

Immigration and the Municipal Economies in Sweden: the impact of population change on aggregate outcomes

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Abstract

Asylum immigration in Sweden entails net fiscal costs on national level, but the impact on individual municipalities is not extensively researched. If there are net costs also on municipal level, it could be argued that the management principle of controllability is violated, as the allocation of asylum immigrants is decided on national level, but the long term costs are borne mainly by the municipalities. This study aims to explain how the change in population composition through immigration mechanically has affected the development of the average earned income and the labor market participation rate on national and municipal level during the period 1985–2015 in Sweden. This was achieved by decomposing the total development with respect to Swedish and foreign background, and assessing the separate effects of increased proportion of foreign background, and the relatively different development of outcomes in the groups. On average, we found negative effects attributable to changes in the population composition, mainly related to the worse development of outcomes among those with foreign background. Immigration has had a positive effect on the development of average earned income in 9 out of 290 municipalities, but not in any municipality with respect to the development of the labor market participation rate. In conclusion, the results suggest that on average, the direct effect of immigration on municipal tax revenues is negative, with substantial effects in the municipalities with the worst relative earned income development. The compulsory allocation of asylum immigrants to municipalities is likely to induce long term costs that can be affected only to a limited extent by the municipalities themselves, violating the principle of controllability.

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BACKGROUND

In the aftermath of the Swedish migration crisis in 2015, a new law regulating the allocation of asylum immigrants to municipalities (SFS 2016) was adopted in 2016. The law stipulates that municipalities are required to accept asylum immigrants who have been granted residency permits, at a level determined by the state. Before the law was adopted, municipalities were free to decide on the level of refugee immigrants admitted, resulting in the number accepted to vary greatly on municipal level. Several studies show that asylum migration entails fiscal net costs on national level, mainly related to lower per capita tax payments (Ruist 2015). However, the impact on the individual municipal economies has not been extensively researched. If there are net costs also on municipal level, it could be argued that the management principle of controllability is violated, as the allocation of asylum migrants is decided centrally, but the long-term costs are borne by the municipality. Immigrants affect the tax revenues in the host country in both direct ways, e.g. through their performance on the labor market, and in indirect ways, as immigration may alter the labor market outcomes of natives in both directions.

This study focuses on the direct effects, and aims to explain how the change in population composition through immigration mechanically has affected the development of the average earned income and the labor market participation rate (LMPR) on municipal and national level during the period 1985–2015 in Sweden. On average, we found negative effects attributable to changes in the population composition due to immigration. On national level, 100% of the decline in LMPR was mechanically explained by immigration, whereof 25% was explained by a decrease in the proportion of those with Swedish background (SB), and the remaining 75% by the relatively more negative development of outcomes among those with foreign background (FB) compared to SB. In analogy, the increase in national average earned income had been 17.3 and 20.5 per cent higher for the entire population and the age group 20–64 respectively, in absence of population change. Immigration has had a positive direct effect on the development of average earned income in 9 municipalities, but not in any municipality for the development of LMPR. As the labor market outcome for the average immigrant in general is better compared to the average asylum immigrant, the trends observed are likely to underestimate the municipal level consequences of being assigned asylum immigrants. In conclusion, the results suggest that the compulsory allocation of asylum immigrants to municipalities may induce long term costs that the municipalities can affect only to a limited extent. Thus, the principle of controllability is violated.

Responsibility imbalances between the state and the municipalities

Controllability, defined as the ability to affect revenues and costs for the agent that has budget responsibility, is a generally accepted principle (Swedish Association of Local Authorities and Regions 2007). Besides from the obvious argument of fairness, complying with such an arrangement mitigates distortion effects as a result of uneven cost distribution. However, in the interactions between the Swedish state and the municipalities, there are many areas where controllability is violated, e.g. fee caps in municipal childcare and in the care of elderly (Zapata & Malmer 2010). Moreover, the underfinancing in such cases tends to increase over time (2010). Asylum migration is another policy area that could be assumed to suffer from controllability issues, and the increasing relative importance of understanding the municipal level effects is highlighted by the high levels of asylum immigrants that have arrived in Sweden in the recent years. In the current setting, national level policy regarding asylum immigration affects the municipal budgets, with limited opportunities for municipalities to directly affect outcomes or national policies. The municipal impact of national level decisions is mediated both directly by the allocation of those granted residency permits, but also indirectly, as national level policies also affect the volume of asylum applications and granted residency permits respectively. If the impact of asylum immigration on the municipal budget would be positive in the long run, this would not be a big issue. On the other hand, if the impact is negative, the effects have to be quantified in order to be able to evaluate the feasibility of the current responsibility allocation.

The asylum process from a municipal perspective

The costs for initial reception and accommodation of asylum seekers, as well as the two year long establishment period including introduction activities, are borne at the national level. While the state finances living expenditures including housing during the establishment period, municipal costs above the direct effects of lower tax payments per capita may incur if dwellings are not readily available, or if the immigrant has children, additional costs of schooling. In the case where a municipality has idle capacity in schools and housing, the marginal cost is relatively low. However, if there is no redundancy in the system regarding personnel or physical infrastructure, as was the case in many municipalities during the 2015 national migration crisis (Swedish Civil Contingencies Agency 2015), the building of temporary housing solutions and recruitment of new teachers is very likely to significantly drive costs above the normal level. Even more important, municipalities take over the entire economic responsibility for the asylum immigrant when the establishment period is over. As only a very low number of immigrants and their relatives have unsubsidized employments after completing the two year long establishment program, around 6% during 2015 (Arbetsförmedlingen 2015), a large proportion of asylum

immigrants face the risk of becoming dependent on social welfare benefits from the municipalities.

Simplified, Swedish municipalities have economic responsibility for everything that is not concerned with health care or public transportation, which is handled at county level, or is included in the national budget such as defense, the justice authorities, university education, and certain welfare benefits. The main revenue source for municipalities is the municipal tax, which is collected on all earned incomes excluding capital incomes, and amounts to 20.75% on average in 2017, according to Statistics Sweden (2017b). Two other sources of revenue are the municipal tax adjustment system, and the revenues from different municipal fees. The tax adjustment system is mainly financed by national tax revenues, and to a lesser extent, by municipalities that perform exceptionally well relative to others. The idea is to compensate municipalities in which structural factors, e.g. location, industry structure, and demography, have negative impact on municipal revenues. In theory, the tax adjustment system should partly compensate municipalities for potential long term costs associated with asylum immigration. However, it has been suggested that the compensation might not cover the full costs that occur on municipal level (Persson 2006). Currently, the fundamental long term problem for the municipal economies is that even if the accumulated taxes are growing with a larger population, the costs associated with the demographic change outweigh the gains (Swedish Association of Local Authorities and Regions 2015). A forecast from 2016 predicts that the Swedish population will grow by 590 000 until 2019, of which 70% are expected to be foreign born (Swedish Association of Local Authorities and Regions 2016). The predicted annual cost increase for the municipalities as a result of the demographic change is 9%, which in turn is very likely to result in higher municipal tax rates, unless the tax adjustment system payouts increase by the same amount (2016).

