



From state-controlled to free migration: The income effects of the 2008 Swedish labour-migration reform

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Abstract

In 2008, Sweden changed its labour-migration policy to facilitate more labour migration from countries outside the EU. Most state ambitions to shape labour migration, including practices such as the use of labour-market tests and the assessment of migrants' human capital, were abandoned and the responsibility to select migrants was transferred to employers. We use Swedish register data and adopt a difference-in-differences approach to assess the effects of the policy change on labour migrants' labour income, in comparison to non-EU migrants who moved to Sweden for reasons other than work. The effects of the policy change are substantial. Labour migration from outside the EU increased and its composition changed after the reform, resulting in a significant decrease in mean income. We conclude that changes in their occupational composition were the main drivers of the income drop for labour migrants. In sum, the new non-selective labour-migration policy lowered labour migrants' mean income by opening the door to unskilled labour.

Keywords: migrant composition; migration policy; natural experiment; occupational groups; selective migration; Sweden.

1. Introduction

In 2008, Sweden opted for a radical change in its labour migration policy. The new law ([Bill 2007/08: 147](#)) offered all foreign-born people with an offer of employment the right to migrate to Sweden. The state reduced its ambition to control and manage labour migration and transferred the power to decide who can migrate to individual employers. This decision was justified by arguing that employers know best what skills are needed in the labour market. The reform was also guided by the principles of equality and openness:

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by eliminating labour-market tests and human-capital considerations, it welcomed labour migrants regardless of their education and skill level. While the goals of the policy were not clearly stated in the bill, where the principles behind the reform seemed to be more important than the goals, promotional material suggests that it aimed to fill short-term labour shortages while also increasing the labour supply in the long-term to counteract the demographic challenges of an ageing society (Government Offices of Sweden 2008). The policy created new legal pathways for migration, in line with the ambitions of the United Nations (UN) Global Compact for Migration (A/RES/73/195) and the European Union's (EU) New Pact on Migration and Asylum (COM(2020) 609 final). The outcomes of the policy can provide important lessons in future discussions of new pathways for legal migration.

The introduction of this *laissez-faire* labour-migration policy provides an excellent framework to study what happens when state control is withdrawn to a minimum and employers and potential employees are left to regulate migration flows. We take this opportunity to treat the 2008 labour-migration reform as a natural experiment and investigate the effects of the policy change on post-reform labour migrants' income from work in Sweden. Based on register data and a difference-in-differences approach, we analyse the effects of this policy reform on the income of non-EU labour-migrant cohorts who arrived before versus after the implementation of the bill. Using a causal estimation approach, we document that the reform had a causal effect on post-reform migrant cohorts' income. In addition, we examine differential treatment effects by occupational levels.

While the 2008 migration-policy reform in Sweden has caught the interest of a few scholars (Emilsson et al. 2014; Emilsson 2016; Emilsson and Irastorza 2019), this article differs from previous studies by applying causal methods to longitudinal data for the first time to analyse the income effects of the policy change. It also contributes to current academic debates about the state selection of labour migrants and, more specifically, to the literature about labour-migration policy effects.

In fact, despite recent policy experiments in many countries, empirical evidence on the effects of labour-migration policy reforms is scarce (Rinne 2013). The few studies conducted on this topic have mostly involved traditional settler states, such as New Zealand, Canada, and Australia, with elaborate systems in place for selecting immigrants (Bedford and Spoonley 2014). With a few exceptions, these studies conclude that more-careful screening and selection improve the overall human capital of labour migrants which, in turn, usually improved labour-market outcomes (Green and Green 1995; Cobb-Clark 2003; Hawthorne 2005; Chemin and Sayour 2016). Tani's (2020) investigation of the 1997 Australian labour-migration reform provides a more nuanced picture: the average skill level of immigrants increased after the reform; however, it only had a modest short-term positive impact on women's employment rates, wages, and occupational status. Combining bilateral data on highly skilled labour-migrant flows for ten OECD destination countries, Czaika and Parsons (2017) conclude that points-based systems are more effective in attracting and selecting highly skilled migrants compared to demand-driven systems with selection criteria such as the requirement of a job offer, labour-market tests, and labour-shortage lists.

Skill levels do, however, not always translate into good labour-market outcomes (see, e.g. Tani 2020). To reduce the mismatch between immigrants' educational level and the

skills that are needed in host labour markets—and, therefore, to also improve their labour-market outcomes—many countries have added demand-driven selection criteria to their points systems with some success (van de Ven and Voitchovsky 2015b, 2015a).

In Europe, evaluations of migration-policy reforms are much scarcer. *Beskæftigelsesministeriet* (2014) and Rambøll (2010) studied a policy reform that introduced a points-based system for attracting highly skilled migrants in Denmark in 2007. Visas were given to highly skilled foreigners if they moved to Denmark and searched for jobs. They concluded that the results were disappointing, as the majority of them found jobs in lower-skilled occupations. Most newcomers had found *employment* through personal contacts and language was pointed out as one of the main barriers to accessing professional positions. In 2015, new policy initiatives, including an increase in the minimum income requirement, were implemented to improve the employment outcomes of labour migrants. The effect of such initiatives was minimal and the policy was abandoned in 2016.

The 2008 Swedish labour-migration policy change has caught the interest of many researchers and there seems to be some consensus on the main consequences of the reform. Most of this body of research has focused on specific topics such as the exploitation of workers (Woolfson, Olsson, and Thörnqvist 2012; Axelsson et al. 2013), particular occupations like berry-pickers (Hedberg and Fuentes-Monti 2013; Wingborg 2014) or labour migrants at high- or low-skilled occupational levels (Krifors 2017; Frödin and Kjellberg 2018). Some research on the overall consequences of the policy outcomes has also been produced (OECD 2011; Emilsson 2014; Emilsson et al. 2014). To our knowledge, however, only two exploratory papers have tried to analyse the labour-market outcomes of pre- versus post-reform migrants (see Emilsson 2016; Emilsson and Irastorza 2019).

