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Organizational forms in the Swedish preschool sector

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Abstract

The Swedish preschool sector, which is heavily dominated by a female workforce, is marked by low wages and poor health outcomes. Our study shows that preschools' organizational form is significantly associated with hiring practices, wage-setting, and worker health outcomes. For-profit preschools tend to hire younger, less qualified, and less experienced workers, and pay lower wages even after controlling for observable and unobservable worker characteristics. Non-profit providers hire fewer preschool teachers and younger workers, similarly to the for-profits, but on the other hand tend to hire workers with more experience and higher upper secondary school grades. Wages in non-profits are, on average, higher than in for-profit and municipal preschools. Worker health outcomes are better in non-profit and for-profit preschools compared to municipal preschools. Overall, the results suggest that worker composition, wages and health outcomes differ between employer types. Whether these differences matter for preschool quality is a relevant topic for future research.

Keywords: preschool workforce, organizational form, private provision.

JEL codes: J31, J42, J45, L33

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1 Introduction

Since the expansion of the welfare state, the public sector has been the dominant provider of welfare services in many developed countries. Following the privatization waves of the 1980s and 90s, this model of public service provision has been challenged by the introduction of market-based features (Shleifer, 1998). The Swedish preschool sector is a prominent example. Independent providers (for- and non-profit) currently cater to about 20 percent of enrolled children (Skolverket, 2025). Independent preschool providers receive public funding on par with the public providers (municipalities) – through a voucher scheme – and parental fees are limited.

The shift away from monopoly in production has simultaneously generated a shift away from labour market monopsony (Robinson, 1969). As a result, professionals involved in the delivery of publicly financed services have greater possibilities to "shop around" among employers for higher wages and better work conditions (Le Grand, 2017). This development is potentially desirable in light of the fact that most occupations in the publicly financed service sector – such as childcare and early education – are female-dominated and are characterized by low wages (Blau and Kahn, 2017; McLean et al. 2024). The well-being of early educators has also been the focus of several literature reviews (Cumming, 2017; Berger et al. 2022).[1] Compared to other sectors of the economy, Swedish preschool workers are located in the bottom of the wage distribution (Figure 1a) and in the top of the distribution over prescription of mental health related medications (Figure 1b).[2] The position of preschool workers in the wage distribution is near that of workers in hair care and retirement homes (these sectors share marker). On a related note, Bonetti (2019) shows that the childcare workforce (excluding teaching) in England earns £5.00 less in gross hourly pay than the average working woman, and that the hourly pay is on par with hairdressers and beauticians despite slightly higher qualification levels in the childcare workforce. When it comes to the prescription of mental health related medication in Figure 1b, Swedish preschool workers are positioned above workers in schools and hair care, and far above workers in the restaurant sector.

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[1] There could be both a wage and a flexibility penalty in traditionally female-dominated occupations, with female-dominated occupations offering less control over scheduling (Chung, 2019). Indeed, many female-dominated workplaces are contact-professions – where service and care provision require presence in time and space. In general, female workers face worse psychosocial work environment while men are more likely to suffer fatal accidents at work (SWEA, 2017). Poor health among early education workers is thought to be a result of a combination of low resources, emotional load and professional standards, among other things (Cumming, 2017; Berger et al. 2022).

[2] Figure A2 in the appendix shows that preschool workers are also at the top of the distribution when it comes to sick leave.

Out of the comparison sectors indicated in the figures, only workers in the retirement homes sector are at a higher level.
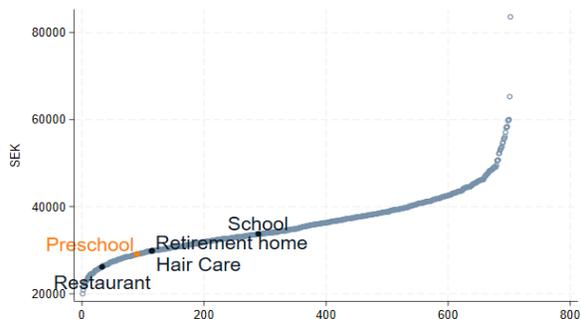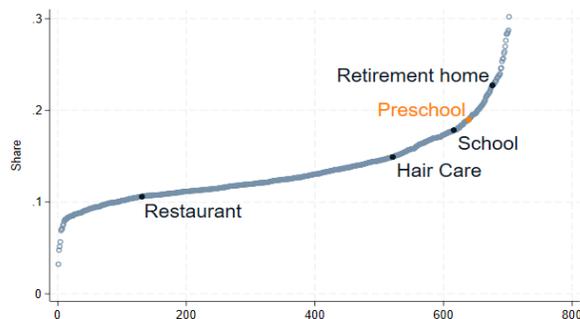
Figure 1a. Wages by sector 2020

Figure 1b. Mental health by sector 2020

Note: The y-axis in Figure 1a shows the average wage in the sector in SEK (2020 monetary value). The wage information for small private firms is based on a subsample; observations are weighted with the inverse of the sampling probability. The y-axis in Figure 1b shows the share of workers with a prescribed mental health related medication (ATC-code N05, neuroleptics, and N06, psycholeptics). All workers linked to workplaces are included. Sector is measured as workplace 5-digit SNI code.

The prediction that decreased employer concentration via private entry will lead to higher wages and better work conditions must however be amended to accommodate differences in goals and incentives with different types of providers. Let us start by considering *for-profit* provision. According to Hart et al. (1997), theory provides no definitive answer on the consequences of allowing profit-motivated private contractors in the publicly financed service sector; an estimation of trade-offs must be made for each sector separately. The trade-off involves the potential for efficiency and/or quality innovations contra the risk for cost cutting with deleterious effects on quality. In a voucher system in combination with fixed low parental fees, such as the Swedish preschool setting, revenues are maximized when all slots are filled. This can incentivize a profit-seeking contractor to innovate in aspects of service quality to attract users. If a preschool is successful in improving productivity there is scope for rewarding high performing workers (that have features attractive to parents) with increased wages (Hoxby, 2002). On the other hand, profit-seeking through cost-minimizing can imply hiring less qualified workers, paying lower wages and/or a deterioration in work conditions. Hart et al. (1997) illustrate in an empirical application that private prisons avoid paying the union wage premium by hiring less qualified workers.

An important aspect is the extent to which parents value – and observe – preschool quality, as demand is what drives the innovation- and quality-enhancing mechanism of for-profit provision

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in the above framework. Several studies suggest that preschool quality is multidimensional and observable to policy makers and parents to a limited extent (Mocan 2007, Blanden and Rabe 2021). In addition, since changing preschool is disruptive for a child, dissatisfied parents may be reluctant to switch provider. Whether parental demand if sufficiently responsive to incentivize for-profit preschools as quality-innovators relative to cost-cutters, and how this impacts workers' wages and well-being, is thus an empirical question.

In theories of the *non-profit* organization, the objective function is often modelled from the perspectives of insiders. For instance, Feldstein (1971) models a trade-off facing hospital bureaucracies deciding on the quality of care versus the number of hospital beds. In Pauly and Redisch (1973) hospitals are portrayed as being in the control of physicians who maximize their own net incomes. According to Glaeser's (2002) "labour donation hypothesis", non-profit organizations are captured by elite workers and their preferences over production attributes, i.e. the "nature" of the provided service in terms of quality. The model predicts that workers are willing to trade care about the production attribute for lower wages. Glaeser (2002) makes the assumption that attempts to increase wages above the reservation wage will be blocked by donors.

In the case of the Swedish preschool sector, funding stems from local taxes and government grants, not from donations. The theories of insider control in the form of workers are still relevant, as many non-profit preschools are run by workers or parents using a "cooperative form". We therefore consider both higher wages – as a form of worker "rent" – and lower wages – as a result of production control and labour donation – to be a possibility for workers in non-profits.

The theoretical predictions concerning whether municipal, non-profits and for-profits will choose different worker composition, wage levels and work environment are thus ambiguous. We provide empirical evidence on these matters by analysing provider differences with respect to worker composition, wages and health outcomes in Swedish preschools. We make use of detailed linked worker-workplace data spanning 20 years that include the full population of municipal, for-profit and non-profit preschools in Sweden. The data allows us to study worker outcomes in the form of full-time equivalent monthly wages, and the prevalence of sick leave and prescription of mental health related medications. Our long data panel furthermore enables us to study how wages react to worker switches between different forms of organizations. We observe a broad set of worker

characteristics, including indicators of worker qualification (education, previous work experience, school grades) and demographics (gender, age).

First of all, we find systematic differences in worker composition between preschools of varying organizational forms. Within municipality and year, for-profit preschools on average tend to employ workers that are cheaper (younger and lacking preschool teacher degree) and healthier (younger) compared to municipal preschools. For-profits furthermore have higher staff turnover rates. The non-profits also tend to employ workers that are on average younger and lack preschool teacher degree, but contrary to the for-profits, workers in non-profits have higher alternative qualifications (work experience and upper secondary school grades) and lower turnover rates.

Conditional on observable and time-invariant unobservable individual characteristics and municipality-by-year fixed effects, we estimate an average wage penalty of working in for-profit preschools compared to the municipal sector, and an average wage premium of working in non-profit preschools. We furthermore find evidence of better worker health outcomes in non-profit preschools, i.e. lower sick leave and mental health medication rates, also conditional on observable and unobservable individual characteristics. We find similar evidence of lower sick leave in for-profit preschools, but the lower rate of health medication prescription is not robust to the inclusion of worker fixed effects.

Our results furthermore indicate that preschool workers have opportunities to "switch it up"; i.e. increase their wages by switching employer. The largest estimate is found among workers going from a for-profit to a municipal preschool; such a switch is associated with a 5 percent wage boost, compared to the wage development of workers who remain with the same municipal employer. A switch from the municipal sector to a for-profit, or between municipalities, renders a lower reward of around 3 percent. A similar pattern is found when the sample is limited to workers with a preschool teacher degree.[3]

It shall be emphasized that our results are descriptive in nature. An assessment of the causal impact of provider type would require as good as random allocation of workers over preschools. The variation in our data instead stems from workers selecting where to apply for work and employers selecting whom to hire. In our analysis, we control for observable worker characteristics, as well

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[3] Non-profits are not included in the switching analysis because of limited data coverage.

as time-invariant unobserved worker characteristics; we thereby control for a host of factors relating to e.g. a worker's education, work experience, age and gender, as well as *time-invariant* aspects of personality. We can however not rule out that remaining differences in *time-varying unobserved* worker characteristics lie behind the estimated differences in wages and health outcomes. For instance, switches from for-profit- to municipal preschools could be systematically timed with some personal productivity boost that is reflected in a larger wage increase. Furthermore, municipal (and non-profit) employers could be systematically better at assigning workers suitable workplace responsibilities, thereby improving their productivity and wages; although better worker-workplace matching can be viewed as a mediating factor rather than a source of bias. Similarly as with wages, switches from non-profit (or for-profit) preschools to municipal preschools could for some reason be timed with a decrease in health. Our analysis also indicates that smaller preschool organizations could be a positive mediating factor behind the better health outcomes in the independent preschool sector.

Our results that workers in for-profit preschools are younger, have less work experience and lower levels of formal education are similar to results on charter schools in America; teachers in charter schools also earn less but work somewhat longer hours (Epple et al. 2016).[4] Charter schools in America enjoy rather extensive autonomy, and are allowed to deviate from the requirements on teacher qualifications and certifications that regulate public schools (Jabbar, 2018).[5] Chen et al. (2024) assume differing demand functions between charter and public schools with respect to "traditional" and "alternative" teacher training and establish empirically that charter school entry is associated with a decrease in newly graduated university educated teachers, and a small increase in Math majors. The results suggest that charter schools deprioritize regular high-education pedagogical programs to the benefit of single-discipline majors in basic subjects. Similar evidence is offered by Hoxby (2002), who find that school choice raises the demand for teachers with Science and Math skills and graduates from high-quality colleges, and reduces demand for formal credentials, such as teacher certifications. Kirabo Jackson (2012) and Carruthers (2012) find that

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[4] In the non-exhaustive review of empirical literature that follows, we mainly rely on evidence from higher levels of the educational system, since we found limited quantitative research about preschool workers' wages and work conditions with different types of providers.

[5] Most charter schools in America are officially non-profit, while our group of for-profit preschools are all corporations (limited companies). Charter schools in America are governed by their own curriculum. In Sweden, independent schools and preschools follow the same rules and curriculum as public schools and preschools. In practice, however, there is some room to experiment with different forms of scheduling and pedagogy.

teachers that switch to charter schools tend to be less experienced and have lower predicted effectiveness. Carruthers (2012) concludes that charters are less willing to pay for formal credentials or that scarce resources constrain them from outbidding public schools. The above literature seems to largely agree that demand functions differ between charter and public schools when it comes to teacher qualifications. An important question is whether this matters for quality. While we do not provide an extensive review of the literature in this respect, we can note that Dobbie and Fryer (2013) find that teacher certification and training is not related to charter school effectiveness; see also Epple et al. (2016) for a review. Harris and Sass (2011) also do not find a generally robust relationship between teachers' formal pre-service education (or their scores on college entry exams) and teacher productivity, but they do establish a positive relationship for work experience in the early career stages. Other characteristics that are less occurring among workers in for-profits – in our case – such as low turnover, have been shown to raise the quality of teaching (Ronfeldt et al. 2013; Gibbons et al. 2021).

Regarding privatization and childcare quality, Blau and Currie (2008) find considerable heterogeneity in quality in both private and public early childhood education in North America, but that the cost of providing a given level of care seems to be higher in the public than in the private sector. Blanden et al. (2016) find only small positive impacts on educational outcomes from a large-scale increase of free places at private preschools in England. They argue that the smaller-than-expected estimate is due to the expansion largely consisting of relatively low-quality private provision. A set of studies (Akgunduz and Plantenga, 2009; Noailly and Visser, 2009) furthermore study the impact of introducing more market forces in the Dutch childcare system. The ensuing increase in private provision correlates with a downward trend in quality, but according to Akgunduz and Plantenga (2009), this is an effect of the rapid expansion rather than privatization per se.[6]

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[6] Other empirical research about organizational forms and worker outcomes provides a mixed picture. Brown et al. (2010) and Bastos et al. (2014) find positive impacts on wages and employment of privatization of state-owned firms, but point to heterogeneity across types of privatizations, bargaining regimes and workers. Olsson and Tåg (2018) find negative effects of privatization of state-owned companies in Sweden on worker incomes. Melly and Puhani (2013) find an impact on increased wage inequality. King and Lewis (2017), Hirsch et al. (2018), and Schumacher (2009) study, with mixed results, nurses' wages in US public, for- and non-profit hospitals. Thoresson (2024) finds that decreased monopsony power in the Swedish pharmaceutical sector boosted wages. Hensvik (2018) finds that an increase in independent upper secondary schools had a positive impact on teacher wages in Sweden.