Historical immigration to Sweden

Immigration to Sweden was very limited up until the Second World War, when an estimated 170 000 refugees, predominantly from neighboring Nordic countries, were granted residence in Sweden (SOU 1967). While most of these refugees eventually returned to their homeland after the war, many sought permanent residence in Sweden. During the post war period, labor migration to Sweden from other European countries increased rapidly. Between the years 1950 and 1970, Sweden saw an almost three-fold increase of foreign born individuals, from 198 000 to 538 000 (Statistics Sweden 2004), but asylum immigration was comparatively insignificant. During this period up until the late 1970s, employment rates and wage earnings among immigrants were on par with, or in some periods even higher than for natives (Ekberg & Hammarstedt 2002). At the same time immigration started to increase, and the composition of

people immigrating began to change from primarily European labor immigrants to asylum immigrants and their relatives, the majority arriving from non-European countries (Ekberg 2009). Asylum migrants and their relatives account for 66.5% of the 2 million residence permits granted between 1980 and 2015 according to the Swedish Migration Agency (2017). Although those who are granted a residency permits make up a heterogeneous group, the majority of labor immigrants and exchange students eventually return to their home countries. As a result, the net immigration during the last few decades has primarily consisted of non-EU asylum migration (Statistics Sweden 2011a). Statistics Sweden reports that less than 40% of non-European labor migrants remain in Sweden 10 years after immigration, while the number is 96% for asylum migrants (Statistics Sweden 2013). As the composition of immigrants started to change, so did the labor market outcomes. Since the beginning of the 1990s, a significant gap in terms of both employment rates and income levels can be observed between natives and foreign born (Statistics Sweden 2016a).

Labor market outcomes among immigrants in the recent decades

Labor market outcomes for immigrants have changed dramatically over the last decades, in parallel with a significant increase in the proportion of those with FB (Hammarstedt 2002). In 1985, the LMPR for foreign born was 73.5% while 83.8% for natives, creating a gap of 10.3 percentage points. The gap increased to about 20 percentage points in the early 1990s and has remained fairly constant since. One explanation for the persistence of the gap is the long time span between arrival in Sweden and labor market entry. Statistics Sweden report that the LMPR for asylum immigrants aged 20–64 is approximately 38% after 5 years in Sweden, and 55% after 10 years (Statistics Sweden 2013). Consequently, the rate at which LMPR is increasing with time spent in Sweden is not high enough to offset the effects from the more recently arrived immigrant cohorts (Sanandaji 2016). However, there must be some factors that in turn explain the slow labor market integration. Potential explanations include cultural differences in the view on women participating in the labor market, high Swedish minimum wages, ethnic discrimination, and differences in human capital levels between natives and foreign born. While many factors may contribute, there are clearly some that are of greater importance. The difference in labor market participation between men and women is indeed larger among immigrants, but as there is a significant difference between native and immigrant men as well, this cannot offer a full explanation (2013). Despite that labor market training programs with exceptional levels of subsidization have emerged, the effects on employment are seemingly low, possibly explained by the skill intensive labor market in Sweden that does not demand workers with low productivity, even if the actual cost of labor for the employer is very low (2016).

Ethnic discrimination is often proposed as another explanation to the difference in labor market outcomes. Several studies using experimental methods have indeed found results indicating the occurrence of ethnic discrimination (Carlsson & Rooth 2007; Arai & Skogman Thoursie 2009), e.g. when it comes to the probability of being invited to a job interview. However, the effect of the lower acceptance rate for those with non-Swedish names, 2 acceptances out of 10 applications vs. 3 out of 10 for those with Swedish names, is probably of limited importance unless job scarcity is high (2007). It is to be noted that discrimination can be divided into preference based discrimination and statistical discrimination. Preference based discrimination is present when a person is excluded by an employer just due to the fact that the employer does not like immigrants. Statistical discrimination is present when an applicant with e.g. foreign background is excluded because the employer has observed that on average, the observable or non-observable skill level is lower in the group that the applicant belongs to. One very positive finding is that recent empirical research shows that there is no evidence of significant ethnic discrimination on the aggregate level on the Swedish labor market, giving the suggestion that the labor market gap between those with SB and FB is depending on discrimination low explanatory power (SOU 2015; Bussi & Pareliussen 2015). However, as pointed out above, this does not imply that ethnic discrimination does not occur at all, but that the effects seem to be negligible on the aggregate level.

A Swedish governmental report using PIAAC (Programme for the International Assessment of Adult Competencies) data from the OECD (The Organisation for Economic Co-operation and Development) concludes that the average mathematical skill levels even among formally highly educated immigrants from the Middle East and Africa is lower than for Swedish natives with low education, and on par with North Americans and West Europeans with low educational levels (SOU 2015). The report also concludes that while human capital (including e.g. linguistic skill and relevant previous work experience) is generally high in Sweden, 35% of the foreign born population has inadequate skills in reading and mathematics, compared to 5% among natives. The gap in human capital is the highest among all OECD countries, as is the gap in employment rate, but interestingly, there are no significant differences between the groups in the probability of being employed when controlling for human capital (2015). These empirical results imply that that the difference in labor market outcomes between natives and foreign born is mainly explained by differences in human capital. In a highly skill intensive labor market such as the Swedish, not possessing enough human capital has a severe negative impact, as 87% of those considered “good skilled” or “high skilled” are employed, compared to 51% for those with “inadequate skills” (2015). These findings become even more relevant when taking the increasing rate of globalization, automatization, and digitalization into consideration, which eliminates the need for many of the easier “stepping stone” professions that previously allowed Swedish

immigrants to get a foothold on the labor market (The Confederation of Swedish Enterprise 2016).

The relationship between labor market outcomes and aggregate fiscal effects

Immigration is a complex phenomenon, and it goes without saying that immigration that prevents bottlenecks in the technical industry, e.g. that of engineers from India to the Swedish IT sector is mutually beneficial from an economic standpoint, while the case is different for the average asylum immigrant in Sweden. Simply, if fiscal contributions made by immigrants through taxes and social fees exceed the amount received in terms of social benefits, the effect is positive. The net surplus is then redistributed from immigrants to natives through income distribution policies. Empirical data has shown that immigration to Sweden generated a fiscal surplus until the late 1980s (Ekberg 1983; Ekberg 1999; Gustafsson & Österberg 2001). This positive effect likely culminated in the early 1970s where it was estimated at around 1% of GDP (Ekberg 1983). Since then, the redistribution flow has changed direction. In 2006, an estimated 1.5% of Swedish GDP was redistributed from natives to immigrants (Ekberg 2009). In a similar study on redistribution during 2007, an estimated 0.7% of GDP was redistributed from people with SB to those with FB (Ruist 2015). The differences in results likely stem from Ruist only including refugee immigrants in the data studied. Though it is worth noting that both studies were made using cross sectional data, and thus not consider how the redistribution effect may have evolved over time. These results indicate that the effects of income redistributions alone are relatively small as a fraction of GDP, which coincides with the results from an extensive study review by Rowthorn (2008) stating that most countries experience a fiscal impact from immigration within the 1% of GDP range. However, to give a relatively abstract number some kind of proportion, 1% of GDP roughly represents the current total cost for national defense in Sweden, and to the continuous redistribution it is reasonable to add the costs of initial reception, which amounted to approximately one additional per cent of GDP in 2015 (Swedish Migration Agency 2016).