An early follow-up study by the OECD (2011) shows that there has been no substantial increase in the number of work permits, which may be due to the economic crisis and the newness of the law. The report also notes that the reform has provided opportunities for recruitment to businesses and professions that were previously excluded, resulting in half of the work permits and most of the longer permits being granted for occupations which have no labour shortage. Later studies found that not only did the number of labour migrants increase with the new policy but they did so mostly in lower-skilled occupations (Emilsson 2014, 2016; Calleman and Herzfeld Olsson 2015).

One of the main findings in the evaluation article by Emilsson (2016) was that the policy change did affect the work conditions of labour migrants—those arriving after the policy reform more often worked in occupations where there was already a surplus of workers and had, on average, lower salaries than those who worked under the old labour-migration law. Based on a descriptive analysis of register data, Emilsson and Irastorza (2019) compared the size, composition and employment of labour-migrant cohorts who arrived in Sweden before versus after the 2008 reform. They show that non-EU post-reform labour migrants did not perform as well as their pre-reform counterparts, a result which they relate to the lower education and the greater education-to-occupational-level mismatch of post-reform labour migrants.

A few studies and evaluations of the reform also suggest that there were examples of fraud and violations of working conditions after the reform. The low-income levels that

labour migrants declared in surplus occupations are a strong indicator that many of them work under worse conditions than natives. [Emilsson et al. \(2014\)](#) show that, in some occupations in the private service sector, the average income is as low as 10,000 SEK (circa EUR 1,000) per month. A case study on Chinese restaurant workers concluded that the new labour-migration policy has not succeeded in establishing conditions for workers in the restaurant sector that comply with Swedish labour and employment law ([Axelsson et al. 2013](#)). In the summary of their anthology on the 2008 reform, [Calleman and Herzfeld Olsson \(2015\)](#) note that all the evidence suggests that immigrant workers often receive a lower salary than that specified in the employment contract and have worse working conditions than native employees. Finally, [Emilsson and Irastorza \(2019\)](#) conclude that the pre-migration controls introduced in 2011 and 2012 to prevent abuses in the system improved labour-market outcomes for labour migrants. These controls consisted of a pre-screening of the economic situation of employers and their history of payments of salaries and taxes concerning previous labour migrants. They were mostly implemented in low-skilled occupations in industries ‘in need of particular control’ categorized by the Migration Board such as cleaning, hospitality and berry picking ([Pelling 2020](#)).

2. Labour migration policies in Sweden

Traditionally, labour migration policies have been classified in supply-driven versus demand-driven models of selecting labour migrants ([Chaloff and Lemaitre 2009](#); [Papademetriou and Sumption 2011](#)). In supply-driven models, the state selects labour migrants with the knowledge and skills that are expected to be needed in the medium and long term. Typically, a points system is designed in which different forms of human capital—such as education level, age, work experience, and language skills—are assessed. In contrast, a demand-driven model is based on employers’ immediate need for labour and most often includes a labour-market test to check whether there is domestic labour available qualifying for the position announced.

Today, most countries have abandoned strict supply- or demand-driven models and opted for a combination of both—so-called hybrid models ([Kolb 2014](#); [Koslowski 2014](#)). The supply-driven models in Canada, Australia, and New Zealand have been adjusted to take greater account of the labour-market demand, trying to find the right balance between human-capital requirements and labour shortages ([Hawthorne 2005, 2011](#); [Desiderio and Hooper 2016](#)). By doing so, the models try to ensure not only that labour migrants are highly skilled but also that their particular skills are valued in the labour market. European countries like the United Kingdom (UK), Austria, and Denmark have also introduced or experimented with variations of the points system, combining demand- and supply-driven selection mechanisms ([OECD 2013](#); [Somerville 2013](#)). The EU blue card, which allows member states to accept highly skilled labour migrants with an employment offer above a minimum income threshold, constitutes another example of this converging trend.

The main driver for hybrid systems seems to be to increase the selectiveness of labour migrants so that they are both highly skilled and attractive to potential employers, thereby

reducing the influence of migrant self-selection and migration network effects. The importance of state selection is, according to Tani (2014), more important for countries with a relatively high average income compared with the home country, a compressed income distribution and a comprehensive welfare system for its low-income earners. Keeping out low-skilled migrants in favour of highly skilled ones, therefore, emerges as a tool with which to 'protect' the host country's welfare system and address its domestic employers' needs.

In line with Tani (2014), other theorists of labour-migration policymaking suggest that a country like Sweden, with its coordinated market economy, would prefer a highly selective labour-migration policy focusing on the highly skilled (Devitt 2011; Menz 2011). This was the case until the 2008 labour-migration reform drastically changed the selection criteria for non-EU labour migration by eliminating labour-market tests and human-capital considerations (Bill 2007/08: 147).

The Swedish models for labour migration during the post-war years can be divided into three periods: from the end of World War II until the early 1970s, from 1972 until the new law was introduced in 2008 and the period under the current system of labour migration.

The first period, from the end of World War II to the beginning of the 1970s, allowed employers to recruit labour without much state control (Lundh and Ohlsson 1999). After the successive phasing out of visa requirements for immigrants from non-Nordic countries as well as a liberalisation of praxis in cases involving applications for residence and work permits, it became possible to travel to Sweden on tourist visas and apply for a job once there. In 1967, the rules for non-Nordic labour immigration were tightened due to demands from the trade union movement. From then on, non-Nordic citizens who wanted to work in Sweden were required to arrange work permits and housing *before* entering the country (Lundqvist 2002). Despite the new rules, non-Nordic labour immigration continued to be relatively substantial until the recession in 1971 and 1972, when the Swedish Trade Union Confederation (LO) issued a circular to its unions calling for a more-restrictive policy regarding the approval of work permits for non-Nordic citizens (Lundh and Ohlsson 1999).

