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Article

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IZA Journal of Development and Migration

Provided in Cooperation with:

IZA – Institute of Labor Economics

Suggested Citation: Gustafsson, Bjorn Anders; Mac Innes, Hanna; Österberg, Torun (2017) : Age at immigration matters for labor market integration - the Swedish example, IZA Journal of Development and Migration, ISSN 2520-1786, Springer, Heidelberg, Vol. 7, Iss. 1, pp. 1-23, <https://doi.org/10.1186/s40176-017-0087-1>

This Version is available at:

<https://hdl.handle.net/10419/161741>

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ORIGINAL ARTICLE

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Age at immigration matters for labor market integration—the Swedish example

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Abstract

This paper analyses how age at immigration to Sweden and getting a first foothold in the labor market is related. We estimate hazard rate models using registry data on all persons who arrived in each of the years 1990, 1994, 1998, and 2002. The results show that the number of years taken to get a foothold in the Swedish labor market increases rapidly by age among immigrants from middle- and low-income countries aged 40+. Most individuals who are born in middle- or low-income countries who immigrate after age 50 never get a foothold in the Swedish labor market.

JEL codes: J15, J21, J61

1 Introduction

This paper investigates the relation between age at immigration to Sweden and the number of years until a migrant has the first job of substantial importance in the destination. The hypothesis under scrutiny is that the number of years until a first job of substantial importance is held is longer for foreign-born immigrants originating from middle- and low-income countries who arrive when middle aged than for their peers who arrive when younger, as well as immigrants of the same age born in high-income countries. Coupled with this, we ask if a substantial proportion of middle-aged and older immigrants born in middle- or low-income countries never succeed in having a job in their destination country.

The gap in employment between natives and foreign-born individuals in Sweden is larger than in most other rich countries (see Dustman and Frattini 2011 and de la Rica et al. 2015) and is the subject of much policy concern. It is well known that many immigrants originating from middle- and low-income countries, who arrive as refugees or for family reunion, do not work during the first few years that they reside in Sweden. As shown later in this paper, Sweden has during recent decades received an increasing number of middle-aged and older immigrants. Many such immigrants enter as refugees or for family reasons. Knowledge of the relationship between age at immigration and the length of time until the first job of substantial importance is obtained has the potential to be a piece in the puzzle explaining the weak labor market position of many immigrants to Sweden and is one motivation for this study.

In the Swedish population, the disposable income of a person, as well as his or her poverty status, is related to their present or previous career in the labor market. One can therefore expect that middle-aged immigrants who arrive in Sweden are at high risk of being poor when arriving, as are those who arrive of higher age.¹ This is an

additional motivation for analyzing the relationship between age at immigration and the number of years until a foothold in the labor market in the destination country is achieved.

The international literature on how immigrants assimilate into the labor market of the host country is vast (for surveys, see Duleep 2015 and Dustmann and Görlach 2015). However, only surprisingly few studies have focused on the relationship between age at immigration and subsequent assimilation into the labor market in the host country. Most studies have focused on earnings assimilation. Their results indicate that age at immigration disfavors the earnings of middle-aged and older immigrants. There are evidence on this from the US (Friedberg 1992), Canada (Schaafsma and Sweetman 2001), and Australia (Wilkins 2003).

A commonly asked question in the literature on immigrant assimilation in the host country is how the earnings of immigrants develop over the years following their immigration in comparison to their native peers. Formulating the research question in this way is highly relevant in cases where the majority of immigrants already have a job in the destination country during the year that they arrive or soon thereafter. However, in situations where many immigrants do not have a job, it is motivated to focus on employment assimilation. A recent such study on Sweden is Akay (2016) who investigated dynamics aspects among male immigrants using panel data for the years 1990 to 2000. In this data were 7.5 % of native born not employed throughout the period compared with, for example, 25 % among men born in Africa and 30 % among men born in the Middle East. Application of a state-of-the-art non-linear dynamic assimilation model indicated the existence of a slow yet steady assimilation process. Most, but not all, categories of foreign born were found to be able to reduce the employment probability gap in the Swedish labor market to under 10 to 20 % points.

Our study is also in the tradition of analyzing large sets of data from Swedish registers. Different from Akay (2016), we focus on the importance of age at immigration and analyze the period until first having gained a foothold in the Swedish labor market.² A research design that focused on the period until newly arrived immigrants have a foothold in the labor market has previously been applied to Norway as well as Sweden but, unlike the present study, was not focused on the importance of age at arrival.³ We follow all adult foreign-born persons who arrived in Sweden in each of the years 1990, 1994, 1998, and 2002. By estimating hazard rate models, we relate the length of the period to have the first job of substantial importance to age at immigration as well as selected characteristics previously shown or assumed to be of importance: education, region of Sweden upon arrival, and family status at the time of immigration.⁴

As we hypothesize that the relationship between age at arrival and the time taken to get a foothold in the labor market of the destination country is steepest among immigrants from middle- and low-income countries, we estimate models for immigrants born in three different categories of countries: low-income countries, middle-income countries, and high-income countries. Differences in the period until gaining a foothold in the Swedish labor market across arrival cohorts can be due to differences in unmeasured characteristics across cohorts but also to variations in the labor market situation in the host country.