Immigration can affect the economy of the host country both through the direct effect of labor market outcomes compared to natives, and through indirect/dynamic effects such as displacements in the labor market, innovation spillovers leading to boosts in economic growth and productivity, and through other cultural effects that are harder to observe. Displacement in the labor market occurs when additional immigrant workers contribute to higher competition over jobs and thus generate a downward pressure on wages and/or employment rates for the already present working force. It is noteworthy though, that a given immigrant can act both as a complement and as a substitute, depending on the context. However, international research on the effects of displacement in the labor market on wages and employment levels has generally

found very modest displacement effects (Borjas 1994; Card 2009; Ottaviano & Peri 2012). Similar conclusions have been drawn from research conducted in Scandinavia, where negative dynamic effects of immigration on wages and employment among natives have been found to be significant but small (Andersson & Wadensjö 2008, Korpi 2008). This effect appears to have larger impact when considering professions associated with lower levels of human capital. (Borjas 2003; Borjas 2006). As for innovation spillovers, which help facilitate long term growth, research on US data has shown immigrants to be overrepresented among those granted patents. However, one crucial aspect to take into consideration is the strikingly high level of education generally possessed by those surveyed (Hunt & Gauthier-Loiselle 2010; Kerr 2013). Thus, increased innovation may not be applicable when discussing the effects of immigration in general, as it is related to the characteristics possessed by immigrants. Indeed, in research comparing the likeliness of patenting among immigrants in Sweden, immigrants have been shown to be significantly less likely to patent than natives on average, though the difference is quite small (Zheng & Ejermo 2015). To conclude, immigrant groups have different characteristics, causing the impact on society to vary accordingly (Dustmann & Frattini 2014).

It is well documented that there are fiscal net costs related to accepting asylum migrants in Sweden (Ekberg 2009, Ruist 2015, Flood & Ruist 2015, Aldén & Hammarstedt 2016). In the study by Flood & Ruist (2015), the long term fiscal costs of immigration were estimated using population growth forecasts over the period 2015–2060. The findings were that immigration can be expected to be a net fiscal cost during the period, unless the employment rate is significantly improved compared to the 2015 level. The study also included life cycle analysis of expected costs for immigrants arriving in year 2014 and onwards. Again, the estimated effect seems to be highly dependent on the level of employment attained by those immigrating over the period (Flood & Ruist 2015). In another study using cohort data on refugee immigrants over the period 2005–2012, similar trends were observed (2016). Though net costs decrease over time, the average net fiscal cost per asylum immigrant was estimated to 95 000 SEK per year, excluding any costs incurred during the asylum process (2016). Depending on the question asked, it is debatable whether it is feasible to exclude the relatively high short run reception costs when assessing the economic impact of immigration. However, in the long run, it has been shown that 80% of the fiscal costs are related to lower public per capita revenues, i.e. tax payments, and only 20% due to higher public costs (Ruist 2015). This has the implication that the most relevant variables of interest when studying the long term effects of asylum migration on the public economy are related to labor market outcomes as the LMPR, labor incomes and the subsequent tax payments.

Effects of population change on aggregate outcomes

Previous studies on immigration in Sweden have mainly focused on the impact on an aggregate level, which of course is relevant. However, as fiscal costs are tightly linked to labor market integration, and municipalities have to face the day to day consequences of imbalances between tax revenues and costs attributable to its inhabitants, it is of great importance to understand the impact of immigration also on municipal level. Establishing causal relationships between a given number of immigrants and the economic development in a given municipality is a complex process, including both direct and indirect effects, as described above. Due to the aforementioned differences in skill levels and labor market outcomes between natives and foreign born, a relevant concept to consider when assessing the effects on aggregate outcomes is that of composition effects. By studying the development of the relative proportions of immigrants and natives, as well as the outcomes in the different groups, it is possible to accurately determine the mechanical contributions of different groups on the total outcome. Composition effect analysis has been utilized by Swedish governmental agencies and researchers in order to evaluate the impact of immigration on the negative development of school results and Programme for International Student Assessment (PISA) test scores (Swedish National Agency for Education 2016; Sahlgren 2015). For instance, 29% of the fall in average Swedish PISA test scores between 2000 and 2012 was driven mechanically by population change, with 11 percentage points of the change attributable to a higher proportion of students with FB, and another 18 percentage points driven by the greater decline in test results within the same group during the period (2015). In analogy, 85% of the 4 percentage unit decrease in high school competence between 2006 and 2015 could be explained by a higher proportion of students migrating to Sweden after starting primary school (2016).

During periods of significant demographic change, the outcome of the group that is increasing in relative size becomes increasingly important for the aggregate outcome. When there are small differences between groups, the corresponding composition effects are small. However, if one group has a significantly different outcome than the other, or has a slightly different outcome but increases dramatically in relative size, a more pronounced change in aggregate outcome is observed. As there are relatively large differences in the labor market outcomes, and the proportion of immigrants has increased during the last decades, it is expected that the financial development on municipal level has been affected by immigration. The contribution of this study to the field of research is to quantify the direct, mechanical impact of population change due to immigration on the change in labor market outcomes on national and municipal level, disregarding potential dynamic effects.

RESEARCH QUESTION

How has population change through immigration affected the development of the national and municipal level average earned income and the labor market participation rate between 1985 and 2015 in Sweden?

DATA AND METHOD

Data retrieval and characteristics

Data was obtained from Statistics Sweden and was comprised of national and municipal level average earned income and LMPR during the period 1985–2015, that is, $T=31$ and $N=290$. The choice of starting point in 1985 was related to the advent of the RAMS (a Swedish acronym for Register Based Labor Market Statistics) database from which data was retrieved, and 2015 was the latest available year at the moment. The number of municipalities has increased slightly during the period of study, from 284 in 1985, to 290 in 2015. The new municipalities (Trosa, Gnesta in 1992; Bollebygd, Lekeberg 1995; Nykvarn 1999; Knivsta 2003) were breakouts in all cases, that is, the parent municipalities did not cease to exist. In order to provide an analysis that is relevant and up to date, the analysis was performed for all municipalities existing in 2015. This means that when changes over time were studied, the time span for 284 municipalities was 31 years, and from the year of foundation to 2015 for the younger municipalities. Apart from the fact that six municipalities did not exist during the entire period, there is no missing data. LMPR and average earned income were available both for the age group 20–64 and all ages, reflecting the main working age and the entire population respectively. An individual was categorized as living in a municipality in during year T if the person had her main dwelling in that municipality on December 31, year T . Both average earned income and LMPR were available as municipal totals as well as for the following mutually exclusive and collectively exhaustive demographic groups within municipalities; born in Sweden by two Swedish born parents, born in Sweden by one Swedish born and one foreign born parent, born in Sweden by two foreign born parents, and foreign born. In addition, the number of individuals within each above mentioned demographic group for a given municipality and year was obtained.

Definitions and handling of data

In order to analyze the effects of immigration on aggregate outcomes, the population was divided into two categories, Swedish background (SB) and foreign background (FB). SB included those born in Sweden by two Swedish born parents. FB included three sub groups: foreign born, born

in Sweden by two foreign born parents, and those born in Sweden by one Swedish born and one foreign born parent. It is to be mentioned that the category foreign born includes adoptees, who amounted to 54 800 on December 31, 2010 (Statistics Sweden 2011b). In order to obtain the average earned income for people with FB, the average incomes in each of the three sub groups were multiplied with the number of individuals in them. These total incomes were then summed up, and the sum divided by the number of individuals with FB. For LMPR, the outcomes in each sub group were weighted proportionally to obtain the LMPR for those with FB.

