Making Employers: The Effects of Supporting First Hires in a Large-Scale Randomized Experiment*

Elias Einiö† Annika Nivala‡

January, 2026

Abstract

Most entrepreneurs operate without employees. Hiring may be unprofitable for them, but they may also be reluctant to pay the one-time costs of becoming an employer due to attentional costs, risk aversion, or credit constraints. We examine the extent to which a temporary subsidy to hire first employees induces entrepreneurs to become employers in a large-scale randomized experiment. The experiment offered to 34,500 randomly selected non-employer entrepreneurs €10,000 to cover 50% of the wage costs of first employees. We find a 20% increase in the fraction of firms that hire workers, with effects of similar magnitude on wage costs and number of employees. The effects stay positive at 7% after the subsidy period, indicating that the temporary subsidy created new permanent employers. Our results suggest that frictions in hiring first employees can be an important barrier for employer entry and firm growth.

JEL Codes: H25, J38, L26, M51

*We thank Kari Hämäläinen, Tomi Kyyrä, Elena Patel, Emmanuel Saez, and Danny Yagan for helpful comments and suggestions. The article also benefited from comments from seminar participants at EEA meetings, FEA, UC Berkeley, NTA meetings, and VATT. We also thank the Ministry of Economic Affairs and Employment of Finland, which administered the experiment, for co-operation in planning and implementation, and the Finnish Tax Administration for providing data. Nivala acknowledges support from the Research Council of Finland (grant no. 346253).

†VATT Institute for Economic Research

‡VATT and Finnish Centre of Excellence in Tax Systems Research (FIT)

1 Introduction

Most entrepreneurs do not have any paid employees.[1] Standard theories of entrepreneurship suggest that firm size is determined by entrepreneurial abilities and skills (e.g. Lucas, 1978; Jovanovic, 1982; Holmes and Schmitz, 1990). But the decision to hire first employees may also include uncertainty about the costs and returns to additional labor, and fixed costs because entrepreneurs need to hire, train, manage, and pay salaries of first employees before learning whether keeping them is profitable. There can also be costs of complying to legal employer requirements. Some entrepreneurs may not make such an up-front investment due to risk aversion (Kihlstrom and Laffont, 1979), misoptimization (e.g. Hanna et al., 2014, or credit constraints – even if such an investment would be profitable *ex post*. In such a case, a temporary subsidy for hiring first employees can make an entrepreneur a permanent employer.

To assess the importance of hiring frictions for employer entry, we study how entrepreneurs respond to a subsidy for hiring first employees in a large-scale randomized field experiment on the population of Finnish non-employer entrepreneurs. Our experimental population comprises 73,271 firms of which 34,500 were offered a government subsidy covering 50% of employee wage costs over 12 months, with a maximum amount of €10,000. In order to receive the subsidy, a firm had to fill a simple application and the subsidy was paid automatically based on monthly filings of wage costs in the tax registers, which are mandatory for all employers in Finland.

The large scale of the experiment was facilitated by our access to administrative tax records on firms, entrepreneurs, and workers with information before and after the experiment. Because the subsidy budget was fixed and take-up uncertain, we ran the experiment in two waves, scaling up in the second wave based on the take-up rate estimated in the first wave. These features and a multi-million subsidy budget allowed us run the experiment on

[1] The fraction of such non-employer businesses is around 80% in the US and widely around the same across Europe.

the whole target population of non-employer firms in Finland, with a total subsidy allocation of around 3.7 mil. euros.

We find that the subsidy had a positive effect on the fraction of entrepreneurs that became employers. Their fraction increased by around 20% (0.6 p.p.) over the first six months, and the effect remained steady over the subsidized period. This effect persisted after the support ceased, indicating permanent effects and that some entrepreneurs found it to be profitable to keep employees unsubsidized.

We find a positive and statistically significant impact on firm growth in terms of employment. While the effects for value added are not significant, they are positive which is in line with employment growth. We do not detect positive effects on profits and entrepreneurs income in the short run, which is consistent with the idea that growing the firm initially takes up entrepreneurial and financial resources and turning the firm into a profitable larger business may take some time.

Our results indicate that the direct subsidy cost of a new employer is €18,200 and of a new permanent employer €27,300. The average subsidy cost was €110 among the treatment group firms, producing €250 worth of labor input, on average, in the 30-months follow-up window. These estimates mean that one euro of subsidy created 2.3 euros worth labor input, on average. Because subsidy costs have ceased after 18 months, this estimate increases over time if the positive effect on labor inputs persists beyond our follow-up window, as suggested by our stable and slightly increasing pattern of positive event-study estimates.

Our study provides the first experimental evidence on an incentives for entrepreneurs to make their first hires.[2] Our study is closely linked to an experimental study by Mel et al. (2019) who examine hiring subsidies for microenterprises in Sri Lanka. We extend and advance this strand of research by providing the first experimental evidence of a population-wide policy in the context of an advanced economy, based on a large-scale experiment lever-

[2]A working paper by Nivala (2024) studies the effects of a Finnish first employee subsidy using a difference-in-differences set-up and a working paper by Cockx and Desiere (2023) studies the introduction of a payroll tax cut for the first employee in Belgium.

aging administrative population registers on firms, entrepreneurs, and workers.

