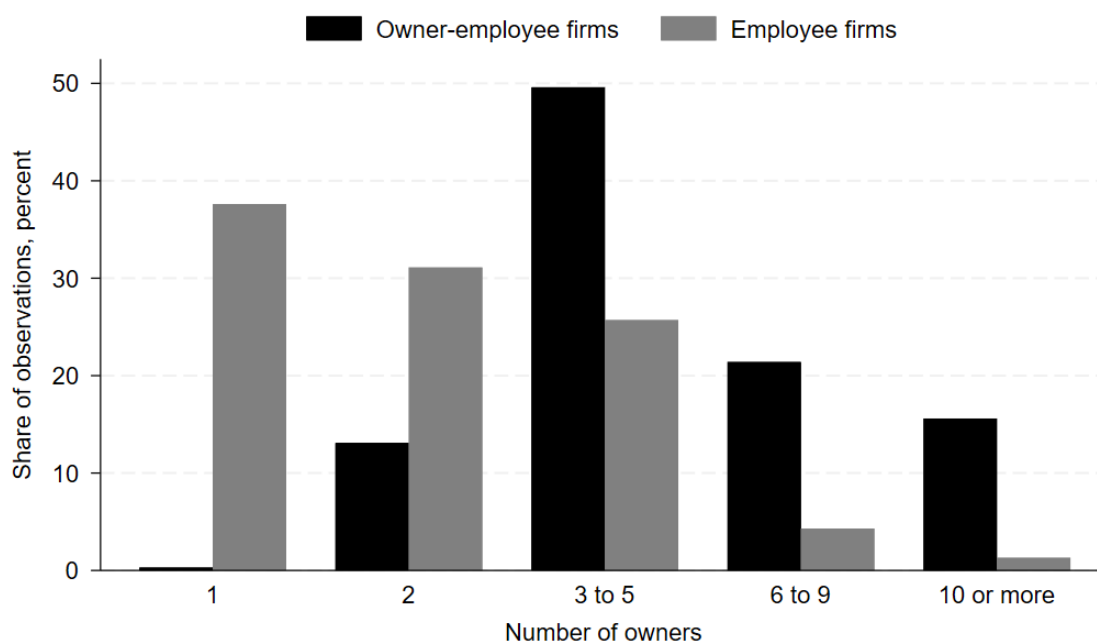


Figure 5. The number of owners in firms during the recruiting year among owner-employees and employees.

Notes: This figure illustrates the number of owners in firms during the year of recruitment, separately for owner-employees and employees. All years from 2007 to 2019, but only one firm-year observation, are included. The number of owners is divided into five categories: 1, 2, 3 to 5, 6 to 9, and 10 or more.

Source: Authors' own work based on Statistics Finland's register data.

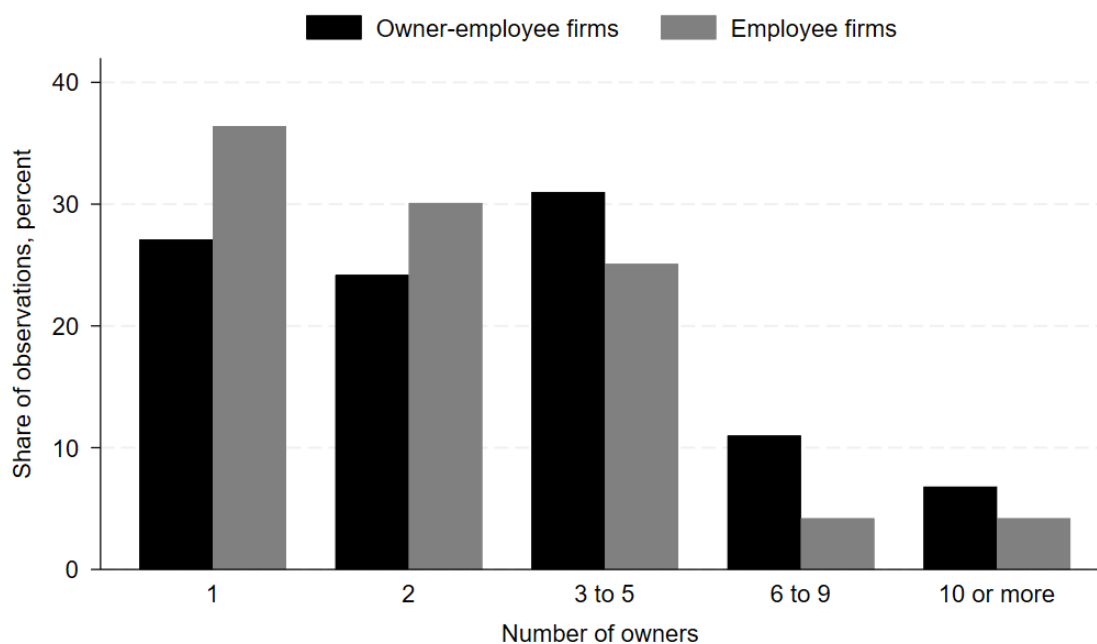


Figure 6. The number of owners in firms during the year prior to recruiting among owner-employees and employees.