LMPR (Förvärvsfrekvens in Swedish) is a percentage measure that describes the fraction of the population that is currently working. The measure is calculated by Statistics Sweden using information reported to the Swedish tax agency by employers or, if self employed, by the individual, which is then matched with more detailed data collected annually from a sample of the Swedish population (Statistics Sweden 2017b). Besides active workers, the definition also includes people who are employed, but currently on sick leave, parental leave, those who have subsidized employments or take part of various labor market training programmes at least one hour a week on average during November. LMPR can be calculated for different age spans, commonly 15–64 within the European Union, while Sweden usually discloses LMPR for those aged 16–64 or 20–64. This paper utilized the age group 20–64 when discussing LMPR, since it better reflects the actual working age in Sweden as almost all teenagers undergo high school education in some form.

Average earned income (Sammanräknad förvärvsinkomst in Swedish) is the average sum of income from labor during each year, expressed in SEK. Besides labor income from employment or self employment, pension payments, sickness benefits, unemployment benefits and other taxable transfer payments are included in the sum, while capital incomes are left out. Average earned income is affected by inflation, so adjustments were made in order to capture real changes over time. On municipal level, this was achieved by dividing the municipal level average earned income with the national average during the same year. As a result, the municipal level development relative to the national average was captured, hereafter referred to as *Relative earned income* (REI), which was the variable used in the municipal level analysis. When REI is calculated using the age group 20–64 (REI(20–64)), it describes the average earned income among those aged 20–64 within a municipality, as a fraction of the average earned income among ages 20–64 on national level. Correspondingly, if we calculate REI using all ages (REI(total)), it describes the average earned income among all inhabitants in a municipality, as a fraction of the average earned income among all inhabitants on national level. It is to be noted that REI(total) is very similar to the relative municipal tax capacity. The relative tax capacity is a frequently used measure to compare the relative performance of a municipality, for instance, a relative tax capacity of 1.05

can be interpreted as that the municipality performs five percent better than the national average. As the national average cannot be related to itself, the relative measure is not applicable when analyzing the effects on national level. Because of this, the national average earned income levels were adjusted to the 2015 price level using the established Swedish annual average consumer price index KPI (Statistics Sweden 2016b).

Analysis method

For each of the variables REI(total), REI(20–64) and LMPR, in each of the 290 municipalities, the change in total outcome between the years 1985 and 2015 was calculated. For breakout municipalities, the year of foundation was used as a starting year. In analogy, the change for those with SB was calculated. By dividing the change for those with SB by the total change, the proportion of the change explained by changed population composition through immigration was obtained.

$$\text{If} \quad \pi = \frac{\Delta \text{outcome}_{SB}}{\Delta \text{outcome}_{Total}}$$

Then $(1 - \pi)$ reflects the mechanical effect of immigration on the change in aggregate outcome. In other words, in absence of population change due to immigration, the change in aggregate outcome would have been $(1 - \pi) \times 100\%$ different. If we for instance assume that the change in aggregate outcome is negative, a percentage below 100% represents the proportion of the change attributable to population change, while a percentage above 100% represents that the change in aggregate outcome had been positive in absence of population change.

The effect of immigration on the change in total municipal outcome can in turn be decomposed into two components. The first component is the effect that arises from an *increase of the proportion with FB*, as outcomes are different compared to SB. The second component is the effect that is observed if the *development of outcomes is different* between FB and SB. By holding the relative proportions of Swedish and foreign background constant over the period, and pinning down the difference in outcomes between Swedish and foreign background at the 1985 level, a counterfactual trend for the total development was created.

The counterfactual trend can be exemplified as follows:

Suppose that the proportion with Swedish background is 0.8, and the proportion with foreign background is 0.2 in period (T), but 0.5 for both groups in period (T+1).

First, suppose that those with Swedish background have improved their outcome from 10 units in period (T) to 14 units in period (T+1), resulting in a change of +4.

Second, suppose that the actual development for those with foreign background is an improvement from 8 units in period (T) to 9 units in period (T+1), with a change of +1.

The counterfactual trend for foreign background will then start from the first actual outcome of 8, but adds up the change of those with Swedish background, +4, resulting in a counterfactual outcome for foreign background of 8+4=12 in period (T+1).

By first multiplying the actual outcome for those with Swedish background in period (T+1) with the proportion with Swedish background in period (T), then multiplying the counterfactual outcome for foreign background in period (T+1) with the proportion with foreign background in period (T), and lastly adding the two products together, a counterfactual total outcome is created.

$$\text{Actual total outcome in (T)} = 0.8*10 + 0.2*8 = 9.6$$

$$\text{Actual total outcome in (T+1)} = 0.5*14 + 0.5*9 = 11.5$$

$$\text{Counterfactual total outcome in (T)} = 0.8*10 + 0.2*8 = 9.6$$

$$\text{Counterfactual total outcome in (T+1)} = 0.8*14 + 0.2*12 = 13.6$$

The counterfactual total outcome reflects how the development had been in absence of an increased proportion with FB, and in absence of a different development of the outcomes for Swedish and foreign background respectively.

The difference between the change in counterfactual total outcome and the change among those with Swedish background was then calculated, and divided by the change in actual total outcome. This yielded the contribution of decreased proportion of SB on the total effect of immigration on aggregate outcome. As the total effect of immigration on aggregate outcome consists of the sum of the effect due to changed proportion of FB and the effect due to changed outcomes among those with FB, the latter effect can be obtained by subtracting the former from the total effect.

$$\text{Effect of changed outcome (FB)} = (1-(\pi)) - \text{Effect of decreased proportion of SB}$$

When interpreting the relevance of the results in single municipalities, one needs to take into account the absolute contribution of those with FB to the total outcome. We define absolute contribution as $|\text{change in total outcome} * \text{proportion of total outcome explained by immigration}|$, expressed in percentage points. The absolute contribution can in turn be negative or positive. If the change in outcome for SB is -0.05, and the total change is 0.05, the positive absolute contribution from immigration is 0.10. The rationale for using the absolute contribution is that it can be said to express the magnitude of the effect of immigration. If the total change in a variable is -0.001, it is of lesser importance if population change due to immigration explains 100% of the change, resulting in a negative absolute contribution to the change of 0.001. On the

other hand, if the total change in a variable is -0.150, and immigration mechanically explains 100% of this change, the negative absolute contribution of 0.150 is strongly affecting the municipality, as the total outcome is dragged down by 15 percentage points.

Sensitivity analysis

Statistics Sweden has used different definitions for SB over the years. Initially the definition included only Swedish born with two Swedish born parents, but since about a decade, those who have at least one Swedish born parent are also included. The rationale for using the first, narrower definition is that the aim of the paper is to analyze the overall effect of immigration on the aggregate outcomes. This includes the effects of second generation immigrants, even if just one parent is foreign born, and thus better reflects the effects in the long run. However, in order to see how much the definition of Swedish/foreign background affected the results, all computations were also made using the broader definition of Swedish background, including those born in Sweden by one Swedish born parent.

RESULTS

In summary, we find that the changes in national and municipality level outcomes in LMPR and incomes are greatly affected by changes in the population composition due to immigration. On national level, incomes have increased in real terms for those with SB, FB and on the total.

However, in the absence of population change due to immigration, the increase in average earned income(total) from 1985–2015 (in 2015 prices) would have been 17.3% higher, where 2.8 percentage points are attributable to the decrease in the proportion of SB, and 14.5 percentage points due to changed outcomes among those with FB. If the average earned income in the main working age group of 20–64 is studied instead, the impact is even stronger, with the numbers 20.5%, 2.6 percentage points, and 17.9 percentage points respectively. Total LMPR has declined with 4.8% during the period, but as there has been no change among those with SB, 100% of the decline in total outcome between 1985 and 2015 is attributable to the decline among those with FB. In this case, the mechanical effect of immigration on the change of the total LMPR outcome is mediated to 25.3% by decreased proportion of SB, and to 74.7% by decreased outcomes among those with FB. The results are summarized in **Table 1** below.

