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Johanna Rickne*

Who cleans my house if the government pays? Refugees, low-educated workers, and long-term unemployed in tax-subsidized domestic service firms

Abstract

Many European countries have implemented policies to revive their domestic service sectors. A common goal of these reforms has been to create employment for disadvantaged groups on the domestic labor market. I evaluate a Swedish policy where domestic service firms receive a 50% tax deduction on labor costs. Detailed data from tax records identify all formal workers and owners of firms that receive deductions. I describe the composition of workers and owners in these firms with respect to three groups targeted by Swedish policymakers: refugees, people with low education, and people who enter the workforce from long-term unemployment. I find that the shares of refugees and long-term unemployed in the subsidized sector barely exceed the shares in the full private labor force, and fall far below the shares in industrial sectors with a predominance of elementary jobs. The share of people with low education is higher than in the full private sector and on par with other low-skilled sectors. I conclude that the tax subsidy largely failed to improve employment opportunities among the target groups. An extended analysis suggests that labor immigration from other EU countries may be a partial explanation for this. EU immigrants operate half of all subsidized firms in Sweden's largest cities and nearly exclusively employ other EU immigrants.

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1 Introduction

Many European countries have introduced policies to revive their domestic service sectors. A common motivation behind these reforms is to create employment for people with low qualifications. Such employment has been declining in the labor markets of high-income countries. Globalization has moved jobs abroad, structural transformation has shrunk the size of the agricultural and industrial sectors, and digitization and automation have replaced routine jobs with machines. While elementary service jobs have been harder to globalize or automate, demand for these services has declined because of reductions in income inequality. A case in point is the domestic service sector, which declined to the point of near extinction in Western European economies over the course of the 20th century.

The idea to create employment for disadvantaged groups by reviving domestic service sectors took hold in Western Europe in the 1990s. Encouraged by the EU Commission and national lobby groups, many countries introduced policies that invested public money to lower the price of these services (Carbonnier and Morel 2015, Morel 2015). Variations in policy designs include service checks (France, Belgium, Germany, and Austria), cuts to social security premiums (The Netherlands, Germany), and tax deductions for labor costs (Sweden, Denmark, and Finland). But despite the ubiquity of these policies, few studies have assessed the degree to which disadvantaged groups are actually employed in the subsidized sector. The available evidence also suggests some cause for concern. Raz-Yurovich and Marx (2018) document a national-level increase in the employment rate for women with low education that coincides with the reform, but also note a growing inflow to the subsidized sector of workers from Eastern Europe, and reduced inflows from domestic unemployment.

This paper evaluates Sweden's reform to subsidize domestic services. As in other countries with similar policies, policymakers expected this reform to expand the employment opportunities for workers with low qualifications. I use detailed employer-employee data to evaluate whether employment opportunities expanded for three groups of workers targeted by Swedish policymakers: 1) refugee immigrants, 2) people with a low level of education, and 3) the long-term unemployed.

My analysis relies on population-wide employer-employee data in 2010–2015. Companies claim the tax deduction from the Swedish Tax Authority, which gives a complete record of these firms. I then use individual- and business tax records to identify any person who receives wages or business income from these firms, as well as all other private firms in each calendar year. Administrative records provides high-quality data for the socio-demographic traits of these persons, and the panel dimension of this data lets me identify the entry to a firm from long-term unemployment.

I use the straightforward empirical method of comparing the shares of the disadvantaged groups in subsidized firms and other firms. The first comparison is with all firms in the private sector. If the subsidization policy was successful at expanding the employment opportunities for the disadvantaged groups, subsidized firms should have higher shares than the full private sector. A second comparison considers two industrial sectors: the commercial cleaning sector and the restaurant sector. These sectors provide the largest number of elementary jobs in the Swedish labor market. This makes them a useful benchmark to analyze if the subsidized sector employs more or less of the disadvantaged groups compared to Sweden's pre-existing large sectors of elementary jobs.

Overall, the results show that subsidized firms have low shares of people from the disadvantaged groups, both among their wage-earners and business owners. The share of refugees and long-term unemployed is barely higher in the subsidized firms than in the full private sector. The disadvantaged groups are also small in an absolute sense. Refugees make up 6% of the employed, and 1% are non-European women refugee with low education, a group heavily featured in the policy debate. And while subsidized firms are more likely than the average private firm to employ people with a low level of education, they are still less likely to do so than firms in the commercial cleaning and restaurant sectors. Taken together, these findings show an employment structure in subsidized firms that is barely more favorable to disadvantaged groups than that of the full private sector. It is also substantially less favorable to these groups than the employment structure in other sectors with a predominance of elementary jobs.

The analysis suggests a possible explanation for the low shares of disadvantaged workers. I find that EU immigrants account for 35–45% of the workers in subsidized firms, nearly five times their share in the overall Swedish working-age population. I extend this analysis to discuss two mechanisms whereby the dominance of EU immigrants may have directly affected the employment opportunities of disadvantaged workers. I document a high level of co-ethnic recruitment: firms operated by EU immigrants tend to employ 80% EU immigrants, while employing smaller shares of refugees and low-educated workers than other subsidized firms. Firms managed by EU immigrants are also concentrated in Sweden's largest cities. EU immigrants manage nearly half of the subsidized firms in the country's three largest cities, where refugee immigrants are also more likely to live.

I conclude that the Swedish policy largely failed to produce expanded employment opportunities for the three targeted groups. Policy makers may need to look elsewhere, or at least be mindful of the potential pitfalls. As in other countries with similar policies, the Swedish policy does not regulate who is employed to carry out the subsidized services in people's households.^a This situation creates the opportunity for an inflow of EU immigrants to the subsidized sector, which seems closely linked to the policy's failure to favor the disadvantaged groups. If a country is part of a larger administrative area with the free movement of labor, such as Sweden's membership in the European Economic Area (EEA), workers and entrepreneurs can cross borders to take advantage of the labor demand created by policies in other countries. Co-ethnic hiring in these firms may then directly crowd out the employment opportunities of incumbent immigrant groups, a problem that seems acute for refugee immigrants. These results make a broader academic point about refugee integration: competition for elementary jobs between refugees and EU immigrants in specific industries may help explain refugees' weak outcomes in Western European labor markets (e.g. Åslund et al. 2017, Fasani et al. 2018; reviewed by Brell et al. 2020).

A second conclusion relates to the policy's broader impacts on inequality. In Section 5, I describe the socioeconomic profile of the consumers of subsidized domestic services using administrative data. Consumers have higher-than-average incomes and education levels, a pattern also observed in other countries (Flipo et al. 2007, Marx and Vandelannoote 2015). These well-off households can also increase their earnings when the outsourced domestic services

a Such restrictions are common for payroll tax cuts, for example by restricting the target population by age (see, e.g., Huttunen et al. 2013).

free up their time for paid labor (Halldén and Stenberg 2014, Raz-Yurovich and Marx 2019). Positive impacts on the employment opportunities of disadvantaged workers could have counterbalanced the positive income effect on already well-off households. But because those results have largely failed to materialize, I conclude that the policy likely expanded inequality.

2 The policy

In 2007, a center-right Swedish government introduced a tax deduction for domestic services (*RUT-avdrag*). The policy entitles buyers to a 50% tax deduction on the labor cost when they buy a domestic service covered by the policy.^b The tax deduction applies to the wage and social contributions for the service worker, as well as the company's profits and Value-Added Tax (VAT), but not to costs for materials, equipment, or commuting. The policy quickly became near-synonymous with household cleaning services, which accounted for more than 90% of the total subsidies in 2010 and 83% in 2016 (Swedish Tax Agency 2011, skatteverket.se). Gardening became the second most popular service. While other services like laundry and cooking were eligible for tax deductions under the policy, few households claimed them for these services.^c

Like in other countries with similar policies, the Swedish reform aimed to create jobs for people with short education and in long-term unemployment (Prop. 2006/07:94). It also sought to regularize the informal sector and to expand the labor supply of professional women. Refugee immigrants were not specified in the original legislative text but were, from the start, part of the narrative about expected beneficiaries (Kvist and Petersson 2010, Gavanas and Mattsson 2011). This group also played an increasingly central role in the policy debate over the subsequent years (Peterson 2011:205, Nyberg 2015). Refugee immigration stood at a relatively high rate in Sweden throughout the 2010s, and refugees' pace of entry into the paid labor force was relatively slow. This observation generated a vivid debate about the need for more "elementary jobs". A lack of low-wage, elementary jobs was said to be a key barrier to refugees' economic integration. The tax deduction for household services became a poster child for the growing policy push to tax-subsidize the creation of new "elementary jobs" that would fit refugees' (perceived) skill profile.^d Expanding the *RUT-avdrag* became a centerpiece of the center-right coalition's agenda for refugee integration, and politicians and pundits commonly referred to the policy as an "engine of labor market integration" for refugee immigrants.^e Within the group of

b Total annual deductions per person were capped at 50,000 SEK (5,300 euros), which applied jointly to the *RUT-avdrag* and another tax deduction for heavier renovation work.

c The exact services included in 2007 were household cleaning, laundering clothes and other home textiles, cooking, snow removal, hedge and lawn cutting, weeding, and child care. Tutoring was added in 2013 and removed in 2015, and cooking services were removed in 2016. More recently (after the study period of this paper), repair of household appliances, IT services and moving services were also included in the scheme.

d This debate generally defined an "elementary job" as occupations requiring only a primary level of education, corresponding to group 9 in the first-digit occupation code (in the Swedish SSYK codification as well as in the ISCO-08 codification). Cleaning services is the largest elementary job on the Swedish labor market.

e Examples include the Center Party's 2019 budget proposal explaining how the subsidy creates employment and business opportunities for refugee immigrants who otherwise have a hard time "getting a foot in the door" in the Swedish labor market (https://www.riksdagen.se/sv/dokument-lagar/dokument/motion/centerpartiets-budgetmotion-2019_H6022610/html); op-eds by the Conservative Party arguing that an "increased tax subsidy for domestic services improves the labor market integration" (<https://www.na.se/artikel/moderaterna-hojt-rutavdrag-underlattan-integrationen> (July 15, 2019); and policy statements from the Swedish Enterprise Board (<https://www.svensktnaringsliv.se/fragor/enkla-jobb/>). In more recent policy developments, an expansion of the *RUT-avdrag* played a prominent role in the grand bargaining between Swedish political parties to address the 2015 refugee crisis (*Migrationsöverenskommelsen*). After the 2018 election, coalition bargaining resulted in an agreement to raise the cap and extend the list of services included in the scheme, once again motivated by a desire to improve refugee immigrants' labor market integration.

refugees, the emphasis lay on improved employment chances for women refugees from outside of Europe and with low education levels.

All taxpayers aged 18 or over are eligible for the tax deduction as long as the amount of income taxes they paid exceed the deductions claimed during the calendar year. In the original version of the policy, the consumer would buy the service from a company, save the receipt, and claim the deduction as part of their annual tax returns. A regulatory change in July 2009 significantly reduced this administrative burden by shifting the filing responsibility from the consumer to the company. After selling the service, the firm now reports the number of service hours, labor costs, and the consumer's personal ID code to the Tax Agency. All firms that are registered to pay corporate taxes, including small home-service companies and people who are self-employed, are eligible to report in this way.^f Notably, the Swedish scheme does not regulate who the firm hires to perform the household services, the wages of these workers, or what type of labor contract they have. Unlike some countries that have implemented service vouchers, Sweden does not regulate the price of the services on the market.

3 Expected employment opportunities of disadvantaged groups

European policies to revive domestic service sectors have shared the goal of providing jobs for disadvantaged groups (Carbonnier and Morel, 2015). As with other labor market policy, these goals are national rather than international. Countries envision employment benefits for their national, domestic labor market, rather than employment creation for disadvantaged groups outside of the country's borders.

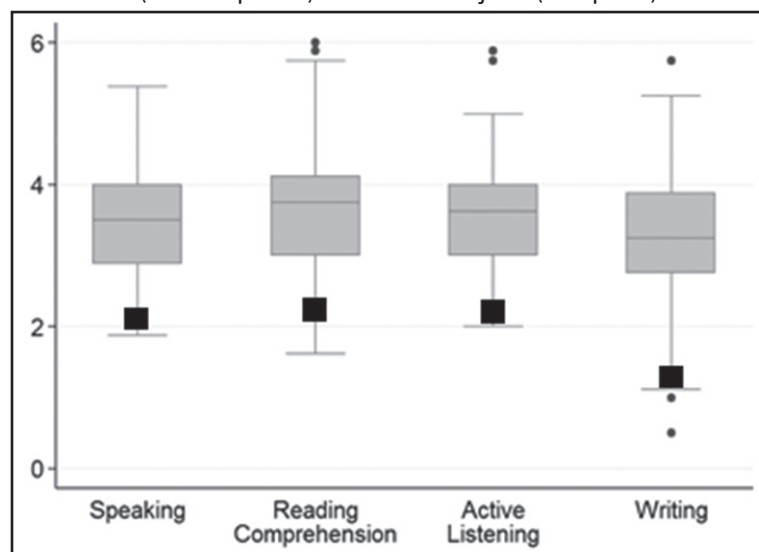
Domestic services like cleaning or laundry are quintessential elementary occupation. In Figures 1 and 2, I use data from the O*NET database for occupational traits to document the low requirements on formal education and language skills of such jobs.^g In Figure 1, the black squares denote the demands for language skills for "Maids and Housekeeping Cleaners" relative to all other jobs in the database (N=965). As seen from the placement of these dots, the demands are clearly lower than for the average job. Figure 2 uses the same comparison to show the low demands on formal education. Domestic service jobs also require low levels of previous labor market experience, and the capital requirements for starting a business are smaller than in most other sectors.

Given the skill profile of domestic service jobs, it is straightforward to assume that this sector offers relatively more employment opportunities for the disadvantaged groups identified by Swedish policymakers as expected policy beneficiaries. Low-educated people are likely to hold these jobs since they require less formal education. Similarly, refugee immigrants have both lower-than-average education levels and weaker qualifications in terms of language skills and work experience in the domestic labor market. People in long-term unemployment also have less work experience because of their time out of the workforce, and all three groups could be assumed to benefit from the relatively low capital requirements for starting a small business in the sector.

^f For direct employment in a household, which is highly unusual in Sweden, the tax deduction is just 15% of the cost of wages and social contributions.