In the second period, 1972–2008, labour migration was governed by the guidelines issued in the 1968 and 1984 legislations (SOU 2005: 50). Labour migration was demand driven and required a job offer from an employer. Just like today, the wages and employment conditions had to be equivalent to those applicable to native labour. Work permits would normally be given before entering Sweden. As in the previous period, the Employment Service did a labour-market test to see if there were available workers in Sweden or other EU/EEA (European Economic Area) Member States before a work permit was granted. The relevant trade unions were consulted on both the conditions of employment and the general labour situation in the industry involved. The system was highly restrictive due to the influence of labour unions and ambitions to mobilize domestic labour in full; this led to low non-Nordic labour immigration until Sweden's entry into the EEA in 1994 and the EU in 1995.¹

It is, though, a misconception that the opportunities for labour migration were closed before December 2008. The labour-market test was flexible and the Employment Service could, within the scope of the law, change the guidelines for work permits according to

labour-market needs. This happened, for example, on 1 January 2005 when the tests were placed earlier in the application process and it was emphasized that filling labour shortages were more important than the level of education. As a result, more permanent residence permits for work were granted between 2005 and 2008.

In sum, from 1972 to 2008, Sweden's labour-migration policy was one of the most restrictive in Europe. With the 2008 reform, this shifted overnight and the country became one of the most liberal and open regimes (OECD 2011; Cerna 2014).

The 2008 reform of the Swedish labour-migration policy transferred the responsibility for migrant selection from the state to employers. Under the new law, there are no restrictions regarding skills, occupational categories, or sectors, and there are no quantitative restrictions in the form of quotas. The only condition for obtaining a work permit is an offer of employment with a liveable wage, in line with applicable collective agreements and general insurance conditions. In practice, a labour migrant must have a high-enough work income above the welfare eligibility threshold for welfare benefits. Within our period of study, we used the same threshold as the one estimated by the Swedish Migration Board to grant residence permits for labour migrants: SEK 13,000/month before taxes (about EUR 1,300), a level below the lowest collective agreement and acceptable only for part-time employment.

While work and residence permits must normally be arranged before leaving the country of origin, in certain cases they may also be granted from Sweden and to foreigners who enter Sweden for reasons other than work. The precondition is that the application must be done during the visa-free period (90 days after entering Sweden) and the employment relates to occupations in which there are documented labour shortages. For example, visiting students who have completed studies for one semester are entitled to apply for a work and residence permit from within Sweden. Likewise, asylum-seekers whose applications have been rejected may also be granted a permit if they have worked for 6 months with a 1-year offer of continued work.

The initial residence and work permit is granted for no more than 2 years and can be extended one or more times. A permanent residence permit is granted if the person has worked for an aggregate period of 4 years within the 5 years before the application. The work permit is linked to the same occupation and employer for the first 2 years; after this, if the work contract gets extended, the permit is also extended to an occupation—but not necessarily to the same employer—for 2 more years. However, there is some degree of flexibility in the system. For instance, if an individual would like to change employers during the first 2 years, they are allowed to apply for a new work permit from Sweden. Equally, those who lose their jobs have 3 months to find new employment before their residence permits are revoked. Table 1 provides a summary of the main aspects of the reform introduced in 2008.

It is useful to highlight here the main differences between the Swedish labour-migration model and other migration regimes worldwide to better understand later discussions of the effects of the 2008 law and the generalization of the research findings to other settings.

First, the Swedish regulations on entry and rights are the same for all labour migrants, regardless of their skill level. Ruhs (2015) has noted that all countries, except Sweden, use different labour immigration programmes for admitting migrants for employment in

Table 1. The regulatory framework of labour migration before and after December 2008.

	Assessment criteria	Time	Family	Categories
Former policy	Permanent residence permit for labour-market reasons	No limitations	Yes	Not specified, determined by the long-term needs of the labour market
	Temporary labour-market shortage	18 + 6 months	Yes	Skilled and experienced professionals for short-term shortages
	International exchange	Maximum 4 years	Yes	Managerial employees/specialists in international corporations
		18 months	Yes	Trainees
		12 months	Yes	<i>Au pairs</i>
	Seasonal workers	Maximum 3 months	No	Workers in agriculture, horticulture, and forestry
New policy	Minimum wage according to occupational standards	2 + 2 years, then permanent	Yes	Same regulation for all categories

Source: SOU (2005: 50, p. 212) and own adaptations.

low-, medium-, and high-skilled jobs. Before 2008, the Swedish labour-migration policy was separated into five different streams, which also gave migrants different rights. For example, highly skilled migrants whose skills were assessed to have long-term value were granted permanent residence permits, while other categories of labour migrants received temporary work permits.

Second, there is no obvious trade-off between numbers and rights in Swedish labour-migration policy, as there is in other countries (see [Ruhs and Martin 2008](#)). There are no numerical quotas and labour migrants are given quite extensive rights: they can bring family members if their stay is expected to be longer than 6 months, they all have a clear pathway to permanent residency and citizenship and they are included in the welfare-state system.

Third, the Swedish model allows migrants who enter Sweden as asylum-seekers to 'change tracks' and become labour migrants (for details on such processes, see the previous section).

Finally, Sweden has a 'pure' demand-driven model with no elements from supply-driven systems. There is no selection based on human capital, as it is the employers who are responsible for migrants' selection. Furthermore, there is no sectorial or occupational focus. Migrants can be hired for any occupation without having any particular skills. In sum, Sweden is not following the international trend towards hybrid labour-migration policies.