Table 1: The impact of immigration on the national level development of average earned income (SEK, in 2015 prices) and labor market participation rate (in % points)

	Year	Proportion FB	Outcome, SB	Outcome, FB	Outcome, total	(1)	(2)	Effect
Income, all ages	1985	0.142	127 074	109 589	124 594			
	2015	0.296	241 669	176 209	222 316			
Change 1985–2015		0.154	114 595	66 620	97 721	-0.028	-0.145	-0.173
Income, ages 20–64	1985	0.154	179 869	160 708	176 982			
	2015	0.330	333 174	244 393	304 187			
Change 1985–2015		0.173	153 305	83 685	127 205	-0.026	-0.179	-0.205
LMPR, ages 20–64	1985	0.154	83.8	76.8	82.7			
	2015	0.330	83.8	65.6	77.9			
Change 1985–2015		0.173	0.00	-11.1	-4.80	0.253	0.747	1.000

(1) = proportion of the change explained by increased proportion with foreign background

(2) = proportion of the change explained by changed outcomes among those with foreign background

Effect = proportion of the total change mechanically explained by population change due to immigration

If Change is (+) and Effect is (+), the impact of immigration is positive

If Change is (+) and Effect is (-), the impact of immigration is negative

If Change is (-) and Effect is (+), the impact of immigration is negative

If Change is (-) and Effect is (-), the impact of immigration is positive

The proportion with FB has increased both in the age group 20–64 as well as in the entire population in all municipalities during the period of study, the changes range from 1.9% in Värmdö to 30.6% in Malmö (all ages). However, the development of REI, LMPR and the proportion with FB varies greatly between municipalities over the period. There are moderately negative relationships between the change in proportion of FB and the change in REI(total) ($\rho = -0.584$; $P = 0.000$), REI(20–64) ($\rho = -0.459$; $P = 0.000$) and LMPR ($\rho = -0.615$; $P = 0.000$) respectively.

As a consequence of that the proportion with FB has increased in all municipalities, the impact of immigration on the total change will be favorable if the change in outcome among those with SB has been worse than the total change. This was true for 9 out of 290 municipalities for REI(total), and 1 out of 290 municipalities for REI(20–64) respectively, but not in any municipality for LMPR, as seen in **Table 2**. For the vast majority of municipalities, the change in total outcome was negatively affected by the change in population composition. In 94 out of the 120 municipalities in which the development of REI(total) was negative, 100% or more of the decline in REI(total) was mechanically explained by immigration. Correspondingly, this was also the case in 115 out of 150 municipalities for REI(20–64), and in 113 out of 237 municipalities for LMPR. In general, a worse relative development of REI and LMPR provides the main explanation for the decline, regardless of the variable studied. It is to be noted, that in the municipalities where immigration has had a positive impact on the change in REI(total), the positive absolute contribution due to population change was low, ranging from 0.03 to 1.8 percentage points, Haparanda being the exception with an absolute increase of 9.3 percentage points. Conversely, in the municipalities with the worst development of REI(total), the negative absolute contributions were substantial, e.g. amounting to a stunning 18.7 percentage points in Malmö.

Table 2: Average positive/negative contributions from people with foreign background to the change in total municipal level outcome for different definitions of foreign background

Main analysis	Positive contribution				Negative contribution				
	Average	Min	Max	N	Average	Min	Max	N	
REI, total	0.02	0.00	0.09	9	REI, total	0.05	0.00	0.19	281
REI, 20–64	0.01	0.01	0.01	1	REI, 20–64	0.06	0.00	0.17	289
LMPR	—	—	—	—*	LMPR	0.043	0.00	0.113	289*

Sensitivity analysis	Positive contribution				Negative contribution				
	Average	Min	Max	N	Average	Min	Max	N	
REI, total	0.02	0.00	0.18	89	REI, total	0.03	0.00	0.12	201
REI, 20–64	0.02	0.00	0.14	95	REI, 20–64	0.03	0.00	0.11	195
LMPR	0.0006	0.0002	0.001	2	LMPR	0.038	0.0045	0.1096	288

Main analysis defines SB as born in Sweden by two Swedish born parents, while the sensitivity analysis also includes those born by at least one Swedish born parent in the definition of SB. * The contribution in Nykvarn was 0.

Table 3 shows the change in REI and LMPR on municipal level, sorted on the actual development of REI(total). That is, the five municipalities with the best/worst development are the top/bottom five of all 290 municipalities, and as a comparison, the median five municipalities were included as well. In the five municipalities with the worst development of REI(total), 66–103% of the decrease was mechanically explained by the change in population composition. Both the decrease in the proportion with SB and the decrease in average incomes among those with FB contribute to the total change. To be noted though, the latter component in Botkyrka is relatively small. In municipalities with median development of REI(total), the relative change is small by definition, limiting the relevance of the change. However, in all median municipalities, if the total development was negative, more than 100% of the negative development was explained by changed population composition, and if the total development was positive, the development would have been several times better in the absence of population change. It is noteworthy that the negative development in the outcomes of those with FB seems to be of greater importance for the total effect in the median municipalities. All five municipalities with the best development of REI(total) would have done even better, in absence of changes in the population composition. While the negative impact of immigration on total outcomes is small in Öckerö and Lomma, the development of REI(total) would have been between 15.4% to 19.4% higher in the other three municipalities. In the latter three municipalities, the relative decrease in outcome among those with FB accounts for the majority of the effect. When studying the development of REI(20–64), the overall result pattern is very similar as for REI(total). However, it is interesting that the decrease in outcomes among those with FB is driving the overall effect of immigration even more than for REI(total). This component is now stronger than the effect of decreased SB in

four out of five of the municipalities with the worst development, which was not the case for REI(total). In Botkyrka, the decrease in SB is still more important for the total effect of immigration, but the two components now contribute almost equally to the total effect. LMPR has declined in all five municipalities with the worst development in REI(total), which is mechanically explained to between 59% and 91% by the change in population composition. Both the decrease in the proportion with SB and the decrease in outcomes among those with FB contribute to the effect, the latter component being slightly higher in all five cases. In three out of five median municipalities, the decline in LMPR was explained to over 100% by the change in population composition, while the effect in Sala and Färgelanda was 87% and 67% respectively. This was mainly driven by the decline in outcome among those with FB. LMPR has declined in two out of the five municipalities with the best development in REI(total). If the effect of population change is taken into account, 77% and 96% of the decline in LMPR disappears in Sotenäs and Lomma respectively, and the increase in Tjörn, Öckerö, and Orust would have been even higher.