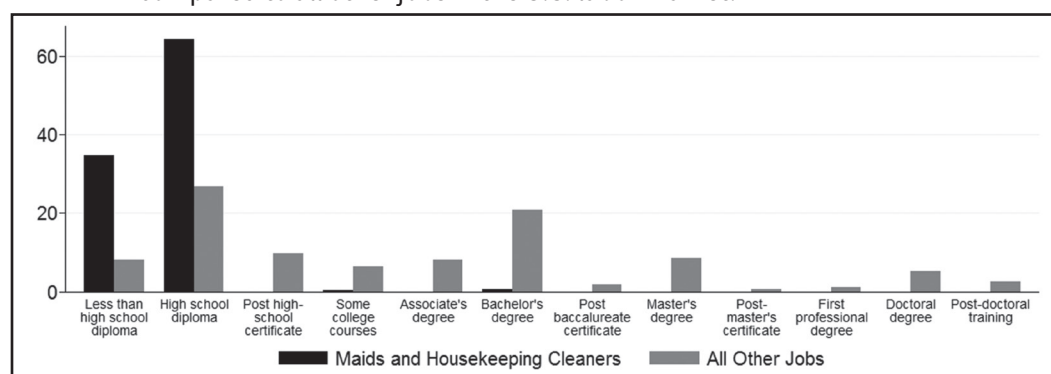
^g The O*NET database is sponsored by the U.S. Department of Labor, Employment & Training Administration and updated annually based on data collected by the non-profit organization RTI International. It contains data on skill requirements across occupations, which is based on assessments by experts and employee surveys.

Figure 1 Expert judgments for skills needed among maids and housekeeping cleaners (black squares) relative to all jobs (box plots).



Notes: The figure compares the skill requirements for maids and household cleaners (marked as black squares) to the distribution of skill requirements for other jobs in data from the O*NET database. The gray boxes represent 50% of the values of each variable, from the first to the third quartiles, and the horizontal line in the box shows the median. The whiskers mark the mini and maxi of the variable, and outliers are marked with black dots.

Figure 2 Distribution of educational requirements for maids and housekeeping cleaners compared to all other jobs in the U.S. labor market.



Note: The figure shows the distribution of educational requirements as reported in the O*NET database (www.onet.com).

There are also several factors that make it *less* likely that disadvantaged groups will benefit from the *RUT-avdrag* policy. One is the hands-off approach regarding who is employed in the subsidized jobs. The Swedish reform allows companies to hire freely for the service jobs. Unlike policies that provide subsidized employment for specific socio-economic groups, this policy design allows employers and customers to make discriminatory decisions on who they employ (Becker 1971, Bohnet 2016). In Sweden, households frequently request that service providers send workers with a Caucasian appearance to clean their homes (Kvist 2013, authors' interviews with domestic service providers).

A second factor is immigration. In a sector that requires relatively low language skills and labor market experience, immigrants from other European countries may be better positioned

to exploit these opportunities than the intended beneficiaries on the domestic labor market. In the domestic cleaning sector, EU immigrants benefit from an infrastructure of community or language-based recruitment networks with bilingual brokers (Kvist 2013, Gavanas 2013, *Kommunalarbetaren* 2019). These networks help people immigrate and offer an alternative to formal labor market institutions (following the broader discussion in Gavanas 2013).

Network-based hiring across borders may be easier in the domestic service sector than in some other sectors. The sector is dominated by small firms and self-employment, which makes it easier for immigrants to establish firms and make their own hiring decisions. In turn, this opens for co-ethnic hiring that advantages EU immigrants who share ethnicities with firm managers (so-called recruitment homophily). Co-ethnics may benefit in the recruitment process because of advantages in communication, information, and a shared culture that establishes a mutual trust (e.g., McPherson et al. 2001, Edo et al. 2019). Indeed, qualitative research on the Swedish domestic cleaning sector has documented strong patterns of co-ethnic hiring (Gavanas and Mattsson 2011, Gavanas 2013).

Preferences to enter the domestic service sector may also differ between EU immigrants, refugee immigrants, and low-educated or un-employed natives. The domestic service sector has low wages, but also poor work conditions. Researchers have observed how a high degree of competition and low unionization push work conditions downward, especially in small firms (Calleman 2011, Thörnqvist 2015). Employment is often fluid, unstable, and with one person holding several part-time jobs simultaneously and interspersed with intervals of unemployment (Calleman 2011, 2015, Thörnqvist 2015). For EU immigrants, these jobs may still be attractive because of wage differences between countries. This attractiveness is absent for workers on the domestic labor market, who may also have access to social insurances or government training programs. Specific groups of expected beneficiaries might also find the work conditions in the domestic service sector particularly unattractive. For example, domestic workers are often alone in a customer's household which may conflict with religious and social norms among refugee women with a Muslim background.^h

Finally, the dominance of self-employment in the domestic service sector may directly disadvantage some groups of workers. Even if capital requirements for starting a business in the sector are relatively small, it requires some level of education interpret the tax law and organize invoices and periodic tax reporting. This could put people with short education at a relative disadvantage. Language skills also help navigate the formality of starting up and operating the firm, which could raise barriers toward refugee immigrants.

Before continuing to the data section, it is worth emphasizing that this paper is interested in the *composition* of employment in the subsidized sector rather than the *number* of jobs created. Economists have argued that subsidies directed at the domestic service sector should be more likely to create jobs than subsidies to other sectors (Kleven et al. 2000, Flipo et al. 2007). As I show below, there are strong indications that the Swedish policy led to a meaningful number of new firms and jobs. It caused a large drop in the price of household cleaning services, and a significant number of households started buying these services rather than cleaning their own homes. In addition, many of the subsidized firms that operated in 2010–2015 did not exist

^h Notably, this group already faces significant barriers to entering the labor market, such as weaker networks and traditional gender norms that disincentivize employment (Akerlof and Kranton 2000, Grönkvist and Niknami 2012, Brell et al. 2020).

prior to the reform. A detailed analysis of the number of new jobs, or of the average cost of those jobs to taxpayers is, however, beyond the scope of this paper.ⁱ

4 Data and methods

Defining the subsidized sector. Since July 2009, Swedish companies have been able to claim the tax deduction by submitting information to the Swedish Tax Authority. Statistics Sweden aggregates these data to the firm-year level, which gives me a complete list of the organizational ID codes for all firms that received some nonzero deduction in each year, as well the total amount of annual deductions. The first full calendar year for which this information is available is 2010, and my dataset ends in 2015. There are 96,968 firm-year observations during this period.

I define the subsidized sector as firms for which total tax deductions in a year comprise a relatively large share of their total sales of goods and services.^j To measure sales, I use the variable *Net Sales*, which captures the firm's total annual sales minus rebates and VAT. Statistics Sweden cleans the data used to calculate this variable before making it available for research, but faulty reporting by firms still results in some missing or erroneous values, especially for small companies (authors' conversations with Statistics Sweden). Net Sales data are available for 86% of my sample (83,431 of 96,968). For the remaining firms, I use the annual sum of wages and business income as an alternative variable for total sales (I describe the source of these income data below). After adding this second measurement, only 8,540 firm-year observations remain with missing data, and they account for only 1.3% of the total tax deductions in 2010–2015.

I use thresholds of the ratio of tax deductions to total sales to define two groups of subsidized firms. I define a firm as *subsidized* if the tax deduction was applied to at least 20% of its total yearly output, and *highly subsidized* if it was applied to more than 50%.^k Methodological details for this calculation are available in Section W1 of the Web Appendix. Since this classification is performed at the firm-year level, it is possible (but unlikely) for a firm to belong to different groups in different years.

The group of firms that I classify as *subsidized* account for 80% of the total amount of tax deductions in 2010–2015. *Highly subsidized* firms, which are a subset of the previous group, account for 61%. We should think of these firms as specializing in domestic services, most commonly household cleaning. Firms that receive non-zero subsidies but which I do not define as *subsidized* are mostly selling other services (or goods), such as a construction company that sometimes cleans apartments or households. The average share of economic activity in the firms covered by the tax deductions is low, at 4.6%.

Comparison sectors. I compare the employment composition in the subsidized sector to three other groups of firms: all private firms, the commercial cleaning industry, and the restaurant industry. Private ownership is defined by a firm's Ownership Code, an administrative variable based on tax records. The restaurant and commercial cleaning industries are defined by their

i For discussions of the issue of jobs in Swedish-language reports, see Tillväxtanalys (2019), and Riksrevisionen (2020).

j Since subsidized firms register under a variety of industry codes, this variable cannot be used to define the sector.

k This method draws on previous policy evaluations by the Swedish Tax Authority (Skatteverket 2011) and the Danish Ministry of Industry, Business, and Financial Affairs (Erhvervsministeriet 2001).

5-digit industry codes.^l About half of the firms in the subsidized sector have commercial cleaning as their industry code. I keep these firms in the category of subsidized firms. This means that the commercial cleaning sector is defined as all firms that have the industry code for commercial cleaning, minus the firms that belong to the subsidized sector.

To answer the paper's research question, I use the straightforward method of comparing the presence of disadvantaged groups among people who receive either wage income or business income from the subsidized sector and the comparison sectors. If the presence of the groups is similar in the subsidized sector as full private sector, the policy has clearly failed to favor these groups on the labor market. As the commercial cleaning and restaurant sectors provide the most elementary jobs in the Swedish labor market,^m their employment composition is another useful benchmark for the performance of subsidized firms. If the subsidized sector has the same probability of employing disadvantaged groups as these industries, the policy has created an equally favorable employment structure for these groups as a typical sector with a predominance of elementary jobs in the Swedish labor market. If the subsidized sector outperforms these sectors, perhaps by having *even* lower demands for formal education, training or language skills, this would be a particularly positive finding for the policy.

Defining employment by income threshold. I define employment in a sector as having a total amount of annual wages and business income from that sector that exceeds a threshold amount. Income data come from the Job Register (*Jobbregistret*), which is based on tax records and lists all payments of wages and business income that exceed 99 SEK in a calendar year (~11 USD). I use the organizational ID code for the source of each payment to match it to the subsidized sector and the comparison sectors. This way of measuring employment offers a significant advantage when studying the domestic service sector. Work in this sector is often characterized by the same worker holding several small jobs, either simultaneously or in sequence, and some people being both self-employed and wage-earners at another firm. Under these circumstances, summing up incomes from all subsidized firms over each year gives a more accurate description of who is employed in the sector than counting only the largest income source in a year or measuring where a person works at one specific point in time.

My income data include all people with a Swedish ID code as well as all temporary workers with temporary ID codes (*samordningsnummer*). These codes are used for people who work in Sweden temporarily as posted workers, await their permanent ID code, or have pending asylum claims.

In the main analysis, I define employment as having a total annual income of at least 6 monthly wages for the median cleaner in the private sector.ⁿ I use two other cutoffs, a lower one at 1 monthly wage and a higher one at 12 monthly wages, throughout the paper as a sensitivity

^l 8129 (General cleaning of buildings) and 56100 (Restaurants and mobile food service activities) in the Swedish system of industry codes, which corresponds to the Nomenclature of Economic Activities (NACE), Revision 2.

^m Calculated by the author, using the definition of elementary jobs in endnote d for the 2010–2015 period. Table W2 in the Web Appendix shows the distribution of 1-digit occupation codes in each sector. Because these codes are collected in a survey that samples all large firms, most medium-size firms, but only a small proportion of small firms (2% of firms with 1–9 employees), they should be interpreted with caution given the prevalence of small firms in the domestic service sector.

ⁿ Swedish occupation codes closely approximate the ISCO08 code 911 for “Domestic hotel and office cleaners and helpers”. Wage data come from the Swedish Salary Statistics and cover all large private firms and a stratified random sample of small and medium-sized firms. I compute the median wage for full-time workers in cleaning jobs in the private sector in each year, and multiply this sum by 6 to get the threshold value. The median monthly wage for a cleaner in the private sector was 19,536 SEK in 2010 and 22,869 in 2015.

check. Because wage and business income have separate entries in the Job Register, I can also define people as either wage earners or small business owners based on their total annual income from either of these sources. Throughout the paper, I use “employment” to refer to people whose combined total income from wages and business income exceeds the threshold.

My data are not precise enough to determine which individual workers in subsidized firms carry out the subsidized services. Most of the firms are small and not sampled in Statistics Sweden’s surveys on occupations. I sidestep this data problem by studying the composition of all employment in the subsidized firms, conditional on being above the income threshold. One potential drawback of this approach could be that the income threshold excludes precisely the employment from disadvantaged groups that I am interested in. However, this does not appear to be the case, since the descriptive results are robust to including people with very low annual incomes (the 1 monthly wage threshold). Another potential critique is that I include employees who hold higher-level jobs within the subsidized firms. Yet I argue that including these people is appropriate, because the tax subsidy also contributes to employment more broadly within firms, such as marketing jobs or low-level coordination jobs for domestic service workers in the field.

A third critique concerns missing information on informal employment. This type of employment is less common in Sweden than in most other countries, but is likely more prevalent in the domestic service sector than in other sectors. Research has shown that informal work in domestic services is most common among undocumented immigrants (Swedish Tax Authority 2011, Gavanas 2013, Hobson et al. 2018). Needless to say, these immigrants are a severely marginalized group in the labor market. But they are not targeted by Swedish policy makers as expected beneficiaries of policy to revive domestic services. As such, the exclusion of informal work in my data means that I will likely over-estimate, rather than under-estimate, the policy’s impacts on the employment opportunities of the targeted disadvantaged groups.

Disadvantaged groups: education, immigration, and labor market status. Socio-demographic variables for sex at birth, region of birth, year of birth, education level, and latest year of immigration come from the Longitudinal Integrated Database for Health Insurance and Labour Market Studies (LISA, according to its Swedish acronym). Immigrants’ education level is recorded as part of the immigration process, and Statistics Sweden also carries out regular surveys to supplement missing data for this group. Among people with temporary ID codes, approximately 30% have socioeconomic data on geographic region of citizenship, age, and sex at birth. The main analysis considers each of the three groups separately. I also sub-divide the analysis by sex at birth, and report results for some smaller groups of high policy relevance.

Refugees are identified from data on residence permits in the Longitudinal Database for Integration Studies (STATIV, according to its Swedish acronym). I count people as refugees if they have held a residence permit with refugee status at any point since their arrival in Sweden. Following standard practice, I count six types of residence permits as “refugee status”: refugees according to the Geneva convention, quota refugees, humanitarian refugees, refugees according to temporary legal frameworks, other refugee permits, and family reunification immigrants to persons with refugee status.^o The earliest year for which residence permit data are available is 1985. Refugees whose permits were granted so long ago that they had expired by then, for

^o In Swedish: Konventionsflyktingar; Skyddsbehövande; Synnerligen ömmande omständigheter; Tillstånd enligt tillfällig lag; Övriga tillstånd, flyktingar m.fl.; Flyktinganhöriga.

example by gaining Swedish citizenship, are (erroneously) not included in my definition.

EU and non-EU immigrants are defined based on being born either inside or outside EU28 countries. Notably, being defined as a refugee overrides these two categories. Of people born outside of Sweden in another EU28 country, 18% are defined as refugees; and of people born outside of EU28, 47% are defined as refugees.