The results of our study indicate that for-profit preschools on average have workers with lower educational qualifications and years of experience, and higher worker turnover. Empirical evidence surveyed in Blanden and Rabe (2021) however suggests that these types of *structural quality* indicators are only weakly correlated with more profound measures of *process quality*, which relate to children's day-to-day experience, including how they interact with each other and the childcare staff during the various activities of the day. We can therefore not rule out that the for-profit preschools are able to maintain high quality with formally lower qualified workers.[7]

Finally, our results on employer switches relate to whether a multitude of providers is beneficial for raising wages and improving work conditions. There has been a recent surge in studies estimating the wage impact of employer market power and non-poaching agreements (Kreuger and Ashenfelter, 2022; Card, 2022). When non-poaching agreements are in effect, workers cannot increase their wages by switching employer. This could result in wages falling below workers' marginal product value; and several studies point to this being the case across countries and industries (Sokolova and Sorensen 2021; Azar and Marinescu, 2024). Our results clearly show that workers in preschool are able to raise their wages by switching employer. On the other hand, we find no evidence that the wage boost from switching employer is stronger when the labour market is less concentrated, nor when the supply of preschool teachers is low.

2 Preschool in Sweden

Preschool in Sweden is highly subsidized and universal. Municipalities (local governments) are obliged to provide preschool to the extent needed for parents who are working or studying. For children whose parents are not in employment or studies, municipalities must provide preschool for at least 15 hours a week. Families typically pay a low share (approximately 1–3 percent per child) of their gross taxable income up to a maximum rate set by the national government (SEK 1,688 for the first child in 2024). At three years of age, all children are entitled to at least 525 hours of preschool yearly free of charge, which effectively reduces the preschool fee. The main share of

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[7] One possibility is that independent providers prioritize lower child-worker ratio over worker quality. According to the Swedish National Agency for Education (Skolverket, 2024) child-worker ratios are very similar in municipal and independent preschools; 5.2 in municipal, and 5.1 in independent, preschools, in 2024. Reported differences in child-preschool teacher ratios are larger; 11.8 in municipal, and 16.9 in independent, preschools.

preschool costs is covered by municipal income tax revenues and central government grants. Preschool is increasingly seen as an integrated part of the Swedish educational system, and approximately 96 percent of all children in ages 4–5 attend preschool (Skolverket 2024).

Preschool workers can be divided into three broad categories: preschool teachers, childcare assistants and staff without formal preschool-related qualifications.[8] Since 2011, preschool teachers have to certify their qualifications and education, and all preschools require at least one preschool teacher on staff to enforce the preschool curriculum. Preschool teacher training currently consists of 3.5 years of higher education studies. Childcare assistant training is provided within an upper secondary vocational program of three years, or as an intensive adult vocational training program of 1.5 years. Preschool teachers constitute 42 percent of the preschool workforce in our data, childcare assistants 23 percent and unqualified workers 35 percent.

Wages for preschool workers are set according to a combination of individualized wage setting and collective agreements that are negotiated by the employer and employee organizations. Most collective agreements specify (in percentages) the wage increases that can be expected on the aggregate level within a firm or a sector, while some only regulate the wage negotiating process without specifying a number. There is scope for wage negotiation between the individual worker and employer within all types of agreements. Collective agreements cover all workers at workplaces that have a collective agreement; this holds for nearly 90 percent of the Swedish workforce.[9]

Parents choose among the available preschools within their municipality, subject to availability of slots, and all preschools receive equal funding via municipal vouchers. In many municipalities, privately operated preschools (in the following denoted "independent" preschools) exist alongside the municipal ones, and receive full public funding as long as they are open to all children and meet the general quality standards. According to our calculations, independent providers of preschool are unevenly spread across the country, with a larger presence, especially of for-profits,

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[8] Our sample only includes workers hired in occupations related to working with the children; i.e. we exclude kitchen- or cleaning staff, administration or management. Occupational codes are used solely to define the sample in this manner. Worker qualifications (preschool teacher, childcare assistant or unqualified) are instead based on educational degrees. See Section 3 and Appendix Sections A1–A2 for more details. Adermon and Laun (2018) describe in what industries and in what occupations certified preschool teachers worked during 2005–2015.

[9] For information in English, see the document "The Swedish model & collective agreements. A brief introduction.", which can, as of February 2025, be downloaded from the webpage Swedish National Mediation Office, https://www.mi.se/english/about-us/.

in more urban and affluent municipalities. The independent preschool share is also higher in municipalities with a larger share of the market friendly Moderate party – this link is stronger for the for-profits than the non-profits. Correspondingly the independent preschool share is smaller where the Social Democrats and the Left party hold many local assembly seats.

The development of this mix of public–private provision was shaped by actors both at the local and central government levels and has its roots in an ideological conflict centred around the presence of for-profit preschools in the 1980s. At that time, local initiatives by municipalities run by market friendly parties to involve for-profit companies in the provision of publicly funded preschools were counteracted by the Social Democratic central government's adoption of a law that explicitly prohibited such arrangements (Linnarsson, 2017). When a centre-right coalition came to power in the early 1990s, it opened for municipalities to allow – and fund – privately operated preschools, including for-profits. The coalition had intended to go further and *oblige* the municipalities to accept private preschool entry but was stopped by the return to power of the Social Democrats in 1994. In May 2006, the centre-right opposition, with the support of the Green Party, however managed to pass a parliamentary bill that did oblige the municipalities to provide funding to any preschool that met the quality criteria, irrespective of the organizational form.[10]

As a result of these political decisions, independent providers' market share has increased over time. As shown in Figure 2, the share of workers in the independent sector, as a whole, reached 18 percent in 2020. During our period of analysis, the increase has been in the form of for-profit provision, whereas the non-profits have declined somewhat. It is likely that this development partly stems from the abolishment of the municipal right to veto private entry 2006, since the veto likely constituted an obstacle mostly for the politically contested for-profit preschools. Another potential explanation is that increased requirements for documentation, and a more ambitious preschool curriculum, has favoured larger organizations, which are often organized as for-profits.[11]

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[10] Martin-Korpi (2015) and *Utbildningsutskottets betänkande* 2005/06:UbU13.

[11] This was pointed out in an article in *Dagens Samhälle*, "Förskolemarknaden stuvas om – småbolag trängs ut", 2014-09-25, retrieved in 2025-09-16: https://www.dagenssamhalle.se/styrning-och-beslut/kommunpolitik/forskolemarknaden-stuvas-om-smabolag-trangs-ut/
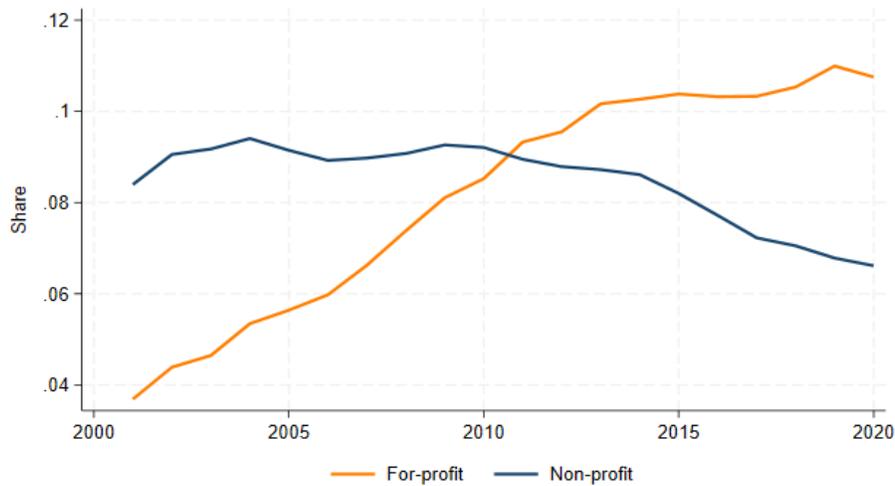
Figure 2. The share of workers in for- and non-profit preschools

The quality regulation of Swedish preschool is fairly weak. The Swedish National Agency for Education (Skolverket) has issued guidelines – not regulation – concerning child group sizes, and every preschool is required to employ at least one preschool teacher with the overall responsibility of implementing the preschool curriculum. Furthermore, oversight of the preschool sector is fragmented. The municipalities are responsible for authorizing and evaluating quality in independent preschools located in their municipality. This oversight is in turn monitored by the Swedish Schools Inspectorate, which also exercises direct oversight over the municipal preschools and over preschool quality in general. Since the preschool curriculum lacks concretion and specifics with respect to inputs, group sizes and educational goals and testing, municipalities likely operationalize the guidelines with their own standards in varying ways.[12] In practice, oversight in terms of depth and frequency likely varies substantially over the country.

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[12] The preschool curriculum states that preschool should be grounded (among other things) in democratic values, equal rights, and sustainable development. Many of the stated values are relational and emphasizes empathy, openness, diversity, participation, and creativity. The teaching should be factual, broad, non-confessional, and adaptive to the needs of each child. Some relatively concrete wording includes the following: "Preschool should especially stimulate language development in Swedish /.../ Children should be offered a stimulating environment where they are given the opportunity to develop their language skills through listening to reading aloud and by discussing literature and other texts" (p 4, Lpfö 18). Children should also be given the chance to develop their "ability to use mathematics to investigate, reflect and test different solutions to their own problems and the problems of others" (p 9).

3 Data

The analysis is based on linked worker-workplace data covering the years 2001–2020 from Statistics Sweden, combined with additional register information from The Swedish National Board of Health and Welfare.[13] The data includes approximately 1.8 million worker-year observations, see Appendix Table A4. Preschools are identified by the workplace industry code, and we further restrict the sample to individuals with occupational codes related to working directly with the children; i.e. we exclude e.g. kitchen, cleaning and administrative staff. A sector code classifies each preschool workplace as either belonging to the public (municipal) sector or the private (independent) sector. Furthermore, we classify preschools organized as limited companies (*aktiebolag*) as for-profit preschools, as these have a clear profit-motive, and classify the remaining private sector preschools as non-profit. The non-profit group includes a variety of organizations, including economic associations, foundations, interest groups, as well as a small share (0.17 percent of the worker-year observations) of non-corporate firms.[14]

Our main outcome is a variable reflecting full-time equivalent wage obtained from Statistics Sweden's wage register converted to year 2020 monetary value using the consumer price index. Coverage should in principle be 100 percent for the public sector, while only a subsample of the private sector is covered. Specifically, our data cover nearly 90 percent of municipal workers, almost a third of for-profit workers, but only around 5 percent of non-profit workers. Coverage among non-profit workers is lower because sampling weights are lower for smaller organizations, and non-profits tend to be smaller. Parts of the analyses that are particularly data intensive exclude non-profit workers due to the low coverage.

In addition to studying wages, we use two binary variables to measure workers' health. The first is an indicator for sick leave, measured as receiving sickness benefits at any point during the year. The variable captures sick leave spells that exceed the initial employer-paid period. The employer-paid period was 14 days for most of the data period, except for 2004 and the latter half of 2003, when it was 21 days. The second health related outcome variable is a dummy variable for having

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[13] More detailed information on sample restrictions and variables is available in Appendix section A1 and A2.

[14] Economic associations – the most common organizational form among non-"profits" – are legally allowed to distribute profits to its members. We, however, consider it unlikely that profit-making is the prime objective among economic associations, since most of them are run as either parental- or worker cooperatives. We have found no information on the prevalence of profits or dividends in preschools organized as economic associations.

dispensed a prescribed medical drug related to mental health problems during the year, defined as ATC-codes N05 and N06. The group N05 (*Psycholeptics*) includes e.g. antipsychotics and benzodiazepines. The group N06 (*Psychoanaleptics*) includes e.g. antidepressants (SSRIs) and stimulants to treat ADHD. The two groups of medicines chosen thus capture treatments that are sedative, such as benzodiazepines, often used to treat insomnia and panic, and SSRIs, that are used to treat anxiety and depression. We acknowledge that the sick leave variable is ambiguous as a measure of worker health since lower sick leave rates can be a consequence of workers "powering through" because of pressure from, or loyalty to, the employer. We consider the mental health medication variable to be a suitable complement and a less obscure measure of worker health. In contrast to the data on wages, the data on health outcomes cover the full worker population. However, data on medication prescriptions are not available until 2005.

In order to control for worker qualifications and to study differences in worker composition, we categorize workers into three groups: preschool teachers, childcare assistants and other – unqualified – workers, based on the ISCED-codes for highest level and field of education. Workers are categorized as preschool teachers if they have completed 3.5 years of education – or equivalent according to earlier education plans – required to obtain preschool teacher legitimation (see Appendix Table A2 for detailed information). Workers are categorized as childcare assistants if they have completed an upper secondary vocational program or equivalent adult vocational program. Workers with an "after-school" (*fritidslärare*) teacher education are also included in the childcare assistant category.

We measure prior work experience as the number of years, during the last eight years, that the worker was employed in a preschool.[15] Finally, we generate a set of ability indicators based on the upper secondary final grade. The indicators measure if the worker had a high, mid or low upper secondary grade, defined as the top quartile, middle half and bottom quartile of the final grade distribution, by year. Grade data is available in the graduation registers from year 1973 an onwards. To accommodate workers who finished upper secondary education prior to 1973, who did not finish upper secondary school or who immigrated to Sweden posterior to upper secondary

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[15] We choose eight years as this is the maximum spell that our data sources permit us to construct the measure for without excluding any of the years of the analysis period.

education, we generate a variable indicating if the worker is missing upper secondary final grade information.[16]

Descriptive information on the variables is provided in Appendix Table A4.

4. Worker composition

In Figure 3, we compare the characteristics of workers in for- and non-profit preschools with the characteristics of workers in municipal preschools. The pattern provides interesting information on the workforce composition, as well as a sense of the magnitude and direction of the selection-on-observables. We perform the comparisons within municipality and year to control for local demand and supply of worker qualifications and characteristics overall.[17]

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[16] Over 80 percent of the workers were expected to graduate from upper secondary school in 1973 or later.