Table 3: Mechanical effects of immigration on the change in REI and LMPR for the five municipalities with the worst, median and best development of REI(total)

Worst five

Municipality	Variable	Δ Proportion FB	Δ Outcome, SB	Δ Outcome, FB	Δ Outcome, total	(1)	(2)	Effect	Absolute Effect
Malmö	REI, total	0.306	0.004	-0.174	-0.183	0.518	0.505	1.023	0.187
	REI, 20–64	0.306	0.019	-0.159	-0.144	0.475	0.656	1.131	0.163
	LMPR, 20–64	0.306	-0.011	-0.142	-0.119	0.326	0.581	0.908	0.108
Botkyrka	REI, total	0.250	-0.049	-0.058	-0.144	0.621	0.038	0.660	0.095
	REI, 20–64	0.305	-0.011	-0.122	-0.175	0.493	0.445	0.938	0.164
	LMPR, 20–64	0.305	-0.035	-0.092	-0.109	0.325	0.354	0.679	0.074
Järfälla	REI, total	0.223	-0.043	-0.122	-0.143	0.439	0.258	0.697	0.100
	REI, 20–64	0.271	-0.004	-0.138	-0.140	0.479	0.492	0.972	0.136
	LMPR, 20–64	0.271	-0.034	-0.093	-0.087	0.263	0.346	0.609	0.053
Burlöv	REI, total	0.304	0.004	-0.201	-0.142	0.329	0.701	1.030	0.146
	REI, 20–64	0.339	0.041	-0.199	-0.123	0.307	1.031	1.338	0.165
	LMPR, 20–64	0.339	-0.054	-0.154	-0.132	0.193	0.397	0.591	0.078
Södertälje	REI, total	0.282	0.002	-0.096	-0.138	0.593	0.421	1.014	0.140
	REI, 20–64	0.323	0.029	-0.139	-0.141	0.452	0.751	1.202	0.169
	LMPR, 20–64	0.323	-0.030	-0.109	-0.111	0.284	0.445	0.730	0.081

Median five

Municipality	Variable	Δ Proportion FB	Δ Outcome, SB	Δ Outcome, FB	Δ Outcome, total	(1)	(2)	Effect	Absolute Effect
Hudiksvall	REI, total	0.084	0.043	-0.140	0.010	-0.594	-2.501	-3.096	0.031
	REI, 20–64	0.099	0.026	-0.176	-0.010	0.302	3.270	3.572	0.036
	LMPR, 20–64	0.099	0.008	-0.156	-0.021	0.113	1.268	1.381	0.029
Hässleholm	REI, total	0.154	0.082	-0.134	0.011	-1.914	-4.569	-6.483	0.071
	REI, 20–64	0.174	0.067	-0.150	-0.006	2.774	8.830	11.604	0.070
	LMPR, 20–64	0.174	0.007	-0.126	-0.044	0.360	0.799	1.159	0.051
Sala	REI, total	0.114	0.057	-0.132	0.011	-0.562	-3.549	-4.111	0.045
	REI, 20–64	0.128	0.041	-0.145	-0.008	0.685	5.272	5.957	0.048
	LMPR, 20–64	0.128	-0.006	-0.163	-0.046	0.062	0.807	0.870	0.040
Partille	REI, total	0.124	0.047	-0.011	0.012	-1.446	-1.429	-2.875	0.035
	REI, 20–64	0.150	0.113	-0.025	0.047	-0.433	-0.993	-1.426	0.067
	LMPR, 20–64	0.150	0.004	-0.064	-0.027	0.302	0.846	1.148	0.031
Färgelanda	REI, total	0.091	0.068	-0.240	0.013	0.037	-4.460	-4.423	0.057
	REI, 20–64	0.086	0.034	-0.223	-0.016	0.063	3.107	3.170	0.051
	LMPR, 20–64	0.086	-0.020	-0.214	-0.061	0.071	0.601	0.672	0.041

Best five

Municipality	Variable	Δ Proportion FB	Δ Outcome, SB	Δ Outcome, FB	Δ Outcome, total	(1)	(2)	Effect	Absolute Effect
Tjörn	REI, total	0.065	0.231	0.033	0.199	-0.015	-0.144	-0.158	0.031
	REI, 20–64	0.073	0.179	-0.017	0.142	-0.029	-0.225	-0.254	0.036
	LMPR, 20–64	0.073	0.036	-0.065	0.015	-0.245	-1.155	-1.400	0.021
Öckerö	REI, total	0.043	0.182	0.180	0.180	-0.009	-0.001	-0.010	0.002
	REI, 20–64	0.051	0.177	0.163	0.173	-0.014	-0.012	-0.026	0.004
	LMPR, 20–64	0.051	0.026	-0.037	0.018	0.040	-0.484	-0.444	0.008
Lomma	REI, total	0.065	0.182	0.213	0.175	-0.065	0.030	-0.035	0.006
	REI, 20–64	0.092	0.308	0.164	0.269	-0.040	-0.104	-0.144	0.039
	LMPR, 20–64	0.092	-0.001	-0.080	-0.022	0.263	0.691	0.955	0.021
Orust	REI, total	0.072	0.187	0.022	0.162	-0.009	-0.145	-0.154	0.025
	REI, 20–64	0.090	0.133	-0.034	0.103	-0.018	-0.271	-0.290	0.030
	LMPR, 20–64	0.090	0.023	-0.071	0.004	-0.889	-3.861	-4.750	0.019
Sotenäs	REI, total	0.081	0.183	0.019	0.153	-0.022	-0.172	-0.194	0.030
	REI, 20–64	0.087	0.093	0.009	0.070	-0.096	-0.223	-0.319	0.022
	LMPR, 20–64	0.087	-0.003	-0.029	-0.013	0.394	0.375	0.769	0.010

1 = proportion of the change explained by increased proportion with foreign background

2 = proportion of the change explained by changed outcomes among those with foreign background

Effect = proportion of the total change mechanically explained by population change due to immigration

Absolute effect = $|\Delta\text{Total} * \text{Effect}|$

If Change is (+) and Effect is (+), the impact of immigration is positive

If Change is (+) and Effect is (-), the impact of immigration is negative

If Change is (-) and Effect is (+), the impact of immigration is negative

If Change is (-) and Effect is (-), the impact of immigration is positive

For Haparanda, Tyresö and Surahammar, the change in REI(total) had been worse, controlling for changes in the population composition. This is a result of that only those with FB have improved their outcome in Haparanda and Tyresö, while the decline in the outcome among those with FB is lower than the decline for those with SB in Surahammar. These effects were to some extent mitigated by the decline in the proportion of SB. In Trosa, Kiruna, Vaxholm, Håbo, Ekerö, and Nykvarn, the increase in REI(total) has been positively affected by immigration, in all cases driven by improved outcomes among those with FB. In Ekerö and Nykvarn, the outcome for FB surpassed the outcome for SB in 2015. The results are summarized in **Table 4** below.

Table 4: Effects of population change on the change in total outcomes in municipalities with a positive effect from immigration

	REI(total)			REI(20–64)		
	Total change	Effect	Absolute Effect	Total change	Effect	Absolute Effect
Haparanda	-0.0176	-5.29	0.093	–	–	–
Tyresö	-0.0014	-4.21	0.006	–	–	–
Surahammar	-0.0412	-0.269	0.011	–	–	–
Trosa	0.0518	0.0064	0.000	–	–	–
Kiruna	0.1010	0.0417	0.004	–	–	–
Vaxholm	0.1120	0.0432	0.005	–	–	–
Håbo	0.0556	0.272	0.015	–	–	–
Ekerö	0.0936	0.311	0.029	0.128	0.0985	0.013
Nykvarn	0.0099	1.81	0.018	–	–	–

(–) = no positive effect observed

Sensitivity analysis

On the national level, the results were largely unchanged if SB included people born in Sweden by one Swedish born parent. The increase in average earned income would have been 15.1% higher for the total population, 19.3% higher for the ages 20–64, and 90% of the decline in LMPR is explained if controlling for changes in population composition. The pattern of LMPR development on municipal level was also basically unchanged, with two municipalities having positive contributions from population change (Nykvarn and Lekeberg). More interestingly, 89 out of 290 municipalities had positive contributions to the change in REI(total), and 95 out of 290 for REI(20–64) using the broader definition of SB. The top five municipalities having the largest positive absolute contributions to the change in REI(total) from immigration were Haparanda (0.18), Övertorneå (0.12), Ekerö (0.08), Pajala (0.07), and Vaxholm (0.06). For

(delta)REI(20–64) the results were very similar, with Haparanda (0.14), Övertorneå (0.11), Ekerö (0.10), Vaxholm (0.07), and Pajala (0.07) in the top.