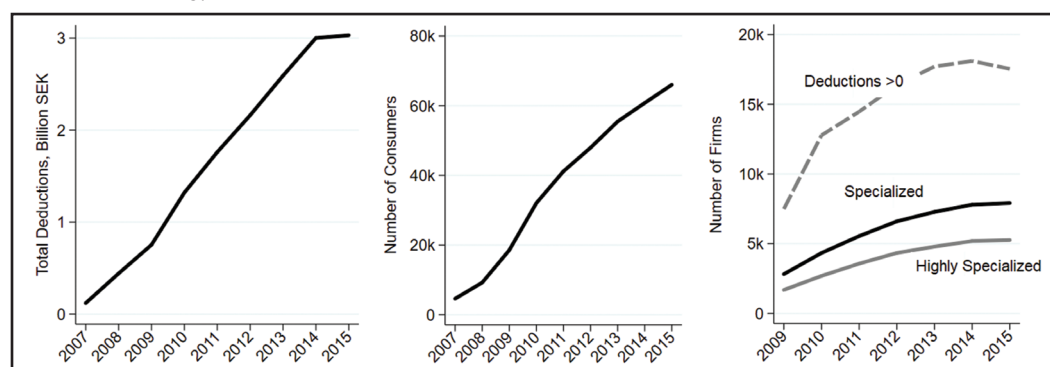
Low education is defined as all people who have not completed upper secondary education, following the international standard (OECD 2019).

Long-term unemployment, unemployment, and non-employment are measured using data on income sources in each year (following work by Andersson and Brännström 2009). A person is defined as *unemployed* if their largest source of income is from unemployment benefits and/or active labor market programs. A little over 3% of the sample falls into this category, a figure that is biased downward because people may be actively looking for work despite not receiving benefits or participating in a program. *Non-employment* is defined as meeting one of two conditions: 1) having a total labor income less than 1 monthly wage for a cleaner in the private sector or 2) having a combined total income from sickness insurance, disability pension, worker injury insurance, rehabilitation insurance, and basic income support that makes up the person's largest source of income in that year. *Long-term unemployment* is defined as being unemployed in the current year and either unemployed or non-employed in the previous year. People currently enrolled in higher education and 18 year olds with zero labor income are dropped from all three variables.

5 Descriptive statistics for firms, workers, and consumers

This section reports basic descriptive statistics for the number of firms, wage earners, and small business owners in the subsidized firms and comparison sectors. I also report basic descriptive statistics for the policy's expansion over time, including the number of consumers of subsidized services and the total deduction amount paid by the government. A natural starting point for understanding these developments is the dramatic price drop for domestic services that occurred immediately after the policy was introduced in 2007. The price of household cleaning services fell by nearly the size of the entire tax deduction (50%) and remained at this lower level in the following years (see Web Appendix Figure W1). This indicates that the policy had a maximal impact on service demand, which would not have been the case if companies had instead pocketed part of the subsidy as profits and kept consumer prices at a higher level. Figure 3 shows time trends in the total yearly deduction amount, the annual number of consumers who used the deduction, and the number of subsidized firms. In 2015, the total amount reached 4.8 billion SEK (0.6 billion USD) and the number of people who used the policy was 649,720 persons (8.3% of the eligible population). The number of firms with non-zero subsidies was 17,000 and among these, 7,917 were *specialized* and 5,263 *highly specialized* in producing the subsidized services. Using additional variables from the administrative business register, I observe that only 0.1% of the specialized firms are foreign owned, compared to 2% of all private sector firms. Specialized firms are also less likely to be stock corporations (17% vs. 32%) or limited liability partnerships (17% vs. 32%), and are more likely to be sole proprietorships (75% vs. 62%).

Figure 3 Total annual tax-deductions, number of consumers, and number of subsidized firms.



Notes: The figure shows time trends in the total tax-deductions (left), the number of consumers with non-zero deductions (center) and the number of firms in three categories of specialization (as defined in Section 4).

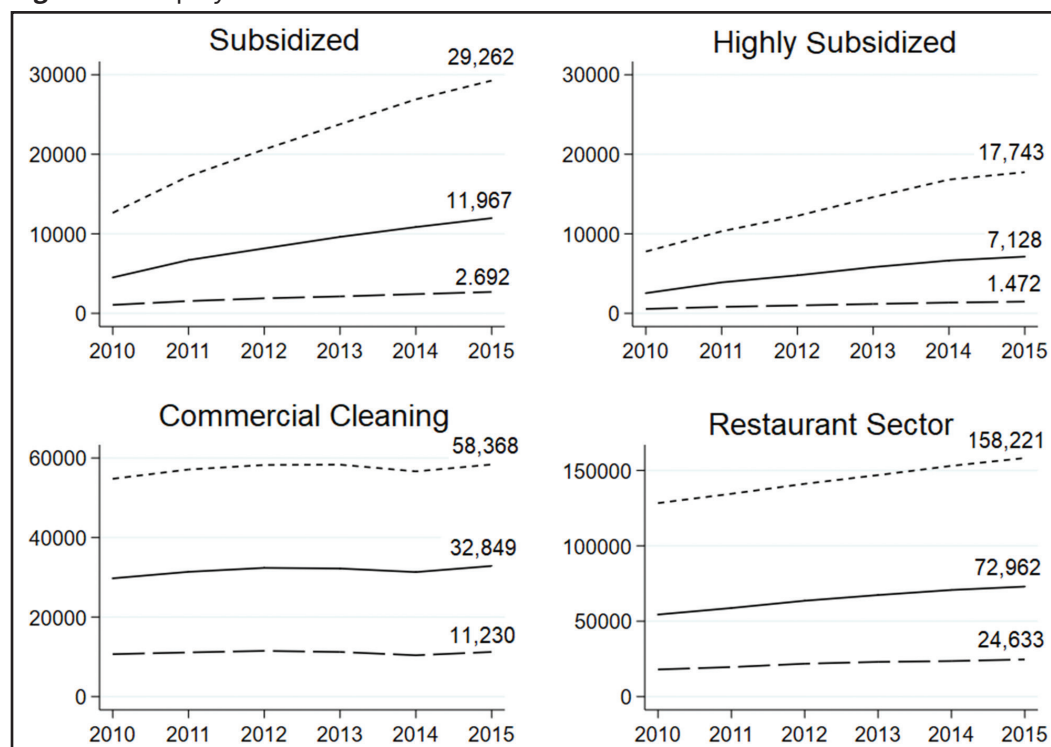
Web Appendix Figures W2 and W3 show the socio-demographic profiles of the consumers of subsidized services. People with high incomes, high education, and couples with children under 18 in the household are over-represented in this group compared to the Swedish population. In 2015, almost two-thirds of all deductions went to households in the top quartile of the income distribution. This skew toward richer households is even more prevalent among high-intensity consumers, who I define as people who purchase at least one hour of domestic cleaning services per week (6% of all consumers in 2015).

Number of employed. Figure 4 shows time trends for employment numbers in the subsidized sector compared to the commercial cleaning and restaurant sectors. Trends are shown separately for the three threshold values for employment in terms of annual income from the sector (at least 1 monthly wage, 6 monthly wages, or 12 monthly wages for a full-time cleaning job).

Employment in the subsidized sector grew consistently over the 2010–2015 period. In 2015, the subsidized firms together employed 11,967 and the highly subsidized firms employed 7,128 people according to my main definition. Splitting these groups according to whether people have income from wages or business income shows a relatively high rate of self-employment in the subsidized sector compared to the comparison sectors (Figures W4 and W5 in the Web Appendix). In subsidized and highly subsidized firms, 29% and 32% of employees are self-employed, respectively, compared to 18% in the restaurant sector and 9% in the commercial cleaning sector.

Figure 4 also contains an interesting observation about the income structure of subsidized firms. Relative to the two comparison sectors, a larger proportion of employees and small business owners have low yearly incomes. Section W2 in the Web Appendix explores this issue further and briefly discusses job quality by computing rates of in-work poverty, defined as having a total disposable income below 60% of the population median. The rate of in-work poverty in the subsidized sector is higher than in the commercial cleaning and restaurant industries, and much higher than in the full private sector.

Subsidized firms have a small proportion of temporary foreign workers, which means that missing demographic data will not be an important source of measurement error in the analysis. Of people with at least 6 months of wages, fewer than 1% are temporary foreign workers,

Figure 4 Employment numbers.

Notes: The figure shows annual counts of people whose annual labor earnings from a specific sector surpass three thresholds for total yearly labor earnings. Subsidized and highly subsidized firms are defined in Section 4. All income data are from Swedish tax records and cover all sources of annual earnings above 11 USD.

which is similar to the proportions in the commercial cleaning and restaurant sectors (1.4% and 0.7%, respectively). This low number might partially reflect that posted workers are very uncommon in the cleaning industry (Thörnquist 2015). It might also reflect the small cost, but large benefits, of registering as a permanent citizen in Sweden. The process is quite simple for people who have the right to work in the country, for example migrants from EEA countries and their relatives. Having an ID code may be worthwhile even for shorter periods of work since it facilitates access to medical care and financial services.

New jobs and firms? As previously described, this paper does not distinguish between new employment created by the tax deduction and formal or informal jobs that existed before the reform. Nevertheless, various statistics strongly indicate that a substantial share of the employment observed in the subsidized firms is mostly new jobs. In an anonymous survey of 5,000 users of the tax deduction in 2010, only 6% reported having previously purchased the services on the informal market, while 65% had either done the chores themselves, not done them at all (7%), or been helped by a relative (3%) (Swedish Tax Agency 2011). Based on interviews with 201 business owners in the domestic service sector, Kvist (2013) describes a rapidly expanding market of consumers, firms and workers. In my data, the registration dates of the subsidized firms show that many were created after the reform. Only one in three subsidized firms (32%) and one in five highly subsidized firms (19%) exists in the 2006 business register, one year before the policy was introduced.

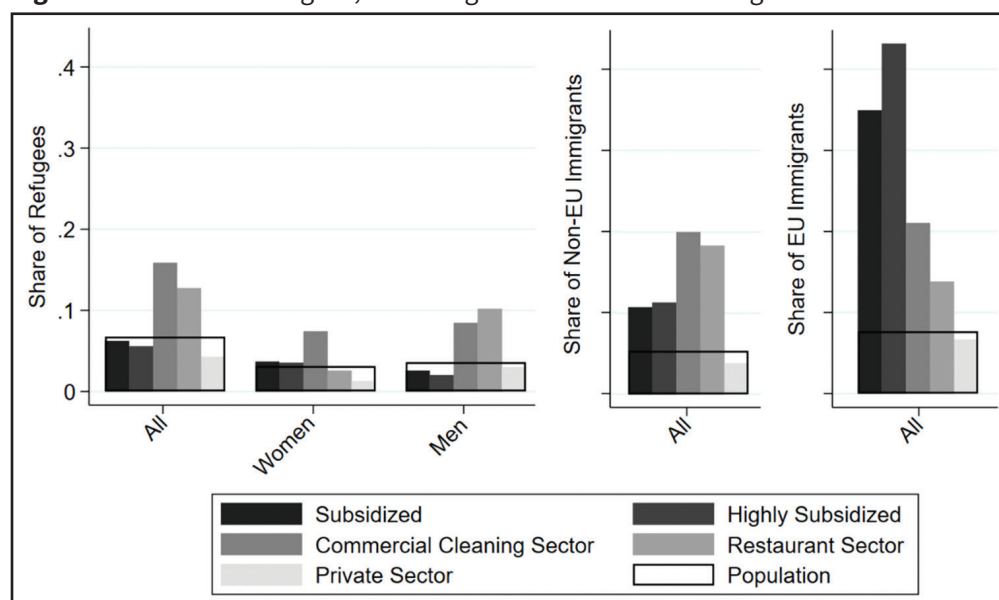
6 Disadvantaged groups in subsidized employment

Refugees and other immigrants. Refugee immigrants make up 7% of the Swedish working-age population, and represent one of the most disadvantaged groups in the labor market. One-fourth are non-employed (20%), 7% are unemployed, and 5% long-term unemployed. All three shares exceed those of the full working-age population (11% non-employed, 3% unemployed, and 2% long-term unemployed). In contrast to refugees, the other two immigrant groups—EU immigrants and non-EU immigrants—do not perform worse than native-born on these measurements.^p

The left side of Figure 5 compares the shares of refugees across sectors. The results demonstrate that the subsidized sector has not stood out as a “motor of integration” for refugee immigrants. The share of refugees in subsidized firms barely surpasses the share in the full private sector, and it is only half as large as in the restaurant and commercial cleaning industries. Despite offering jobs with low requirements for language skills and labor market experience, subsidized firms have not been more likely to employ people with a refugee background than the average private firm, and have been substantially less likely to do so than other sectors with a predominance of elementary jobs. By comparing the shares in the sectors to the population share (the large transparent box), it is striking that the subsidized sector barely employs the same share of refugees that exists in the adult population, while the restaurant and commercial cleaning sectors clearly outperform this number.

Non-EU immigrants have more positive employment prospects in the subsidized firms. Their share of the employment of these firms is larger than in the private sector as a whole (10%

Figure 5 Shares of refugees, EU immigrants and non-EU immigrants across sectors.



Notes: The figure shows the shares of people with different immigration backgrounds among people whose annual income from the sector exceeds 6 monthly wages for an average cleaner.

^p EU immigrants have a 13% non-employment rate, a 4% unemployment rate, and a 2% long-term unemployment rate; non-EU immigrants have a 12% non-employment rate, 5% unemployment rate, and a 3% long-term unemployment rate.

vs. 4%) but lower compared to the two comparison industries where their proportion is close to 20%.

I find the most striking results for EU immigrants. This group makes up more than one-third of the employment in the subsidized firms, and nearly half of the employment in highly subsidized firms. These high numbers correspond to more than five times the proportion of EU immigrants' employment in the private sector and about twice the proportion in the two comparison industries. The commercial cleaning sector also has a higher share of EU immigrants than refugee immigrants, but the gap is less dramatic. One possible interpretation is that EU immigrants have not entered commercial cleaning to the same degree as domestic cleaning because of its market structure with large incumbent firms and significantly more unionization (Thörnqvist 2015). Section 7 extends the analysis of EU immigrants to discuss how their dominance in the subsidized sector could be crowding out employment opportunities for disadvantaged groups.

Figure W6 in the Web Appendix replicates Figure 5 for the year 2015 and shows the results separately for wage earners and small business owners. This description shows that the proportion of EU immigrants is even higher among small business owners than employees in the subsidized sector. They make up a third of all small business owners in the subsidized sector, and nearly one half in the highly subsidized sector. In contrast, the share of refugee women is smaller among business owners than among employees.