More broadly, our work also contributes to literature examining how labor subsidies or taxes affect firm behavior (e.g., Bennmarker et al., 2009; Korkeamäki and Uusitalo, 2009; Fairlie et al., 2015; Lechmann and Wunder, 2017; Saez et al., 2021, 2019; Ku et al., 2020). In a closely related study, Guo and Wallskog (2025) find that payroll taxes reduce the fraction of firms that become employers. We estimate in an experimental setting whether a temporary subsidy can alleviate frictions at the margin of employer entry, which is of specific interest as becoming an employer may incur particular fixed costs and uncertainty. Hence a temporary subsidy may have persistent effects on employer status lasting beyond the support period.

2 Description of the Experiment

The recruitment subsidy experiment was based on our experimental plan (Einiö et al., 2021) and it was pre-registered in the AEA RCT registry (ID number 9039). The Ministry of Economic Affairs and Employment administered the experiment in 2022. The subsidy and the experimental design were defined in the Act on the Recruitment Subsidy Experiment (2022) that was passed on January 14th 2022.[3] The aim of the experiment was to provide evidence on whether a wage subsidy for non-employer firms reduces firms' barriers for hiring first employees and whether the subsidy has an effect on firm growth.

2.1 The Recruitment Subsidy

The subsidy covered 50% of wage costs (excluding payroll taxes) over 12 months, with a maximum amount of €10,000. Firms in the treatment group were eligible for the subsidy if they hired an employee within 4 months after the month they were notified of the subsidy. In order to receive the subsidy, firms had to apply for it with a simple procedure. The subsidy payments were made monthly, and they were automatic based on firms' monthly

[3]The act was under parliamentary consideration during Autumn of 2021.

wages filings in the Incomes Register of the tax authority.[4]

The target population of the subsidy covered firms with no paid employees in the past 12 months and with revenue of €15k to €1mil in 2021.[5] Because the maximum allocation of subsidies was fixed to 9 million euros and the take-up rate was uncertain, we ran the experiment in two waves, scaling up in the second wave based on the take-up rate estimated in the first wave. These features and a multi-million subsidy budget allowed us run the experiment in the whole target population. We next describe the design features and implementation in more detail below.

2.2 Experimental Design and Implementation

The experiment was conducted in two consecutive waves starting on March and August of 2022. Both waves had separate treatment and control groups assigned with stratified randomization with stratas defined by two-digit industry codes and revenue quantiles within the industry. The treatment was exactly the same in both waves. The reason to divide the experiment into two waves was to manage the treatment group size so that the budget for the subsidy would not be exceeded, while maximizing statistical power. The budget for the subsidy was €9,000,000, allowing a total of 900 full subsidies worth 10,000 euros. Because the take-up rate in the treatment group is *ex ante* unknown and difficult to assess from pre-experiment data as it is affected by the treatment, we used the estimated take-up rate from the first wave to determine the treatment group size in the second wave needed to get close to 900 subsidies. The advantage of this approach is to reach the targeted budget and simultaneously manage the risk of oversubscription (more applicants than subsidies).

[4]This register is a database where all employers and authorities have to file paid wages, pensions, and benefits within 5 days of the payment.

[5]Firms in the target population also had to have no tax debt or missing tax filings, no filed bankruptcy petition in the courts, no declared bankruptcy, and not be located in Åland islands. The target group was identified by the Tax Administration from the tax records. The subsidy was a *de minimis* subsidy as defined in EU regulations, which means that a firm cannot exceed €300,000 total of de minimis subsidies within 3 years. As the subsidy was small and targeted to firms that typically do not receive large subsidies, the threshold had little practical relevance.

The first wave was smaller and allowed us to estimate the take-up rate.[6] In this wave, a subsidy was offered to 3,500 randomly selected firms, while the size of the randomly selected control group was 20,000 firms. The size of the second wave was scaled up based on the first-wave take-up rate, which was 1.5%. This take up rate meant that the subsidy can be offered to more than half of the target population. Hence, the treatment and control group size in the second wave was set to gain optimal treatment-to-control-group split (e.g., McConnell and Vera-Hernandez, 2015). The treatment group size was 31,000 firms (rounded to hundred) in the second wave.[7]

The subsidy was allocated by TE Services of Southeast Finland (hereinafter TE Services), a public employment services office under the MEAE. [8] At the start of the implementation phase, the Finnish Tax Administration identified the target population from the tax registries. The randomization codes were written by us and published on the TE Service's website before randomizations. The randomization was done by the TE Services by running our code.

The treatment group was informed about their eligibility and the details of the subsidy by letters from the TE Services. In order to get the subsidy, firms had to apply for the subsidy from TE Services via a simple electronic form. Firms had four to four and a half months to hire an employee after receiving the letter and were asked to send supplemental information on the employee hired and the employment contract start date before the end of this hiring window. Providing information on the employee and start date was a prerequisite for paying the subsidy. [9] Unpublished survey results by the TE Services suggest that entrepreneurs

[6]The randomization was done on 8 March 2022 and letters to the treatment group were sent on 10th to 14th of March. These firms had until July 31st to apply for the subsidy and hire an employee.

[7]Using the upper bound of the 90% confidence interval on the take-up rate, which had a point estimate of 1.5%, the maximum size of the treatment group was determined to be 46,539 when allowing for 5% risk of oversubscription. In the second wave the randomization was done on 10th August 2022 and the letters were sent on 15th to 29th August.

[8]This particular public employment services office was selected because it had previous experience of administering firm subsidies, as it was in charge of some of the temporary COVID firm subsidies in 2020. Despite the TE Services being regional, they did not have a regional objective in administering the subsidy.

[9]Firms that had not sent the supplemental information by this deadline were also contacted once by TE Services to supply the information.

found the application process easy.