Notes: This figure illustrates the number of owners in the firms during the year preceding recruitment, separately for owner-employees and employees. All years from 2007 to 2019, but only one firm-year observation, are included. The number of owners is divided into five categories: 1, 2, 3 to 5, 6 to 9, and 10 or more.

Source: Authors' own work based on Statistics Finland's register data.

4. Estimation method and results

4.1 Likelihood of ownership during recruitment

In this study, we employed a logistic regression model to determine what kinds of individual- and firm-level factors are associated with the likelihood of employee ownership in the recruitment year. This study focuses on newly recruited workers in limited liability firms during the years 2007-2019. For each individual i , we only keep observations from the year of recruitment t . We estimate the logistic regression model as described in Eq. 1:

$$\text{Employee ownership}_{i,t} = \alpha + \beta X_{i,t} + \gamma Z_{i,t} + \delta \text{Year}_{i,t} + e_{i,t} \quad (1)$$

where the dependent variable is a dummy variable, "employee ownership," which takes a value of one if worker i has received ownership at the hiring firm in the year of recruitment t , and zero otherwise. The model includes a set of control variables defined in Section 3.1. Worker characteristics are marked as X_i and firm characteristics are denoted as Z_i . The model also includes dummies for the observation years 2007-2019 (Year_i).

The estimation results of the logistic model (Eq. 1) are reported in Table 3, with the coefficients presented as odds ratios. Column 1 displays the baseline model, and the corresponding average marginal effects are provided in Appendix 2. Marginal effects are discussed selectively in the text to conserve space. Columns 2-5 present the results of several robustness checks. [8]

The results show that the likelihood of ownership increases with the worker's age, but only to a certain extent (Table 3, column 1). We calculated the predicted probabilities and found that the probability of ownership increased until age 34 and decreased thereafter. Women have a lower likelihood of ownership than men. Supporting hypothesis 1, highly educated individuals are more likely to acquire ownership during recruitment. According to the marginal effects, higher education increases the probability of ownership by 0.09

percentage points (Appendix 2). Considering family-related factors, being married and having young children increases the likelihood of ownership. Furthermore, a worker's annual income in the previous year is positively associated with the likelihood of ownership. Individuals with higher income in the previous year are perhaps more likely to possess the financial means to participate in ownership arrangements, particularly when such arrangements involve financial risk (e.g., Grable, 2000). While some studies find that marriage and having children increase risk aversion (e.g., Chaulk *et al.*, 2003), family responsibilities may also strengthen incentives for long-term wealth accumulation, thereby increasing the attractiveness of ownership opportunities. Moreover, some evidence suggests that having more children can, under certain circumstances, lead to greater risk tolerance, as larger families may create a need to pursue innovative solutions to meet growing economic demands (e.g., Lin, 2009).

Larger capital income during the previous year, larger standard deviation of the capital income during the previous five years, self-employment during the previous year, and the number of prior employment relationships during the past ten years increase the likelihood of employee ownership. Hence, in line with hypothesis 2, these findings imply that owner-employees are more risk tolerant than employees in general.

Interestingly, in line with hypothesis 3, the work experience acquired at a firm with medium-high or high relative productivity increases the likelihood of employee ownership. It could be that individuals who have previously worked in high-productivity firms possess specialised skills and knowledge that companies want to acquire. Previous work experience in a high-productivity firm increases the probability of ownership by 0.03 percentage points (Appendix 2).

Firm-related factors also influence employee ownership. The estimation results indicate that employee ownership is more likely in young and small firms. Namely, the likelihood of employee ownership is highest in companies 1-4 years old and with fewer than 5 employees. [9] Moreover, a firm's (log) annual revenue is negatively associated with the likelihood of employee ownership. We also estimated two additional model specifications, which included firm age in years and firm size, measured as the number of personnel, as continuous control variables (Table 3, column 2), as well as a startup dummy (Table 3, column 3). We define startups as firms that are less than five years old and have fewer than 50 employees. The results imply that firm age has a more marked connection to employee ownership than

firm size (Table 3, column 2). Nevertheless, the likelihood of employee ownership decreases as firm age or size increases. Moreover, the results show that employee ownership is more likely in startups when firm age and size are controlled for (Table 3, column 3). Thus, the estimation results support hypothesis 4, which states that employee ownership is more commonly used by young and small firms, typically startups. The probability of employee ownership increases by 0.09 percentage points if the recruiting firm is 1-4 years old and 0.17 percentage points if the firm has under five employees (Appendix 2).