DISCUSSION

This paper aimed to quantify the mechanical effect of changed population composition through immigration on the change in average earned income and LMPR on national and municipal level. This was achieved by studying the development of the actual total outcomes as well as the development among those with SB and FB, compared to a counterfactual total outcome where both the proportion of SB and the relative differences in outcomes between SB and FB were held constant at the 1985 level. In general, we found negative effects attributable to changes in the population composition. On national level, 100% of the decline in LMPR was mechanically explained by immigration, whereof 25% was explained by a decrease in the proportion with SB, and the remaining 75% by the relatively more negative development of outcomes among those with FB compared to SB. In analogy, the increase in average earned income had been 17.3 and 20.5 higher for the entire population and the age group 20–64 respectively, in absence of population change. Immigration has had a positive effect on the development of REI(total) in 9 municipalities, and in 1 municipality regarding REI(20–64), but for the LMPR, this was not the case in any municipality. In 78% of the municipalities in which REI(total) has decreased, 100% or more of the decrease was mechanically explained by changes in the population composition.

Regardless of the reason of immigration, on average, the fiscal consequences in the municipalities in which REI(total) has decreased most dramatically are very palpable. Using Malmö as an extreme example, the absolute negative contribution in REI(total) mechanically attributable to immigration was 18.7 percentage points, which translates into a structural underfinancing of the municipal budget in absence of payments from the tax adjustment system. In 2015, 23% of the municipal costs in Malmö were financed by the municipal tax adjustment system (Malmö municipality 2016), in turn financed by the national budget, and to lesser extent, other municipalities. A large part of the 23% gap between costs and revenues represents an inability to finance its own operations, which is remarkable for the third largest city in Sweden, located as a hub to continental Europe. If the decrease in performance was not related mainly to population change, such an event would be expected to affect the labor market outcomes among people with both SB and FB similarly to some extent. The fact that REI(total) has increased slightly for SB, but decreased with 17.4 percentage points among those with FB, strongly speaks against the explanatory power of e.g. industrial factors when analyzing the causes of the plummeting economic performance of Malmö. In 2015, slightly above two thirds of the municipal sector

revenues came from tax payments, making it the by far most important revenue source (Swedish Association of Local Authorities and Regions 2016b). As such, a decrease in REI(total) of 3 percentage points can roughly be translated into a 2 percent decrease in total municipal revenues. For most municipalities, the annual surplus target is 1 to 2% of total revenues, which gives some guidance when assessing the magnitude of a change in REI(total).

Among the few municipalities experiencing positive effects, the absolute contributions were generally small. The highest impact was observed in Haparanda, with a positive absolute contribution of 0.093. However, as Haparanda has a direct land border to Finland, it is very likely that the vast majority of those with FB in Haparanda have Finnish ancestry. Further, in 1997, the municipal median share of foreign born that was comprised of asylum immigrants and their relatives was 21.25%, while this ratio in Haparanda was 1% according to Statistics Sweden (2016c). In 2015, the median municipal share had risen to 32.65%, but only to 4.7% in Haparanda (2016c). As Kiruna is located close to both the Finnish and the Norwegian border, has a thriving mining industry with attractive wages, and has a similarly low ratio of asylum migrants to foreign born (2016c), it is likely that the observed positive impact of immigration is not driven by asylum migration. Overall, the municipalities with positive absolute contributions to REI(total) had a low ratio of asylum immigrants to foreign born (2016c). Further, it is interesting that Trosa, that broke out from Nyköping in 1992, and Nykvarn from Södertälje in 1999, are two of the nine municipalities where migration has contributed positively to the development of REI(total), as there may be a selection bias in breakout municipalities. It is feasible to assume that breakouts are unlikely to occur if the inhabitants believe that the development in the new municipality will be worse, implying that one would expect breakout municipalities to perform above average, and thereby possibly attract successful inhabitants both with SB and FB from the parent municipality. All in all, it is likely that the immigrant stock in several of the nine municipalities that have benefited from population change does not include large proportions of asylum immigrants.

It could be argued that municipal level analysis could suffer from selection bias, as people with FB tend to end up in areas with low socioeconomic levels, in which they may face a lower probability of succeeding than they would have had otherwise. It is to be noted that both sparsely populated rural areas as well as some suburban areas that already have high levels of people with FB can be referred to as socioeconomically weak. A study on the geographic placement of Swedish asylum immigrants granted residence permits during 2014, found evidence for that asylum immigrants frequently were placed in depopulated municipalities with high unemployment rates, in alignment with the first type of socioeconomically weak areas (Wennström & Öner 2015). It is to be noted though, that studying the allocation pattern during

one year is not sufficient to draw conclusions in general. In socioeconomically weak areas of the suburban type, lower housing prices, the proximity to friends, relatives, and a sense of cultural connection could lead to an accumulation of people with poor socioeconomic outcomes that in turn could affect the outcomes of newly arrived immigrants. This is probably true to some extent, but the effect is likely to be more pronounced on a higher geographical resolution level than a municipality. On the other hand, if a municipality has several such areas, the effect could well be present also on municipal level. However, if one wants to analyze the overall impact of immigration, it is incorrect to control for socioeconomic factors among previously arrived migrants, if these lower socioeconomic outcomes on average is a part of the mechanism by which immigration affects society. Moreover, our results suggest that the average effect of changed population composition through immigration is negative, regardless if the municipality has performed exceptionally good, bad or on average in terms of REI or LMPR development.

Dynamic effects

The methodology of this study does not allow for estimation of dynamic effects, but since one must consider such effects when analyzing the total impact of immigration on society, it is worth to address the issue to some extent from a municipal point of view. Besides the effects that immigration can have on the labor market outcomes of natives within municipalities, it is possible that one municipality benefits from immigrants living in a different one. This could potentially be mediated by that immigrants on average could be assumed to be willing to work for lower wages, which increases the profitability of a firm, all other things held constant. As the owner of the firm may live in a different municipality than the immigrant worker, the gains from immigration may be materialized elsewhere. In theory, this is possible, but a precise estimation of such an effect is very difficult to achieve. Further, the classic rationale for immigration assumes that foreign workers are willing to work for lower wages than the native population, generating a surplus in the receiving country that has a higher capital to labor ratio. In a Swedish setting, this assumption is a bit inadequate due to the fact that wages are generally high while the wage distribution is relatively narrow. Even if there are no minimum wages by national law, it is more or less socially unacceptable to pay workers less than the wage level agreed upon by one of the large unions and the corresponding employer organization. This probably limits the effects of such intermunicipal transfers of immigration gains.