Firms in the treatment groups had four to four and a half months to hire an employee after receiving the letter, until the end of July in the first wave and until the end of December in the second wave. Also firms that hired before receiving the letters were eligible for the subsidy on wage costs that occurred after subsidy application.

3 Data and Estimation

3.1 Data

The study is facilitated by our access to extensive register data covering the whole target population: the Experiment Register from the ELY Centre and tax records from the Tax Administration. The Experiment Register includes information on the treatment assignments, a list of entrepreneurs in the firms, and subsidy decisions and payments.

We use data from multiple different tax records. First, we draw data from the Income Register which provides monthly information on individuals' wages and benefits. This monthly employer-employee data is based on employers' mandatory filings, which they are obligated to provide within five days from the payment of a salary. These data are used to construct the monthly wage bill and employment by firm. These data also allow us to calculate individual-level incomes, total wage earnings, student allowances, and unemployment benefits, which are used to examine the effects on individuals and to study which types of employees were hired.

Second, we draw information from the firms' annual tax filings in 2020–2023 that include information on revenue, labor costs, profits, investments by asset type, industry, home municipality, and legal form. These data are used as baseline control variables and to study additional measures of firm performance. Third, we have data from VAT filings for 2020–2024, allowing us to extend the follow-up period for sales one year further. These data also allow us to construct sales at the monthly level for the majority of firms in our analysis

sample.[10]

Columns 1–4 in Table 1 presents summary statistics separately for the treatment and control groups. Out of the 34,500 treatment group firms 1.5% used the subsidy and none in the control group, as expected.[11] In total 654 firms applied for the subsidy and 77% of them used it, as not all applicants hired employees during the hiring window. As expected, the experimental population includes fairly small firms with around 1.2 entrepreneurs and 24 thousand euro profits, on average, and mean revenue at around 84 thousand euros in the treatment group and 81 thousand euros in the control group.

Columns 5–7 in Table 1 provide tests for the balance of baseline covariates listed in the first column, both separately for each covariate and jointly. The coefficient estimates in Column 5 are on based separate regressions of a baseline covariate on the treatment status, conditioning on strata fixed effects. None of the individual tests is significant at the 10% risk level, indicating that the treatment and control groups are balanced in terms of each baseline covariate. The last two rows of the tables provide join tests of the significance of the baseline covariates in a regression of treatment status indicator on the covariates, conditioning on strata fixed effects. The F-test p-value is 0.36, indicating that the baseline covariates are jointly balanced. These results indicate that the randomization resulted in a

[10]Firms with low levels of turnover may file VAT returns at the quarterly (20% of the sample) or annual level (10% of the sample). For these firms, monthly VATT data is unavailable.

[11]The take-up rate in the treatment group was similar across waves (Appendix Table A1).

balanced treatment-control assignment.

Table 1: Summary statistics and balance of baseline covariates

	Treatment group		Control Group		Balance test		
Baseline covariate	Mean	Std. dev.	Mean	Std. dev.	Coef.	Std. err.	P-value
Number of entrepreneurs	1.2	.54	1.2	.51	.0069	.0042	.1
Revenue	84,140	110,097	81,097	105,674	338	586	.56
Sales from VAT returns	82,639	96,115	80,804	94,251	−381	386	.32
Profit	23,560	39,750	24,099	38,850	−492	286	.085
Labor costs	13,316	24,152	11,862	22,865	251	165	.13
Variable costs	27,911	72,610	26,320	68,968	250	455	.58
Depreciation	3,678	9,463	3,548	9,087	76	67	.26
Net assets	70,428	242,137	65,720	234,581	401	1,824	.83
Financial assets	43,247	121,005	39,963	119,701	−308	910	.74
Fixed assets	57,606	221,091	53,706	211,913	1,810	1,611	.26
Machinery and equipment	9,345	23,100	9,347	22,680	221	168	.19
Real estate	15,080	84,050	14,404	82,400	244	617	.69
Immaterial assets	783	5,351	860	5,548	−7.1	44	.87
Investments	4,565	18,953	4,420	18,662	−121	151	.42
Investments, mach. and equip.	3,410	13,703	3,351	13,659	−65	109	.55
Investments, real estate	314	3,247	318	3,233	−21	26	.44
Investments, immaterial	125	1,161	101	1,035	8.2	9.3	.38
N	34,500		38,771			73,270	
Applicants	654		0				
Subsidy granted	641		0				
Used subsidy	505		0				
F-test statistic						1.1	
F-test p-value						.36	

Note: Columns 1-4 show the means and standard deviations of baseline covariates separately for the treatment and control groups. Column 5 shows coefficients on the treatment status from separate regressions of a baseline covariate, indicated by the row label, on the treatment status and strata fixed effects. Columns 6 and 7 show the corresponding heteroskedasticity-robust standard errors and p-values. The last two rows of the table show the F-statistic and the corresponding p-value for the joint significance of the baseline covariates listed in the first column, estimated from a regression of the treatment status on the baseline covariates and strata fixed effects.

Appendix Table A2 shows additional descriptive statistics, separately for firms that used the subsidy and for firms that became employers. The average subsidy was €7,459 among firms that used it. Within the first 18 months, the wage costs among these firms were €20,910, on average. The majority of the subsidized firms were corporations (75%) – corporations are also a majority among the control group firms that became employers (65%). A larger share of subsidized firms operated in professional, scientific and technical activities sector compared to the control group (21% vs. 14%), while a lower share operated in the

construction sector (14% vs. 22%).