I calculate some additional descriptive statistics to comment on nonnative entrepreneurship in the subsidized sector compared to the private sector. One in four (39%) of the owners of subsidized firms is a foreign-born woman, compared to three in one hundred (3.4%) in the full private sector. This over-representation is especially notable for EU-immigrants. Europe-born women without refugee status are 16 times more likely to operate a small business in the subsidized sector than in the full private sector (32% compared to 2% of the business owners). Refugee women are also more likely to operate businesses in the subsidized sector, but by a smaller factor of 5 (3% vs. 0.6%). This means that while the subsidized sector clearly favors entrepreneurship by nonnative women, this is first and foremost a phenomenon that benefits female labor immigrants from the EU.

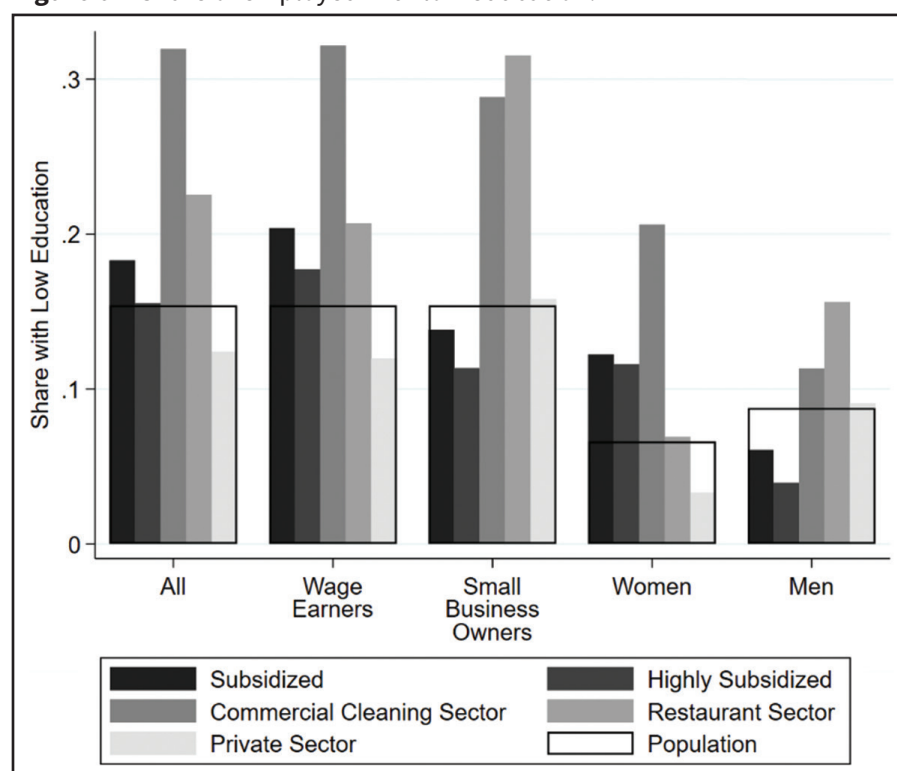
Figure W7 replicates Figure 5 for the lower and higher cutoff values for employment, at least 1 monthly wage for a cleaning job, and at least 12 monthly wages. The conclusions from Figure 5 are not sensitive to this variation in the employment definition. As such, they offer some commentary on hierarchies in formal employment in the subsidized sector. Refugees or EU immigrants are not over-represented among the lowest annual incomes from the sector, echoing the observation in previous research that part-time employment and unstable employment is prevalent for both native and foreign workers (Abbasian and Hellgren 2012, Thörnqvist 2015).

Low education. In 2010–2015, people with a low level of education (defined as less than upper-secondary education) made up about 15% of the Swedish working-age population. Like in other Organization for Economic Co-operation and Development (OECD) countries, they constitute a disadvantaged group in the labor market (OECD 2019). During the study period their average non-employment rate was 27%, unemployment rate 5%, and long-term unemployment rate 3%, compared to 11%, 3%, and 2%, respectively, in the full working-age population.

Figure 6 shows the shares of people with low education across sectors. Starting with total employment, the subsidized sector employs a larger share of people from this group than the private sector as a whole, but a smaller share than the two comparison industries. When we break the sample down into wage earners and small business owners, we can see that the subsidized sector is relatively successful at employing low-educated people as wage earners, but less so for small business owners. For wage earners, subsidized firms employ a higher share of low-educated people than the full private sector, a similar share as the restaurant industry, and a smaller share than the commercial cleaning sector. For small business owners, the share is lower than in all three comparison sectors. People with low education operate roughly 15% of small businesses in the subsidized sector, 10% of those in the highly subsidized sector, but nearly 30% in the comparison sectors. This is remarkable given the relatively low capital requirements for starting a business in the domestic service sector.

Why are low-educated people less common among the small businesses in the subsidized sector? One reason might be that immigrants with secondary or tertiary education are pushed into self-employment by difficulties in having their academic credentials recognized in the labor market. Comparing the immigrant composition of the low-educated workers to those with secondary or tertiary education gives some evidence of this. The small business owners with low education are mostly native born (63%) while those with medium or higher education levels are mostly foreign-born (51%). Splitting the sample by sex at birth shows that the revival of the domestic service sector has provided employment primarily for women with low education. Their share of the employed is nearly three times as large as in the full private sector, and twice as large as in the restaurant industry. For men, the opposite is true: the subsidized sector

Figure 6 Share of employed with low education.



Notes: The figure shows the shares of people with a low level of education among those with an annual income from the sector that exceeds 6 monthly wages for an average cleaner.

employs just half the share of low-educated men compared to the private sector and the two comparison industries.

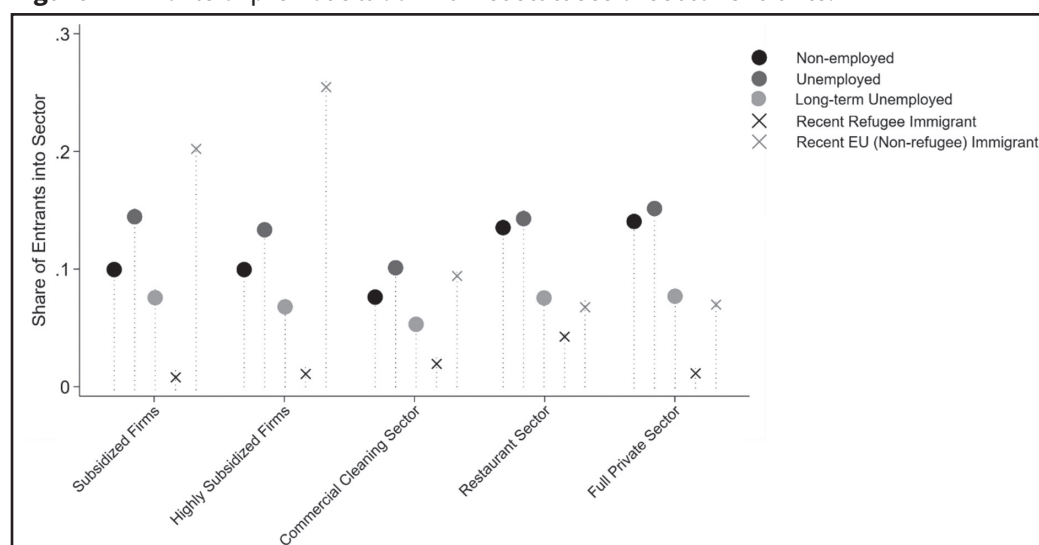
The low-educated women deserve some additional commentary in terms of their immigration status. In the Swedish policy debate, non-European women with a refugee background and low education have been highlighted as a group that would benefit from expanded employment chances in the subsidized sector. Disaggregating the statistics for low-educated workers provides negative news on this front. Refugee women with low education make up 1.4% in subsidized firms. Adding the requirement that the refugee woman is born outside of Europe further reduces the proportion to 0.9%. One way of interpreting this information is that created by the policy for this marginalized group came at the cost of financing an additional 99 jobs.

In the Web Appendix, I show that the descriptive results for low-educated workers are not sensitive to the income threshold for defining employment (Figure W8) or to restricting the data to the last year in the study period (Figure W9).

Entry from non-employment, unemployment, and long-term unemployment. I now compare the labor market statuses before job entry. An entrant is defined as a person with at least 6 months of wages from a specific sector in the current year, and zero income from that sector in the previous year (Web Appendix Figure W10 repeats the analysis for the threshold of 1 month of wages). I drop observations for people who enter a sector when they are 18 or 19 years old, because they lack an observable labor market status in the two years prior to entry.

Among the entrants to different sectors, I compare the shares who were previously unemployed, non-employed or long-term unemployed. As described in Section 4, these definitions are based on the person's income sources in the year before entry (for unemployment and non-employment) and in the two previous years before entry (for long-term unemployment). In addition to these three categories, I also measure entry shortly after immigration. This is important because new immigrants represent a large share of the subsidized sector and may create measurement error in the analysis. A person who arrives in the same year as they enter a sector does not have observable income data in the Swedish administrative records in the two years before entry. A person who arrives in one year and enters the sector in the next may also erroneously be defined as previously non-employed simply because they were only present to earn money in Sweden for part of the year prior to entry. To sidestep these concerns, I define entrants as recent immigrants if they immigrated in either the same year as they entered the sector or the year before. I also split recent immigrants by their region of birth or refugee status (non-EU immigrants are not reported in the figure to save space). To be clear, this immigration definition over-rides the three labor market statuses.

Figure 7 refutes the idea that the subsidized sector is a particularly efficient way for long-term unemployed individuals to enter the Swedish labor market. The share of sector entrants who come out of long-term unemployment is similar in the subsidized sector, the full private sector, and the restaurant industry, but it is somewhat larger than in the commercial cleaning industry. The same pattern holds for entrants who come out of unemployment. For non-employment, the subsidized sector has a smaller share than the private sector and the restaurant industry, and a similar share as the commercial cleaning sector. Figure W11 in the Web Appendix splits this analysis by sex at birth. Because women are the large majority of entrants, the pattern for women is close to those in Figure 7. Relative to these women, men in

Figure 7 Profile of previous labor market statuses of sector entrants.

Notes: The figure shows the labor market and immigration statuses of entrants into sectors in 2011–2015. Non-employment and unemployment are measured in the year prior to entry. Long-term unemployment is defined as unemployment in the year prior to entry, and either unemployment or non-employment before that. Recent immigration is defined as immigration in the two years before entry. The definition of recent immigration, i.e. within the last two years, over-rides the labor market status.

the subsidized sector have been more likely to enter from both un-employment and long-term unemployment.

The Xs in Figure 7 show which sectors act as entryways to the Swedish labor market for newly arrived immigrants. All sectors have low shares of recent refugee immigrants among their entrants, around 1.5% of the total entrants in all sectors except for the restaurant sector, where the figure is 4.5%. There is no evidence that the domestic service sector has been more successful than other sectors at providing an entryway into the Swedish labor market for recent refugee immigrants.

The subsidized sector has a very large share of recent EU immigrants. One in five entrants in subsidized firms, and more than one in four entrants in highly subsidized firms, immigrated to Sweden from another EU country in the two years prior to entering this sector. These rates are about three times as high as for the entrants into the private sector as a whole. Web Appendix Figures W12 and W13 illustrate the exact number of years since immigration, where entry is defined either as going from 0 to 6 monthly wages (W12) or 0 to 1 monthly wage (W13). They show that most EU entrants in the subsidized sector arrived recently, while most refugee entrants did not.

In sum, the subsidized sector is about equally likely as the comparison sectors to employ people coming out of long-term unemployment or unemployment, and less likely to employ people who were previously non-employed. The subsidized sector also has a substantially larger share of recent EU immigrants among its entrants. This means that the large share of EU immigrants previously observed among the employed have likely immigrated with the explicit purpose to work in the subsidized sector. Their moves also seem to be at least semi-permanent, as the vast majority are permanent residents with Swedish ID codes.

7 An extended analysis of EU immigrants

This section extends the analysis of EU immigration in two ways. First, I describe the dominance of Eastern Europeans in this group and show the stability of this dominance over time. Second, I argue that two factors—co-ethnic hiring patterns and the geographical concentration of firms operated by EU immigrants in Sweden's largest cities—are potential mechanisms via which this group directly crowds out employment of refugee immigrants and low-educated people in the subsidized sector. Finally, I split the sample of subsidized firms by firm size to comment on the interplay between market segmentation and the relative shares of immigrant groups.

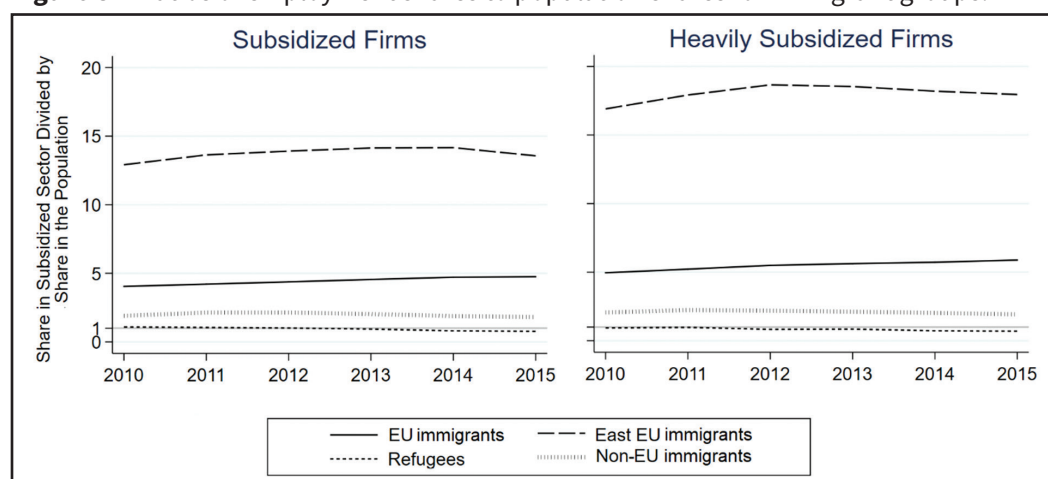
The EEA's open labor market allows people to freely cross borders to work and start businesses. While these flows may be welfare enhancing in various ways, they may also undercut the efficiency of policies designed to benefit disadvantaged groups in specific countries. As richer countries enact policies to develop a sector by increasing the number of elementary jobs, people from other, lower-income countries can immigrate to take advantage of the increased labor demand caused by these reforms.

I define Eastern Europe as the difference in membership between EU28 and EU15, which includes Bulgaria, Czechia, Hungary, Poland, Romania, and Slovakia, as well as the Baltic states of Estonia, Latvia, and Lithuania, and the four small Southern European countries of Slovenia, Malta, Croatia, and Cyprus. It does not include Moldova, Ukraine, or Russia, which instead fall into the category of non-EU immigrants.