As mentioned in the introduction, previous research regarding dynamic effects of immigration on the economies in both Sweden and other countries show small overall effects, and some studies point in the direction that the effects in Sweden seem to be negative (Andersson & Wadensjö 2008; Korpi 2008; Zheng & Ejermo 2015). With this said, we want to point out that this study does not seek to investigate the overall causal impact of asylum immigration on the

municipalities, the methodology simply does not allow for that interpretation. However, we have studied the aspect that most likely is of greatest importance for the municipal economies, namely the direct effects of immigration on the labor market outcomes. By analyzing the change in REI(total), we have studied a variable that closely resembles the relative tax capacity, which probably is the most important key ratio when analyzing municipal economic performance. Though the individual municipality is compensated partly by the tax adjustment system if the revenues are not high enough, the effects of the decline in the tax base are very real for the municipal sector as a whole. This tendency is to be taken seriously if one wants to design long run sustainable policies both at central and local level. While one could argue that the results of the analysis could vary depending on between which years the change is analyzed, as the proportion with FB is continuously increasing, the general trend is an increasing importance of the different relative outcomes between SB and FB. Due to many other reasons, including that the period coincides with the majority of accepted asylum immigrants, that it would be irrational to analyze only a fraction of this period given that more data is available, and that the long term effects of immigration related to the outcomes in the second generation takes time to materialize, we argue that the chosen period of 1985–2015 is highly relevant.

Different definitions of Swedish and foreign background

An interesting finding is that while the results on national level for LMPR and REI are more or less unchanged when the broader definition of SB is used, including those born by only one Swedish born parent, the number of municipalities with positive absolute contribution from FB to the change in REI increases dramatically. This is mainly caused by that the development for SB(broad definition) is dragged down compared to SB(narrow definition) due to the significantly worse outcomes among those with only one Swedish born parent compared to two, parallel to an increase in the proportion of Swedish born with one Swedish born parent. This reduces the magnitude of the observed effect, and in some cases, leads to contradictory results. For instance, using the broad definition of SB, a positive contribution from FB is observed in Botkyrka, pointing in the direction that Botkyrka benefits from population change due to immigration. For a given municipality, this could very well be true, but since Botkyrka has the largest proportion with FB and the second most negative development of REI in the entire country, regardless of definition used, that interpretation is not very likely to be true. However, the majority of municipalities still experience a negative absolute contribution from FB even when the broader definition of SB is used, and the average negative contribution is larger than the average positive. It is also worth noting that the results regarding LMPR on municipal level are robust to the definition change. This is probably partly explained by that the LMPR in 2015 for those born in Sweden by one Swedish born parent is 5.6% lower on national level compared to those with two

Swedish born parents, while average earned income is 18.5% lower for all ages, and 6.6% lower for the age group 20–64. By aggregating the Swedish born with one and two Swedish born parents, one could therefore expect that incomes are affected relatively more negatively than LMPR. Thus, regardless of definition, the difference in LMPR between SB and FB is on average mainly driven by poorer outcomes among foreign born and those with no Swedish born parents, while the difference in incomes is affected by better outcomes among Swedish born with two Swedish born parents compared to all other groups.

An explanation to this could be that those with only one Swedish born parent are more likely to work part time, and in low wage occupations compared to those with two Swedish born parents, which Aldén & Hammarstedt (2016) state is true for foreign born compared to natives. While it is true that the LMPR in a municipality is important and highly correlated to the level of economic performance, what actually matters when it comes to financing the municipal operations are the tax revenues, which in turn are directly linked to earned income. While we observe that the results are somewhat different depending on the definition used for SB, the main conclusion is still valid. Most importantly, as it leads to a partial exclusion of the long term effects, it is methodologically incorrect to include those born in Sweden by only one Swedish born parent in the definition of SB if one wants to investigate the overall impact of immigration. Using a broader definition of SB will systematically fail to recognize the significant differences in average earned income between Swedish born with one and two Swedish born parents, and thereby give an incomplete picture on the long term municipal consequences.

Strengths and limitations

This study has both strengths and limitations. The first strength is that it accurately quantifies the mechanical impact of population change through immigration on the development of two key variables for municipal revenues in Sweden, namely, average earned income and LMPR.

Second, the analyzed time period 1985–2015 coincides with the period in which the vast majority of the asylum immigrants and their relatives have arrived to Sweden, which to some extent results in the possibility to view the outcome in 1985 as “pre asylum migration” and the outcome in 2015 as “post asylum migration”. Third, the quality of the data is very high as Statistics Sweden retrieves it directly from the Swedish Tax Agency. This means that there is no missing data, and regarding incomes, potential measurement error is practically absent, as only incomes that are actually reported to the Swedish Tax Agency eventually result in direct tax revenues.

The first limitation of the study is that it does not take into account that LMPR and REI for those with SB or with FB are not exogenous, that is, additional immigration could affect the outcomes in both directions. However, this is not within the scope of this study. Second, this

paper does not make any distinctions between asylum migrants, foreign born from neighboring countries, or adoptees when analyzing the effects of changed population. We are well aware that the terms “immigrant” and “asylum immigrant” are not interchangeable, and that there are subsequent limitations to the interpretation of the results. The labor market outcomes on average are clearly worse for asylum migrants and their relatives, which in turn is highly likely to cause that the observed negative mechanical contribution of immigration in general probably underestimates the actual negative marginal contribution from asylum immigration. Ideally, individual level data would be preferable, and for those with foreign background, additional information about the reason for immigration for the individual or her parents. Third, this study analyzes changes in REI, which is very similar, but not identical with relative tax capacity. The difference lies in that tax capacity in Sweden is calculated using taxable earned income, which is earned income less deductions for i.e. general social security fees, which in turn means that it does not perfectly reflect the amount that is eligible for municipal taxation. However, since we relate the earned income to the national average, the deductions should cancel out each other relatively well, making REI and relative tax capacity comparisons relevant. Fourth, LMPR is very generously defined, which leads to that people who are not working anywhere near a level that can pay for living expenditures are classified as participating in the labor market. While the definition is the same for everyone, it does not fully reflect the percentage of potential man-years worked by inhabitants. However, having access to an income measure as well, this is of lesser importance, and the two different labor market measures complement each other.

CONCLUSION

In conclusion the results suggest that for most municipalities, the direct effect of immigration regarding REI and LMPR is a relative decrease in aggregate outcomes. The negative contributions are present across municipalities with both exceptionally good and exceptionally bad performance, and are mainly mediated by that the relative development in labor market outcomes in terms of REI and LMPR is worse for those with FB. Our findings imply that the aggregate net fiscal costs described on aggregate level are materialized significantly in municipalities, with the most pronounced effects in municipalities with the worst development of REI(total). The magnitude of the effect on the tax base in some municipalities is remarkable, and it is very unlikely that there is any other political area where a skewed responsibility allocation between state and municipalities is capable of affecting the municipal finances so palpably. Unless the tax adjustment system payouts increase with the same rate as the cost development in the municipal sector, the advent of compulsory allocation of asylum immigrants to municipalities will

likely induce long term costs that the municipalities can affect only to a limited extent, which violates the principle of controllability.

SUMMARY

While the fiscal effects of asylum immigration in Sweden are well researched, there are few studies that analyses the impact on municipal level. With the advent of a new law in 2016 that requires municipalities to accept asylum immigrants, the relevance is further highlighted. The aim of this study was to explain how the change in population composition through immigration mechanically has affected the development of average earned income and LMPR on municipal and national level during the period 1985–2015 in Sweden. This was achieved by decomposing the total development with respect to Swedish and foreign background, and assessing the separate effects of increased proportion of foreign background, and the different relative development of outcomes in the groups. The findings in this study imply that population change through immigration in most cases mechanically has affected the development of the municipal economies negatively, mainly mediated by the relatively worse development of labor market outcomes among those with FB. Though there are a few exceptions, the vast majority of municipalities face negative contributions from immigration.

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