The take-up rate of the subsidy is around 32% among the treatment group firms that became employers and hence would have qualified for the subsidy.[12] This rate is considerably higher than the 1.9% in the earlier regional first-employee subsidy, that had less flexibility in terms of the job contract, had more complicated application and payments processes, and did not inform firms directly by letters (Nivala, 2024). A potential reason for some treatment group firms that became employers not using the subsidy could be large application costs relative to expected gains or lack of information (e.g., the letter informing the firm about eligibility may not have reached and opened by everyone). Other explanations include lack of skills or unwillingness of entrepreneurs to use public subsidies.

Appendix Table A2 also includes characteristics of the entrepreneurs and hired employees of the subsidized firms. The average duration of employment was 9 months in the subsidized firms compared to 5 in the non-subsidized employers. In the subsidized firms, 77% of hired employees were employed in the previous months compared to about 60% in the unsubsidized firms.

3.2 Estimation

We estimate the following regression for outcome Y_i:

$$Y_i = \delta T_i + \alpha_s + \beta X_i + \varepsilon_i \tag{1}$$

where T_i is the treatment indicator equal to one if firm i is in the treatment groups and zero if it is in the control group; X_i are pre-determined firm characteristics listed in Table 1, which are included in our baseline specifications; α_s are strata fixed effects; and ϵ_i is the error term. We cluster standard errors at the level of strata.

In a randomized setting, the OLS estimate of δ recovers the causal effect of a firm becom-

[12] We use here 9-month window instead of 6 months because there seems to be some lag in filing of the wage costs to the Income Register. Within the first nine months, 92% of subsidy users had positive wage costs, while 80% have wage costs within the first six months.

ing eligible for the recruitment subsidy. This intention to treat (ITT) effect is a key policy parameter recovering an estimate of the average impact of the recruitment subsidy, if it were made available for all non-employer firms.[13]

To examine the evolution of the effects over time, we also estimate the following event-study regression:

$$Y_{ikt} = \sum_{k=-10}^{28} \delta_k (T_i \times D_k) + \alpha_s + \gamma_k + \lambda_t + \beta X_i + \varepsilon_{im} \tag{2}$$

where D_k are event time dummies, k indexing, months, quarters, or years from the start of the treatment period, γ_k are time fixed effects relative to the start of the treatment period, and λ_t are calendar time fixed effects.

4 Results

4.1 Effects on hiring first employees and labor inputs

We start by presenting event study graphs for the evolution of subsidy payments and employer status, based on monthly subsidy payments from the Experiment Register and monthly wage payments from the Income Register. The value one on the x-axis indicates the month in which the treatment group was offered the recruitment subsidy.

Figure 1 shows similar trends in subsidy payments and the fraction of firms with employees between the treatment and control groups prior to the treatment. In Panel A, subsidy payments increase steeply after the start of the treatment period, reaching the peak at the sixth month. Panel B shows a statistically significant positive effect on employer entry, with the estimate rising through the first eight months. The magnitude of the effect reduces after this until 18th month from the offer, which is the last month when the treatment group

[13] A randomized research design based on applicant firms would not allow for recovering such an effect because it would not allow to incorporate the contribution of take-up. Such a experimental design can also induce self-selection of firms that would use the subsidy if its availability was certain, as some of these firms may not assign to the experiment because only a fraction of assignees are allocated to the treatment group.