The likelihood of ownership is highest in information and communication, as well as in professional, scientific, and technical activities, and lowest in construction and ‘other’ industries. Moreover, a firm's average number of years of education is positively associated with the likelihood of ownership. These results indicate that ownership is more likely in firms that depend on human capital, such as (high) technology companies or knowledge-intensive services. For example, the probability of employee ownership increases by 0.06 percentage points if the recruiting firm operates in the information and communication sector (Appendix 2). Finally, the likelihood of employee ownership decreases as the proportion of women in a firm increases, indicating that ownership may be more common in male-dominated fields.

We also estimated a separate model specification that included an indicator for workers’ occupation in the recruiting year as an explanatory variable (Table 3, column 4). According to the results, employee ownership is more likely among individuals recruited as managers, professionals, technicians and associate professionals, or clerical support workers. The likelihood of receiving ownership during recruitment is lower for craft and related trades workers, as well as plant and machine operators and assemblers. The estimation results are quite robust compared to the baseline model (Table 3, column 1), except that adding the worker’s occupation as a control variable changes the estimates for education and industry. Ownership is now more likely only for the most highly educated and only for individuals working in the information and communication industry. Thus, the results further support hypothesis 3, which states that employee ownership is used to acquire skilled workers, especially from high-productivity firms.

Acquiring skilled workers is crucial to the growth of firms, so it could be hypothesised that employee ownership might be used to acquire skilled employees, especially in fast-growing firms. When a firm grows rapidly, it may need to acquire talent but cannot

necessarily afford to pay a high enough salary. Instead, the firm can offer ownership. We test this hypothesis and estimate a logit model, including a dummy variable indicating whether the recruiting firm was a high-growth firm (Table 3, column 5). The definition for the high-growth firm is that firm personnel increases by at least an average of 20 per cent a year for at least three consecutive years =1, otherwise =0. This information was available to approximately half of the companies in the data due to growth periods. [10] The results show that the likelihood of ownership is higher in high-growth firms. This suggests that employee ownership can be a means of acquiring a skilled workforce, particularly when a firm is experiencing rapid growth.

Table 3. Individual- and firm-level determinants of employee ownership

Dependent variable: employee ownership	(1) Odds ratio (s.e.)	(2) Odds ratio (s.e.)	(3) Odds ratio (s.e.)	(4) Odds ratio (s.e.)	(5) Odds ratio (s.e.)
Individual-level characteristics					
Age	1.08*** (0.017)	1.08*** (0.017)	1.08*** (0.017)	1.08*** (0.017)	1.05** (0.020)
Age ²	1.00*** (0.000)	1.00*** (0.000)	1.00*** (0.000)	1.00*** (0.000)	1.00*** (0.000)
Women	0.52*** (0.031)	0.53*** (0.031)	0.53*** (0.031)	0.57*** (0.033)	0.47*** (0.039)
Foreign background	0.85 (0.079)	0.85 (0.078)	0.84 (0.078)	0.85 (0.079)	0.69*** (0.093)
Education (ref. primary)					
upper secondary level	0.92 (0.053)	0.92 (0.056)	0.92 (0.056)	0.95 (0.059)	0.82** (0.071)
lowest-level tertiary	1.50*** (0.126)	1.50*** (0.125)	1.50*** (0.125)	1.11 (0.096)	1.41*** (0.170)
higher-degree-level tertiary	1.93*** (0.149)	1.89*** (0.144)	1.89*** (0.144)	1.33*** (0.104)	1.99*** (0.212)
Married	1.46*** (0.059)	1.46*** (0.059)	1.46*** (0.059)	1.38*** (0.057)	1.53*** (0.089)
Children under seven years old	1.14*** (0.049)	1.15*** (0.049)	1.15*** (0.049)	1.16*** (0.049)	1.25*** (0.077)
Annual income, previous year (log)	1.29*** (0.061)	1.28*** (0.059)	1.28*** (0.059)	1.19*** (0.040)	1.07 (0.042)
Capital income, previous year (log)	1.03*** (0.007)	1.03*** (0.007)	1.03*** (0.007)	1.03*** (0.007)	1.03** (0.011)
Standard deviation of capital income, 5 previous years (log)	1.11*** (0.008)	1.11*** (0.008)	1.11*** (0.008)	1.10*** (0.008)	1.16*** (0.009)
Self-employed, previous year	2.19*** (0.125)	2.21*** (0.125)	2.21*** (0.125)	2.16*** (0.124)	2.55*** (0.277)
Number of previous employment relationships	1.09*** (0.015)	1.09*** (0.015)	1.09*** (0.015)	1.09*** (0.015)	1.14*** (0.012)