[17] The patterns of results are qualitatively similar if we replace the municipality-by-year fixed effects by separate year and municipality fixed effects, or by year fixed effects and a set of municipal covariates for municipal council seat shares, preschool age population, income tax base, and type of municipality, with respect to urban/rural status, although the non-profit coefficient for work experience is no longer statistically different from zero (results available upon request). Exclusion of municipal controls or fixed effects yields higher wages in the for-profit sector conditional on worker characteristics. This likely reflects that for-profits are more common in urban areas, where wages tend to be higher.

Figure 3. Worker characteristics in for-profit and non-profit preschools
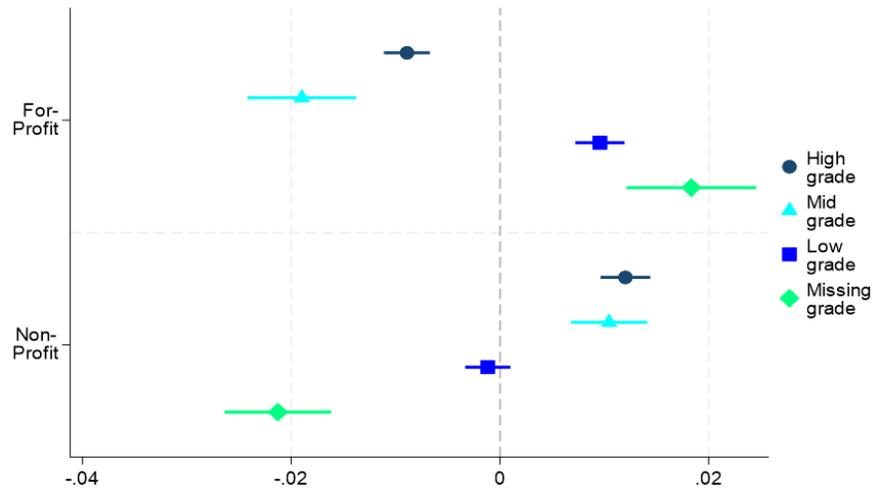compared to municipal preschools
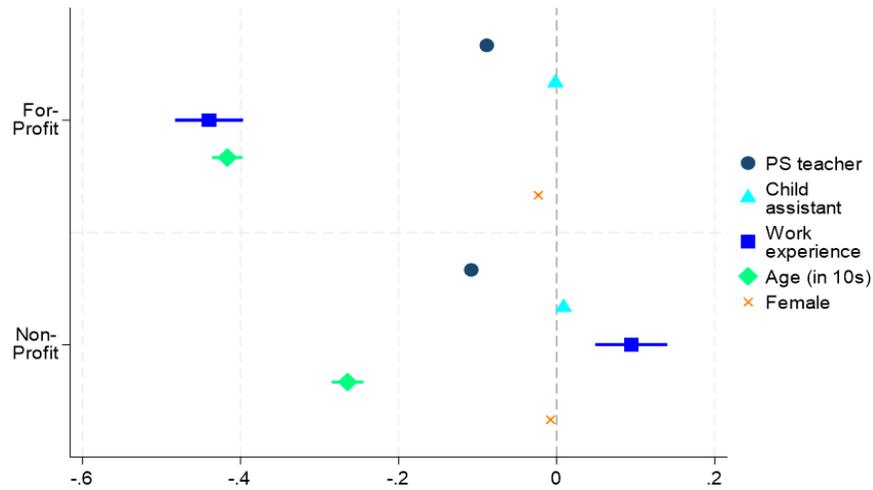
The figure shows that the share of preschool teachers is about ten percentage points lower in non- and for-profit preschools compared with municipal preschools within the same municipality and year. Since the shares of childcare assistants do not differ across organizational forms, we can conclude that non- and for-profits both rely more on unqualified workers. Workers in for-profit preschools are on average 4 years younger and have a bit more than 0.4 fewer years of prior preschool employment during the last eight years. Workers in non-profit preschools are on average a bit more than 2 years younger, but even so, tend to have around 0.1 more years of preschool work experience. For-profits have slightly more males on staff. Supplementary results in Figure A3 in the Appendix furthermore show that for-profit preschools are characterized by higher staff turnover rates than the municipal preschools.

In Figure 4 we investigate selection with respect to worker ability as measured by upper secondary final grade.[18] Figure 4 shows clear differences between the two forms of independent preschools:

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[18] Grades are not a clear-cut measure of ability as upper secondary students attend various tracks including different subject combinations. Even so, we believe that the measure is informative as a measure of whether the worker was in the top, middle or bottom of the distribution; this likely captures innate ability as well as motivation and other traits that affect students' grades.

For-profit workers are less likely to have a high- or mid-level grade and more likely to have a low- or missing grade compared to municipal workers. Non-profit workers are conversely more likely to have a high- or mid-level grade and less likely to have a missing grade.

Figure 4. Worker grades in for-profit and non-profit preschools

Note: The figure shows the results from four separate regressions including two dummy variables for working in a for-profit or a non-profit preschool respectively and municipality-by-year fixed effects. Workers in municipal preschools are the reference category. 95% CIs based on standard errors clustered by municipality-year. Age in level and squared are included to control for missing grade information.

The joint pattern from Figures 3 and 4 suggest that in terms of observable characteristics, for-profit preschools consistently display a negative selection in terms of expected worker qualifications. Workers in for-profits are younger, have shorter work experience, lower grades and are less likely to have preschool teacher degree than workers in the municipal sector. The results for non-profit workers are more mixed; these workers are also younger and less likely to have preschool teacher degree, but they on the other hand have more work experience and higher grades.[19]

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[19] The same patterns hold for age and work experience if the sample is limited to workers with a preschool teacher degree; within this group, for-profit workers are younger and less experienced than the municipal sector, whereas non-profit workers are younger but more experienced. When it comes to the upper secondary grades, non-profit workers also have higher grades, whereas the pattern for for-profits is much more muted than for the full sample; they are a bit less likely to have a missing grade, a bit more likely to have mid-range grade, but do not differ from the municipal sample in the likelihood of having a high or a low grade. These estimates are available upon request.

5. Wage and health outcomes of preschool workers

In this section we study if municipal, for-profit and non-profit preschools differ systematically in terms of worker wages, sick leave and prescription of mental health related medicine, conditional on observed and unobserved worker characteristics.

5.1 Empirical strategy

The empirical strategy is illustrated by regression Equation 1.

$$y_{ipmt} = \beta_1 FP_p + \beta_2 NP_p + \omega_{tm} + \varepsilon_{it} \quad (1a)$$

$$+ \delta X_{it} \quad (1b)$$

$$+ \theta_i \quad (1c)$$

The outcome (wages, sick leave and mental health medication) for worker i in preschool p, in workplace municipality m, and year t is given by y_{ipmt}. Our variables of interest are FP_p – employment in a for-profit preschool, and NP_p – employment in a non-profit preschool. Workers in municipal preschools are the reference category.

As explained in section 2, the share of independent preschool workers is correlated with local characteristics such as municipal size, income level and political representation in the local council. As the wage level, as well as the share of workers with a mental health related medical prescription, also tend to be higher in larger and more affluent municipalities, these types of local characteristics are important to account for.[20] Their omission otherwise risks to cause an upward bias in the estimated association between the wage level and the for-profit and non-profit organizational form. This is particularly the case for the for-profit form, as it is more strongly correlated with both population size and taxable income. In addition to these observable variables, preschool wages and health outcomes may be influenced by factors that are unobserved by us, such as local wage or health strategies or decisions relating to the financing and organization of

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[20] The average wage among preschool workers is positively correlated with the preschool age population size and taxable income, conditional on the share of workers with a preschool teacher or child assistant degree, and on year fixed effects. The same holds for the share of workers with a mental health related medical drug prescription. Results are available upon request.

the preschools. Since local and potentially time-varying information is cumbersome to collect and quantify, our baseline strategy is to include fixed effects for the interaction of the municipality where the preschool is located and year, denoted ω_{tm} in models (a-c). The municipal environment in terms of resources, political priorities, supply and demand for preschool workers, general economic conditions, or any other aspects that are specific to a municipality and year, is thus held constant in the regression analysis. It follows from the inclusion of municipality-by-year fixed effects that only individuals who work in municipalities with more than one organizational form contribute to the estimation of β_1 and β_2. Complementary results available in the appendix Table A5 show that the results are qualitatively unaffected by replacing the municipality-by-year fixed effects with either a year fixed effect and a set of municipality covariates, or separate municipality and year fixed effects and a set of time-varying municipality covariates. Omitting any municipal controls, whether in the form of covariates or fixed effects, does however affect the results. This suggests that controlling for the municipal characteristics is important, but that the form that this takes – covariates or fixed effects – is in this case of little importance.

Model (a) of Equation 1 includes no worker specific covariates. The estimates from that specification capture both the potential impact of the organizational form and of selection of workers based on e.g. age and qualifications. Model (b) shows how much of the initial differences that remain after controlling for observable worker characteristics X_{it} in the form of age (level and squared), previous preschool work experience (level and squared), two dummy variables for either having a preschool teacher- or a childcare assistant degree, a dummy variable for being female, and four dummy variables denoting high-, mid-, low-, and missing upper secondary grades. Remaining selection on time-invariable unobservable characteristics is accounted for in model (c) by adding worker fixed effects θ_i.

5.2 Results

Figure 5 shows the regression results for the wage outcome, in the form of the natural logarithm of workers' monthly full-time equivalent wage. The coefficients capture the wage differences in percentages between the for-profit (FP_p) and non-profit (NP_p) preschool workers respectively, compared to the reference group of municipal preschool workers.

Figure 5: Outcome: Ln wages
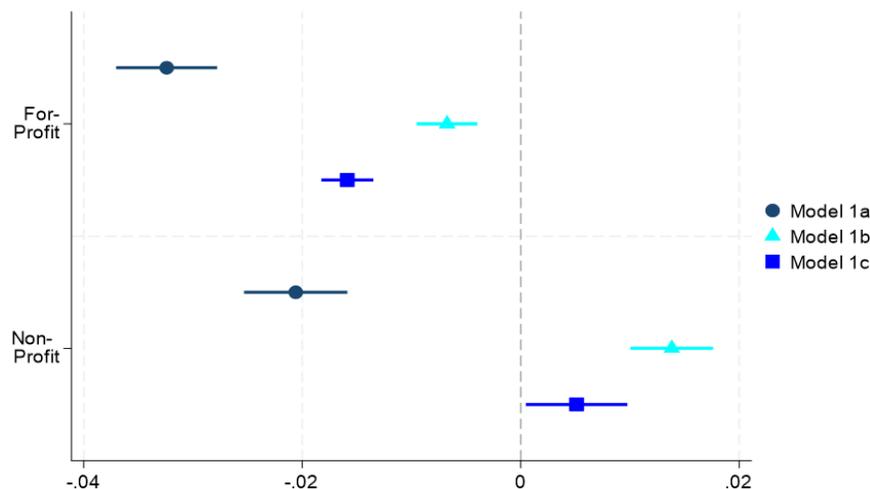
Note: The figure shows estimates and 95 % confidence intervals from estimations of equations 1(a–c). Standard errors are clustered on the municipality-by-year level. The figure is based on data from 2001-2020. Note that the private sector data is sampled with small firms underrepresented. Sampling probability weights are not used. The wage is converted to year 2020 monetary value.

Our most basic empirical model (a) compares individuals working in different organizational forms within a municipality and year. The results indicate 3.2 percent lower wages in for-profits, and 2.1 percent lower in non-profits, compared to municipal preschools. These differences partly reflect that workers in independent preschools are younger and less likely to have a preschool teacher degree, as was shown in Figure 3. Adding worker characteristics in model (b) shrinks the wage penalty in for-profits to −0.7 percent, and the wage penalty of the non-profits transforms into a 1.4 percent wage premium. Adding worker fixed effects in model (c) doubles the wage penalty in the for-profits to −1.6 percent, and the wage premium shrinks somewhat in the non-profits to 0.5 percent.[21]

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[21] Rerunning model (b) using the estimating sample in model (c), i.e. workers who switch between different organizational forms, yields a for-profit coefficient of −1.7 percent, i.e. similar to the coefficient −1.6 percent in model (c). This indicates that the difference between the models in Figure 5 reflects differences in the sample of workers rather than unobservable variable bias. The non-profit coefficient is however almost identical when model (b) is estimated only for switchers (1.2 percent) compared to the full sample (1.4 percent). In the case of non-profits, unobservable variable bias thus plays a larger role than sample selection.

In summary, there is evidence of a modest conditional wage penalty of working in the for-profit preschool sector, in the form of around 0.7–1.6 percent lower wages than the municipal sector, depending on the specification. Non-profit preschool workers on the other hand have 1.4 percent higher wages, conditional on observable characteristics (model b), than the municipal workers but only moderately, 0.5 percent, higher wages, when the identifying variation is limited to within workers (model c).[22] A decomposition of the estimates from model (c) into firm-specific coefficients (firm fixed effects) for the for-profit and non-profit sectors shows that most of the estimates lie within ± 1 percent (see Appendix Figure A4). Alas, although there are a few outlier firms, the estimates do not seem to be driven solely by isolated occurrences of extreme values; most for-profit firms have wages that are similar to or a bit *lower* than the municipal sector, and most non-profit firms have wages that are similar or a bit *higher*.[23]

We now turn to the health-related outcomes; sick leave in Figure 6 and mental health related medication in Figure 7. The results for model (a) show that for-profit and non-profit workers are less likely than municipal workers to be on sick-leave or have mental health medication, conditional on municipality-by-year. These differences by large remain once we add observed worker covariates (model b) although the size of the coefficients decrease a bit. The coefficient decrease is not surprising, given that workers in independent preschools tend to be younger, a characteristic that is associated with better health. The coefficient sizes of regression model (b) suggest that for-profit workers are 2.6 percentage points less likely to take sick leave, and 0.6 percentage points less likely to have mental health related medication, compared to municipal preschool workers. For the non-profits, the corresponding estimates indicate a 3.8 percentage point lower propensity to take sick leave, and a 0.5 percentage point lower likelihood to be on mental health related medication. Considering that the average sick leave and mental health medication rates in the preschool worker population are 20 and 16 percent (Appendix Table A4), these estimates are not unsubstantial.