The basic objective of most labour-migration regimes is to cover shortages of labour while trying to avoid the potentially adverse effects of labour migration on the employment of previous residents of the country ([OECD 2009](#)). This objective is achieved by deciding who and how many labour migrants to admit and for which jobs ([Chaloff 2014](#)). By not deciding on any of these aspects and opting for a 'pure' demand-driven labour-migration policy, Sweden goes against almost all international trends ([de Haas, Natter, and Vezzoli 2018](#)). It also defies the trend of balancing numbers versus rights and the closely related tendency to adopt more selective labour-migration policies.

3. Estimation strategy and sample description

To examine the effect of the 2008 labour migration policy reform on non-EU migrant cohorts' income, we estimate various difference-in-differences specifications in which the difference between the work income of non-EU labour migrants arriving both before and after the reform is contrasted with that same difference among other non-EU migrants (who migrate as family members, refugees, students and the like). The rationale behind the difference-in-differences approach is to treat the policy reform as a natural experiment. The attractiveness of the approach comes from comparing two groups at two (or more) points in time. The first difference, the difference between groups comes from one group being affected by policy change (here: free migration for non-EU labour migrants due to the labour migration reform) and the other group (other non-EU migrants) being unaffected. The second difference is comparing the outcomes for these groups before and after treatment (the reform).

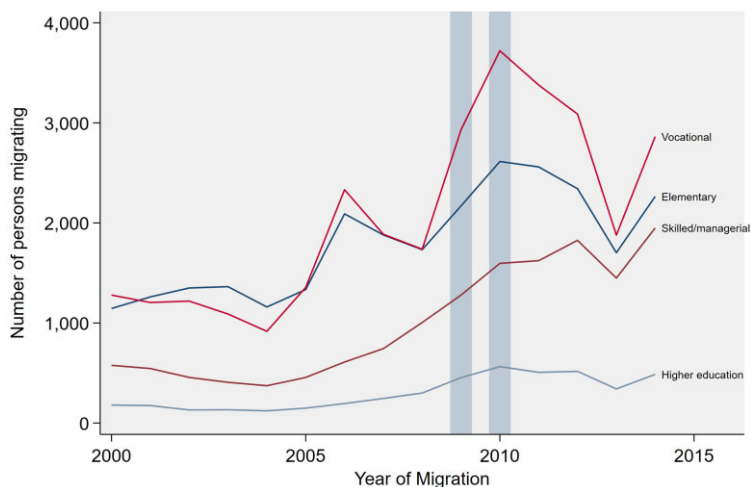


Figure 1. Trends in number of persons migrating before and after the reform by occupational groups, 1998–2014.

Source: STATIV. Own adaptations.

Figure 1 displays changes in the number of labour migrants moving to Sweden, by occupational group. We expect that the causal effect of the reform on labour migrants' mean income from work mostly derives from compositional changes, as the reform lifted immigration bars even for persons with lower education and in lower occupations. The sharp increase in the number of persons with vocational and elementary occupations migrating to Sweden in the post-reform period (highlighted by blue bars) provides strong support for our assumption. For persons with higher education occupations and skilled/managerial occupations, we observe a more gradual increase that occurred for more periods before the reform. Also, the decline in the number of persons with elementary and vocational occupations is well in line with expectations as it coincides with the controls introduced by the Migration Board after 2010. The controls had an immediate effect on the waiting times for work permits (Pelling 2020), leading to an instantaneous drop in labour migration.

Figure 2 displays the mean log income for non-EU labour migrants and other non-EU migrants. While the two groups have substantially different levels of log income from work, the pre-reform trend in log income is relatively similar for the two groups. There was no income trend for other migrants before the reform, but we do observe some decrease in the mean log income of labour migrants. For labour migrants arriving in the period after the reform (highlighted by bars), however, we observe a drastic and substantial drop in the log income, which is not observable among other migrants. For those, we observe a slight increase in the 2 years after the reform, which coincides with positive Gross Domestic Product (GDP) growth, and levels out thereafter. For labour migrants, we observe an increase in log income from 2010 onwards and in a period of economic contraction, which is likely to be explained by the pre-controls for work permits that the

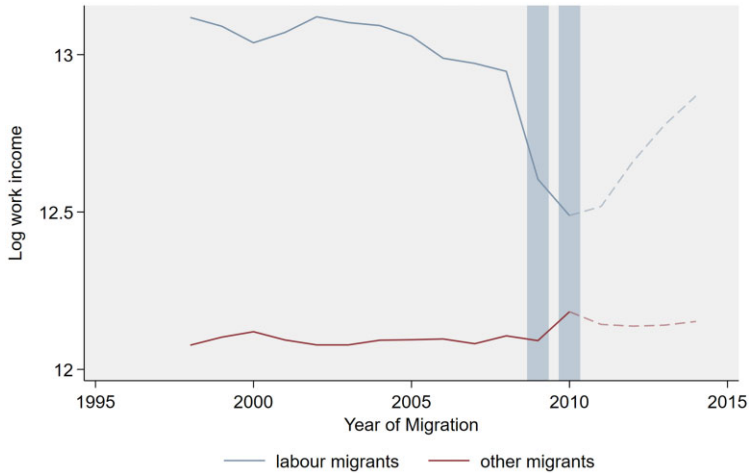


Figure 2. Trends in the log of work income for non-EU labour migrants and other migrants, 1998–2014.

Source: STATIV. Own adaptations.

Migration Board introduced then. For this reason, we do not include years after 2010 in our sample (those years are plotted with a dashed line).

3.1 Sample description

To conduct the empirical analyses, we use unique Swedish register data (STATIV) for the period 1998–2010. STATIV is a longitudinal database for integration studies that contains administrative information on all individuals registered in Sweden and is updated every year. Our sample comprises the entire adult, working-age population (18–65 years old) of foreign-born non-EU migrants who moved to Sweden between 1998 and 2010. Since the reform was enforced on 01 December 2008, in our empirical analysis we consider 2008 as a pre-reform year and, therefore, 2009 as the first year after the reform. We restrict the last year of observation to 2010 since the Migration Board has introduced pre-controls for work permits in certain industries since 2012, a practice that had been informally applied since 2011 (Emilsson and Irastorza 2019). This later practice must be regarded as a partial reversal of the free labour-migration regime that was introduced in 2008.