Productivity of previous employer (ref. low-productivity)					
medium-low	1.03 (0.069)	1.03 (0.063)	1.03 (0.063)	1.07 (0.066)	1.00 (0.091)
medium-high	1.16*** (0.067)	1.16*** (0.067)	1.16*** (0.068)	1.19*** (0.070)	1.20** (0.103)
high	1.31*** (0.078)	1.32*** (0.078)	1.32*** (0.079)	1.30*** (0.079)	1.53*** (0.132)
unknown	1.04 (0.069)	1.05 (0.069)	1.05 (0.069)	1.06 (0.069)	1.24** (0.114)
Occupation (ref. other or unknown)					
managers				5.06*** (0.388)	
professionals				1.61*** (0.113)	
technicians and associate professionals				1.34*** (0.094)	
clerical support workers				1.26** (0.121)	
service and sales workers				0.93 (0.073)	
craft and related trades workers				0.47*** (0.039)	
plant and machine operators, and assemblers				0.36*** (0.036)	
Firm-level characteristics					
Firm age (ref. 15+ years)					
1–4	2.25*** (0.115)			2.10*** (0.107)	1.67*** (0.124)
5–9	1.38*** (0.079)			1.33*** (0.076)	1.21*** (0.080)
10–14	1.15** (0.072)			1.14** (0.072)	1.09 (0.082)
Firm age in years		0.90*** (0.008)	0.94*** (0.013)		
Firm age in years ²		1.00*** (0.000)	1.00*** (0.000)		
Firm size (ref. 50+ employees)					
under 5	4.77*** (0.466)			4.97*** (0.478)	3.85*** (0.547)
5–9	3.41*** (0.310)			3.36*** (0.304)	3.53*** (0.432)
10–49	2.30*** (0.186)			2.26*** (0.182)	2.06*** (0.212)
Firm size, number of personnel		0.99*** (0.001)	0.99*** (0.001)		
Firm size, number of personnel ²		1.00*** (0.000)	1.00*** (0.000)		

Startup firm			1.32*** (0.089)		
Annual revenue (log)	0.91*** (0.013)	0.83*** (0.013)	0.84*** (0.013)	0.90*** (0.013)	0.93*** (0.024)
Industry (ref. manufacturing)					
construction	0.79*** (0.056)	0.80*** (0.056)	0.80*** (0.056)	0.94 (0.070)	0.76*** (0.078)
sales	1.01 (0.073)	1.13 (0.082)	1.14 (0.082)	0.89 (0.065)	1.06 (0.106)
professional, scientific, and technical activities	1.16** (0.079)	1.18** (0.081)	1.19** (0.081)	0.98 (0.067)	1.14 (0.108)
information and communication	1.56*** (0.107)	1.49*** (0.104)	1.49*** (0.104)	1.17** (0.081)	1.35*** (0.131)
other	0.78*** (0.050)	0.79*** (0.051)	0.80*** (0.051)	0.77*** (0.052)	0.77*** (0.069)
Educational years, firm-level	1.10*** (0.015)	1.11*** (0.015)	1.11*** (0.015)	1.06*** (0.014)	1.11*** (0.022)
Share of women, firm-level	0.63*** (0.053)	0.58*** (0.050)	0.58*** (0.050)	0.49*** (0.043)	0.73** (0.090)
High-growth firm					1.67*** (0.090)
Constant	YES	YES	YES	YES	YES
Year dummies	YES	YES	YES	YES	YES
Number of observations	1,231,429	1,231,429	1,231,429	1,231,429	802,019
Pseudo R ²	0.187	0.185	0.185	0.210	0.173
Log pseudolikelihood	-20211.2	-20276.3	-20268.1	-19636.7	-10374.4
Percentage of correct predictions	99.7	99.7	99.7	99.7	99.8

Notes: This table presents the estimation results of several logistic regression model, where employee ownership in the year of recruitment is the dependent variable. The results are presented as odds ratios. Year dummies (12) were included in all models. Robust standard errors are indicated in parentheses. Significance levels: *** 1%, ** 5%.

Source: Authors' own work based on Statistics Finland's register data.

The estimation results suggest that ownership stakes are offered by a specific type of firm to a selected group of employees during recruitment. This interpretation is further supported by the average marginal effects derived from our baseline model (Appendix 2). The marginal effects are notably small, indicating that the probability of receiving an ownership stake at recruitment is, on average, low and reflects a selective practice. For example, the predicted probability of employee ownership for an average employee in the data is only 0.1 per cent. However, for a highly educated male who has previously worked in a high-productivity firm, the predicted probability is 0.6 per cent. When further conditioned on being recruited by a small firm (under five employees) that is also young (1-4 years), the predicted probability

increases to 1.5 per cent. If, in addition, the recruiting firm operates in the information and communication sector, the predicted probability rises to 2.3 per cent.