As reported above, EU immigrants make up 35% of the employees and small business owners in Sweden's subsidized sector for domestic services. More than two-thirds of these immigrants are Eastern European. Focusing on small business owners only, the number is even more striking: EU immigrants comprise 39% of small business owners, 80% of whom are from Eastern Europe.^q

Figure 8 plots time trends in the over- or under-representation of immigrant groups in the subsidized sector over time. The Y-axis shows the immigrant group's share in the

Figure 8 Ratios of employment shares to population shares for immigrant groups.



Notes: The figure shows time trends in the ratio between the employment share and population share of immigrant groups. Population shares are for the full Swedish population of permanent residents aged 18–65.

^q Just like EU immigrants, immigrants from Eastern Europe are not disadvantaged on the Swedish labor market according to my measurements. Compared to the working-age population, unemployment is 3% in both groups, long-term unemployment is 2% in both groups, and non-employment is 10% among Eastern European immigrants and 11% in the population.

subsidized sector divided by its share of the working-age population. A value of 1 on this scale indicates that the group has the same size in both the subsidized sector and the population. The dashed line represents Eastern European immigrants, who are strikingly over-represented by 12–15 times in the subsidized sector, and 18 times in heavily subsidized firms. Pooling all EU immigrants, the over-representation is smaller at 5 times the population share. Neither of these rates of over-representation has any positive or negative time trends. For refugee immigrants, the ratio remains less than 1 for the whole period.

To analyze co-ethnic hiring, I identify the manager or owner of subsidized firms and categorize them by birth region or refugee status.^r The shares of refugees, EU immigrants and non-EU immigrants among these managers are highly similar to their proportions among all employees of these firms (recall Figure 6). I then compare the composition of employment in subsidized firms after excluding the manager or owner.^s A reliable analysis of entrants from unemployment or non-employment is not possible at this level of disaggregation.

Table 1 shows the composition of employment in firms managed by people from different immigrant groups. It is immediately apparent that all groups employ a larger fraction of people from their own background. Firms managed by EU immigrants have 77% EU immigrants among their employees. This correspondence is even higher in firms operated by Eastern European immigrants, where 88% of employees are from Eastern Europe and 91% from any EU country. The share of refugees is very low in these firms, just 3% and 2%, respectively, but higher in firms managed by a refugee (24%) or a non-EU immigrant (13%).

Table 1 Composition of employees by the manager's country of origin for subsidized firms

Employees	Owner/Manager (% of firm-year observations)				
	EU immigrants (32%)	Eastern European immigrants (23%)	Refugees (5%)	Non-EU immigrants (8%)	Swedish born (55%)
EU immigrants	0.77	0.91	0.34	0.10	0.23
Eastern European immigrants	0.68	0.88	0.16	0.06	0.16
Refugees	0.03	0.02	0.24	0.13	0.05
Non-EU immigrants	0.06	0.02	0.29	0.57	0.10
Swedish born	0.14	0.04	0.15	0.20	0.62
Low-educated	0.14	0.11	0.22	0.25	0.22

Notes: The table shows the shares of employees by immigrant groups and education in firms subsidized under the Swedish policy for promoting domestic services. The owner/manager is identified in administrative data for CEOs, personal ID codes for the owners of sole proprietorships, and data on business income from the firm (detailed in footnotes). A person counts as an employee if the firm is their largest source of labor income in that year.

^r I use a step-wise procedure to find these managers. For two-thirds of the firm-year observations, the firm has a manager in the LISA data and using Statistics Sweden's CEO variable (Andersson and Andersson 2009). Of the remaining 13,321 observations, another two-thirds represent sole proprietorships for which the owner/manager can be identified because the personal ID code is the same as the firm's organizational ID code. Of the remaining 4,569 observations after that step, 39% have a person in the LISA or job register who receives business income from the firm. If several people receive business income, I chose the one with the highest amount in the year as the owner/manager. This procedure identifies the manager for 93% of the firm-year observations in 2010–2015, leaving only 4,568 observations unmatched. Changing the steps of the procedure to, for example, select managers first on sole proprietors rather than CEOs does not alter the descriptive findings.

^s For this analysis I need to identify employees as individuals who have a certain firm as their main source of labor income in the year, using LISA. To arrive at a similar definition as in the main analysis, I only include people in the description if that income is above the threshold of 6 months of wages from a typical cleaning job.

The bottom row in Table 1 shows the share of low-educated employees. It is smaller in firms managed by an EU immigrant (14%) or an Eastern European immigrant (11%) than those run by a refugee (22%) or a non-EU immigrant (25%). Firms managed by a Swedish-born person also employ a significantly higher share of low-educated people (22%) than those managed by EU immigrants. Taken together, these results suggest that co-ethnic hiring, combined with a strong dominance of EU immigrants, is directly crowding out employment for refugee immigrants and low-educated people in the subsidized sector.

Moving to the geographical location of firms, I create a dummy variable for people who live in one of Sweden's three largest cities: Stockholm, Gothenburg, or Malmö. People with low education are not more likely than others to live in these large cities, but refugee immigrants are significantly more likely to do so. One in three refugees live in the largest cities, compared to just one in five people in the full working-age population. I apply the same binary categorization to the location of the subsidized firms using information from the business register. Nearly half (48%) of the subsidized firms located in the three largest cities are run by an EU immigrant, and 37% by an Eastern European immigrant.^t Combined with the co-ethnic hiring patterns discussed above, this location data may help us understand refugee immigrants' weak employment prospects in the subsidized sector. Despite having a skill profile that is relatively well matched to the jobs in these firms, refugee immigrants often live in cities—where the sector is largely operated by EU immigrants, who are much less likely than subsidized firms managed by people from other groups to employ people with a refugee background.

A final analysis splits the sample of subsidized firms by size (Web Appendix Figure W14). There is no clear pattern that EU immigrants work primarily in small firms while low-educated and refugee workers work primarily in large firms. The largest share of EU immigrants is in the smallest, single-person firms, but the second largest share is in firms with more than one hundred employees. And while refugees have their largest share in the largest firms, this is not the case for low-educated workers. These mixed results make it difficult to draw any strong conclusions about the potential link between market segmentation and workforce compositions.

8 Discussion and conclusions

The Swedish tax deduction for domestic services failed to expand employment opportunities on the Swedish labor market for two out of three groups targeted by policy makers: refugees and the long-term unemployed. The policy had somewhat more positive results for the third group, people with short education.

Why was the policy not more successful? My analysis shows that a large inflow of EU immigrants to the sector may be a partial explanation. EU immigrants, who were not targeted by the policy, account for 35% of the employment in the subsidized sector, and nearly 45% in heavily subsidized firms. The dominance of this group is apparent when comparing the shares of EU immigrants in the subsidized sector to those in the full Swedish working-age population. EU immigrants are over-represented in the subsidized sector by a factor of 5 relative to their population share, and Eastern European immigrants are over-represented by factor of

^t Firms state their locations when registering the business and this information is available for 95% of the subsidized firms.

15 (!). Data on years since immigration give the added insight that a sizeable share of these immigrants moved to Sweden to immediately take up work in the subsidized sector.

The inflow of EU immigrants naturally leaves fewer jobs for other workers in the domestic service sector. I also document how co-ethnic hiring and firms' geographic locations may have played a role in this dynamic. Firms under the management of EU immigrants have more than 80% EU immigrants in their workforces, while they also have particularly low shares of refugees. They also employ half as many people with a low level of education as other subsidized firms. Looking at firms' geographical locations, EU immigrants operate nearly half of the subsidized firms in Sweden's three largest cities, which are also homes to a disproportionate share of the country's refugee population.

If EU immigration prevented disadvantaged workers on the domestic Swedish labor market from obtaining better employment chances in the subsidized sector, this is a policy-relevant finding. Western European policies to subsidize domestic services have, like the Swedish one, used public money to lower the price of certain services, but have not regulated who is employed to carry them out. Instituting requirements to employ people from the targeted disadvantaged groups could therefore be one potential path for re-designing the policy. Another could be to offer subsidized services through public rather than private organizations where policymakers can more directly control employment. Both these paths would run the risk of creating a more inefficient service delivery with fewer total jobs. Nevertheless, my results clearly show that today's design is also inefficient. In the Swedish case, public money subsidizes the employment of five EU immigrants for each refugee immigrant, and nearly eight EU immigrants for every refugee in highly subsidized firms. Numbers rise even more for some policy-relevant groups. For every low-educated woman refugee from outside of Europe, there are 99 other workers on subsidized jobs who do not belong to this group.

There are, of course, other potential reasons for why the policy was not more effective. One might be the policy environment, where multiple political aims have competed for policy-makers' attention. Goals like reducing the levels of illegal work or incentivizing the labor force activity of high-educated women, may have been prioritized over those pertaining to the composition of workers in the sector. The results in this paper offer some insights about the likely impacts of subsidy policies for domestic services on inequality. I replicate the pattern from other countries that the consumption of subsidized services is strongly concentrated to high-income households. The results regarding the employment of disadvantaged groups show that this increase in inequality is not balanced out by a relatively large employment impact on marginalized workers. Of course, the policy may still have reduced inequality between European countries by offering employment to EU immigrants with lower wages in the home country. But notably, any conclusion on net welfare effects from a cross country perspective would need to carefully consider immigrants' job quality and human capital. If immigrants with relatively high levels of education leave one country to enter low-end jobs in another, this would represent a misallocation of human capital. My analysis indicates cause for concern on this front by showing that people with higher education in subsidized firms are mostly nonnatives.

Future research could study additional aspects of inequality by exploring the over-time development of the incomes and careers of domestic service workers (following work by Fahlén and Sanchez-Domingues 2018). One area of inquiry could be whether these jobs offer skill enrichment and a passage to higher-paid occupations or higher education, or if they are more

accurately described as dead ends on the labor market. As more data become available, these and other questions—such as the exploitation of undocumented immigrants in precarious jobs—should be studied to obtain a fuller picture of how reviving the domestic service sector affects the labor market and overall inequality.

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Web Appendix

Who cleans my house if the government pays? Refugees, low-educated workers, and long-term unemployed in tax-subsidized domestic service firms

Section W1: Methodology for defining subsidized firms

I categorize a firm's degree of tax subsidization by comparing its annual tax deductions to its annual output. When available, I use net sales to measure output, and when not, I use the total wage bill.

Table W1 shows the Swedish Tax Agency's assumptions about the break-down of consumer prices for subsidized domestic services (2011, Appendix 5, p. 161). Recall that the tax deduction is applied to the consumer price, and hence makes up 50 SEK for each 100 SEK charged to the customer. For each 100 SEK, 20% go toward the Value Added Tax. The remainder of 80 SEK is the firm's Net Sales, i.e. sales minus VAT. Out of the remaining 80 SEK, 10% (8 SEK) is assumed to go to profits and another 10% (8 SEK) to non-labor costs. The remaining 64 SEK are split into social contributions and wages. Social contributions are approximately 35%, which split the 64 SEK into 16.6 SEK of contributions and 47.4 SEK for wages.

Assume that a firm is selling only subsidized services according to the price break-down in Table W1. The degree of financing from the tax deduction is 100% of the firm's total output. We can see that this corresponds to a ratio of Tax Deductions to Net Sales of 0.625 (50/80), and a ratio of Tax Deductions to Wages of 1.05 (50/47.4). These ratios can now be used to calculate the threshold values for firms' where the tax subsidy is applied to at least 20% of the economic activity (i.e. total sales of goods and services) and 50% of the economic activity. For 20%, the threshold values are 0.125 for Tax Deductions to Net Sales ($=50/(80*5)$), and 0.21 for Tax Deductions to Wages ($=50/(47.4*5)$). For the 50% threshold, Tax Deductions to Net Sales need to be above 0.315 ($=50/(80*2)$) and Tax Deductions to Wages should be above 0.525 ($=50/(47.4*2)$).

Table W1 Assumptions about the sub-components in the price of domestic services.

	Percentage	Amount per 100 SEK of the price charged to the consumer, whereof the tax-deduction is 50 SEK
Price charged to the consumer		100
whereof Value Added Tax	20%	20
Remaining amount of net sales		80
whereof profit	10%	8
whereof non-labor costs	10%	8
Remaining amount of labor costs		64
whereof social contributions	30% + 5%	16.6
Remaining wage amount		47.4
Tax-deduction relative to the wage bill		50 kr/47.4 kr = 1.05
Tax-deduction relative to net sales		50 kr/80 kr = 0.625

Source: Skatteverket 2011, Appendix 5, p. 161.

Section W2. In-work poverty

The Swedish policy does not regulate wages in the subsidized firms (like its Belgian equivalent) and membership rates in labor unions is low in the domestic service sector (Hobson et al. 2018). In-work poverty may therefore be high in this sector, unless people mostly hold these jobs in combination with other employment so that they expand their total earnings into a more comfortable range. Job holders may also have other income sources from social insurances or government transfers that pull them out of poverty.

I calculate a dummy variable for in-work poverty from the definition used by EU authorities. To fall into this category, a person needs to be 18 or older and have a disposable income below 60% of the median in the full Swedish population aged 18+. Disposable income is weighted within households to take account of the joint consumption among family members (this standard, consumption-adjusted variable is available directly in LISA). In the proper definition, in-work poverty also requires that the individual has worked for 7 months in the year, something that I cannot measure. I instead report the proportion of in-work poor in the employment categories by total income.

Among people with more than 1 monthly wage from the subsidized sector, 29% fall into the category of working poor, compared to 21% in the Building Cleaning sector, 22% in the restaurant sector and 8% in the full private sector. Among people with 6+ monthly wages, 15% were in poverty compared to 9% in Building Cleaning, 11% in the restaurant sector and 3% in the full private sector. In the highly specialized firms, figures are even higher: 33% in-work poverty among people with >1 monthly wage, and 18% of people with >6 monthly wages.