In addition to EU migrants, we also exclude migrants who are citizens of the Nordic countries as well as migrants who are citizens of countries that became member states of the European Union under the period of study due to the accession of new member states in 2004 and 2007. We restrict our sample to migrants who were registered as employed in the employment register, which is an approximation of ILO's (International Labor Organization) definition of employment status. That means that everyone who has been in paid work for at least one hour during the registration week (in November) is classified as employed. In our sample, we observe this and all other information for time-varying

variables in the year after migration. This selection criterion ensures that we identify labour migrants with somewhat steady employment and exclude migrants who emigrate shortly after arrival or change track (to asylum-seekers, e.g.). Observing employment-status characteristics the year after migration implies a certain sample selection as the individuals need to appear in the population register for a minimum of 2 years (which, however, does not require that the individual has to stay two full years). However, this selection criterion does not impose a strong restriction since only individuals who intend to stay for a minimum of 12 months are included in the population registers.

Moreover, we restrict the sample to individuals who received an income from work that was greater than two price base amounts (*prisbasbelopp*), which is a yearly amount calculated by Statistics Sweden for estimating social benefits. By applying this selection, we exclude individuals who did not have steady employment despite being registered as employed according to the ILO definition.² Restricting the sample by excluding immigrants with very low incomes is widely used with Scandinavian register data (Bratsberg, Raaum, and Røed 2006; Nystedt and Dribe 2015; Elwert and Tegunimataka 2016; Rastorza and Bevelander 2017).

Our sample is comprised of 53,235 individuals, of whom 20 per cent arrived as labour migrants (for more detailed subsample sizes, refer to Table 2).

3.2 Models and variables

In the eight difference-in-differences specifications we present, our outcome variable is the natural logarithm of the annual income from work (adjusted with the annual Consumer Price Index at 2020 values). The variable is a measure of gross annual salary and other work-based benefits (such as sickness allowances and parental leave benefits). We used the STATA CSID package (Rios-Avila et al. 2021) and the doubly robust estimation strategy as proposed by Sant'Anna and Zhao (2020) and Callaway and Sant'Anna (2021) to estimate the effect of the 2008 reform over multiple periods. Labour migrants are defined as individuals who were granted a residence permit as employed or self-employed persons by the Swedish Migration Agency. We estimate the effects of the reform for the post-reform periods 2009 and 2010 while we consider 1998–2008 as pre-reform periods.

We rely on conditional parallel trends and estimate the effect (average treatment effect on the treated, ATT) controlling for age, age squared, gender, marital status, an interaction term between marital status and gender, as well as the metropolitan area of residence (Stockholm, Gothenburg, Malmö, and all other areas of residence, as registered by the Swedish tax authority on 31 December). As stated above, all time-varying variables are measured the year after arrival as part of our selection criteria but also due to a delay in registration of these characteristics.

Beyond the overall estimation of the ATT for the total sample (specification 1), we estimate differential effects by educational and occupational level. Because 20 per cent of the individuals in our sample lack information on educational attainment and 40 per cent lack information on occupation, in model (2), we restrict the sample to individuals for whom we observe education and occupational status in the registers and re-estimate the

Table 2. Descriptive statistics for the full sample.

Variables	Other migrants				Labour migrants			
	Pre-reform		Post-reform		Pre-reform		Post-reform	
	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
Annual income from work	199,058.5	104,551.5	218,684.7	269,024.0	632,454.8	640,466.9	354,149.4	467,134.9
Year of migration	2,004.0	3.1	2,009.6	0.5	2,004.1	3.3	2,009.6	0.5
Age	31.5	7.4	31.9	7.5	34.4	8.0	33.3	8.2
	%				%			
Gender								
Male	62.8		65.7		78.7		80.2	
Female	37.2		34.3		21.3		19.8	
Marital status								
Married	58.1		56.4		55.7		46.8	
Other	41.9		43.6		44.3		53.2	
Metropolitan area								
Stockholm	23.0		23.2		28.7		24.3	
Gothenburg	8.6		7.9		10.9		7.8	
Malmö	4.2		5.0		7.6		4.3	
Non-metropolitan area	64.2		63.9		52.8		63.6	
<i>N</i>	32,707		9,889		5,693		4,946	

Source: STATIV. Own calculations.

main specification—as in (1)—on the restricted sample to show that the estimates are not impacted by this sample restriction.

Education is registered in six main categories consistent with the levels of the Swedish education system. For immigrants, education is formally registered only if a degree was obtained in Sweden or the education was formally recognized by the Swedish higher education authorities, which is a lengthy process. Statistics Sweden has attempted to supplement the lack of information from surveys sent out to newly arrived immigrants (on an annual basis). The time delay in the registration of survey responses and non-responses are among the reasons why a large share of migrants in our sample, 20 per cent, does not have any information on the level of education registered. Information on occupation originates from formally registered information in various registers and is complemented with a survey mainly addressed at smaller enterprises and organizations. In our sample, 40 per cent of migrants do not have any information on occupation registered.

We recode the level of education into a binary variable, *university*, which takes the value 1 for individuals who have a tertiary education of a minimum of 2 years, and the value 0 otherwise. We recode the available information on the occupational level (from elementary occupations to managers) into the categorical variable *job qualification* with four categories according to the average required qualifications for the occupation in each category (*elementary occupations*, occupations that require no formal education; *vocational occupations*, occupations that typically require vocational training; *higher-education occupations*, occupations that requires shorter university education; *skilled and managerial occupations*, occupations that require specialist higher education and managers). This classification is based on the International Standard Classification of Occupations (ISCO) and the STATIV documentation provided by Statistics Sweden.³

We estimate treatment effects for individuals without university education (specification 3), with university education (specification 4), with elementary occupations (specification 5), with vocational occupations (specification 6), with higher-education occupations (specification 7), and with skilled/managerial occupations (specification 8).