Adding worker fixed effects in model (c) renders the mental health medication estimates for the for-profits insignificant and reduces the sizes of the sick leave estimates, but does not affect the

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[22] Similar coefficient patterns are obtained when re-estimating the regressions with weights in the form of the inverse of the wage sampling probability, in order to account for the under-coverage of the private sector, see Figure A5.
[23] We have also analysed if the wage difference between organizational forms varies across worker education. Some of the results proved sensitive to the choice of model specification. Results are available upon request.

size of the mental health medication estimate for non-profit workers. As previously mentioned, lower sick leave rates are not necessarily a sign of beneficial work conditions, but could instead reflect loyalty with the employer or colleagues, or even pressure from the employer. We consider the mental health medication variable as an important complement, and in that sense, the interpretation of a better work environment seems somewhat more robust for non-profits.

Alternative specifications in Appendix Table A5, which vary the covariates and fixed effects, show that the estimates' sign and statistical significance are mainly robust to such alternations. The coefficients for mental health medications of models (b) and (c) however turn insignificant when the log of employer size is added as a covariate, suggesting that the better health outcomes are mediated by the generally smaller size of the private organizations compared to the municipalities. The same holds for the sick leave coefficients of model (c). Adding it also renders the non-profit wage coefficient of model (c) insignificant. We have however chosen not to include the size covariate in our main specification, as it can be seen as an inherent feature of different types of organizational forms.[24] [25]

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[24] We have also rerun the health-related outcomes using the same sample as the wage regression. The result, which is shown in appendix Figures A6–A7, show insignificant effects for models (b) and (c). A likely explanation is that the wage sample lacks many of the smaller private organizations, as these are under sampled in the wage survey.

[25] Appendix Table A5 also shows that omitting municipality covariates affects the results for the for-profits. As was commented in section 5.1, we view controlling for municipal characteristics as important, as both the preschool organizational form and the outcome variables of our analysis correlate with municipal characteristics such as population size and tax base.

Figure 6: Outcome: Sick leave
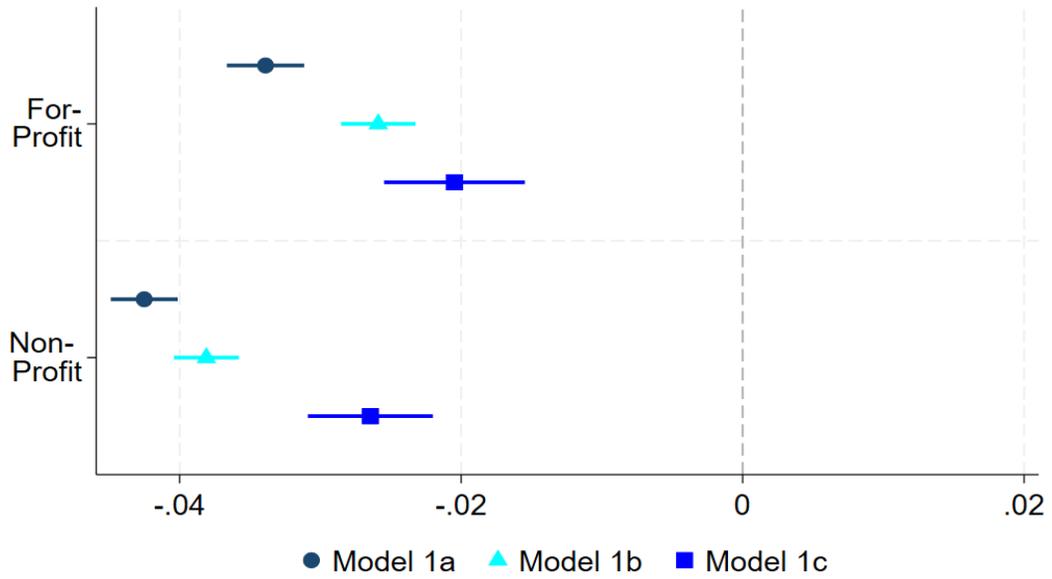
Note: The outcome variable is a dummy variable for being on sick leave during the year for a period exceeding the first couple of weeks of employer-paid coverage. The figure is based on the full sample over 2001-2020. The figure shows estimates and 95 % confidence intervals from estimations of equations 1(a–c). Standard errors are clustered on the municipality-by-year level.

Figure 7: Outcome: Mental illness medication
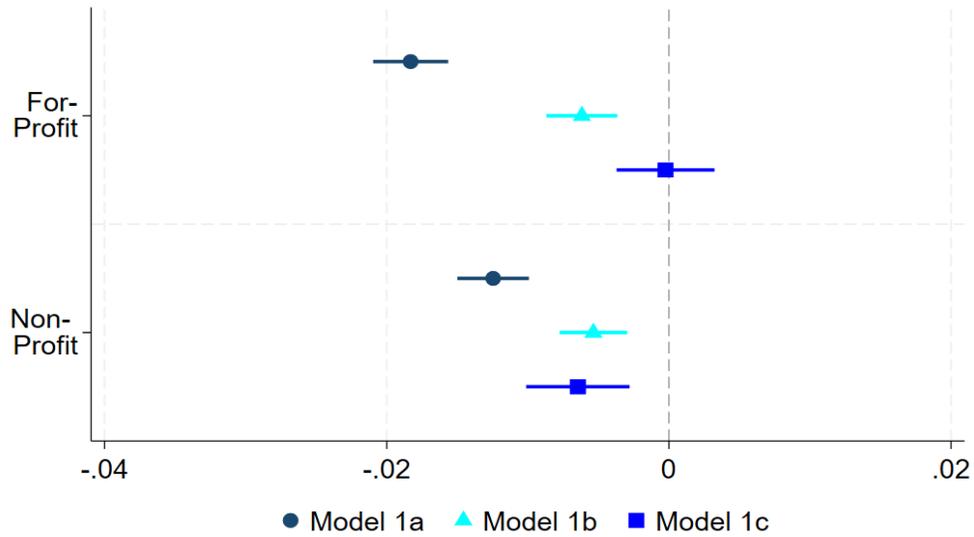
Note: The outcome is a dummy variable for having dispensed a prescribed medical drug related to mental health problems during the year, defined as ATC-codes N05 (*Psycholeptics*) and N06 (*Psychoanaleptics*). The figure is based on the full sample over 2005-2020. The figure shows estimates and 95 % confidence intervals from estimations of equations 1(a–c). Standard errors are clustered on the municipality-by-year level.

6. Worker turnover and wages

In this section we zoom in on worker flows and the possibility to raise wages by switching employer. We start by analysing worker turnover rates, and then turn to how the wage changes when workers switch between employers of different organizational form.

6.1. Worker turnover

For-profit preschools have higher worker turnover rates than municipal and non-profit preschools. As shown in Appendix Figure A3, the share of workers leaving the organization (a municipality, firm or other type of organization) from one year to another is over 20 percent in for-profit preschools, and bit over 15 percent in municipal and non-profit preschools. The share that enters

is slightly higher in all types of organizations, which is not surprising given that the number of children in preschool increased during the period studied.[26]

Part of the large difference between for-profits and other preschools is likely due to the former being more common in more urban areas, where there are generally more opportunities to change jobs. Opportunities to change employer can also vary over time. Figure 8 shows that controlling for municipality-by-year fixed effects closes the gap somewhat, but not fully; the share of workers leaving or entering the organization is around 2 percentage points higher in for-profit preschools than in the municipal reference category. In non-profit preschools, the share of leaving or entering workers is instead around 1.5 percentage point lower. In addition to municipality-by-year fixed effects, these regressions control for the size of the organization, as workers in large organizations are all else equal likely to have fewer outside job opportunities than workers in small organizations.

Figure 8. Outcome: Share of workers leaving or entering
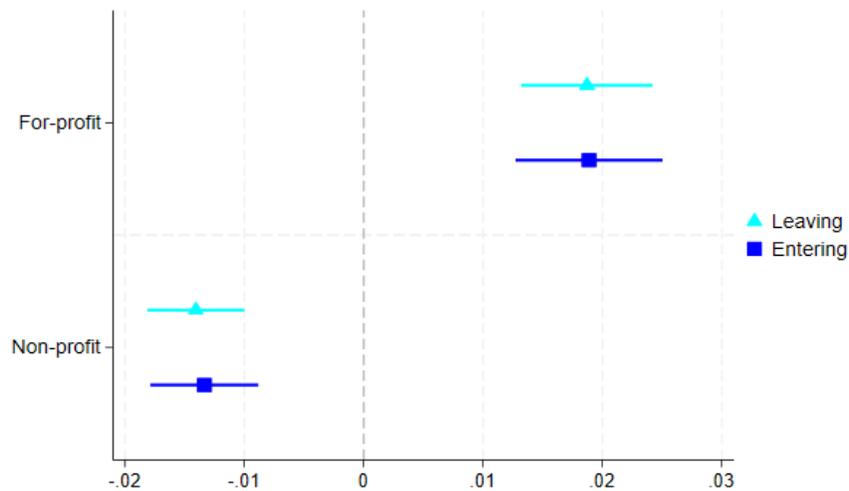
Note: The figure shows coefficient estimates and 95% confidence intervals from regressing the share of workers who leave, or enter, the organization, on dummy variables for for-profit and non-profit organizational form, respectively. Municipal preschools is the reference group. The regression model also includes the number of workers in the organization, as well as year-by-municipality fixed effects. The unit of measurement is the organization (a municipality, firm, or other form of organization) and the estimates are weighted with the number of workers. The confidence intervals are based on standard errors clustered on year-by-municipality. Recent start-ups (during the last five years) are excluded from the data. The data covers 2006-2020.

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[26] The analysis of turnover is based on data in 2006–2020, after we exclude recent start-ups (starting during the past five years), who are expected to have particularly high entry rates.

6.2. Employer switching and wages

In this section we study the possibilities for individuals to increase their wages by switching between employers. An employer is defined as a municipality, a firm or an organization. The motivation for studying switches is twofold: switches capture one mechanism in the relationship between a multitude of employing organizations and higher wages. A lower concentration of employers increases workers' bargaining power, but that power must be anchored in a credible threat of switching employer. Second, a focus on workers who switch allows us to develop a more transparent estimation strategy. Instead of merely adding worker fixed effects, we study "switchers" and "stayers" within two-year windows using stacked regression. This approach allows us to distinguish between specific switches, e.g. from municipalities to for-profits or the reverse, but also switches between employers of similar organizational form, e.g. between two municipalities. Because of the scarcity of the wage data sample for the non-profit sector we are not able to include these workers in our analysis of switchers. Furthermore, we only study wage outcomes, since effects on health outcomes that are related to the work environment are likely more gradual.

We organize the data into a stacked dataset consisting of two-year data windows, d, and study the wage change within each window and local labour market. Our focus is on switches among workers who are employed in the preschool sector in both periods of a data window; hires from other sectors, non-employment or studies are not included.[27]

The analysis is carried out by estimating the specifications illustrated by regression equation 2 on the stacked data:

$$\Delta \ln(w)_{idlm} = \gamma FP_{id} + \boldsymbol{\beta sw_{id}} + \omega_d + \delta X_{id} + \rho W_{md} + \varepsilon_{idlm} \qquad (2a)$$

$$+\omega_d \times LM_l \qquad (2b)$$

The outcome variable of equation 2, $\Delta \ln(w)_{idlm}$, is the difference in the log wage between the second and the first period of the data window d, for worker i in labour market l and municipality m. FP_{id} is a dummy variable indicating that the worker remained with the same for-profit employer

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[27] The analysis includes only workers who remain employed in the same local labour market in both periods. We also drop firms that exit from the market between the first and second year of the data period, since we want to focus on voluntary work switches. We also drop firms that change organizational type, as well as firms that are recorded as new firms in the data due to merges or secessions (their employees can be thought to be part of a partly new organization but not due to an active job switch).

in both years of the data window. The omitted reference category consists of workers who remain with the same municipal employer. Employer switches are indicated by sw_{id}; a vector of dummy variables for different types of switches made by workers between the first and second year within a data window. The coefficients in vector $\boldsymbol{\beta}$ thus measure the extent to which the wage development differs between workers who switched employer compared to the reference group of municipal "stayers". Regression model (a) includes fixed effects for each data window (i.e. for each two-year combination of data), and model (b) replaces the separate ω_d-fixed effects with fixed effects for the interaction of data window ω_d and local labour market LM_l.[28]

Both specifications include a set of worker specific covariates, X_{id}, that serve to control for worker characteristics that may correlate both with the propensity to switch employer and with wage development. These covariates include dummy variables for having a preschool teacher or child carer degree, respectively, measured in period 1 of the data window; dummy variables for getting a preschool teacher or child carer degree, respectively, between period 1 and period 2 of the data window; the age, wage and previous preschool work experience of the worker measured in period 1 (all in level and squared); and dummy variables for the gender and upper secondary final grade. The regression models also include the following municipality specific characteristics W_{md}: log preschool age (1–5) population size, and log tax base, both measured in year 1 as well as their change between the two years of the data window, a set of dummy variables for municipality type in terms of urbanity, and two political variables defined as the municipal council seat shares for the market friendly Moderate Party, and for the Social Democrats and the Left Party, both measured in period 1.

In Figure 9 we show all combinations of "switchers" and "stayers" that involve municipal and for-profit preschools.[29] The reference category are those workers that stay with the same municipal employer. Switchers are those that change employer, defined as municipality/firm/organization.[30]

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[28] We use Statistics Sweden's measure of local labour markets (*LA-region*), which are generated based on observed commuting patterns between municipalities. We use the year 2000 measure, i.e. the measure that is based on commuting patterns from the year prior to the start of our data panel, in order to have a stable unit over time. In that year, there were 90 local labour market regions.

[30] In appendix figure A8, we show separate coefficients for those who remain with the same employer but switch workplace. According to the results, their wage change does not differ significantly from the workers that remain at the same workplace. This could be due to municipalities (and plausibly also firms) having non-poaching regulation in place to limit their own preschool units to attract workers from each other by offering higher wages.

Switches between employers can take place either between or within organizational form; we estimate separate coefficients for all possible combinations of switches.

In the top section of Figure 9 we show that the wage development among those who remain at the same for-profit employer is a bit weaker than among those that stay with the same municipal employer; the estimates are marginally statistically insignificant at the five percent level. The estimates from the two alternative regression models are remarkably similar; adding interactions between data window and local labour market region does not change the results.