4.2 The size of ownership during recruitment

Minority shareholders holding at least 10 per cent of the company's stock are entitled to demand the distribution of dividends, up to half of the previous year's profit (FCA 624/2006). Moreover, owning more than 10 per cent of a company's shares grants the shareholder other essential rights presented in Section 3.2. Consequently, owner-employees are incentivised to negotiate for at least 10 per cent ownership of the firm during recruitment to access these extended rights. Especially individuals who value equity over salary may try to negotiate for a higher percentage of ownership. Workers' bargaining power may be enhanced, particularly if the recruiting firm faces cash constraints but requires skilled labour. According to Kim and Ouimet (2014), employee stock ownership plans (ESOPs) can substitute wages when a firm is cash-constrained and has limited access to external financing. Smaller firms tend to experience greater financial constraints than larger firms (e.g., Hadlock and Pierce, 2010). In our dataset, most owner-employees were recruited by small, young firms (see Table 2).

To test hypothesis 5 (employee ownership is used to compensate for lower wages), we restricted the sample to owner-employees and investigated the size of ownership among them, specifically the likelihood of receiving at least 10 per cent ownership at the firm during recruitment. We created a dummy variable for the size of ownership: ownership of at least 10 per cent =1, and = 0 otherwise (i.e., ownership less than 10 per cent). Only owner-employees from 2007 to 2019 were included in the estimation data (n = 3,645).

The estimated logistic regression model is described in Eq. 2:

$$\text{Ownership at least 10 percent}_{i,t} = \alpha + \beta X_{i,t} + \gamma Z_{i,t} + e_{i,t} \quad (2)$$

where the characteristics of owner-employees are marked as X_i and firm characteristics are denoted as Z_i . The set of control variables is defined in Section 3.1.

The estimation results in the first column of Table 4 indicate that the likelihood of receiving at least 10 per cent ownership during recruitment is higher for individuals with lower annual income levels. This finding supports hypothesis 5, suggesting that ownership

may be used as compensation for lower salaries. We also find that a foreign background and a higher number of past employment relationships decrease the likelihood of obtaining at least a tenth of ownership in the firm. Conversely, factors such as a higher educational level, marriage, entrepreneurial experience, and a larger standard deviation of capital income during the previous five years increase the likelihood of receiving at least 10 per cent ownership during recruitment. Notably, prior work experience in a high-productivity firm does not appear to matter for the size of ownership.

The results further indicate that the likelihood of receiving at least 10 per cent ownership during recruitment decreases as the firm size and annual revenue increase. Moreover, ownership of at least a tenth is less likely in younger firms, those with higher average educational years among their personnel, and those operating in the information and communication industry. In contrast, firms in the construction industry are more likely to offer larger ownership shares (potentially signalling family firm members). Therefore, firms offering larger ownership shares to recruits do not appear to be startups or firms heavily reliant on human capital. Since the likelihood of ownership was higher in young firms and firms in the information and communication industry, this result may indicate that these types of firms need more skilled labour and, therefore, can only offer smaller shares to each of the recruits.

As a sensitivity analysis, we also estimated the factors influencing the increase in ownership share size, from under five per cent to over 10 per cent and over 20 per cent, by using an ordered logit model. The estimation results are presented in the second column of Table 4. The results align with the simple logit model results (Table 4, column 1). Higher educational attainment, prior self-employment experience, variability in capital income, and age are positively associated with larger ownership shares. However, previous employment in high-productivity firms does not correlate with the size of the ownership share. A higher annual income and a history of multiple employment spells reduce the likelihood of receiving a larger ownership share. A smaller ownership share tends to be granted by younger firms and those operating in the information and communication sector. In contrast, a larger ownership share is typically given in firms with fewer employees, smaller annual revenue, and those operating in sales or construction.

Table 4. The size of ownership among owner-employees

	(1) Ownership of at least 10 per cent Logit-model Odds ratio (s.e.)	(2) Ownership of up to 5, over 5 to up to 10, over 10 to up to 20, and over 20 Ordered logit-model, Odds ratio (s.e.)
Individual-level characteristics		
Age	1.04 (0.031)	1.08** (0.283)
Age ²	1.00 (0.000)	1.00*** (0.007)
Women	0.91 (0.110)	0.89 (0.950)
Foreign background	0.58*** (0.125)	0.70 (0.141)
Education (ref. primary)		
upper secondary level	1.27 (0.194)	1.16 (0.150)
lowest-level tertiary	2.34*** (0.460)	1.79*** (0.295)
higher-degree-level tertiary	1.58*** (0.266)	1.36** (0.200)
Married	1.31*** (0.123)	1.08 (0.923)
Children under seven years old	1.05 (0.102)	1.18 (0.104)
Annual income (ref. under 25 000)		
25 000-49 000	0.90 (0.106)	0.90 (0.106)
50 000-74 000	0.83 (0.117)	0.81 (0.101)
75 000-99 000	0.71** (0.125)	0.72** (0.119)
100 000-124 000	0.40*** (0.125)	0.39*** (0.114)
at least 125 000	0.62** (0.129)	0.59*** (0.117)
Capital income, previous year (log)	0.97 (0.015)	0.99 (0.014)
Standard deviation of capital income, 5 previous years (log)	1.06*** (0.017)	1.04*** (0.015)
Self-employed, previous year	1.64*** (0.193)	1.46*** (0.154)
Number of previous employment relationships	0.96*** (0.012)	0.96*** (0.011)