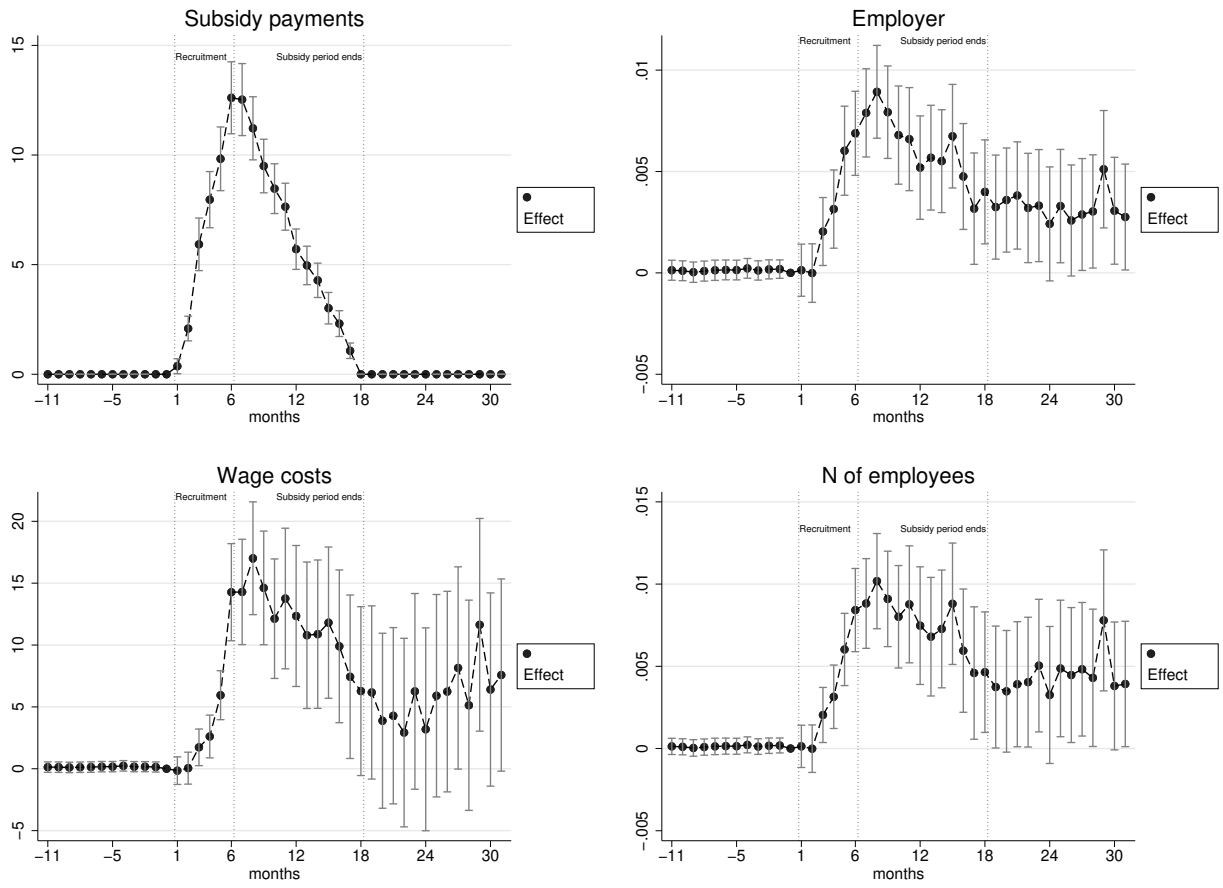

Figure 1: Event study figures

was eligible to use the subsidy. Importantly, the effect is positive and statistically significant, although smaller, also after this, indicating that the temporary subsidy had permanent positive effects on the fraction of employer firms.

Panel A in Table 2 shows the OLS estimates for employer status, which is our pre-specified primary outcome. In Columns 1-3, the results are presented for the first 1-6 months (the hiring window) and 1-18 months (full subsidy period), and also for 7-18 months, the part of the subsidy period following the hiring window.[14] The effect on becoming an employer is 0.6 percentage points in the hiring window ($p<0.01$), which is around 20% of the control group mean of 0.03. The point estimate is of very similar magnitude and precision through the subsidy period, but the relative effect declines gradually, to around 12.5%, because the

[14]We use the 1-6 months for the hiring window (rather than 1-5 months) because often wages for labor input in a given month are paid and observer in the registry in the subsequent month.

control group mean rises over time to 0.056 as more firms in the control group become employers.

Table 2: Effects on becoming an employer and wage costs

	Subsidy period			After subsidy		
	(1)	(2)	(3)	(4)	(5)	(6)
	Hiring window					
Period (months):	1-6	1-18	7-18	19-30	19-24	25-30
Dependent variable						
A. Employer	0.006***	0.007***	0.007***	0.004**	0.004**	0.004**
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Control group mean	0.030	0.066	0.056	0.060	0.045	0.047
B. Wage costs, employees	6.347***	9.719***	11.587***	5.573	3.762	6.757*
	(1.302)	(2.047)	(2.560)	(3.572)	(3.457)	(3.986)
Control group mean	18.523	38.381	46.740	69.324	63.539	74.412
C. Wage costs, entrepreneurs	−3.829	0.438	3.693	5.448	1.770	8.356
	(10.114)	(8.789)	(9.278)	(9.936)	(10.678)	(11.369)
Control group mean	800.336	773.710	757.913	712.299	711.317	707.633
D. Wage costs, total	1.493	10.549	15.350	7.889	1.149	12.438
	(10.415)	(9.517)	(10.292)	(11.645)	(12.222)	(13.239)
Control group mean	825.733	821.479	816.362	797.914	790.719	801.144
E. Wage costs > 1430 EUR	0.001**	0.003***	0.004***	0.002	0.002	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Control group mean	0.005	0.010	0.013	0.018	0.017	0.019

Note: This table shows the estimated treatment effects using Equation 1 and controlling for pre-determined characteristics listed in Table 1. Data for 73,270 firms in the baseline sample. In Panel A, the dependent variable is a binary indicator equal to one if the firm has positive wage costs in the period indicated by the row label "Period (months)". In Panels B-D, the dependent variable is average monthly wage costs in the relevant period. In Panel E, the dependent variable is a binary indicator equal to one if wage costs are above 1430 euros. All specifications include strata fixed effects. Robust standard errors in parentheses. The 90%, 95%, and 99% confidence levels are denoted by *, **, and ***, respectively.

Columns 4-6 in Panel A of Table 2 show the results for the longer-run effect on employer status and wage costs after the subsidy period. These results provide evidence on whether the impacts of the subsidy persists after the subsidy payments end. The point estimate on employer status in the full 12-month follow-up period is 0.004 and statistically significant at the 5% level (Column 4). Importantly, this estimate indicates that the policy had an effect

persisting beyond the subsidy period. This means that some firms that would not have hired their first employees without the subsidy, but did so due to being subsidized, stayed as employers although the subsidy payments ended. Thus, some firms were profitable with positive labor input conditional on becoming an employer, suggesting that costs of hiring first employee can be a barrier for growth for some non-employer firms.

Panels B-D in Table 2 present the results for wage costs of employees, entrepreneurs, and for both groups combined. The outcomes in these panels are average monthly wage costs calculated by dividing the wage cost sum by number of months in the relevant period. In Panel B, the effect on employee wage costs in the subsidy period is positive and significant at 1% level. The point estimate is around 9.7 (around 25% of the control group mean), and increases towards the end of the period, with a point estimate of around 11.6 in the last 7-18 months (again, a relative effect of around 25%). These results are in line with the positive effects for employer status in Panel A. The point estimates for employee wage costs are positive but have low precision after the subsidy period, being 6.8 (around 9% of the control group mean; $p<0.10$) in the last six months of the follow-up window (Column 6).