Figure 9. Outcome: Wage change (%)
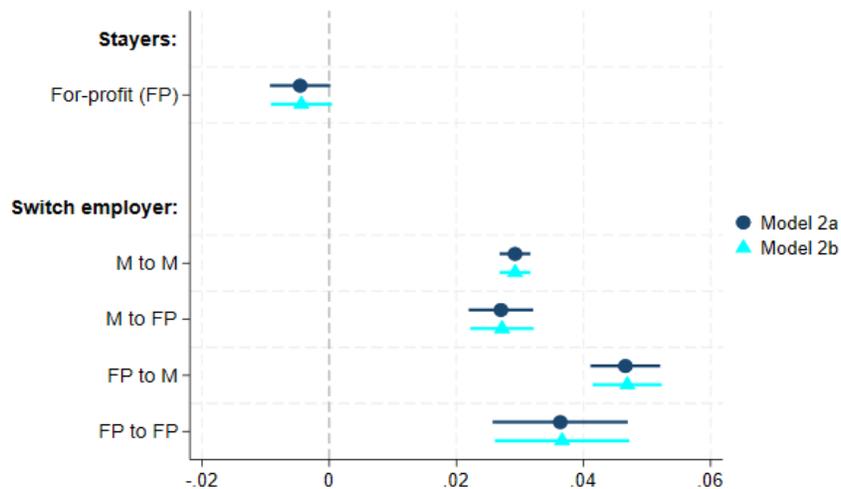
Note: For-profit (FP); Municipality (M). The regression sample is restricted to workers employed in the same local labour market in both periods. Reference group: workers employed by the same municipality in both periods. The wage is converted to year 2020 monetary value. The figure is based on data from 2001-2020. Note that the private sector data is sampled with small firms underrepresented. Sampling probability weights are not used. The figure shows estimates and 95 % confidence intervals from estimations of equations 2(a–b). Standard errors are clustered on data window-by-local labour market level.

The bottom section of the figure shows that switching employer is associated with significantly larger wage increases; around 2.7 to 4.7 percent higher than the reference group of municipal stayers. For comparison, the average annual wage increase among preschool workers during the period was 2.3 percent. This was on par with the wage development in the labour market in general; 2.5 percent based on our data. The results further show that switching from a for-profit employer to a municipal one renders a significantly larger wage bonus compared to the reverse. A switch

from for-profit to municipality is associated with the largest wage increase, 2 percentage points larger than that of a switch in the reverse direction, from a municipality to a for-profit. Switching between municipal employers is associated with an increase of approximately the same magnitude as the latter, whereas the estimate for switching between for-profits is slightly larger, but not significantly distinct from any of the other switching estimates due to its large confidence intervals. A similar pattern as in Figure 9 is found when we study preschool teachers exclusively, see Appendix Figure A7.

Estimates for the full labour market, in Appendix Table A7, show that employer switches within the preschool sector on average are associated with slightly larger wage gains (a 2.7 percent wage boost compared to all non-switchers, conditional on worker age, education, gender, and year fixed effects) than workers who switch between non-preschool employers (a 1.3 percent wage boost). Workers who leave a preschool employment for another sector gain even more, 6.4 percent, whereas those moving from a non-preschool employer to a preschool have a wage development that is 5.2 percent lower than the reference group of non-switchers – a pattern consistent with the low rank of the preschool sector in the wage distribution that was shown in Figure 1a.

Next, we study if the employer concentration and labour market tightness in the local labour market affect the scope for increasing one's wage by switching employer. Employer concentration is measured as the log of the Herfindahl index $\times$ (-1), so that larger values reflect a less concentrated labour market. Labour market tightness is measured as the log of preschool age children divided by the number of work age individuals with a preschool teacher degree residing in the local labour market. These regressions exclude the category of workers switching between for-profit employers, as this category is too small to enable separate coefficients by local market characteristics. The results, which are presented in Figure 10–11, show no strong indications that the wage boost from switching preschool employer is associated with the degree of employer concentration or tightness within the local labour market; none of the estimates are statistically significant at the five percent level. Similar results are given if we run the same estimations for only workers with a preschool teacher degree (See Appendix Figures A10–A11).

Figure 10. Outcome: Wage change (%) × Tightness in preschool teachers
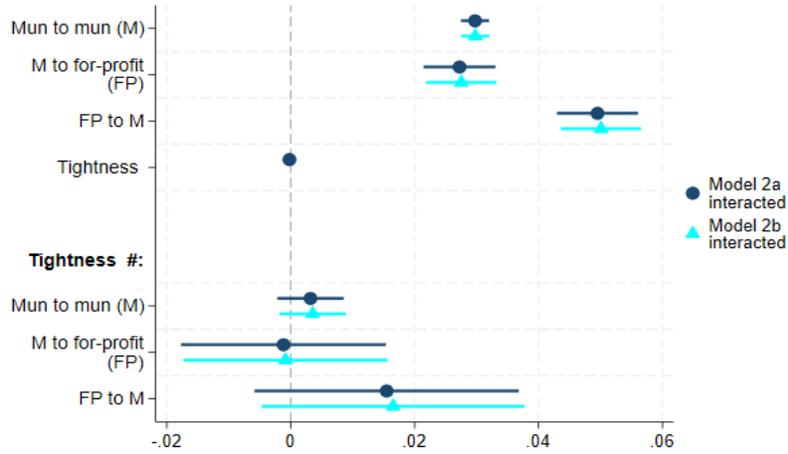
Note: The regression sample is restricted to preschool employees who work in the same labour market region in both periods. Tightness is measured as the natural log of the preschool age (age 1–5) local population divided by the number of work age residents with a preschool or low grade teacher degree. The figure is based on data from 2001-2020. Note that the private sector data is sampled with small firms underrepresented. Sampling probability weights are not used. The figure shows estimates and 95 % confidence intervals from estimations of equations 2(a–b) but adding the labour market tightness and its interaction with the employer switch variables. Standard errors are clustered on data window-by-local labour market level.

Figure 11. Outcome: Wage change (%) × Employer concentration
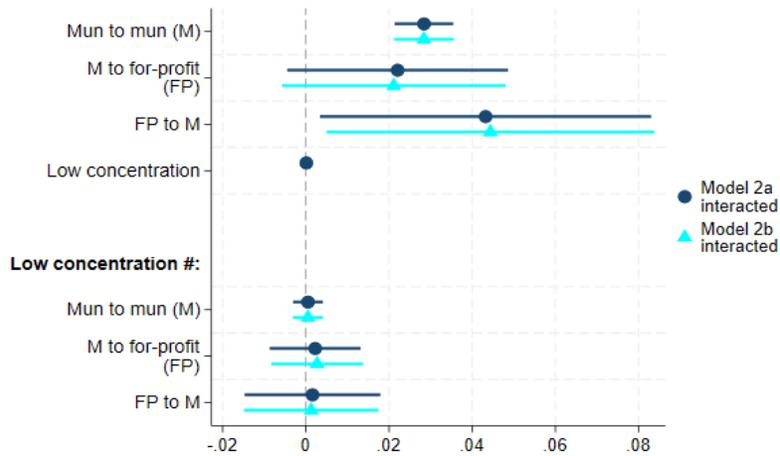
Note: The regression sample is restricted to preschool employees who work in the same labour market region in both periods. Low concentration is measured as ln(-1*HHI), where HHI is calculated counting each municipality/firm/group as an employer unit. The figure is based on data from 2001-2020. Note that the private sector data is sampled with small firms underrepresented. Sampling probability weights are not used. The figure shows estimates and 95 % confidence intervals from estimations of equations 2(a–b) but adding the low employer concentration measure and its interaction with the employer switch variables. Standard errors are clustered on data window-by-local labour market level.

8. Conclusions

The preschool sector is dominated by female workers and is characterized by low wages and poor health. Our study using data on workers in preschool indicate that worker composition, wages and health outcomes differ between preschools of varying organizational forms.

For-profits employ a lower share of preschool teachers, and a larger share of workers that are younger, less experienced and that have lower upper secondary school grades. For-profit preschool workers are paid lower wages than municipal and the non-profit workers because of these differences; but they are also paid lower wages conditional on observable as well as time-invariant unobservable characteristics. We furthermore find that workers who switch from municipalities to for-profits receive a lower wage boost than those who switch in the opposite direction. One interpretation is that these results are evidence of cost-minimizing behaviour among for-profit preschools. On the other hand, we also find lower rates of sick leave and mental health medication among for-profit workers, suggesting that the lower pay may be compensated by a better work environment.

The non-profits are similar to the for-profits in the sense that they employ a lower share of preschool teachers and a higher share of younger workers than municipal preschools, but they also display a stronger willingness than both for-profit and municipal preschools to hire workers with alternative qualifications in the form of longer work experience and higher grades. Conditional on worker characteristics, their workers enjoy both higher pay and better worker health outcomes. The results for non-profit workers are in line with theories of insider utility maximization, rather than the labour donation hypothesis.

Standard labour market theory posits that an increase in employer options increases worker welfare. After the independent school reform, workers in preschools have more proximate employers to choose from. Our analysis of switches shows that preschool workers are in general able to increase their wages by switching employer. However, our results that for-profits pay lower wages and non-profits pay higher wages suggest that it is not only the amount of employer options that matter, but also the employer type. Additional research is needed to establish whether (and, if so, why) workers can obtain a better work environment by switching from municipal employers to (in particular) non-profit preschools. And finally, further studies of the role of worker composition and well-being for preschool quality are warranted as a complement to our study.

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Utbildningsutskottets betänkande 2005/06:UbU13

Appendix

A1. Data sample

Our analysis is carried out based on data from the population wide linked worker-workplace data register (RAMS) available from Statistics Sweden. Based on this register, we generate our sample of preschool workers in the following manner:

We start by generating the worker data set. For workers who are linked to several workplaces during a year (for example, due to changing jobs during the year, or being employed by several employers/workplaces), we pick one link for each worker use the following procedure:

1) We start by picking the workplace that is defined as the main employment during the year by Statistics Sweden's variable "ValtAst", which defines the main employment link as the one yielding the highest earnings. This drops approximately 30% of the total number of worker-workplace links. (The procedure is carried out by year, and the share of worker-workplace links dropped each year ranges from 29.6% to 34.7%.)
2) A small number of workers still have more than one linked workplace. For them, we drop duplicate observations by implementing the following steps:
   a. Based on Statistics Sweden's variable "Yrkstalln", we keep workplace links that represent regular employment, and drop links that represent self-employment (including closely held firms), and sailors (which is a separate "Yrkstalln" variable category). This drops 0.002% or fewer observations yearly.
   b. Finally, any remaining duplicates are dropped randomly. This drops 0.06% or fewer observations yearly.

After the above steps, the remaining sample consists of non-duplicate worker-year observations, representing the main earnings-generating workplace link during each year, for all sectors of the economy. In order to extract the preschool workers, we turn to the register data on workplaces, which includes information on workplace industry and sector. We proceed in the following manner:

1) We start by keeping only workplaces with a preschool sector code. (The preschool sector code is indicated by SNI92=85321 for year 2001, SNI02=80101 for years 2002-07, and SNI07=85100 for years 2008-20.) The data contains information on firm or organization identifiers (including public sector local government units such as the municipalities), as well as the municipality where the workplace is located. We drop observations with missing information on workplace or firm identifier, or on the municipality where the workplace is located. We then implement the following additional sample restrictions:
2) We keep only workers with an occupational code for working with the children as either a preschool teacher, a childcare assistant, or a closely related occupation, workers' occupational codes. (For a subsample of the data, these are not observed yearly. For those cases, we impute based on neighbouring years. See section A2 for detailed information.) This step implies dropping e.g. kitchen, cleaning, administrative and management staff, as well as workers who have missing occupational code even after the imputation procedure is carried out. Implementing this restriction drops approximately 20% of the worker-year observations.
3) After the above restriction, the data set consists of 1 906 574 worker-year observations. 49 of them represent links to workplaces belonging to the central government or county level sectors. These are likely wrongly coded preschool workplaces, why we drop them from the data set.

4) After imposing these restrictions, 0,16% of the observations belong to workplaces with only one linked employee. They are unlikely to be preschools, and are therefore dropped from the data, resulting in a data sample of 1 903 463 worker-year observations.
5) We restrict the data to workers age 16-70. Students in Sweden finish the compulsory education system the year they turn 16. The general retirement age during the period under study was 65, with the option to stay on (with employment protection) to age 67, and the possibility to work at higher ages with the employer's permission. This restriction drops 0.3% of the observations.
6) Workers with very low total annual earnings (including earnings related to employment in the form of sick pay and parental benefits, see the variable "Forvers" in Statistics Sweden's LISA register) are dropped from the sample, in order not to include workers with a very sporadic or low connection to the preschools. This restriction is implemented by dropping all individual-year observations with annual earnings below one income basic amount (IBB). The income basic amount is calculated annually by the Swedish Pensions Agency, with the aim to order to reflect the aggregate trends in pensionable income. It is used for determining social insurance and pension related benefit levels. In 2020, it amounted to 66 800 SEK, which, at a rate of 11 SEK per €, corresponds to a bit over 6 000 €. This restriction drops 4.7% of the observations in the data.
7) A small set of workers with unusually high annual earnings are also excluded from the data. This is done by excluding workers with annual earnings above 10 times the income basic amount. This restriction drops 0.07% of the observations in the data.

After the above restrictions, the analysis sample consists of 1,806,904 worker-year observations covering the period 2001-2020.

Figure A1 shows the distribution of annual earnings before the earnings related restrictions of point 6) and 7) were made, with the minimum and maximum earnings restrictions indicated by dashed lines, for the first and the last year of the data panel; 2001 and 2020.

Figure A1. The distribution of annual earnings, and the data cut-off points.
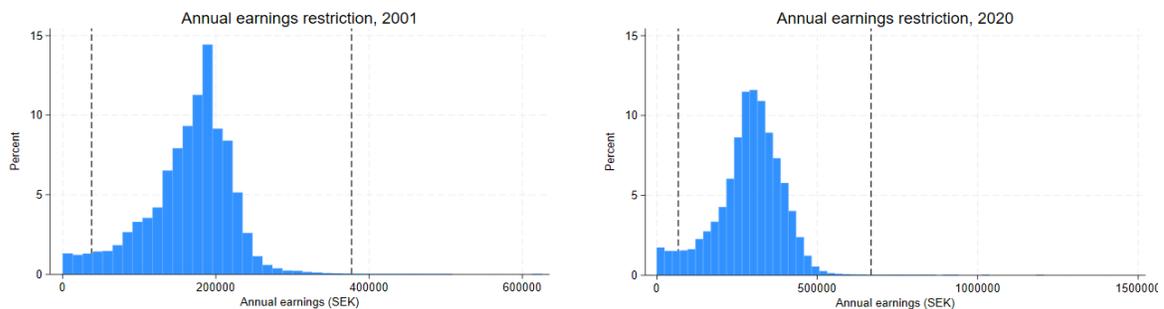
A2. Data variables

This section describes the data variables, with special focus on the main outcome variables, the preschool organizational form variables, and educational and occupational codes relating to the preschool sector.