4. Findings

4.1 Identifying assumptions

For the difference-in-difference approach to achieve valid estimates, several identifying assumptions need to be fulfilled. The most important assumptions are the parallel trend assumption, no spillover effects (Stable Unit Treatment Value Assumption, SUTVA), and no anticipation. The *parallel trend assumption* states that, in the absence of treatment, the difference between the treatment group (no-EU labour migrants) and the control group (other non-EU migrants) are constant over time (conditional on X) that are unrelated to treatment. That is, the trends would be parallel in both groups in the absence of treatment. While the assumption is not testable (due to the counterfactual problem), in Figure 2, we plot the trends in the outcome variable in the treatment and control group before and after the reform (1998–2014). A violation of parallel trends prior to the reform

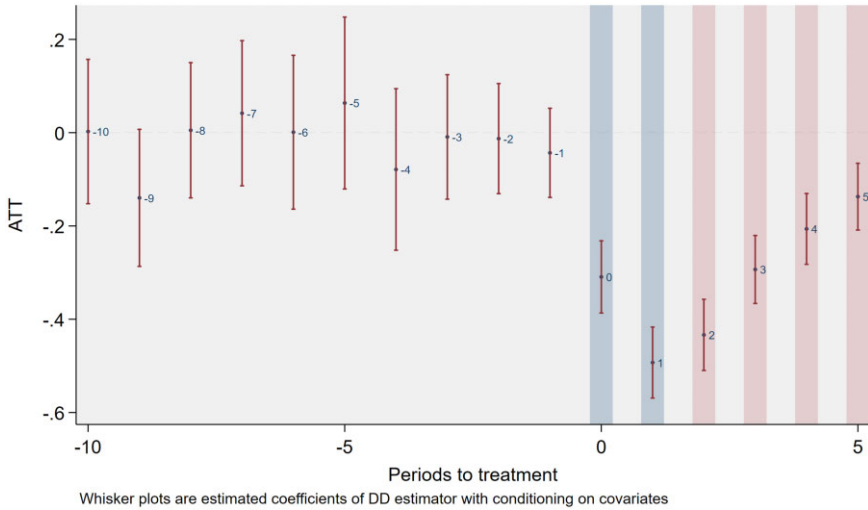


Figure 3. Event study plot for the estimated average treatment effects (ATT) of the labour-migration reform on log work income for non-EU labour migrants.

Source: STATIV. Own adaptations.

may be an indication of non-parallel trends post-reform (in the absence of treatment). The 2 post-reform years are highlighted by blue bars.

Figure 3 shows the event-study plot for the pre- and post-treatment period. All pre-treatment estimates have overlapping confidence intervals, which confirms zero pre-treatment effects and *no anticipation*. We observe a drop in $t - 9$ but since the drop occurs many periods before treatment it is not of greater concern. The plot shows the expected decrease in log income at t_0 and t_1 , the two periods for which we study the effects of the reform (highlighted by blue bars) and the expected increase in the periods thereafter in which controls were introduced by the Migration Board.

With anticipation effects, we would observe a significant decline in log income before the reform, which we do not observe. Had employers—in anticipation of the reform—offered lower wages before December 2008, we should consider moving our treatment date (to the date of the announcement of the reform). However, the event-study plot does not indicate such effects. Moreover, we do not expect strong anticipation effects since the main effect of the reform on income goes through increasing immigration (see Figure 1) and changes in granting residence permits took only place after 1 December 2008.

4.2 Descriptive statistics

Table 2 provides descriptive statistics for the four subsamples of the main sample (used in specification 1) as classified by the time of arrival (before or after the 2008 reform) and the reason for migration (labour migrants versus other non-EU migrants).

The mean annual income from work (in Table 2 presented in 2020 values) increases somewhat for other migrants in the post-reform period compared to the pre-reform period, from 199,059 SEK to 218,685 SEK (*circa* 20,000 and 22,000 EUR, respectively), while it decreases for labour migrants from 632,455 SEK to 354,149 SEK (*circa* 63,000 and 35,000 EUR, respectively). While there is a small increase in mean income for migrants arriving before or after the reform, we observe a sharp decrease in labour migrants' mean income for those arriving within the 2 years after the reform, compared to labour migrants immigrating before the reform. The mean year of migration is about the same for the two migrant groups before and after the reform (2004 and 2009), which affirms that there is no distinct difference in the timing of migration between the two groups. The mean age, as well as the gender composition, shows only small changes for the two groups before and after the reform. Labour migrants are somewhat older on average (33–34 years) compared to other migrants (32 years) both before and after the reform. The share of men is substantially larger than the share of women among both migrant groups before and after the reform. The share of men increased from 62.8 to 65.7 per cent for other migrants and from 78.7 to 80.2 per cent for labour migrants after the reform. While the share of other migrants settling in one of Sweden's three metropolitan areas is about the same for other migrants arriving after the reform as for other migrants arriving before it, among labour migrants, the share of migrants settling in non-metropolitan areas increased from 52.8 to 63.6 per cent for those arriving after the reform.

Table 3 provides descriptive statistics for the sample used in specifications (2) to (8) (excluding individuals with missing registration of education and occupational status)⁴. The mean income for labour migrants and other migrants before and after the reform differs slightly between the two samples. However, the general pattern of a small increase in income for other migrants arriving after the reform and a steep decrease in income for labour migrants arriving after the reform is the same in the two samples. The descriptive statistics for all other variables in the two samples are very similar. Regarding the share of migrants with a university degree, for other non-EU migrants, we observe only a small change between the periods before and after the reform. About 45 per cent of them have a university degree. Even the occupational status is relatively similar for other non-EU migrants arriving before and after the reform. While 42 and 44 per cent of those who arrived in Sweden before the reform worked in elementary or vocational occupations, respectively, somewhat fewer—namely 38 and 40 per cent—of their counterparts arriving after the reform had the same occupational levels.