In Panel C, the estimated impacts on the wage costs of entrepreneurs, also observed in the Income Registry, are small and imprecise, but the point estimates are positive in the full subsidy period (Column 2) and after it (Column 4), with the largest point estimate of around 8.4 (around 1.2% of the control group mean; $p=0.46$) in the last six months of the follow-up period (Column 6). Overall, these effects do not indicate significant crowding out of entrepreneur's own wage income.[15] Also the point estimates for total wage costs are positive (Panel D), although not statistically significant at conventional levels due to low precision induced by entrepreneurs' wage component.

Finally, Panel E in Table 2 shows results for employee wage costs being above 1,430 euros,

[15]Due to the low precision of the estimates in Panel C, they should be interpreted with caution. Nevertheless, the negative point estimate in the hiring window would be consistent with the idea that entrepreneur's time used for hiring in the hiring window of the first 1-6 months could crowd out other activities that generate income.

which is our threshold for a more extensive job contract.[16] The positive estimates align with the findings for wage costs and suggest that the effects are not solely generated by new hires with very low monthly salaries.

4.2 Effects on firm performance and entrepreneurs' income

Next we examine the impacts on several measures of firm performance. The majority of firm performance outcomes are drawn from firms' annual tax reports available until 2023 at the point of writing this article. We also include results for the year 2022 for completeness, although we expect little impact on firm performance in this year since the treatment started to roll out in March 2022. Moreover, a large fraction of firms that took up the subsidy in the larger second wave did not use it earlier than the end of that year. It may also take some time for the growth effects to emerge. In Panel A of Table 3, the point estimate for value added is 533 (around 1% of the control group mean) and it is not statistically significant at conventional levels (p=0.12). The point estimate for revenue is of a similar magnitude, but has lower precision. We also observe a statistically insignificant and positive point estimates for investments. Moreover, we do not find evidence of the subsidy increasing firm profits in the short run – if anything, while the estimate for profits is not statistically significant, it suggests a slight decline.

[16] This threshold corresponds to the monthly wage level in the national eligibility rules for unemployment insurance.

Table 3: Effects on firm performance and entrepreneurs' income

	(1)	(2)	(3)
Year:	2022	2023	2024
Firm outcomes			
A. Value added	−337.471	533.075	
	(268.885)	(341.193)	
Control group mean	56,031	53,699	
B. Revenue per person	246.648	595.420	
	(414.143)	(493.541)	
Control group mean	73,629	67,599	
C. Investments	−31.293	66.993	
	(137.640)	(133.692)	
Control group mean	4,204	3,860	
D. Profits	−359.074	−95.885	
	(231.919)	(251.295)	
Control group mean	23,487	20,590	
E. Revenue	390.552	744.519	
	(467.550)	(608.333)	
Control group mean	85,213	81,310	
F. Sales (VAT filings)	−148.733	354.718	353.280
	(414.857)	(548.355)	(646.047)
Control group mean	83,844	79,297	77,099
Firms	73,270	73,270	73,270
Entrepreneurs' outcomes			
G. Income	−338.037	−610.785**	
	(218.281)	(254.948)	
Control group mean	28,384	29,102	
H. Income above median	−0.007***	−0.010***	
	(0.003)	(0.003)	
Control group mean	0.278	0.296	
Entrepreneurs	61,988	62,091	

Note: This table shows the estimated treatment effect using equation 1 with baseline covariates described in table 1 and company form as control variables. Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

Negative effects on profits would be consistent with an adjustment period during which costs from hiring and paying wages of new hires reduce firm's profitability. Consistent with this, we find a negative effect on entrepreneurs' income in 2023 (Panels G and H).[17] This is in line with the idea that entrepreneurs had to substitute some of their time used for producing outputs to activities required to become and employer, like hiring and acquiring information. Finally, the point estimates are positive in 2023 for both revenue outcomes sourced from the annual tax reports and VAT filings, but statistically insignificant.[18]

4.3 Who were recruited?

In this section, we examine the lengths of job spells that were started with the help of the subsidy, and which types of employees were recruited. Panel A in Table 4 provides the estimate of the effect on duration of employment, measured as the number of months during which the hired employee received wage income. The average job spell length increases by around 0.1 month ($p<0.05$), corresponding to roughly 10% of the control group mean.

[17] The income measure includes both labor and capital income.

[18] Revenue and sales figures from both annual tax forms and VAT filings reflect total sales of the firm, but have slightly different rules for what is included.

Table 4: Effects on employment and by labor market status of recruited employee

	Treatment effect
A. Length of job spell (months)	0.093**
	(0.046)
Control group mean	[0.901]
B. Employed	0.0090**
	(0.0038)
Control group mean	[0.0799]
C. Unemployed	0.0012
	(0.0011)
Control group mean	[0.013]
D. Student	0.0007
	(0.0008)
Control group mean	[0.0065]
E. Pensioner	−0.0001
	(0.0009)
Control group mean	[0.0104]
F. Above median income	0.0024
	(0.0017)
Control group mean	[0.022]
G. Entrepreneur's spouse	0.0003
	(0.0005)
Control group mean	[0.0035]
Observations	77,799