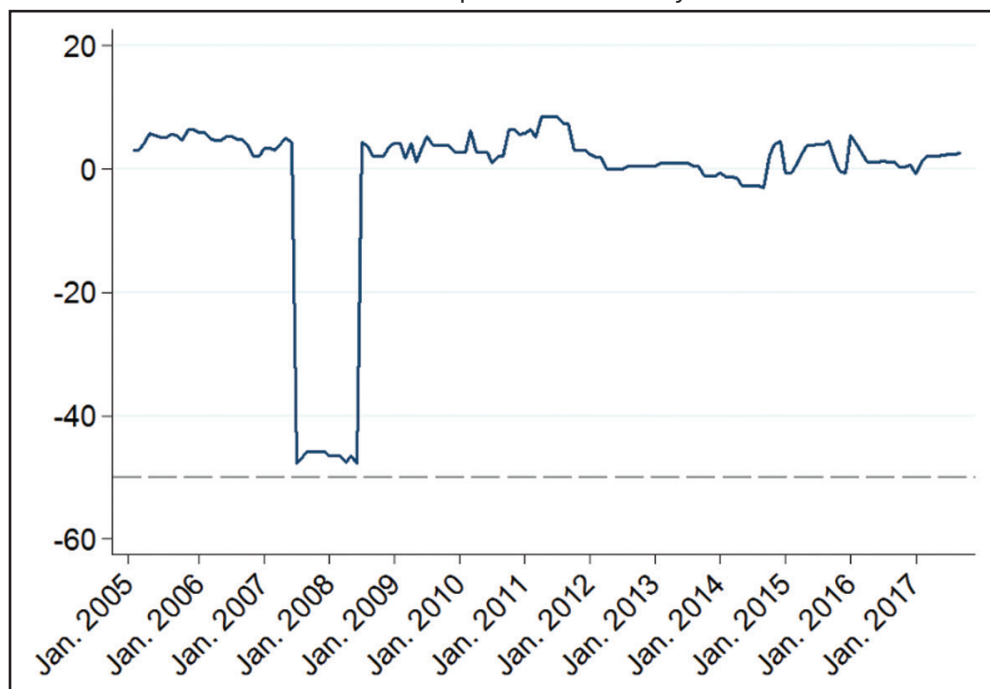
Table W2 Distribution of 1-digit occupations across sectors (%)

		Subsidized firms	Highly subsidized firms	Commercial cleaning	Restaurant sector	Private sector
0	Armed Forces occupations	0.06	0.06	0	0.06	0.02
1	Managers, senior officials, legislators	3.63	3.23	2.79	7.01	7.62
2	Professionals	1.48	1.47	1.16	0.95	15.45
3	Technicians and associate professionals	1.4	1.06	1.16	2.56	16.11
4	Clerks	2.66	2.27	2.34	1.91	8.99
5	Service and sales workers	7.96	7.53	8.03	37.72	16.86
6	Skilled agricultural, fishery, forestry workers	3.94	1.92	0.23	0.14	3.27
7	Craft and related trades workers	2.59	1.62	1.1	0.74	15.2
8	Plant and machine operators and assemblers	0.81	0.49	1.09	0.54	10.98
9	Elementary occupations	75.49	80.36	82.1	48.36	5.49

Source: LISA register data for 2015. Occupation is measured in the Swedish Salary Statistics (*Lönestrukturstatistiken*), which is a mandatory survey to firms. The survey covers all large private firms, a large share of the medium-size firms, and 2% random sample of small firms (1–9 employees).

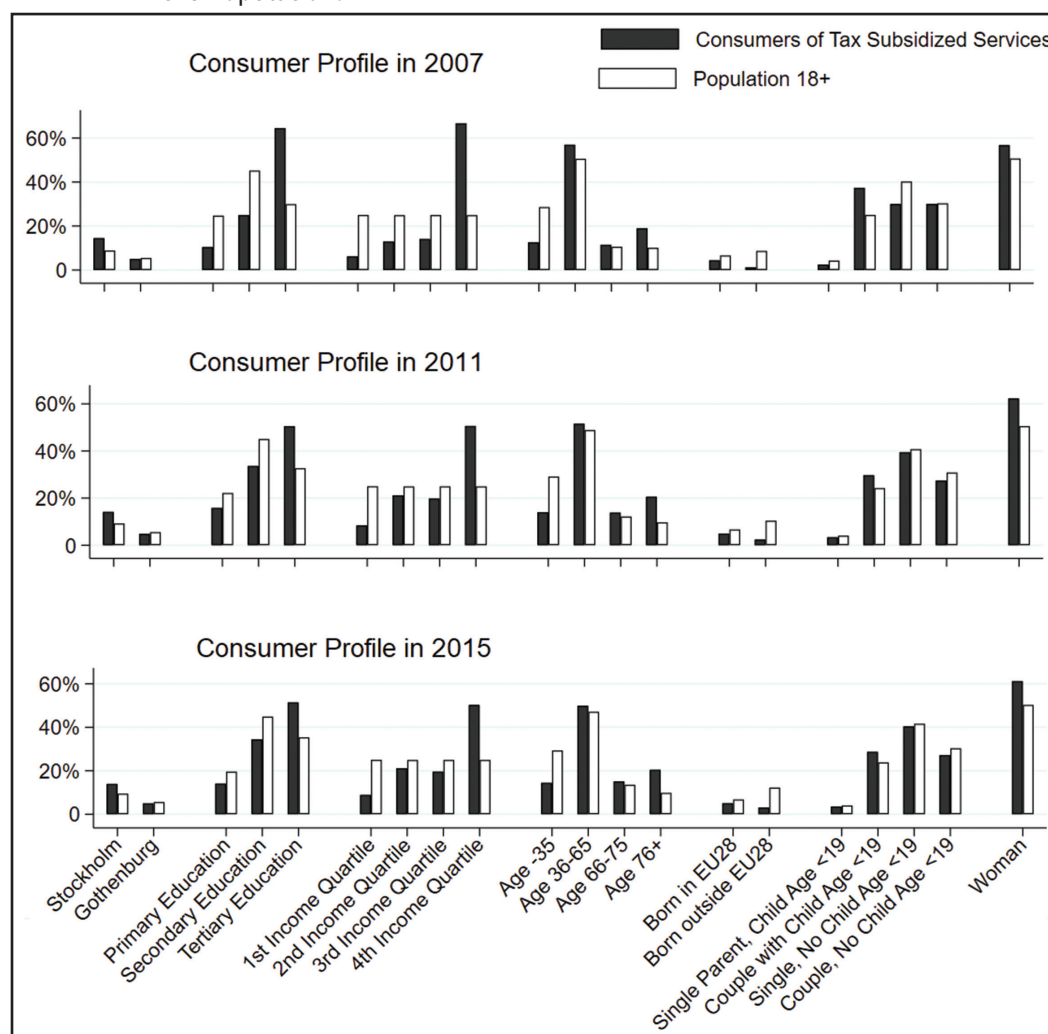
Section W3. Tables and figures

Figure W1 Percentage change in the hourly price of domestic cleaning services compared to the same month in the previous calendar year.



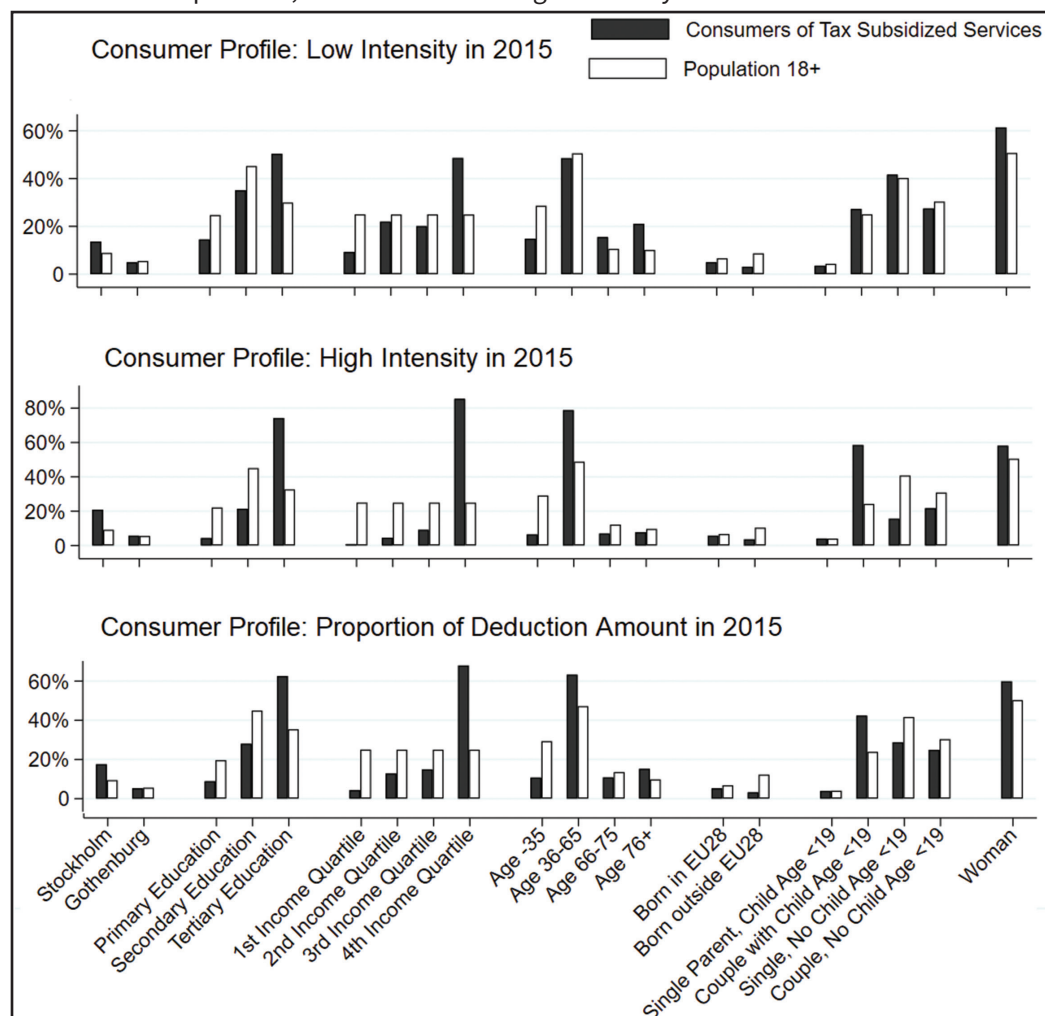
Source: The Swedish Central Bank.

Figure W2 Demographic Profile of Consumers of Subsidized Services Compared to the Population.

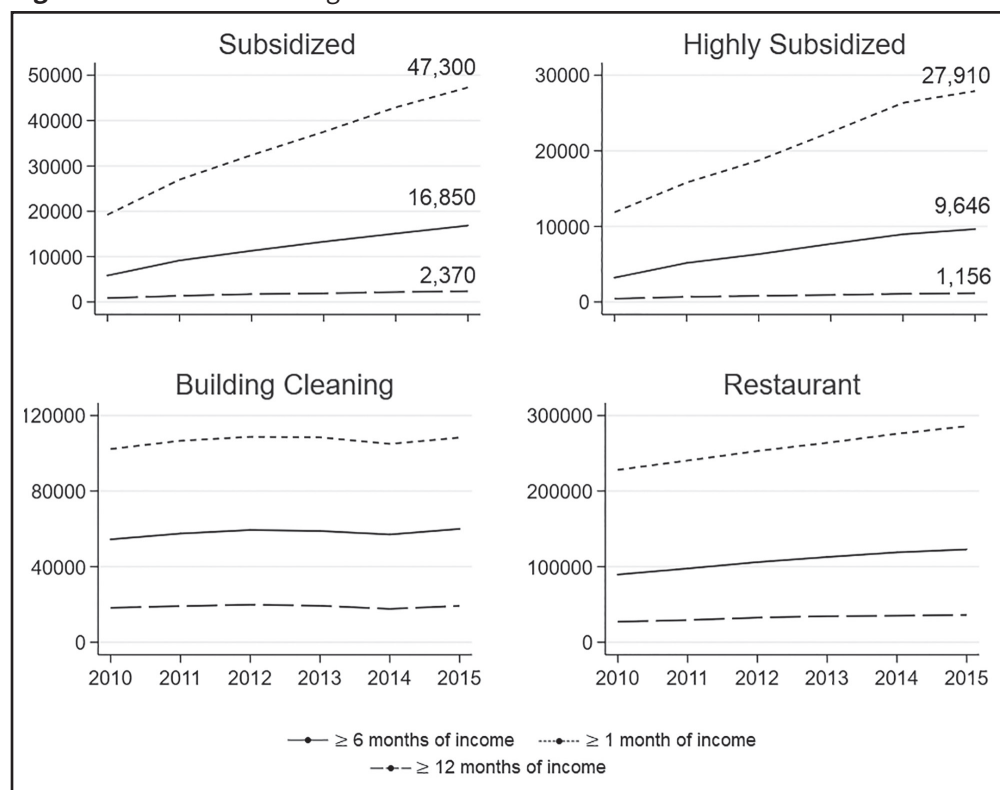


Notes: The figure is based on a complete record of all consumers of tax subsidized services from the Swedish tax agency in 2010–2015. Population data comes from the administrative records of Statistics Sweden and are linked to consumers via the mandatory personal ID code.

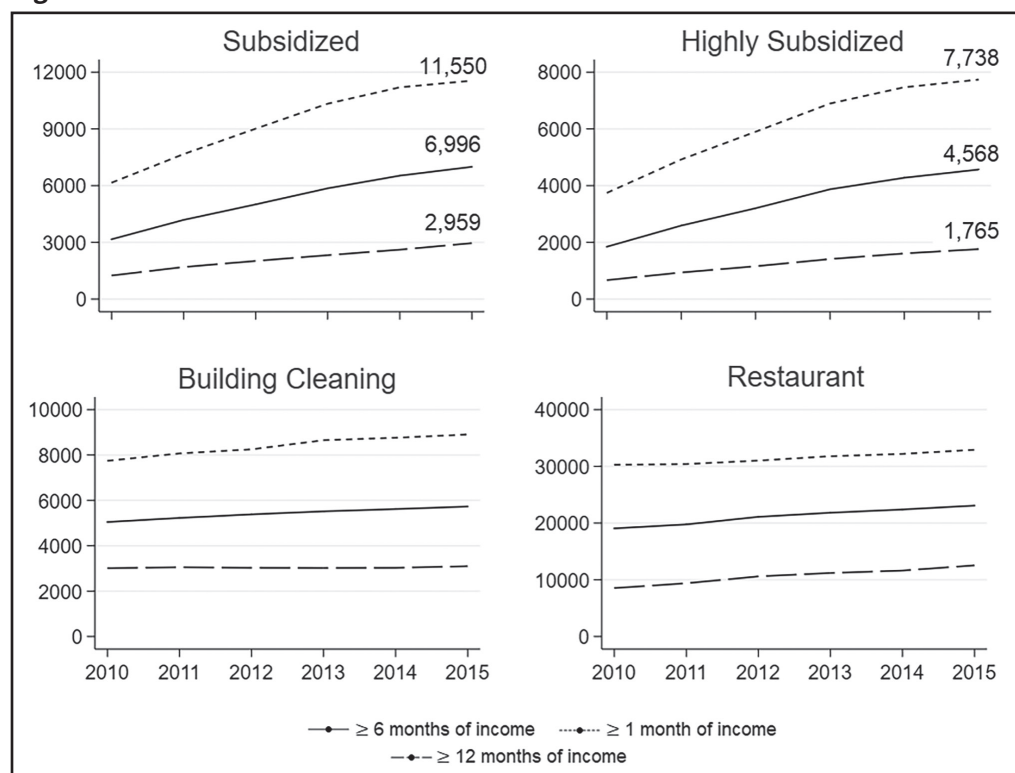
Figure W3 Demographic Profile of Consumers of Subsidized Services Compared to the Population, and for Low- and High-Intensity Consumers.