Productivity of previous employer (ref. low-productivity)		
medium-low	1.03 (0.147)	0.99 (0.139)
medium-high	1.18 (0.160)	0.86 (0.110)
high	1.10 (0.155)	1.13 (0.141)
unknown	1.15 (0.186)	0.99 (0.126)
Firm-level characteristics		
Firm age (ref. 15+ years)		
1–4	0.56*** (0.065)	0.61*** (0.063)
5–9	0.66*** (0.086)	0.67*** (0.078)
10–14	0.89 (0.127)	0.88 (0.110)
Firm size (ref. 50+ employees)		
under 5	10.54*** (2.648)	8.21*** (2.427)
5–9	5.60*** (1.320)	5.68*** (1.281)
10–49	2.80*** (0.604)	2.38*** (0.500)
Annual revenue (log)	0.89*** (0.032)	0.81*** (0.027)
Industry (ref. manufacturing)		
construction	1.95*** (0.320)	2.19*** (0.295)
sales	1.34 (0.215)	1.34** (0.191)
professional, scientific, and technical activities	1.30 (0.192)	1.18 (0.161)
information and communication	0.61*** (0.093)	0.55*** (0.079)
other	1.36** (0.200)	1.34** (0.176)
Educational years, firm-level	0.71*** (0.020)	0.72*** (0.019)
Share of women, firm-level	1.01 (0.190)	0.99 (0.190)
Constant	YES	YES
Year dummies	NO	NO
Number of observations	3,645	3,645
Pseudo R ²	0.212	0.155
Log pseudolikelihood	-1992.0	-3196.2
Percentage of correct predictions	72.4	

Notes: Column 1 presents the estimation results of the logistic regression model, where the size of ownership (at least 10 percent) among owner-employees is the dependent variable. Column 2 presents the estimation results of ordered logit model, where size of ownership share (up to 5, over 5 to up to

10, over 10 to up to 20, and over 20 per cent) is the dependent variable. The results are presented as odds ratios. Robust standard errors are indicated in parentheses. Significance levels: *** 1%, ** 5%.

Source: Authors' own work based on Statistics Finland's register data.

5. Conclusions

A skilled workforce is a crucial prerequisite for the success and growth of companies. Traditionally, companies have made efforts to engage employees through various incentive schemes, including wage increases, bonuses, and fringe benefits. However, intensifying competition for top talent has led companies to offer higher forms of engagement, such as stock options and ownership shares. Offering direct ownership, with potentially unlimited upside from the company's performance, is another way to acquire skilled labour. Ownership may also be used as part of the remuneration package if the recruiting firm cannot offer a competitive salary to the worker. Moreover, share ownership involves financial risk; therefore, risk tolerance may also play a role in employee ownership.

This study contributes to the literature on employee ownership by offering a novel perspective and new empirical evidence on the determinants of direct ownership acquired during recruitment. While previous studies have primarily focused on ESOPs, which typically involve broad-based share allocations, and stock options, which are often granted to managers or key personnel, the factors influencing direct share ownership upon hiring remain relatively underexplored. Unlike much of the existing literature, which relies primarily on survey-based data, this study utilises comprehensive register data. Specifically, we utilise unique linked owner-employer-employee data from Finland, covering the years 2007-2019, supplemented by information from various individual- and firm-level datasets. Using logistic regression models, we examine factors associated with the likelihood of an employee acquiring direct ownership in the year of recruiting. Beyond standard individual-level covariates, our models incorporate prior employment in high-productivity firms, a wide array of variables related to the current firm, and several proxies for the risk tolerance of the recruits.

According to the results, a limited group of individuals become owner-employees during recruitment. These individuals are typically highly educated, which supports hypothesis 1. Another central finding, supporting our hypothesis 3, is that owner-employees are more likely to have previously worked in high-productivity firms and are currently working as

managers or professionals. Moreover, in line with hypothesis 4, employee ownership is more likely in young and small firms, which we interpret as indicative of startup firms. This is further supported by the finding that employee ownership is more likely in startup firms when firm age and size are controlled for. Moreover, employee ownership is more likely in knowledge-intensive service sectors, particularly in professional, scientific, and technical activities, as well as in the information and communication sector. The educational level of personnel is also higher in owner-employee firms. Overall, all of these results support the view that employee ownership is used to acquire skilled workforce (talent), often for managerial and professional positions, and this may be more common in startup firms and firms heavily reliant on human capital. An additional analysis reveals that rapidly growing firms use ownership stakes to attract talent.

Yet another key finding, supporting hypothesis 2, is that owner-employees have more entrepreneurial experience and have had a higher number of employment relationships in the past. The standard deviation of capital income during the previous five years prior to ownership is also higher. These results suggest that owner-employees are more risk tolerant than employees and are better disposed to hold idiosyncratic risk. According to earlier findings, employee share owners have higher risk tolerance and are more knowledgeable about financial matters than employees in general (Pendleton and Robinson, 2022; Kruse *et al.*, 2021; Bryson and Freeman, 2010).