Note: This table shows the estimated treatment effect using equation 1, controlling for predetermined characteristics listed in Table 1 and company form as control variables. In Panel A, the dependent variables is employment duration in months. In Panels B–G the outcomes are indicator variables equal to one if the employee was employed, unemployed, student, pensioner, the entrepreneur's spouse, or received above median income in the month before the start of the job spell. Spouses include married and civil partnership spouses. If the firm has no employees, these binary indicators are set to zero. In the regressions of this table, which all use employee-level data, standard errors are clustered at the firm level. Control group means are in brackets. Significance levels: * $p<0.10$, ** $p<0.05$, *** $p<0.01$

Panels B–G in Table 4 report effects by workers' baseline labor market status. We find a positive and statistically significant effect on hiring of individuals who were already employed in the previous month. In contrast, we find no significant effects on hiring of unemployed,

students, pensioners, or entrepreneurs' spouses. The hiring subsidy thus increased primarily the hiring of individuals who were already employed, which is expected, as employed individuals also make up the largest share of new hires in the target population's firms. However, hires from employment appear to be relatively more important than hires from unemployment: the ratio of hires from employment to hires from unemployment in the control group is substantially lower than the corresponding ratio of the estimated effects (5.7 vs. 9). This suggests that hires from employment are, to some extent, over-represented among the jobs created by the subsidy.

4.4 Cumulative effects and costs of new employers

Appendix Table A3 reports an estimate for the total frim-level wage cost generated by the subsidy over the whole 30-month follow-up period, as well as the cumulative total amount of subsidy paid. Based on these estimates, €109 of subsidy generated, on average, €252 additional wage costs at the firm level ($p<0.01$), implying that one euro of subsidy generated labor input worth €2.3, on average.

The costs of new employers can be calculated by dividing the total spending by the number of new employers induced by the subsidy. Given the point estimates on the probability of becoming an employer and the treatment group size, the program created 207 new employers during the subsidy period, implying a direct subsidy cost of €18,200 per employer given that total subsidy spending was €3,767,000. At the end of our observation period, there were 138 new permanent employers with an implied direct subsidy cost of €27,300.

5 Conclusions

In this study, we examined the impacts of a large-scale randomized controlled trial, the Finnish Recruitment Subsidy Experiment. In the experiment, randomly drawn 34,500 firms with no employees were offered a subsidy for hiring the first employees. We find a statistically

significant positive effect on the likelihood of becoming an employer which persists after the subsidy period ended. This suggests that the temporary subsidy created new permanent employers. The persistent impact on the fraction of employer firms may improve labor market matching (see, e.g., Diamond, 1982; Coles and Smith, 1998; Gan and Li, 2016), provided that the new employers that entered with the help of the subsidy did not crowd out employers elsewhere.

We also find a positive effect on firm growth in terms of employment, and a positive, although statistically insignificant, effect on value added. Moreover, our results suggest that entrepreneur's incomes decline in the short term, which is in line with the idea that entrepreneurs had to substitute some of their time used for producing outputs to activities required to become and employer, like hiring and acquiring information.

While our results indicate that the experiment reached its goal to create new permanent employers, our analysis of extensive administrative population data reveals that the new workers hired with the subsidy were disproportionately more often already employed before the subsidized job spell. This provides suggestive evidence that the subsidy may have reduced employment elsewhere. This together with the relatively low take-up rate implies that the subsidy unlikely had considerable positive effects on aggregate employment in the observation window of this study. We leave the assessment of the potential dynamic long-term impacts of inducing new employers for the future when more data on the performance of the experimental population become available.

The key conclusion of our study is that there are frictions in becoming an employer, and a temporary wage subsidy can help entrepreneurs to overcome it. Our results imply that a hiring subsidy for first employees can create new employer firms and that a temporary subsidy can induce new permanent employment in these firms.

References

Bennmarker, H., Mellander, E., and Ockert, B. (2009). Do regional payroll tax reductions boost employment? *Labour Economics*, 16:480–489.

Cockx, B. and Desiere, S. (2023). Labour costs and the decision to hire the first employee.

Coles, M. G. and Smith, E. (1998). Marketplaces and matching. *International Economic Review*, 39(1):239–254.

Diamond, P. A. (1982). Wage determination and efficiency in search equilibrium. *Review of Economic Studies*, 49(2):217–227.

Einiö, E., Nivala, A., and Nokso-Koivisto, O. (2021). Yksinyrittäjien rekrytointituen vaikutusten arviointi: Suunnitelma satunnaistetusta kontrolloidusta kokeesta. Työ- ja elinkeinoministeriön julkaisuja 2021:1.

Fairlie, R. W., Karlan, D., and Zinman, J. (2015). Behind the gate experiment: Evidence on effects of and rationales for subsidized entrepreneurship training. *American Economic Journal: Economic Policy*, 7:125–161.

FINLEX (2022). Laki rekrytointitukikokeilusta 20/2022. Helsinki, 14.1.2022.

Gan, L. and Li, Q. (2016). Efficiency of thin and thick markets. *Journal of Econometrics*, 192(1):40–54.

Guo, A. and Wallskog, M. (2025). New employer payroll taxes and entrepreneurship. *Journal of Public Economics*, 250:105469.

Hanna, R., Mullainathan, S., and Schwartzstein, J. (2014). Learning through noticing: Theory and evidence from a field experiment. *The Quarterly Journal of Economics*, 129(3):1311–1353.

Holmes, T. J. and Schmitz, J. A. (1990). A theory of entrepreneurship and its application to the study of business transfers. *Journal of political Economy*, 98(2):265–294.

Jovanovic, B. (1982). Selection and the Evolution of Industry. *Econometrica*, 50(3):649–670.