Notes: See notes to Figure W2. The proportion of the deduction amount is computed by summarizing the total deductions for consumers in a specific category and dividing that amount with the total deductions made in 2015.

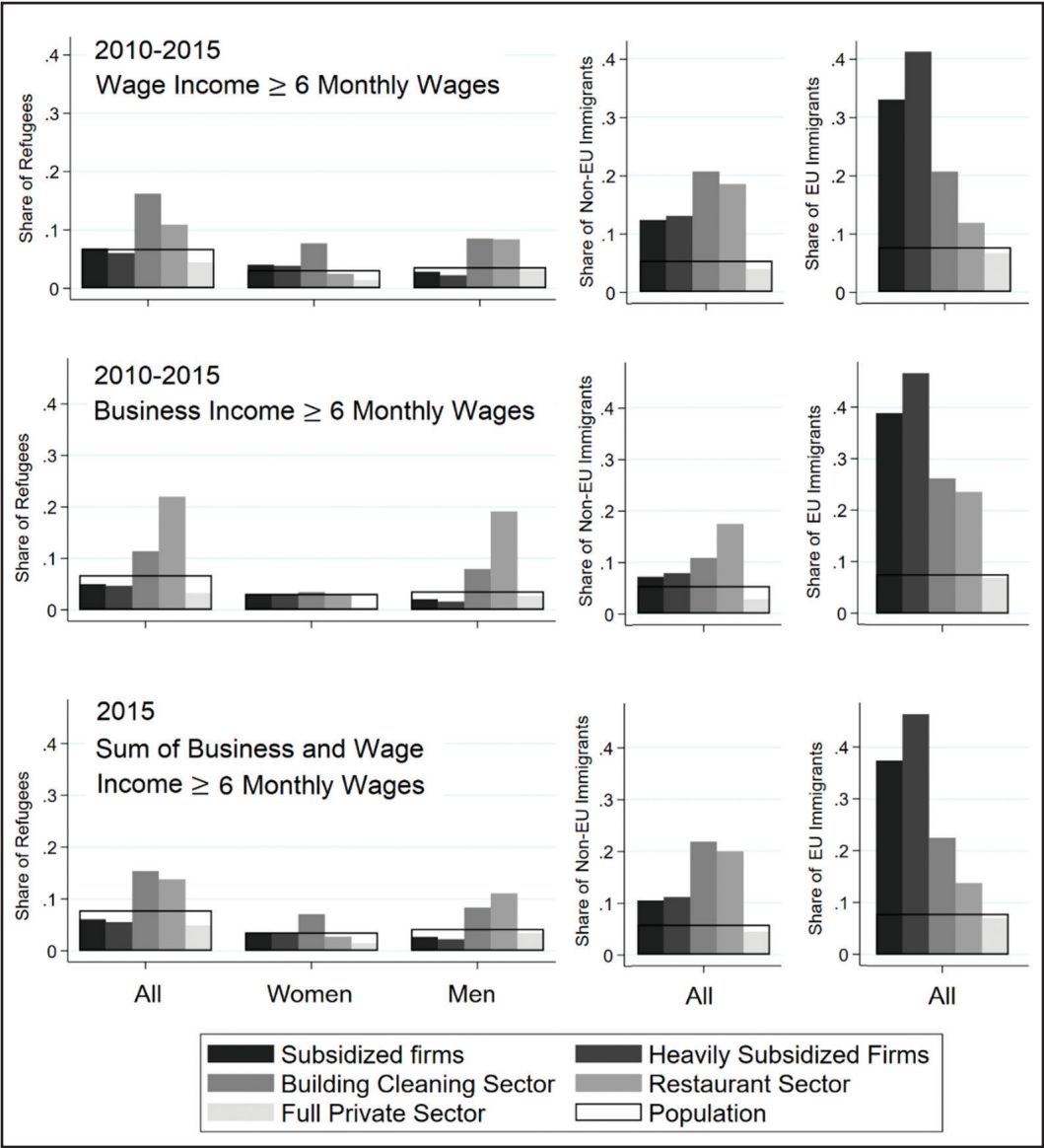
Figure W4 Number of wage earners.

Notes: The figure shows annual counts of people in three categories of wage earnings (see legend). The definition of subsidized and highly subsidized firms is presented in Section 4. All income data is from Tax Records and cover all sources of annual earnings above 11 USD.

Figure W5 Number of small business owners.

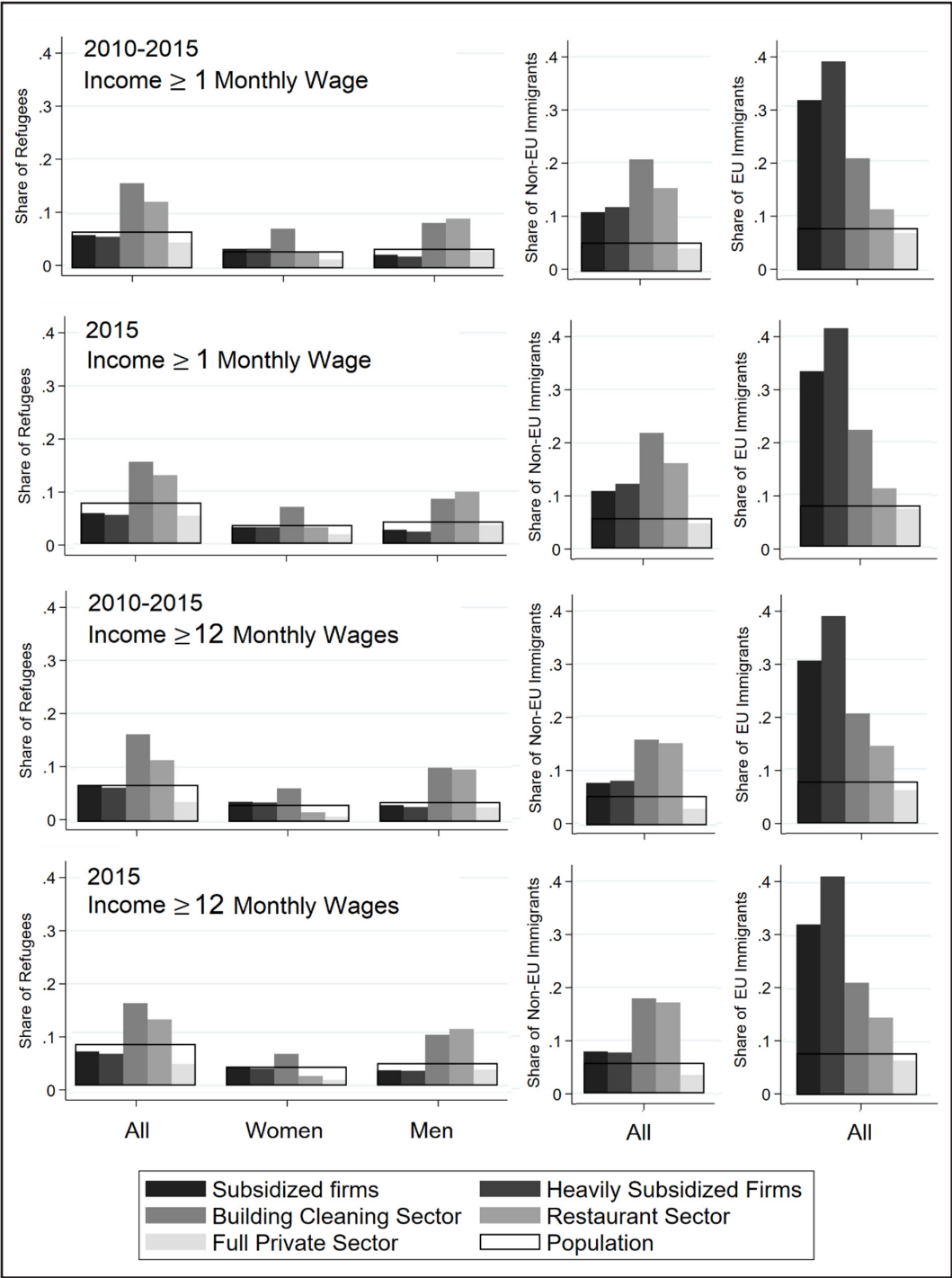
Notes: The figure shows annual counts of people in three categories of total annual earnings of business income (see legend). The definition of subsidized and highly subsidized firms is presented in Section 4. All income data is from Tax Records and cover all sources of annual earnings above 11 USD.

Figure W6 Composition of immigrants in 2015, and among wage earners and small business owners.



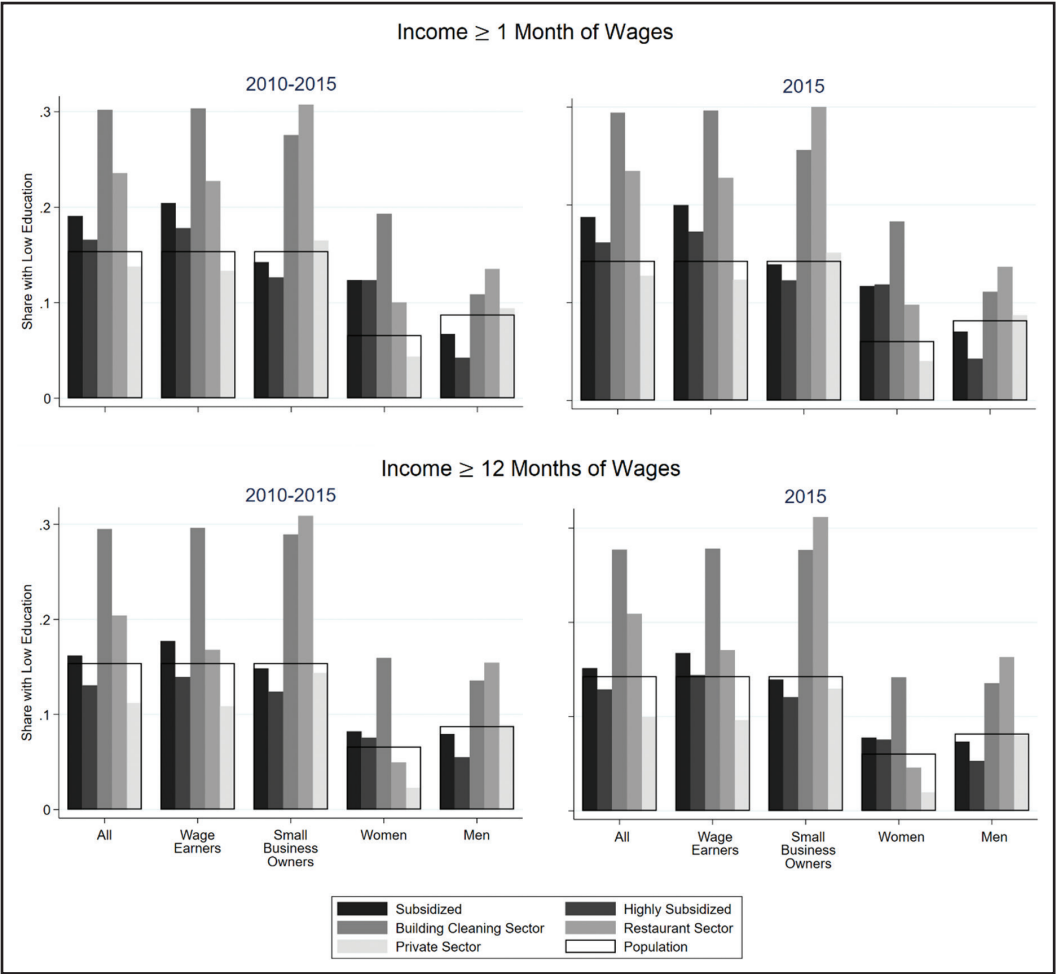
Notes: See notes for Figure 5.

Figure W7 Composition of immigrants across sectors at two alternative income thresholds for employment.

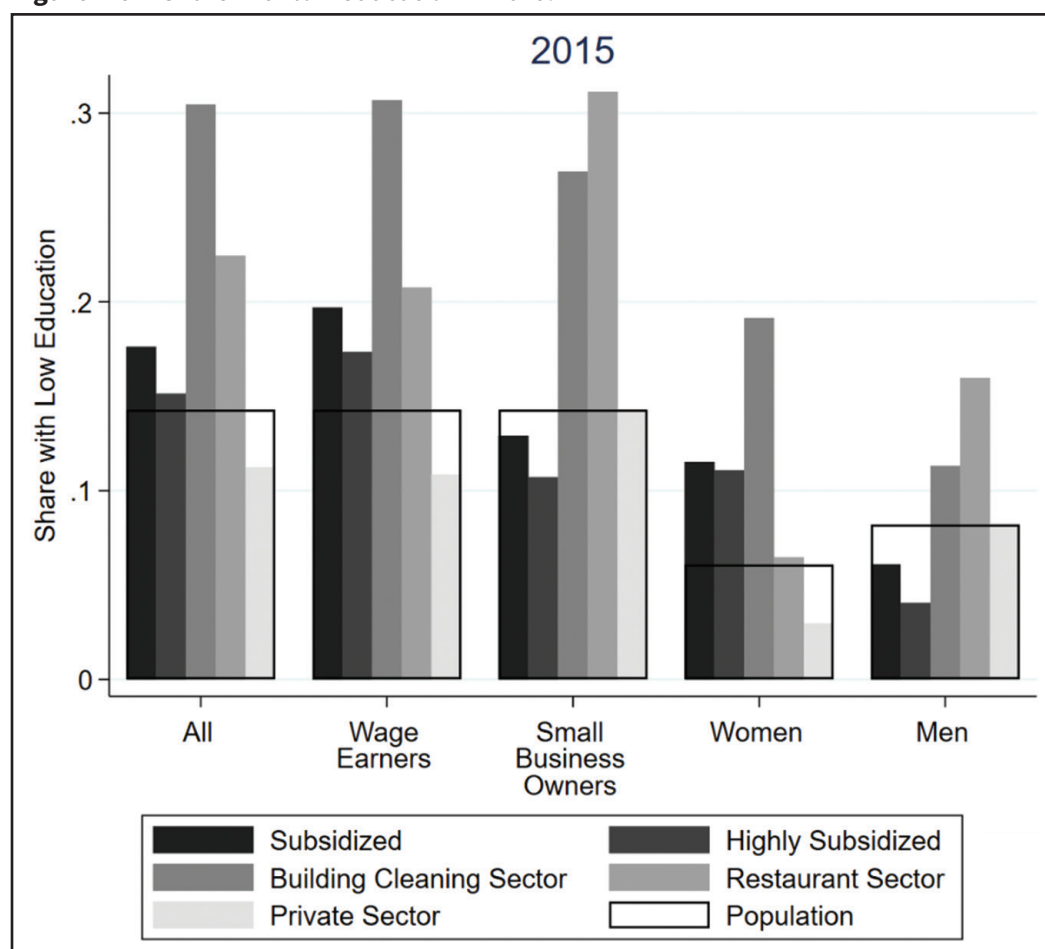


Notes: See notes for Figure 5.