The descriptives provide anecdotal evidence suggesting that ownership may be used as a part of compensation packages when recruiting firms are unable to offer competitive wage salaries. Specifically, the data show that the average ownership share tends to decrease as the annual income of owner-employees increases. This observation is further supported by additional regression analyses examining the factors influencing ownership size among owner-employees. Consistent with hypothesis 5, the results indicate that individuals with lower annual income levels are more likely to receive larger ownership stakes during recruitment. Thus, employee-ownership appears to compensate for lower salaries. Furthermore, the analysis suggests that small firms with lower annual revenue are more inclined to offer larger ownership shares to owner-employees, implying that ownership may be used to offset a more compressed wage structure in these types of companies. This aligns with the notion that ownership can serve as a substitute for wages, particularly in cash-constrained firms with limited access to external financing (Kim and Ouimet, 2014), a

condition often observed in small and growing firms (Brown *et al.*, 2009; Coad and Srhoj, 2020; Hadlock and Pierce, 2010). However, the regression results also reveal that younger firms and those in the information and communication sector are less likely to offer larger ownership shares during recruitment. Therefore, while startups and firms heavily reliant on human capital are more inclined to offer ownership as part of their recruitment strategy, they typically do not provide large ownership shares. This suggests that such firms may require more skilled labour, leading them to distribute smaller ownership shares among recruits.

Consistent with our findings, previous studies have demonstrated that individual characteristics, such as age, educational level, marital status, number of children, and wealth, increase the likelihood of employee stock ownership (Brickley and Hevert, 1991; Bryson and Freeman, 2010). However, the study context in the prior literature is not directly comparable to ours, as nearly all employees in a firm are typically entitled to ownership plans (e.g., ESOPs). In this study, direct ownership was offered to a selected group of employees by a specific type of firm. The evidence presented in this paper suggests that employee ownership is used by firms to attract a skilled workforce and as a means of knowledge acquisition, which is crucial to the success and growth of firms. Owner-employees are typically highly educated individuals recruited to managerial and professional positions. The strategic significance of these ownership arrangements is particularly pronounced in small and young startups operating in knowledge-intensive services. The results further suggest that employee ownership is used to offset lower compensation levels, particularly among small (startup) firms with lower annual revenues. These findings can inform human resource personnel in developing compensation packages for selected individuals as part of their comprehensive recruitment strategies.

Finally, our estimation results showed that women are less likely than men to become owner-employees at recruiting firms. The likelihood of employee ownership also decreases when the proportion of women in a firm's personnel increases. It remains unclear whether the results are driven by the fact that women receive ownership offers less frequently than men or that they decline ownership offers more often than men. Previous literature suggests that women are typically more risk-averse than men, which could provide some explanation for the results (e.g., Filippin, 2022). However, Blasi and Kruse (2023) argue that employee ownership can potentially help address the gender wealth gap; however, women are currently underrepresented among firms with an ESOP. Future research should investigate gender

differences in employee ownership in more detail. Moreover, examining whether direct share ownership enhances job retention would be essential, as several studies have shown that ESOPs are associated with greater job stability (e.g., Bryson and Freeman, 2018; Kurtulus and Kruse, 2017).

Appendices

Appendix 1. Mean and standard deviation of ownership among owner-employees

Owner-employees	Ownership share, mean	Ownership share, standard deviation
<i>Productivity of previous employer</i>		
low	0.14	0.14
medium-low	0.13	0.14
medium-high	0.13	0.13
high	0.11	0.12
unknown	0.14	0.14
<i>Firm age</i>		
1–4	0.13	0.14
5–9	0.12	0.13
10–14	0.14	0.14
15+	0.13	0.13
<i>Firm size</i>		
50 +	0.04	0.07
10–49	0.08	0.10
5–9	0.12	0.11
under 5	0.18	0.15
<i>Industry</i>		
manufacturing	0.12	0.12
construction	0.18	0.14
sales	0.16	0.15
professional, scientific, and technical activities	0.11	0.12
information and communication	0.07	0.09
other	0.15	0.15

Notes: This table displays the average ownership share and the standard deviation of ownership among owner-employees from 2007 to 2019. The share of ownership is measured by the percentage of firm stock.

Source: Authors' own work based on Statistics Finland's register data.