Among labour migrants, we see a substantial change in the composition of migrants arriving before and after the reform: 88 per cent of those who arrived in the years before versus 55 per cent of those who arrived after the reform had a university education. The occupational level of labour migrants also changed after the reform: only 3 per cent had elementary occupations compared to almost one-fourth of those who arrived after, and about 14 per cent of pre-reform versus 47 per cent of post-reform labour migrants had vocational occupations. For labour migrants working in higher and skilled/managerial occupations, on the other hand, we observe the opposite pattern.

Table 3. Descriptive statistics for the restricted sample.

Variables	Other migrants				Labour migrants			
	Pre-reform		Post-reform		Pre-reform		Post-reform	
	Mean	Std	Mean	Std	Mean	Std	Mean	Std
Annual income from work	207,589.6	102,371.5	229,472.7	197,323.3	565,953.9	588,838.6	350,673.8	428,821.2
Year of migration	2,004.5	2.6	2,009.6	0.5	2,004.8	2.9	2,009.6	0.5
Age	32.0	7.4	0.0	0.0	33.4	8.0	0.0	0.5
	%				%			
Gender								
Male	61.2		65.3		74.8		78.4	
Female	38.8		34.7		25.2		21.6	
Marital status								
Married	58.3		55.6		55.6		47.7	
Other	41.7		44.4		44.4		52.3	
Metropolitan area								
Stockholm	22.1		22.6		26.0		24.0	
Gothenburg	8.5		7.7		10.9		7.9	
Malmö	4.3		4.7		6.9		3.9	
Non-metropolitan area	65.2		64.9		56.2		64.2	
Education								
University level	44.3		46.2		88.0		54.8	
Other	55.7		53.8		12.0		45.2	

Continued

Table 3. Continued

Variables	Other migrants				Labour migrants			
	Pre-reform		Post-reform		Pre-reform		Post-reform	
	Mean	Std	Mean	Std	Mean	Std	Mean	Std
Occupation								
Elementary	41.8		38.4		2.5		23.2	
Vocational	43.8		40.3		13.5		46.8	
Higher	4.0		5.6		16.9		7.6	
Skilled/managerial	10.4		15.7		67.1		22.4	
N	15,636		4,985		2,023		2,982	

To summarize, there are large differences in income before and after the reform between labour migrants and other migrants, while most other variables are comparable between the two groups and the two time periods (despite smaller compositional changes). Regarding education and occupation, we see substantial differences among labour migrants arriving before or after the reform, which indicates a change in the composition of labour migrants with respect to these variables.

4.3 Difference-in-difference estimation

We ran a set of eight different specifications to estimate the causal effect of the reform (ATT) as stated above (Table 4). All models rely on conditional parallel trends and control for demographic controls.

Specification (1) is the model for the total sample baseline specification and includes only the terms stated above. The coefficient for the difference-in-difference estimator is -0.409 , which corresponds to a causal negative effect of the reform on work income of about 33 per cent. In specification (2), we replicate the same specification as in (1) but with a restricted sample which excludes individuals with missing register information on education and occupational status. The sample size reduces from 53,235 to 25,626 individuals, but the difference-in-difference estimator is unaffected by the sample selection (ATT -0.409). Given the strong increase in migration for persons with elementary and vocational occupations (Figure 1), it is likely that the overall effect is driven by a changing composition of labour migrants caused by the reform. To investigate how the reform affected the mean log work income for different occupational groups, we stratify the sample for the following specifications. In specifications (3)–(8), we estimate differential treatment effects. Specification (3) restricts the sample to persons without a university education, for whom the estimated treatment effect is -0.103 , while the ATT is -0.369 for persons with university degrees (specification 4) (approximately 10 and 31 per cent decrease in work income, respectively). Specifications (5)–(8) estimate effects by occupational group. The estimated ATTs are largest for higher-education occupations (-0.192) and skilled/managerial occupations (-0.182) and smaller for elementary (-0.076) and especially vocational occupations (-0.011). While it is likely that the overall effect is driven by compositional changes in the group of labour migrants, these estimates from specifications (3)–(8) show that there are significant effects even within educational and occupational groups. The differential effects by occupational groups are not surprising considering that, even after the reform, visas were only granted when employers guaranteed a minimum liveable wage, in line with applicable collective agreements and general insurance conditions. Thus, it is expected that there was little room for wage reductions in the lower occupations for which the mean income is already low. For higher education and skilled/managerial occupations, on the other hand, the reform opened the possibility to recruit employees at a lower cost.

Table 4. Estimated average treatment effects on the treated (ATT) of the labour migration reform on logged annual work income.

Variables	(1) Total		(2) Restricted sample	
	B	SE	B	SE
ATT	-0.409	0.022	-0.409	0.03
Demographic controls	Yes		Yes	
Sample restriction	No		Yes	
N	53,235		25,626	
	(3) No university education		(4) University education	
	B	SE	B	SE
ATT	-0.103	0.05	-0.369	0.03
Demographic controls	Yes		Yes	
Sample restriction	Yes		Yes	
N	12,976		12,650	
	(5) Elementary occupations		(6) Vocational occupations	
	B	SE	B	SE
ATT	-0.076	0.05	-0.011	0.05
Demographic controls	Yes		Yes	
Sample restriction	Yes		Yes	
N				
	(7) Higher-education occupations		(8) Skilled/managerial occupations	
	B	SE	B	SE
ATT	-0.192	0.12	-0.182	0.06
Demographic controls	Yes		Yes	
Sample restriction	Yes		Yes	
N	1,472		4,431	

Notes: Demographic controls are age, age squared, gender, marital status, an interaction term between marital status and gender, as well as the metropolitan area of residence. Estimations rely on clustered standard errors. *Source:* STATIV. Own calculations.