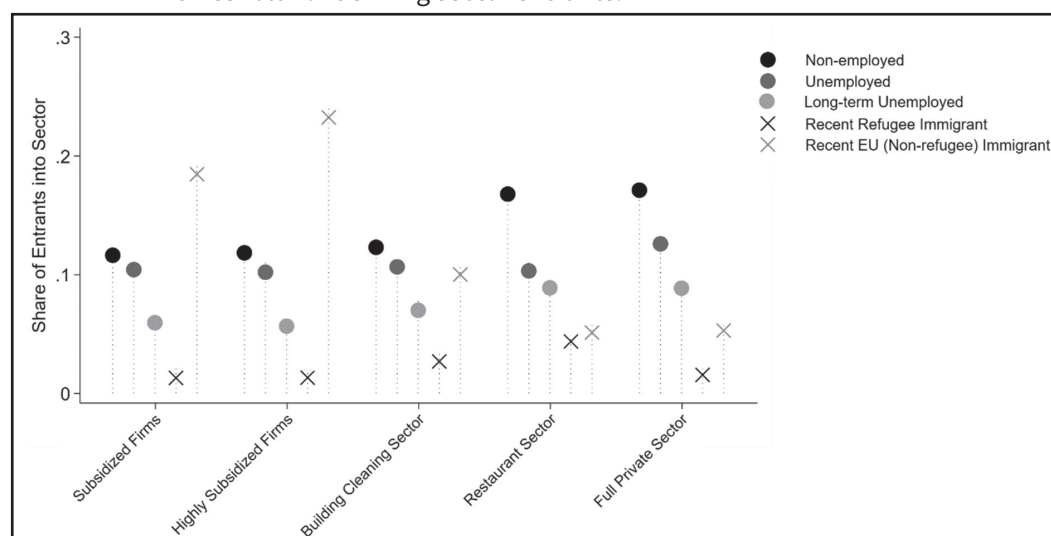
Figure W8 Share with low education for two alternative income thresholds for employment.



Notes: See notes for Figure 6.

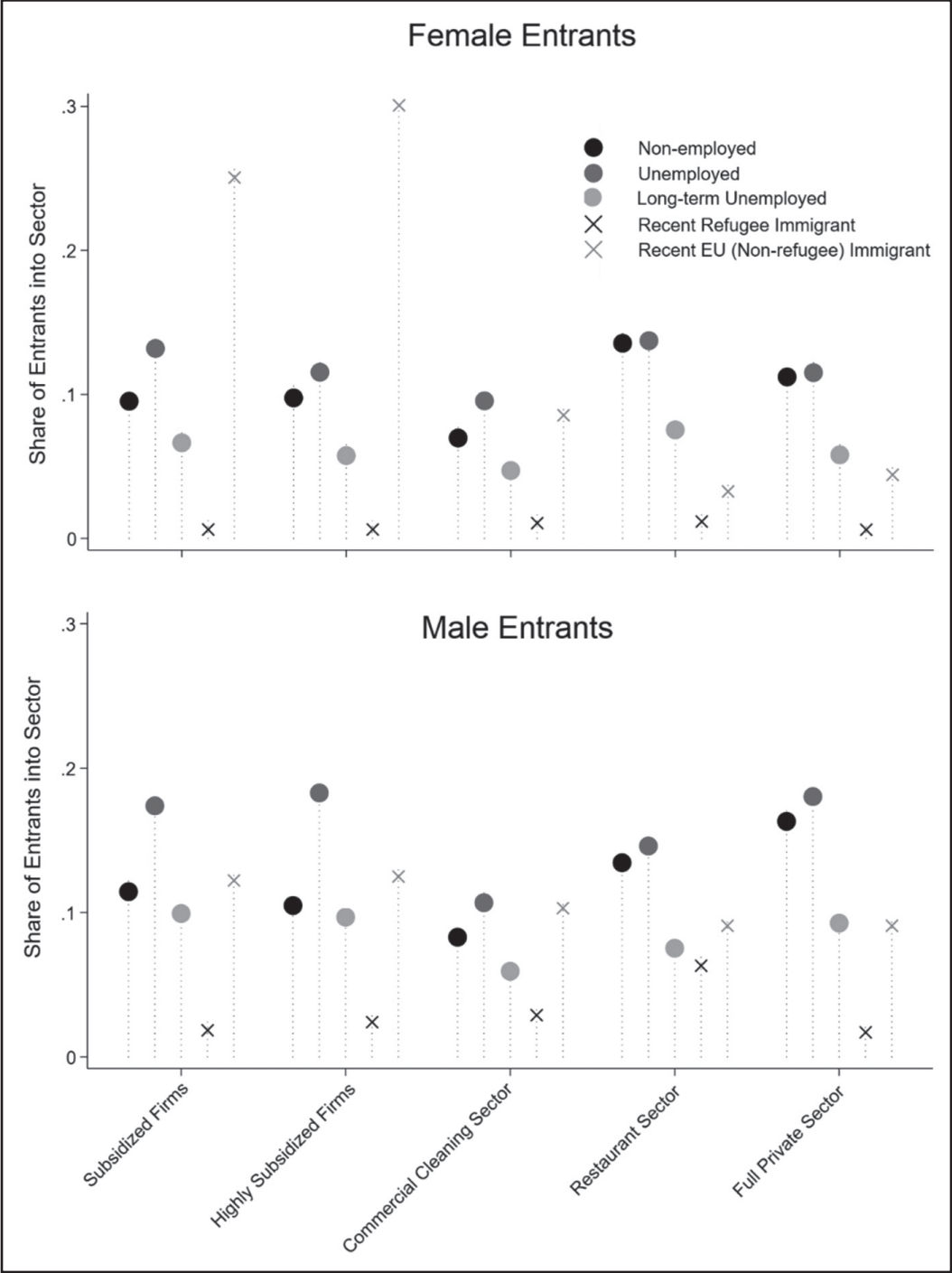
Figure W9 Share with low education in 2015.

Notes: See notes for Figure 6.

Figure W10 Profile of previous labor market statuses of sector entrants, lower income threshold for defining sector entrants.

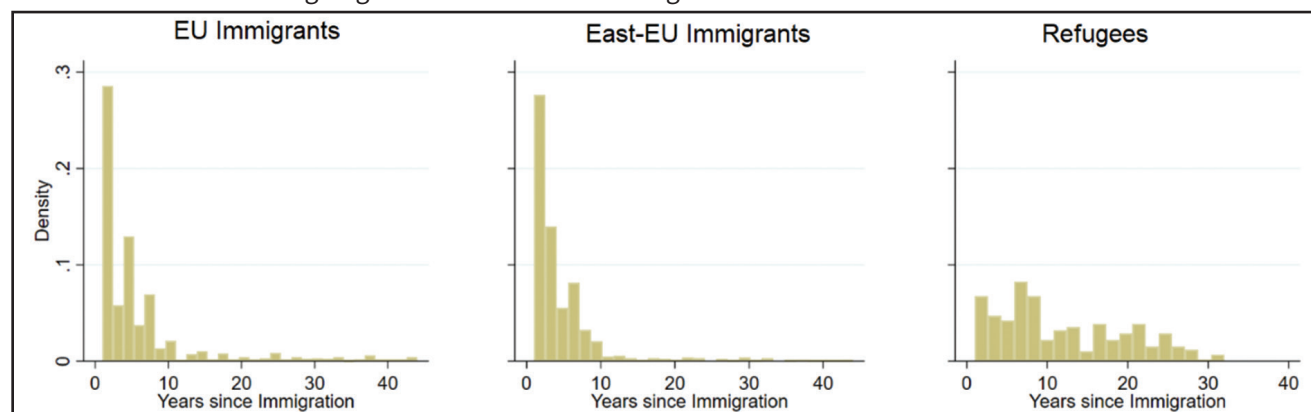
Notes: See notes to Figure 7. A sector entrant is defined as having zero income from the sector in the previous year and at least 1 monthly wage for a median cleaning job in the current year. Labor market statuses are observed the year prior to entry.

Figure W11 Profile of previous labor market statuses of sector entrants by sex at birth.



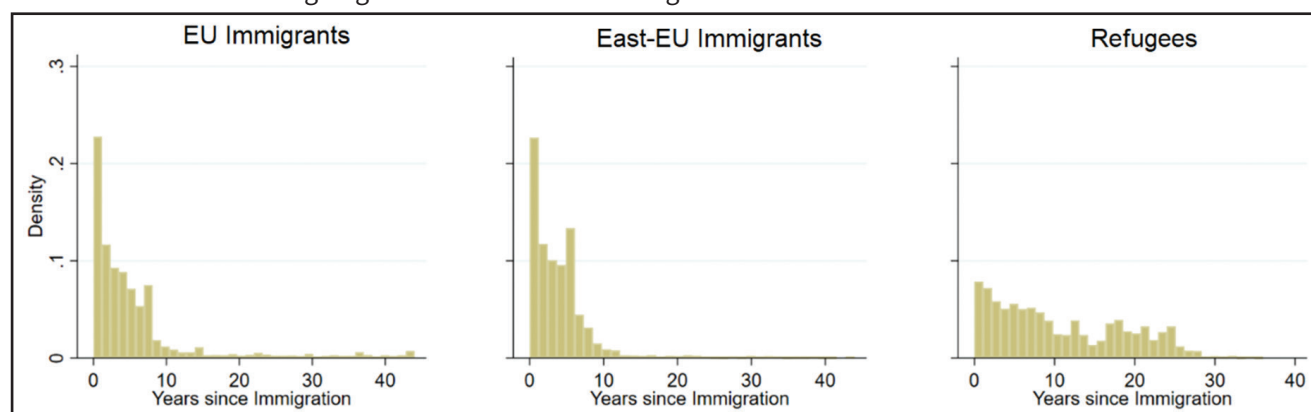
Notes: See notes for Figure 7.

Figure W12 Distributions of years since immigration at the entry year into the subsidized sector, with entry defined as going from 0 to 6 months of wage income.



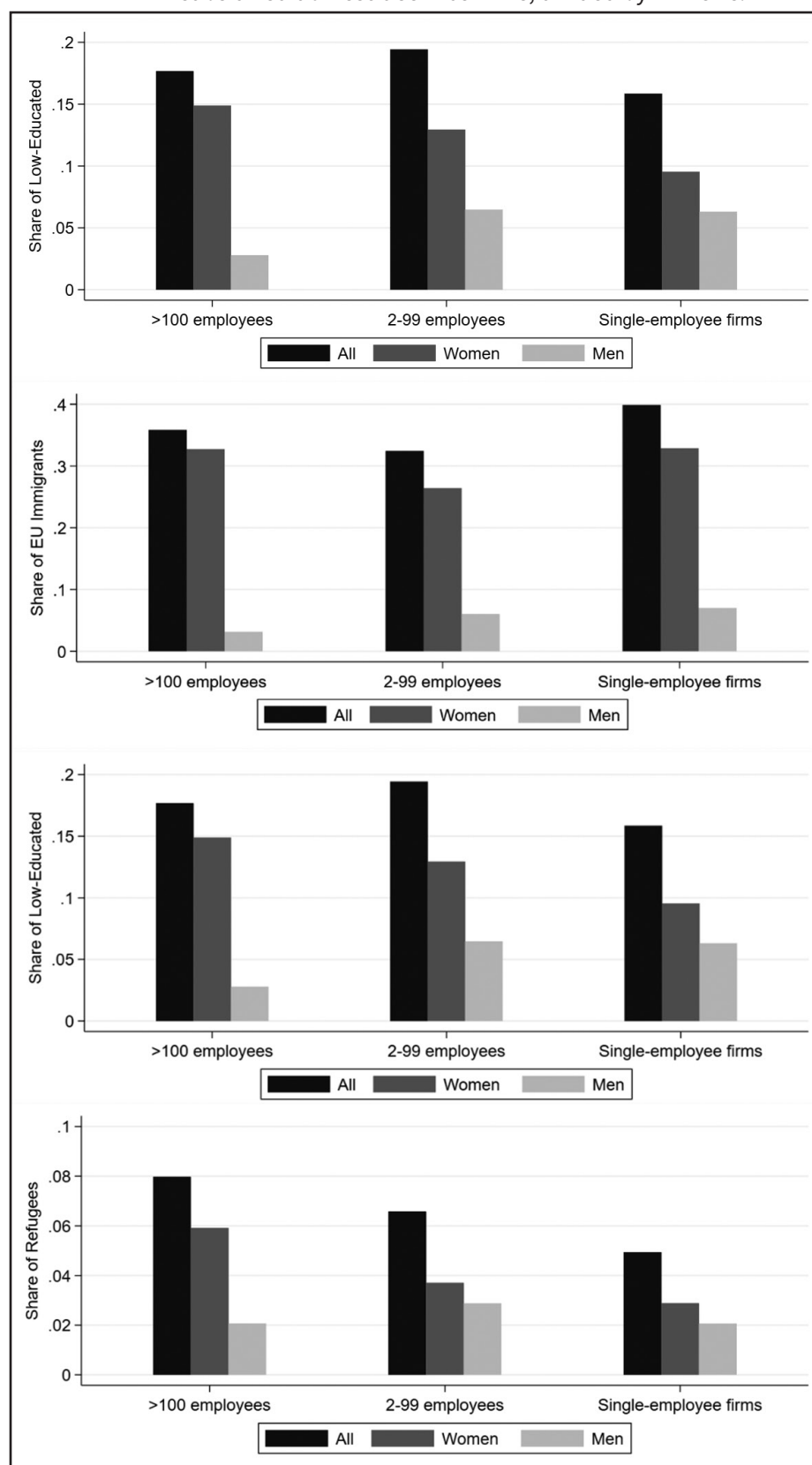
Notes: Data for 2010–2015.

Figure W13 Distributions of years since immigration at the entry year into the subsidized sector, with entry defined as going from 0 to 1 months of wage income.



Notes: Data for 2010–2015.

Figure W14 Shares of EU immigrants, people with low education, and refugee immigrants in subsidized domestic service firms, divided by firm size.



Notes: Firm size is calculated as the sum of people who have a firm as their main source of labor earnings in a calendar year. This variable is missing for 2% of the main dataset. A cut-off for large firms is set at 100 employees. 10.3% of the workers in the main sample work in firms above this size-threshold.