Preschool organizational form

Preschool organizational form is measured based on the variable "Sektorkod", from Statistics Sweden's register RAMS. Our preschool worker-workplace data set contains the following categories:

Table A1.Number of observations by form of organization

Sektorkod	Form of organization	Our classification	Observations	Percent
13	Municipal	Municipal	1,503,659	83.22
24	Municipally owned firms	Municipal	52	0.00
21	Limited company	For-profit	151,411	8.38
25	Other organizations	Non-profit	148,777	8.23
22	Other private firms	Non-profit	3,005	0.17
Total			1,806,904	100.00

Note: The organizational form "Other private firms" include sole proprietorships, trading companies and limited partnerships. "Other organizations" include foundations, parishes, other economic associations and interest groups. *Sektorkod* refers to the Swedish variable name for the sector code.

As shown in the table, the vast majority of preschool are organized as either belonging to the municipal sector (Primärkommunal förvaltning), as private limited companies (Aktiebolag, ej offentligt ägda) or "other organizations" (Övriga organisationer). The latter category, "Other organizations", is a broad category including e.g. foundations, parishes, other economic associations and Interest groups. Whereas there is no information on these subcategories in our data set, information from another data source[31] which covers some of the later years of our panel, indicates that the preschools in this category are most commonly organized as economic associations (*ekonomisk förening*), followed (in descending order) by non-profit associations (*ideell förening*), religious associations and foundations.

In addition to the above main categories, there are also a few very small categories. The larger of them, representing 0.17% of the observations, are private non-corporate firms ("Other private firms" in the table), including sole proprietorships, trading companies and limited partnerships. A very low number are classified as municipally owned firms.

As indicated in Table A1, we add the few municipally owned firms to the municipal category. Furthermore, we classify the for-profit sector as preschools organized as limited companies (Aktiebolag, ej offentligt ägda), since this is an organizational form with a clear profit motive. Finally, we define the non-profit sector as all the remaining preschool organizations, i.e. those belonging to the category "Other organizations", as well as the small share of preschools organized as private unincorporated firms ("Other private firms").

Additional firm and workplace information

The data on workplaces includes information on organizational number, meaning the we can observe which workplaces belong to the same firm/organization or municipality. We can also observe the municipality of location for all workplaces. The variables for whether or not workers switch workplace or firm/municipality, are based on Statistics Sweden's FAD-codes. These are generated by Statistics Sweden based on firms' organizational number and observed worker flows, with the aim to create firm identifiers that are stable over time also if the firm changes organizational form. The FAD-data also includes indicators for mergers and divisions of companies. We use this to make sure that our analysis of employer

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[31] This information reflects year 2020 information from the "Preschool register" (*Förskoleregistret*); a register on Swedish preschools which covers years 2014-2020.

switches reflects actual switches and not merely organizational changes (more detailed information is provided in relation to the analysis).

Educational qualification

We generate two qualification groups, Preschool teacher and Childcare assistant, based on the workers educational degrees, measured by Statistics Sweden's SUN2000 codes for the field and level of individuals' highest level of completed education.[32] As indicated in Table A2, the groups include a few categories in addition to workers with SUN-codes for preschool teachers and childcare assistants. First, the highest qualification level includes workers with a low grade compulsory school teacher code, in addition to workers with a preschool teacher code. The reason is that for some of the years in our data, the preschool teacher education could be organized as a sub-track of the low grade compulsory school teacher degree, meaning that the SUN-code for the latter will cover both low grade compulsory school and preschool teacher degrees. As can be seen in Table A2, our data set of preschool workers includes approximately 6.4% with such a degree, and 35.2% of workers with a preschool teacher degree code. Second, the category Childcare assistant first and foremost includes individuals whose highest level of education is the upper secondary Child and Recreation Programme (Barn- och fritidsprogrammet). The program prepares students for working as childcare assistants in preschools, or other related occupations.[33] This group also includes a couple of education degrees, which predominantly prepare individuals for working with children in after-school care, but who can also be employed in preschools (*fritidsledare* and *fritidspedagog*). Finally, 35.1% of the workers in the data set have other educations, that are not specifically related to working with children in preschools.

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[32] The SUN2000 codes can be linked to the International Standard Classification of Education (ISCED-F 2013). Our definition of educational degrees follows Statistics Sweden's documentation "Utbildningsgrupper, SUN 2000 (xlsx)", available at https://www.scb.se/dokumentation/klassifikationer-och-standarder/svensk-utbildningsnomenklatur-sun/.

[33] It is described by the National Agency for Education (Skolverket, 2012) as follows: "The Child and Recreation Programme is a vocational programme. With a diploma from the programme, students should have the knowledge needed to work with children, youth or adults in pedagogical and social vocational areas, or in the recreational or healthcare sectors."

Table A2. Classification of preschool related educations.

	SUN level	SUN field	Share of preschool worker sample
Degrees included in our category "Preschool teacher":			
Preschool teacher	527 537 547 557	143 (except 143b)	35.2%
Low grade teacher	527 537 547 557	144	6.4%
Degrees included in our category "Childcare assistant":			
Childcare assistant (*barnskötare*)	3	761	21.6%
"After-school care teacher" (*fritidspedagog*)	527 537 547 557	143b	1.4%
"After-school care leader" (*fritidsledare*)	4 5 (excl 412, 522, 532)	761c	0.3%
Other education:			35.1%

Occupation[34]

Occupation is measured by the variable ssyk, which follows the International Standard Classification of Occupation (ISCO). Occupations are defined based on the tasks they comprise and the qualifications needed to fulfil the tasks. The occupational classification for a worker is based on the occupation that she holds/is employed as; not if she has the sufficient formal qualifications for the occupation. In other words, a worker employed as a preschool teacher will have a preschool teacher occupational code even if she does not have a preschool teacher degree.

We use the occupational codes to restrict the sample to workers who are linked to a preschool workplace, and who have an occupation that reflects working directly with the children, according to the data sample restrictions described in section A1. These are measured according to the following occupational codes:

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[34] The information in this section is gathered from the webpage of Statistics Sweden https://www.scb.se/ssyk, and from the following documents from Statistics Sweden: SCBDOK 3.2, Yrkesregistret med yrkesstatistik (YrkesReg) 2012, and MIS 2012:1, Standard för svensk yrkesklassificering 2012 (SSYK).

Table A3. Classification of preschool related occupational codes

	Name of occupational category in Swedish	English translation
Ssyk96 (2001-13)		
3310	Förskollärare och fritidspedagoger	Preschool teachers and after-school care teachers
5131	Barnskötare m.fl.	Childcare assistants etc.
Ssyk12 (2014-18)		
2343	Förskollärare	Preschool teachers
2342	Fritidspedagoger	After-school care teachers
5311	Barnskötare	Childcare assistants

Note: Information on the ssyk code-structure is available at https://www.scb.se/dokumentation/klassifikationer-och-standarder/standard-for-svensk-yrkesklassificering-ssyk/

The above restriction means that we exclude categories such as cleaners, kitchen staff (Swedish preschools are obliged to provide food during the day at no cost[35], meaning that preschools either have their own cook, or use catering) and administrative and managements staff. The reason for excluding these categories are twofold: first, our focus is the preschool staff who work with the children, such as preschool teachers and childcare assistants; second, different preschools may choose to organize the cleaning and food provision in different ways, meaning that some may have a cook and cleaning staff directly linked to the workplace, and others not. The same may hold for administration and management, for example if several preschools belong to a larger administrative unit. Including such categories of workers could therefore skew the results.

The information on occupations is collected by Statistics Sweden in the following manner: Most of the occupational information on workers is gathered from the firms and organizations, who are obliged by law to provide the information. For the public sector, and for private firms with at least 500 workers, data on occupation is gathered yearly for the full population. For private firms with less than 500 workers data is gathered through surveys in the following manner: For firms that are part of the wage survey (*Lönestrukturstatistiken*, see information in relation to the wage variable below), the occupational is gathered as part of that survey. Firms that are not covered by the wage survey (i.e. mainly small firms with fewer than 20 workers, as these are under-sampled by the wage survey) are instead surveyed in a rotating panel, where each firm is surveyed each 4-5 year. This means that there are gaps in the occupational register, mainly for small firms with fewer than 20 workers.

We impute the missing observations for occupational code by imputing values from neighbouring years for the worker, in the following manner: If available, we use the workers' information from year t-1, provided that the worker was employed by a preschool in that year. If not, we use the information from t+1. We then move to year t-2, followed by t+2, t-3, etcetera, and we stop at year t+5. Observations with no occupational code after this are dropped from the data, as described in section A1. (It can be noted that Statistics Sweden use another imputation procedure to impute observations with missing occupational code. The main reason for why we do not follow their method is that they do not impute values over the code break between 2013 and 2014, when the old code, Ssyk96, was replaced by Ssyk12. This leads to

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[35] https://www.skolverket.se/skolutveckling/inspiration-och-stod-i-arbetet/stod-i-arbetet/mat-i-forskolan-och-skolan

more missing observations around the break. For our purpose, it is sufficient to observe whether or not the occupational codes belong to any of the categories listed in Table A3 (not the exact code, which was affected by the code break), and it is thus possible to impute over the code break.

In our final preschool worker data set, the share of non-imputed values (i.e. values observed in the current year) is 95.5% in the municipal sector; 64.1% for the for-profit sector; and 41.5% in the non-profit sector. The lower share in the non-profit sector reflect that those firms tend to be smaller (and as described above, the imputation procedure is predominantly needed for small private firms).

Outcome variables

Wage

The wage data comes from the Wage structure register (Lönestrukturstatistiken), which is produced by the Swedish National Mediation Office, and made available to us through Statistics Sweden. We use the variable "Manl", which measures the basic salary including fixed and variable allowances ("grundlön plus fasta och rörliga tillägg"), recalculated to the full-time equivalent monthly wage. The variable excludes employment amounting to less than five percent of full-time, as well as employments with very low wage (for example, in 2018, workers with a full-time equivalent wage of less than 12 000 SEK were excluded[36]) and workers employed as part of a labour market policy measure. The variable we use reflect the wage for the yearly linked individual-workplace observations; i.e. for individuals linked to several workplaces during a year, we can merge the wage to the workplace in our analysis data (as described in section A1, for workers linked to several workplaces during a year, we pick only the main employment).

In order to avoid that extremely large or small wage observations influence the results, the top and bottom one percent of the wage observations, by year, are dropped from the wage analyses (they are replaced as missing in the data). In addition, a few remaining unreasonably small wage observations (<5000 SEK in full time equivalent 2020 monetary value monthly wage) were replaced as missing.

The wage register covers all workers in the public sector. Wage information for the private sector is gathered by Statistics Sweden for a sample, collected by randomized sampling within size-industry strata. The survey covers all firms with at least 500 employees. For sample firms, wage information os gathered through random sampling. For very small firms, the sampling probability is low. In 2018, the sampling likelihood among the smallest firms (1-9 employees) was 2 percent, and in total about 3 percent of all firms were sampled, representing about 50 percent of all private sector employees.[37] Consequently, the wage information for the private preschool firms in our data set is limited to the sampled firms, and with fewer observations for the small firms. The share of observations with non-missing log wage information is high, 87.1%, for the municipal workers; around a third, 31.2%, for workers in the for-profit sector, and as low as 4.5% for workers in the generally smaller non-profit firms. The low shares of wage-observations, especially in the non-profit sector, implies that we need to analyse them carefully. Luckily, sampling weights are available in the wage register data, and we will complement the main (unweighted) results, that are presented in the main text, with results when the observations are weighted with the inverse of the sampling probability.

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[36] https://www.scb.se/contentassets/866428f1e4c346ccabe0c37ec2f33170/am0110_kd_2018_sl_190524.pdf
[37] https://www.scb.se/contentassets/866428f1e4c346ccabe0c37ec2f33170/am0110_kd_2018_sl_190524.pdf, available from: https://www.scb.se/hitta-statistik/statistik-efter-amne/arbetsmarknad/loner-och-arbetskostnader/lonestrukturstatistik-hela-ekonomin/

The wage variable is converted to the year 2020 monetary value (using consumer price index). The regressions are run on the natural logarithm of the wage.

Sick leave

The Statistics Sweden individual register data (the LISA database) includes sickpay, in the form of annual sickpay, based on the post-employer contributed sickpay period. In other words, the first few weeks, which are covered by the employer, are not observed. This employer contributed sickpay period was 14 days during our sample period, except for the last half of 2003 and all of 2004, during which it was 21 days. We use the variable to construct a dummy variable which captures if the worker received any sickpay during the year, indicating that the worker was on sick leave for a consecutive duration of at least 2-3 weeks at least once during the year.

Mental health related medications

Our indicator for mental health related medications is based on information from the National Prescribed Drug Register from the National Board of Health and Welfare. The register contains information on prescribed drugs dispensed at pharmacies. We construct a dummy variable that indicates if the worker is observed in the register for having dispensed a medical drug related to mental health conditions, defined as ATC-code N05 (Psycholeptics) and N06 (Psychoanaleptics). This variable is available for a shorter time period, 2005-2020, than the remaining variables.

Additional worker variables

From the LISA-database of Statistics Sweden, we obtain the year of birth, which we use to generate age, and the gender (binary indicator) of the workers. Furthermore, we construct a measure of preschool employment experience, based on our linked worker-workplace data. For this measure, we require only that the workplace had a preschool sector code; not that the worker was employed in an occupation related to working with the children. The reason for excluding the latter criterion (which we apply to the main analysis data set) is that the occupational information is not available in our data prior to 2001. The generated variable is defined as a continuous measure of how many years out of the last eight years that the worker had an employment link to a preschool. Finally, from the upper secondary graduation registers for years 1973-, we obtain the final grade from upper secondary school. For workers observed as graduating from upper secondary school multiple times (this may happen if students change their degree), we use the first observation. We use this grade information to construct variables indicating whether the worker obtained a high, mid-level or low grade, as well as an indicator for whether the worker was missing from the registers. The missing grade category consists of workers who graduated from upper secondary school prior to 1973, as well as workers without an upper secondary school degree. (The share of workers in our sample who are too old to be included in the graduation registers that we have access to is 16%, if we assume that they followed the regular school trajectory and attended a two-year track, and is a bit less given that some likely attended a three-year track.) The high/mid/low grade category is defined as the top 25/mid 50/bottom25 percent of the final grade distribution, among the full cohorts of students by year. We make no adjustment for the fact that students in upper secondary education attend different specializations, and that the final grade thus represents the subjects of the taken track.