4.4 Placebo test

To test for placebo effects, we estimate the effects of the reform for EU migrants who were legally unaffected by the 2008 labour-migration reform. Figure 4 confirms that there are no effects for the placebo groups. This test gives strong support for the reform having causal effects for non-EU labour migrants only.

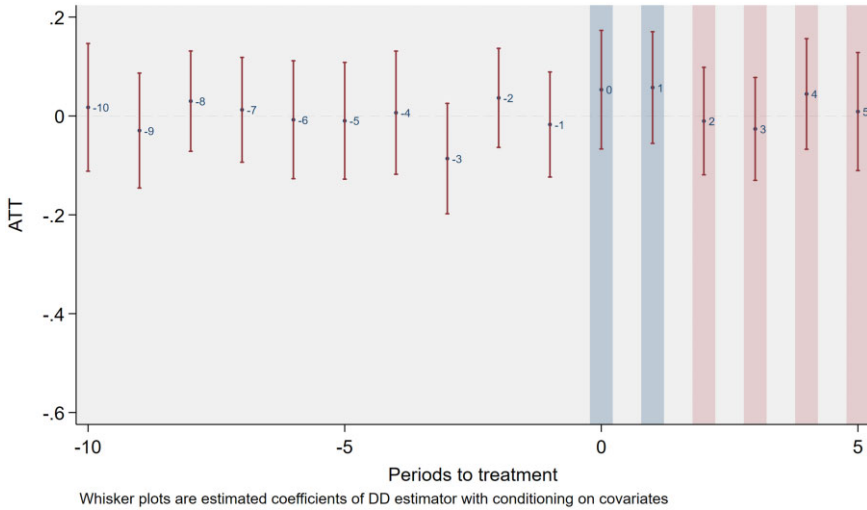


Figure 4. Event study plot for the estimated average treatment effects (ATT) of the labour-migration reform on log work income for the placebo group of EU-labour migrants.

Source: STATIV. Own adaptations.

5. Concluding discussion

Based on register data and a difference-in-differences approach, we have investigated the effects of the 2008 Swedish policy reform on non-EU labour migrants' labour-market outcomes, as measured by average job income. The effects of the policy change are substantial. The educational level, job income, and occupational level all present opposing trends for labour migrants and other migrants who arrived before, versus after, the reform: they did not change significantly for other migrants but they did worsen conspicuously among labour migrants. According to previous studies, the number of labour migrants from Asia, North America, and Oceania decreased after the reform, while the number of labour migrants born in the Middle East increased (Emilsson and Irastorza 2019). Our difference-in-difference estimations confirm what we see in the descriptive statistics: the 2008 policy change had a negative effect on labour migrants' log annual income from work, with changes in occupational composition likely to be the main drivers of the income drop. These results indicate that a free labour-migration system without labour-market tests and human-capital considerations may increase labour migration primarily to low-skilled occupations.

Previous research shows that the new labour migration flows to lower-skilled jobs in the private service sector are, to a large extent, dependent on established transnational networks where small companies owned by co-nationals recruit many or the majority of the low-skilled labour migrants (Employment Service 2012; Frödin and Kjellberg 2018). Van den Broek, Harvey, and Groutsis (2016) also emphasize the importance of migration intermediaries in shaping recruitment, selection, and placement, thereby in part determining labour-market outcomes for particular groups of migrant workers.

In the absence of state interventions, labour-market tests, income thresholds or skill requirements, self-selection and, according to previous studies, also networks play a more prominent role in the selection of migrants. Well-developed, large migrant networks reduce migration costs and translate into negative self-selection patterns (see, e.g., Bertoli and Rapoport (2015) for a literature review). Subsequently, in the long term, a less-selective migration policy is expected to reduce the overall level of human capital among labour migrants and lead to lower productivity among them. We demonstrate that, in the case of Sweden, a shift towards less regulated labour migration resulted in a changing composition and reduced average income for post-reform labour migrants.

Compositional changes, however, were not the only drivers for the income drop after the reform. Differential treatment effects by education and occupational levels show that the policy change had a stronger effect on labour migrants with higher education and those who worked in higher professional occupations. This is not surprising considering that wages are already low in elementary or vocational occupations and protected by collective agreements.

The policy implications of these findings are not negligible. In addition to the instantaneous effect that the reform had on the composition of labour migrants and consequently their average income, we observe also a decrease in income in high-skill occupations. The income drop in professional occupations as well as other irregularities in hiring processes during the first 2 years after the reform, as reported in previous studies, were unintended consequences of the reform. Our findings also indicate that state controls are a useful tool with which to avoid situations of fraud and other irregularities in hiring processes and have a crucial role in the orderly implementation of liberal labour-migration regimes.

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Notes

1. Note that the EU had 27 Member States during the period included in this study. However, our data only allow us to classify countries based on an EU-28 membership. Therefore, people coming from Croatia—which joined the EU in 2013—are misplaced in the group of EU citizens. While we ignore the exact number of people migrating from Croatia between 2007 and 2010, we do know that it is low and,

therefore, do not expect this to alter our results significantly. We plan to correct this in the next version of this article after we receive a new variable based on previous EU memberships.

2. The original employment variable included in STATIV described whether an individual worked for a minimum of 2 h during the third week of November or not. Therefore, additional criteria based on income needed to be applied to filter out people who do not have steady employment.
3. For more information on ISCO, see <http://www.ilo.org/public/english/bureau/stat/isco/press1.htm>. For more information on STATIV variables, see <https://www.scb.se/vara-tjanster/bestalla-mikrodata/vilka-mikrodata-finns/longitudinella-register/stativ-en-longitudinell-databas-for-integrationsstudier/>.
4. Note that the process of checking and registering foreign credentials takes time and, therefore, the data on education are missing for some individuals for the year after arrival.

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