Kihlstrom, R. E. and Laffont, J.-J. (1979). A general equilibrium entrepreneurial theory of firm formation based on risk aversion. *Journal of Political Economy*, 87(4):719–748.

Korkeamäki, O. and Uusitalo, R. (2009). Employment and wage effects of a payroll-tax cut – evidence from a regional experiment. *International Tax and Public Finance*, 16:753–772.

Ku, H., Schönberg, U., and Schreiner, R. C. (2020). Do place-based tax incentives create jobs? *Journal of Public Economics*, 191.

Lechmann, D. S. and Wunder, C. (2017). The dynamics of solo self-employment: Persistence and transition to employership. *Labour Economics*, 49:95–105.

Lucas, R. E. (1978). On the size distribution of business firms. *The Bell Journal of Economics*, 9:508–523.

McConnell, B. and Vera-Hernandez, M. (2015). Going beyond simple sample size calculations: A practitioner's guide. IFS working paper w15/17, London.

Mel, S. D., Mckenzie, D., and Woodruff, C. (2019). Labour drops: Experimental evidence on the return to additional labour. *American Economic Journal: Applied Economics*, 11:202–235.

Nivala, A. (2024). (No) Effects of Subsidizing the First Employee: Evidence of a Low Take-up Puzzle Among Firms. Working Papers 23, Finnish Centre of Excellence in Tax Systems Research.

Saez, E., Schoefer, B., and Seim, D. (2019). Payroll taxes, firm behavior, and rent sharing: Evidence from a young workers' tax cut in sweden. *American Economic Review*, 109:1717–1763.

Saez, E., Schoefer, B., and Seim, D. (2021). Hysteresis from employer subsidies. *Journal of Public Economics*, 200:104459.

Appendix Tables and Figures

Table A1: Subsidy take-up and employer share in the treatment and control groups by wave

	Treatment group			Control group		
	All	1st Wave	2nd Wave	All	1st Wave	2nd Wave
Used subsidy (%)	1.5	1.5	1.5	0	0	0
Employer, 6 months (%)	3.5	4	3.5	3	3.3	2.8
N	34,500	3,500	31,000	38,771	20,000	18,771
	Applicants, treatment group					
Subsidy granted (%)	98	99	98			
Used subsidy (%)	77	73	78			
Employer, 6 months (%)	64	68	63			
N	654	73	581			

Notes: This table shows the means of variables for the treatment and control groups, and for applicants in the treatment group. A frim is defined to be an employer if it had positive wage costs in the Income Register during the first six months since the treatment offer.

Table A2: Additional summary statistics

	Treatment group		Control group	
	(1) Subsidy users	(2) Not subsidized employers	(3) Employ-ers	(4) All
Paid subsidy	7,459	0	0	0
Wage costs, 18 months	20,910	12,846	13,235	691
Employer, 6 months	.8	.75	.78	.03
Employer, 9 months	.92	1	1	.039
Revenue	114,790	128,562	119,606	81,193
Number of entrepreneurs	1.4	1.4	1.3	1.2
Sole proprietor	.18	.21	.28	.51
Corporation	.75	.72	.65	.42
Capital region	.3	.28	.25	.27
Professional, scientific and technical activities	.21	.15	.14	.18
Construction	.14	.19	.22	.16
Wholesale and retail trade	.13	.14	.11	.12
Other service activities	.042	.04	.055	.12
Transportation and storage	.075	.097	.1	.061
N	505	1,069	15,22	38,771
Entrepreneur characteristics:				
Age	46	46	47	49
Female	.25	.26	.24	.31
Total income	40,958	38,181	36,134	31,426
Above mean total income	.35	.33	.34	.28
Pensioner	.12	.13	.13	.18
N	679	1,586	1,945	45,744
Employees hired in 18 months:				
Employment duration	8.9	4.6	5.3	
Share of months with wage above €1,430	6.7	3	3.7	
Status before job spell:				
Employed	.77	.59	.62	
Unemployed	.12	.13	.12	
Above median wage income	.23	.18	.16	
Student	.065	.061	.076	
Pensioner	.066	.09	.096	
N	1,048	1,253	1,819	

Notes: This table shows means of firms, entrepreneurs and hired employees for the treatment group subsidy users in column (1), treatment group employers that did not use the subsidy in column (2), control group employers in column (3) and the full control group in column (4). All variables of firms and entrepreneurs are pre-treatment values in 2021, except for paid subsidy, wage costs, and employer status. Table includes 5 largest industry codes in the target group. Employee data are based on monthly reports in the Incomes Register, employment duration and share of full-time months are from sampling month up to 18 months later. Share of full-time months means months when the employee's wage income is above 930 euros, which is the limit in unemployment insurance eligibility. Status before employment contract is employed if the individual received labor income in the previous month, unemployed if unemployment benefits, above median income if the wage income was above median wage income, student if received study subsidy and pensioner if received pension. Control groups statistics use inverse probability weights by experiment phase to reflect the treatment group phase sizes.

Table A3: Effect on cumulative subsidy payments and wage costs over the 30-month follow-up period

	Paid subsidy	Wage costs
Treatment effect	109.078***	251.617***
	(5.573)	(74.417)
Controls	Yes	Yes
Observations	73270	73270
Adjusted R^2	0.011	0.033
Control mean	0.000	1545.596

Notes: This table shows the estimated treatment effect using Equation 1 with baseline covariates described in Table 1 and company form as control variables. The dependent variables are cumulative sum of subsidy payments and wage costs over 30 months. Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01