Appendix 2. Individual- and firm-level determinants of employee ownership, marginal effects at the means

Dependent variable: employee ownership	marginal effects (s.e.)
Individual-level characteristics	
Age	0.000004 (0.00000)
Women	-0.000629*** (0.00006)
Foreign background	-0.000150 (0.00008)
Education (ref. primary)	
Upper secondary level	-0.000070 (0.00006)
Lowest-level tertiary	0.000472*** (0.00010)
Higher-degree-level tertiary	0.000874*** (0.00011)
Married	0.000387*** (0.00005)
Children under seven years old	0.000134*** (0.00004)
Annual income, previous year (log)	0.000262*** (0.00004)
Capital income, previous year (log)	0.000035*** (0.00001)
Standard deviation of capital income, 5 previous years (log)	0.000109*** (0.00001)
Self-employed, previous year	0.000798*** (0.00006)
Number of previous employment relationships	0.000085*** (0.00001)
Productivity of previous employer (ref. low-productivity)	
Medium-low	0.000025 (0.00006)
Medium-high	0.000147*** (0.00006)
High	0.000289*** (0.00007)
Unknown	0.000041 (0.00006)
Firm-level characteristics	
Firm age (ref. 15+ years)	
1–4	0.000934*** (0.00007)
5–9	0.000287*** (0.00005)
10–14	0.000109** (0.00005)
Firm size (ref. 50+ employees)	
under 5	0.001666*** (0.00013)
5–9	0.001066***

10–49	(0.00009) 0.000578*** (0.00005)
Annual revenue (log)	-0.0001*** (0.00002)
Industry (ref. manufacturing)	
construction	-0.000241*** (0.00007)
sales	0.000013 (0.00008)
professional, scientific, and technical activities	0.000183** (0.00008)
information and communication	0.000635*** (0.00011)
other	-0.000252*** (0.00007)
Educational years, firm-level	0.000100*** (0.00002)
Share of women, firm-level	-0.000466*** (0.00009)
Year dummies	YES
Number of observations	1,231,429

Notes: This table presents the marginal effects of the main logistic regression model, where employee ownership in the year of recruitment is the dependent variable (see Table 3, column 1). The marginal effects are calculated by setting all other variables to their mean values. Year dummies (12) were included in the model. Robust standard errors are indicated in parentheses. Significance levels: *** 1%, ** 5%.

Source: Authors' own work based on Statistics Finland's register data.

Notes

- ¹ Maliranta and Nurmi (2019) describe the FLOWN data in more detail. The FLOWN database and other register data are available via Statistics Finland's FIONA remote access system. Using register data requires a license.
- ² The employment status is based on the person's pension insurance act and the amounts of wage, salary, and entrepreneurial income.
- ³ Offering shares of the firm is also a risk from the firm's perspective. In Finland, minority ownership is strictly protected, so it is difficult to dissolve ownership. On the other hand, many shareholder agreements have a so-called "bad leaver option", where the other shareholders have the right to redeem the shares at the subscription price or nominal value of the shares in the event of separation if the shareholder leaves due to inappropriate behaviour.
- ⁴ The information on previous employment was compiled from various individual-level registers of Statistics Finland (FOLK-modules) and financial statement data. The relative productivity of the previous employer was missing for 33 per cent of the new employees and 16 per cent of the owner-employees. The labour productivity could not be calculated for all firms, for instance, because the value added was negative or zero.
- ⁵ In the full FLOWN dataset covering the years 2007-2019, approximately 0.3 per cent of firms have more than ten recorded owners. Among these firms, owner information is missing in approximately 9 per cent of cases. However, most of this missing data is attributable to corporate ownership. Since this study focuses on individual-level ownership, the relevant data are relatively comprehensive. Specifically, information on person owners is missing in only 2 per cent of cases among firms with more than ten owners. For firms with up to ten owners, owner information is missing in approximately 1.5 per cent of cases. Furthermore, the average ownership share among person owners in firms with more than ten owners is 6 per cent, suggesting that minority ownership stakes are often reported voluntarily.
- ⁶ According to prior studies, a notable share of eligible employees do not participate in share ownership plans, and one strong explanation is risk aversion (Brickley and Hevert, 1991; Bryson and Freeman, 2010). This could be especially true for start-up firms, as it is well known that a large proportion of firms fail early, and very small firms often have a lower probability of survival (Anyadike-Danes and Hart, 2018; Anyadike-Danes *et al.*, 2015).
- ⁷ However, for one-sixth of the owner-employees, this information was missing.
- ⁸ As a sensitivity analysis, we have estimated separate logit models for firms with up to ten owners and those with more than ten owners. For firms with up to ten owners, the results are robust compared to the baseline model since these observations dominate. For firms with over ten owners, worker education, capital income in the previous year, self-employment in the previous year and productivity of the previous employer are not significantly associated with the likelihood of employee ownership. However, the number of observations in this analysis is quite low. The results are available from the authors upon request.
- ⁹ It should be noted that the standard errors are quite large with firm size.
- ¹⁰ Defining a high-growth firm requires that the company has information for at least four consecutive years in the data due to growth periods (i.e., firm personnel increases by at least an average of 20 per cent per year in three consecutive years). For the same reason, high-growth firms could be identified only for the years 2009–2019.

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