Descriptive statistics for the variables in our data sample is given in Table A4.

Table A4. Descriptive statistics for the main variables.

Variable	Observations	Mean	Std. dev.	Min	Max
Outcome variables					
Ln(Wage)	1 363 404	10.12	0.16	9.74	10.53
Wage	1 363 404	25 167	4 133	17 026	37 400
Sickpay	1 806 904	0.20	0.40	0	1
Mental health medication	1 498 059	0.16	0.36	0	1
Worker background characteristics					
Preschool teacher	1 806 904	0.42	0.49	0	1
Childcare assistant	1 806 904	0.23	0.42	0	1
Age	1 806 904	42.55	12.04	16	70
Female	1 806 904	0.96	0.19	0	1
Preschool employment experience	1 806 904	5.57	2.81	0	8
High grade	1 806 904	0.12	0.33	0	1
Mid grade	1 806 904	0.38	0.49	0	1
Low grade	1 806 904	0.13	0.33	0	1
Missing grade	1 806 904	0.37	0.48	0	1

Note: The unlogged wage variables is shown only for information and is not used in the regression analysis. Note that the mental health related medications is available from 2005 on, whereas the remaining variables cover 2001-2020.

A3. Supplementary Figures

Figure A2. Sick leave by sector 2020
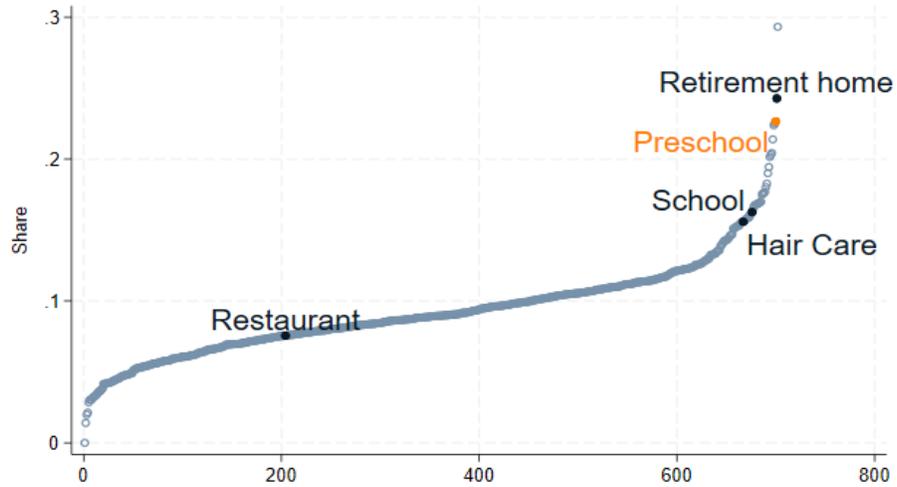
Note: The figure includes all workers linked to workplaces, and sector is measured as workplace 5-digit SNI code. Small sectors for which no wage measures were observed are excluded, as well as workplaces lacking sector code. Sick leave is measured as spells exceeding the first 14 employer-paid days.

## Figure A3. Shares of workers leaving/entering
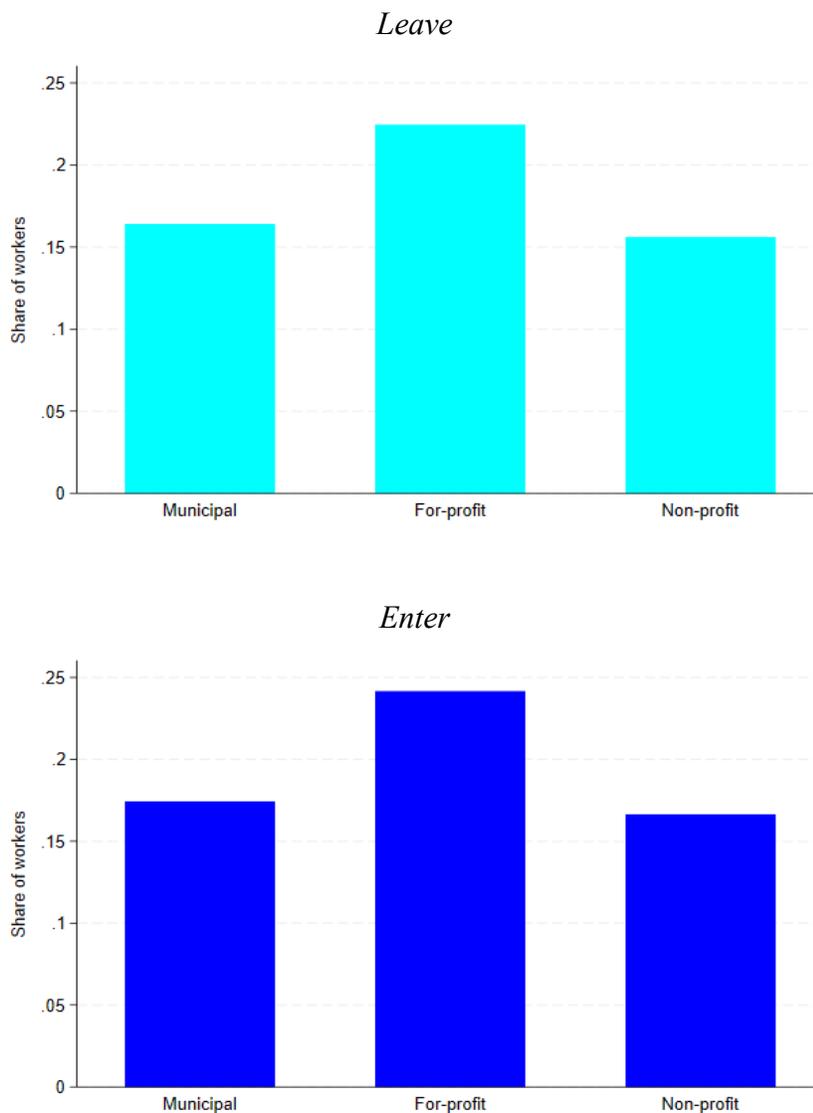
Leave

Enter

Note: The figure shows the shares of workers who leave/enter the organization between two consecutive years. The shares are calculated, by organization, as the number of workers leaving between year t and t+1, out of all workers in year t, or the number of workers entering between year t and t+1 out of all workers in year t+1. The figure shows the average shares by organizational form, in terms of worker-weighted averages, so that larger organizations get a larger weight in the calculation. Recent start-ups (during the last five years) are excluded from the data. The data covers 2006-2020.

Figure A4. Outcome: ln(wage) – Distribution of firm fixed effects
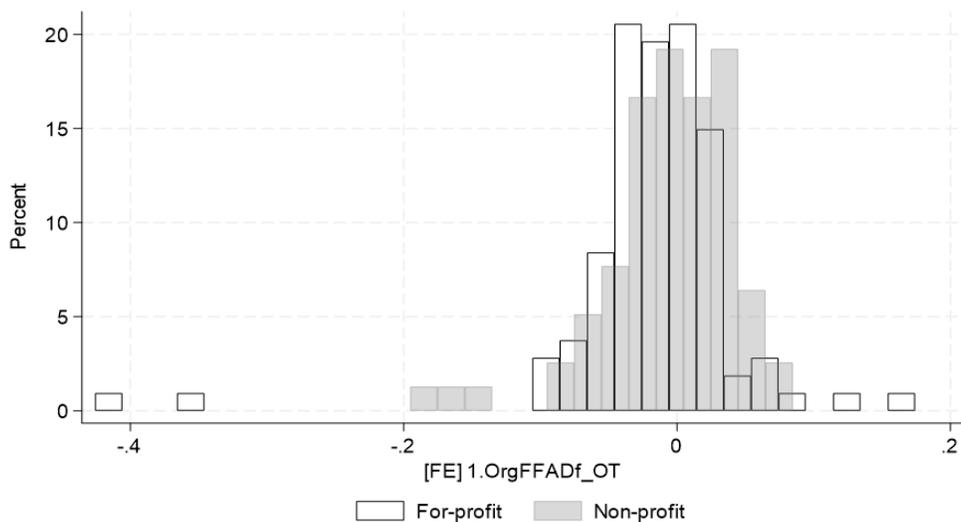
Note: Otherwise as Model 1c. Municipal sector is reference category.

Figure A5: Outcome: Ln wages. Sampling probability weighted regression.
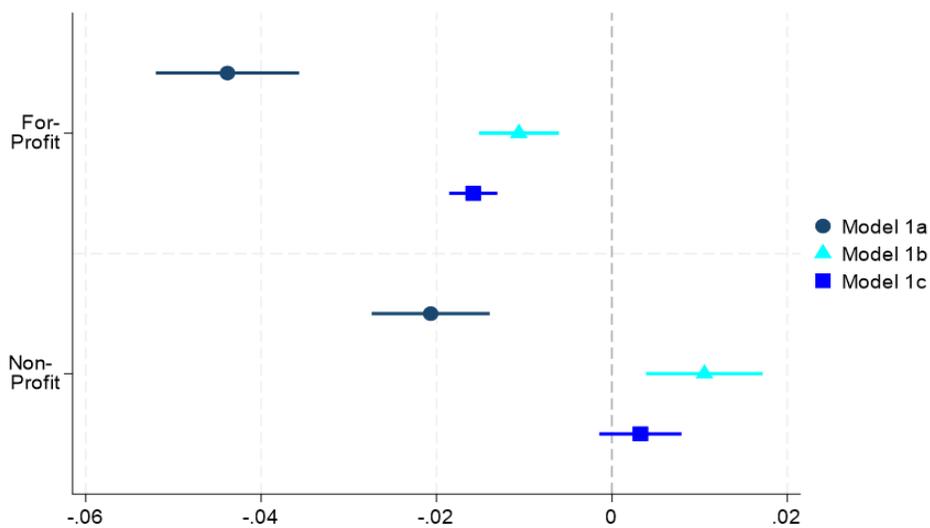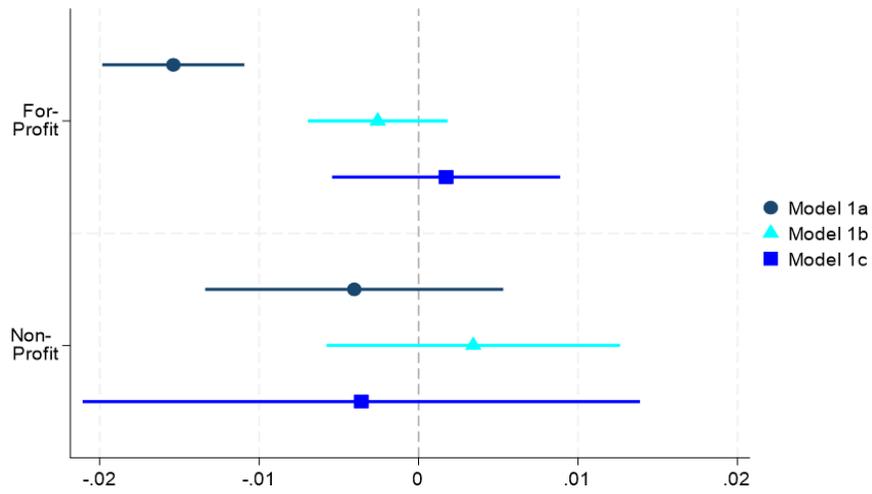

Note: The figure shows estimates and 95 % confidence intervals from estimations of Equations (1a) and (1b). Standard errors are clustered on the municipality-by-year level. Model (a) includes municipality-by-year fixed effects, and Model (b) adds worker covariates. Sampling probability weights are used in order to account for the fact that small firms are underrepresented in the wage data.

Figure A6: Outcome: Sick leave. The data is limited to the wage sample.
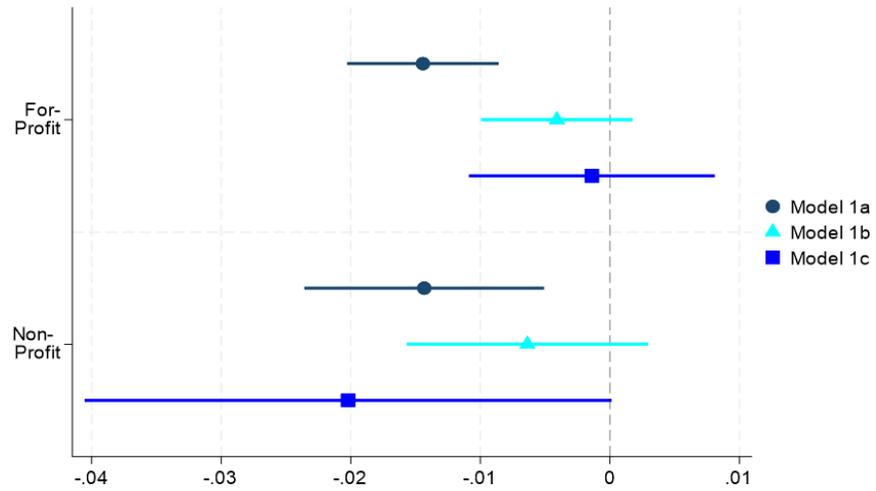
Note: The outcome variable is a dummy variable for being on sick leave during the year for a period exceeding the first couple of weeks of employer-paid coverage. The data is limited to the observations with non-missing wage information. The figure shows estimates and 95 % confidence intervals from estimations of equations 1(a–c). Standard errors are clustered on the municipality-by-year level.

Figure A7: Outcome: Mental illness medication. The data is limited to the wage sample.

Note: The outcome is a dummy variable for having dispensed a prescribed medical drug related to mental health problems during the year, defined as ATC-codes N05 (*Psycholeptics*) and N06 (*Psychoanaleptics*). The data is limited to the observations with non-missing wage information. The figure shows estimates and 95 % confidence intervals from estimations of equations 1(a–c). Standard errors are clustered on the municipality-by-year level.

Figure A8. Outcome: Wage change (%), including switches within employer.
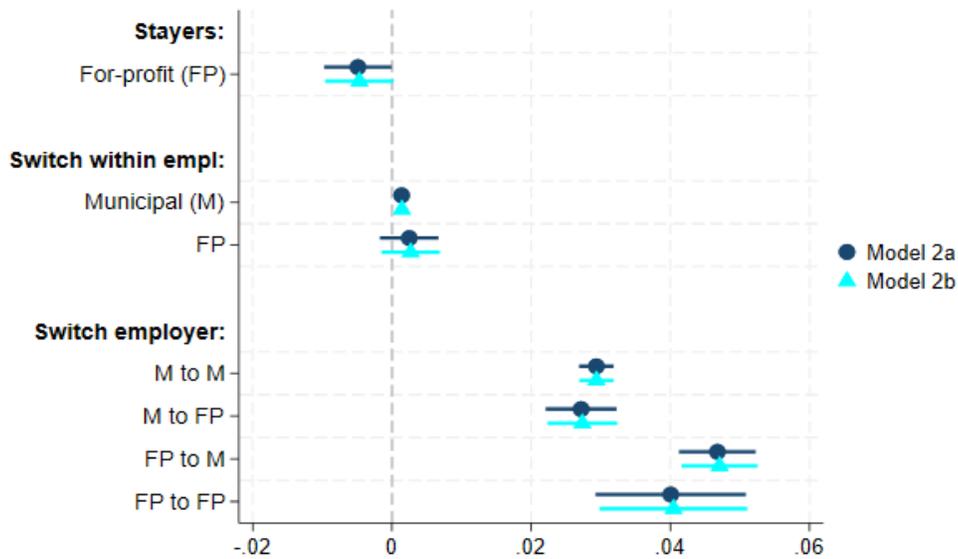
Note: For-profit (FP); Municipality (M). The regression sample is restricted to workers employed in the same local labour market in both periods. Reference group: workers employed by the same municipality in both periods.

Figure A9. Outcome: Wage change (%)

Sample: Only workers with a preschool teacher degree
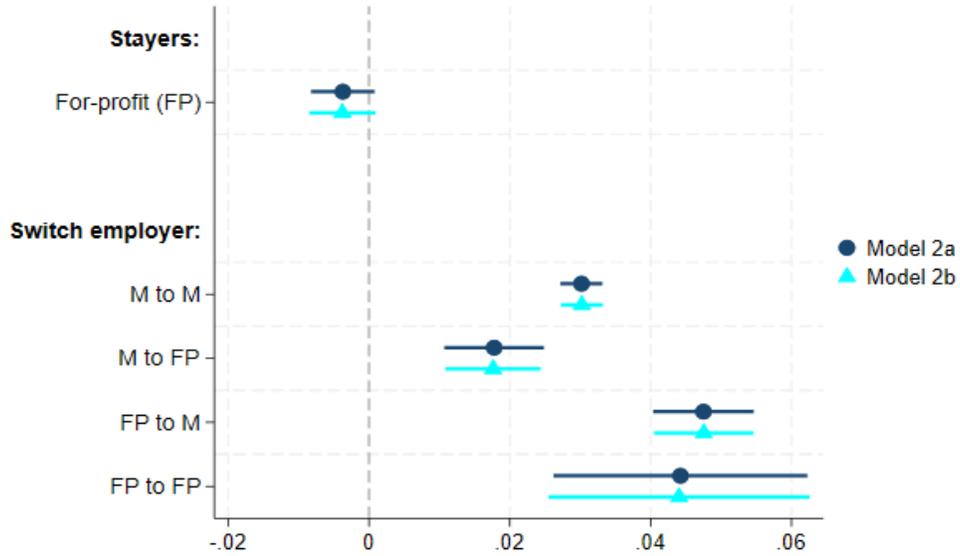
Note: For-profit (FP); Municipality (M). The regression sample is restricted to workers employed in the same local labour market in both periods. Reference group: workers employed by the same municipality in both periods.

Figure A8. Outcome: Wage change (%) × Tightness in preschool teachers

Sample: Only workers with a preschool teacher degree

Note: The regression sample is restricted to workers employed in municipal preschools in the first period, and who work in the same labour market region in both periods. Tightness is measured as the natural log of the preschool age (age 1-5) local population divided by the number of work age residents with a preschool or low grade teacher degree.

Figure A11. Outcome: Wage change (%) × Employer concentration
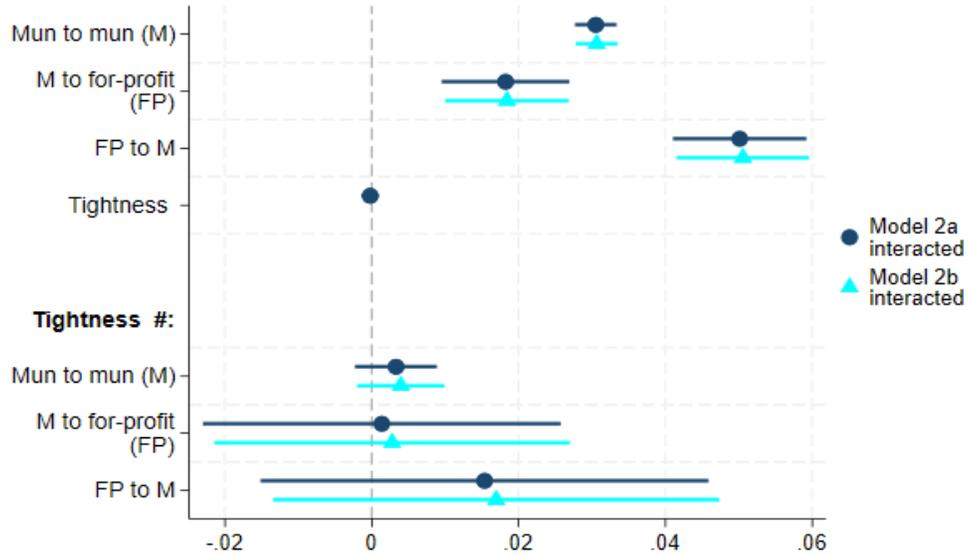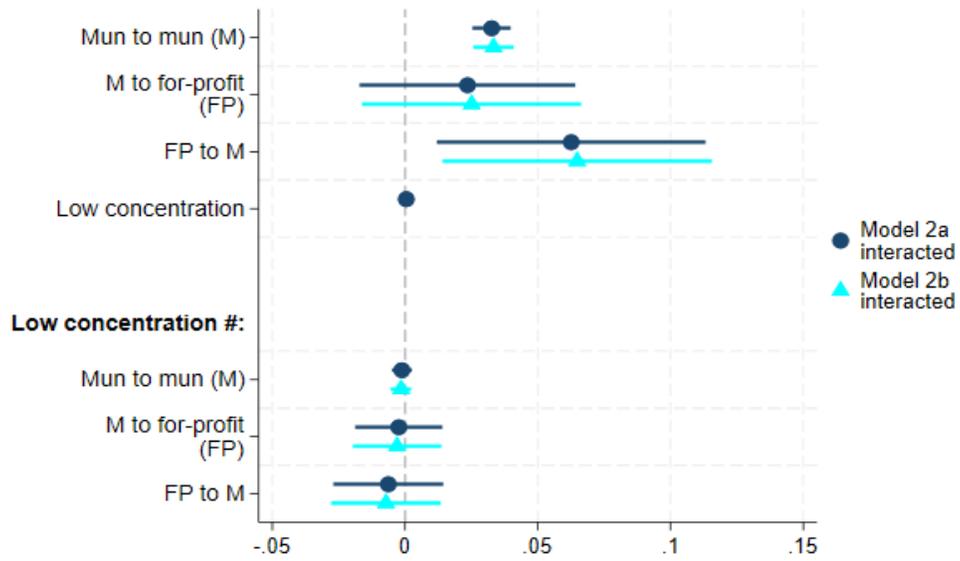
Sample: Only workers with a preschool teacher degree.

Note: The regression sample is restricted to workers employed in municipal preschools in the first period, and who work in the same labour market region in both periods. Low concentration is measured as ln(-1*HHI), where HHI is calculated counting each municipality/firm/group as an employer unit).

A4. Supplementary Tables

Table A5. Alternative specifications to regression equation 1.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A	Outcome: Ln wages			**(Model a)**		**(Model b)**		**(Model c)**	
For-profit	-0.0340***	0.0152***	-0.0127***	**-0.0324***	-0.00771***	**-0.00675***	-0.00617***	**-0.0159***	-0.0171***
	(0.00258)	(0.00215)	(0.00217)	**(0.00236)**	(0.00139)	**(0.00141)**	(0.00150)	**(0.00122)**	(0.00124)
Non-profit	-0.0161***	0.0185***	0.0128***	**-0.0206***	0.0140***	**0.0138***	0.0160***	**0.00513**	0.000683
	(0.00247)	(0.00214)	(0.00186)	**(0.00241)**	(0.00187)	**(0.00193)**	(0.00300)	**(0.00238)**	(0.00289)
Observations	1,363,404	1,363,404	1,363,404	**1,363,404**	1,363,404	**1,363,404**	1,363,404	**1,306,542**	1,306,542
R-squared	0.308	0.730	0.747	**0.338**	0.756	**0.762**	0.762	**0.956**	0.956
Panel B	Outcome: Sick leave								
For-profit	-0.0272***	-0.0208***	-0.0231***	**-0.0339***	-0.0257***	**-0.0259***	-0.0100***	**-0.0205***	-0.00346
	(0.00140)	(0.00133)	(0.00135)	**(0.00140)**	(0.00134)	**(0.00135)**	(0.00197)	**(0.00255)**	(0.00342)
Non-profit	-0.0425***	-0.0381***	-0.0374***	**-0.0425***	-0.0384***	**-0.0381***	-0.0140***	**-0.0265***	-0.000918
	(0.00121)	(0.00117)	(0.00116)	**(0.00121)**	(0.00118)	**(0.00117)**	(0.00238)	**(0.00226)**	(0.00411)
Observations	1,806,904	1,806,904	1,806,904	**1,806,904**	1,806,904	**1,806,904**	1,806,904	**1,759,724**	1,759,724
R-squared	0.006	0.017	0.017	**0.013**	0.019	**0.023**	0.023	**0.311**	0.311
Panel C	Outcome: Mental health								
For-profit	-0.00531***	0.00595***	-0.00472***	**-0.0183***	-0.00600***	**-0.00617***	-0.00135	**-0.000244**	0.00293
	(0.00139)	(0.00131)	(0.00123)	**(0.00136)**	(0.00128)	**(0.00128)**	(0.00193)	**(0.00177)**	(0.00248)
Non-profit	-0.00873***	-0.00187	-0.00453***	**-0.0125***	-0.00561***	**-0.00535***	0.00206	**-0.00646***	-0.00166
	(0.00129)	(0.00122)	(0.00121)	**(0.00129)**	(0.00123)	**(0.00122)**	(0.00229)	**(0.00187)**	(0.00332)
Observations	1,498,059	1,498,059	1,498,059	**1,498,059**	1,498,059	**1,498,059**	1,498,059	**1,455,716**	1,455,716
R-squared	0.005	0.016	0.017	**0.010**	0.019	**0.021**	0.021	**0.606**	0.606
FE	Year	Year	Year	**Year# municip**	Year, municip	**Year# municip**	Year# municip	**Year # municip, persid**	**Year # municip, persid**
Covariates	None	Worker	Worker and municip	**None**	Worker and municip	**Worker**	Worker, employer size	**Worker**	Worker, employer size

Note: The lower number of observations in columns 8 and 9 is due to Stata dropping singleton observations when worker fixed effects are included. The regressions are estimated using the reghdfe-command. The worker covariates include: age (level and squared), previous preschool work experience (level and squared), two dummy variables for either having a preschool teacher- or a childcare assistant degree, a dummy variable for being female, and four dummy variables denoting high-, mid-, low-, and missing upper secondary grades. The municipality covariates include: Municipal council seat shares for the two Left parties and the Moderate Party, the log of the age 1-5 population, the log of taxable income, and dummy variables for municipality type, w r t urbanity. Employer size is defined as the log of the number of preschool employees in the organization.

Table A6. Number of observations per "switching category" in the data used for the analysis in section 6.2

	All workers		Workers with non-missing wage	
	Observations	*Percent*	*Observations*	*Percent*
Remain with employer				
Municipal	1,181,190	89.86	970,384	95.46
For-profit	100,741	7.66	29,283	2.88
Switch employer				
Municipal to for-profit	5,675	0.43	1,393	0.14
For-profit to municipal	5,250	0.40	1,583	0.16
Municipal to municipal	18,723	1.42	13,560	1.33
For-profit to for-profit	2,833	0.22	310	0.03
Total	1,314,412	100.00	1,091,057	100.00

Note: The shares of workers switching employer is much lower than the aggregate flows of workers into and out of preschool firms/organizations depicted in Figures A3–A4. The main reason is that those figures include flows into and out of the preschool sector, whereas this table shows only flows between preschool firms/organizations. A smaller contributing factor is that the present figures are limited to firms that are not involved in mergers or splits during the studied period.

Table A7. Coefficients from regressing the change in log wage on dummy variables for switching employer. Reference category: remain with the same employer.

	Outcome: Change in log wage between two consecutive years.			
Panel A: Switch employer, single dummy variable.				
Switch employer	0.0190***	0.0127***	0.0186***	0.0125***
	(0.00100)	(0.000960)	(0.000987)	(0.000952)
Observations	35,246,455	35,144,162	35,246,455	35,144,162
Panel B: Switch employer, separate estimates.				
Between non-preschool employers	0.0190***	0.0127***	0.0187***	0.0126***
	(0.00101)	(0.000960)	(0.000993)	(0.000952)
From preschool to non-preschool	0.0708***	0.0640***	0.0704***	0.0638***
	(0.00156)	(0.00155)	(0.00156)	(0.00155)
From non-preschool to preschool.	-0.0441***	-0.0515***	-0.0445***	-0.0518***
	(0.00137)	(0.00141)	(0.00140)	(0.00143)
Between preschool employers	0.0323***	0.0267***	0.0315***	0.0263***
	(0.00136)	(0.00144)	(0.00136)	(0.00143)
Observations	35,246,455	35,144,162	35,246,455	35,144,162
Worker covars	No	Yes	No	Yes
FE	Year pair	Year pair	Year pair ×LLM	Year pair ×LLM

Note: The regression is based on stacked pairs of consecutive years, and is run on workers with non-missing wage information who remain employed in the same local labour market region in both years. The outcome variable is the change of the natural log of the wage between the two years in the year pair. The worker level covariates included in columns 2 and 4 are age (in level and square), a dummy variable for being female, and dummy variables for each level of years of education (imputed based on the information available in Statistics Sweden's SUN2000 level variable), all measured in the first of the two years in the year pair. LLM refers to local labour market region. Standard errors, clustered on year pair × local labour market region, are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1