Turning to results, they show that the number of years until an immigrant holds a first job of substantial importance in Sweden decreases rapidly with age for immigrants from middle- and low-income countries who are 40 years of age or older at the point

of entry. Most persons from middle- and low-income countries entering Sweden after age 50 never get a foothold in the Swedish labor market. We also show how the number of years to a first substantial job differs by year of arrival in a manner that is consistent with the business cycle in Sweden and is related to a number of other circumstances. To reiterate: Since the beginning of the 1980s, Sweden has received a substantial number of foreign-born individuals who, upon arrival, have been middle aged or older. Our results imply that, compared to natives, many of them will have low opportunities to consume for the rest of their lives due to no or low earnings as well as not having accumulated substantial pension rights. Thus, it follows that immigrants from middle- and low-income countries who arrive in Sweden when middle aged have a high risk of being poor in old age.

The article is structured as follows. In the next section, we investigate and discuss reasons why age at immigration and getting a foothold in the labor market at the destination country are related. Section 3 describes and discusses the context, outlining how the number of middle-aged and older immigrants to Sweden has increased since 1970 as well as discussing the problematic employment situation for many immigrants to Sweden. The research design is presented in Section 4. Section 5 reports descriptive results on the number of years until individuals gain substantial employment. Multivariate analysis is found in Section 6, and Section 7 summarizes the study and its findings.

2 Why and how age at immigration can matter

The composition and volume of international migration is the outcome of decisions by potential migrants, rules, regulations, and other circumstances in countries of origin as well as in potential destination. Typically, the potential migrant weights the expected advantage of moving to a particular destination against the other expected alternatives (Borjas, 1987). Because moving incurs costs, the expected advantage from it is, *ceteris paribus*, lower the older the person is. From this follows that among adult people who move primarily for economic reasons there is a tendency that the probability to move decreases by age. Such a description fits relatively well the stream of migrants who have arrived in Sweden from other high-income countries.

The situation is in many cases different for people who have migrated to Sweden from middle- and low-income countries. For several, the migration decision is triggered by oppression or an insecure situation for the individual, family, or/and group and to stay at the origin is not an attractive or viable option. This means that some arrive although their expectations of finding a job at the regular labor market at the destination are low for various reasons. Age is one. As we show in Fig. 3, migration to Sweden from on the one hand high-income countries and on the other hand middle- and low-income countries differs in one other important aspect. Migration from high-income countries is typically temporary while the majority of migrants born in middle- or low-income countries remain in the new country.

There are several reasons why age at immigration among people originating from middle- and low-income countries may affect the time until an individual gains a foothold in the destination country's labor market. We start by discussing the likelihood that immigrants behave differently depending on only how old they are when entering a new country. Importantly, middle-aged persons differ from younger immigrants by expecting fewer years of work in the new country. Consequently, middle-aged and older migrants are, *ceteris paribus*, less likely to invest in obtaining new skills valued at the destination country and in finding and developing networks useful for finding a

job. In addition, some skills, like learning a new language, tend to become harder to learn with age (on the latter, see, for example, Chiswick and Miller 2015).

Potential employers can use age as a screening device when hiring job applicants, and this can be economically motivated. Consider a case where some work skills are firm specific and acquired while a worker is employed by a specific firm. They are of little or no use outside the firm. In such a case, the payoff period for learning such skills is longer for a young applicant who is expected to have a long tenure than for an older applicant. The same can be true if substantial costs of hiring a new worker exist. However, other types of relationships between age and being attractive to potential employers can exist. Middle-aged and older workers are often not on a career path and, for such reasons, may be expected to leave a new job shortly after being hired. In addition, middle-aged workers have longer life experiences and are different from younger workers, more often living a settled life, and as a result of this or other reasons may be considered to be more reliable (Rhodes 1983).⁵

How age at immigration and getting a job in the new country are related in the Swedish context is affected not only by the behavior of the immigrant and the potential employer. Unlike half a century ago, a number of public measures now aim to make immigrant workers more attractive to employ. One possible side effect of taking part in such programs is that, during the program period, participants have less time to search for a job. Access to such programs is typically affected by public professionals and bureaucrats, who provide information, suggest alternatives, and in some cases make decisions on access. Their behavior and decision-making can be influenced by the age of the person and, in this way, affect if and how fast a person finds a job.⁶

What evidence is there that firms discriminate according to age (irrespective of whether an applicant is an immigrant or native born)? One type of evidence comes from results of correspondence testing. Such studies investigate the first stages in the recruitment procedure: who is invited to a job interview. They have been used to study how age and immigrant status as well as other characteristics of a worker influence employers' behavior.⁷ Some of the early studies in this field were based on pairwise résumés that were sent to employers in the US: one for a 57-year-old and the other for a 32-year-old. The results revealed that the older applicant received less positive responses when a job was vacant, although the older applicant possessed the same qualifications as the younger applicant (Bendick et al. 1997 and Bendick et al. 1999). Results from similar studies conducted in European countries also point in the same direction (see Riach and Rich 2006 for France and Riach and Rich 2010 for the UK). Taken together, these results indicate that it is more difficult to migrate late in life, as the age barrier in the labor market strikes forcefully against these individuals. The immigrants themselves might also differ in motivation and reasons for migrating by age at immigration.

Studies performed in the Swedish context also provide strong evidence for ageism in addition to the existence of discrimination by race in the first stage of the hiring process in the labor market. For example, matched applications from fictional 31-year-old and 46-year-old male applicants were sent to employers with jobs for sales assistants and restaurant workers. The older applicants received significantly fewer responses for interviews compared to the younger applicants (Ahmed et al. 2012). Eriksson et al. (2012) also showed that recruiters sort out not only applicants who are older but also those who are born outside of Europe, are Muslims, are Jews, those who have several children, or a history of absences due to sickness. The most striking result was a very strong

effect for applicants who were over 55. The probability of getting a job for these applicants was 64 % lower than for applicants who were younger than 30 years of age.

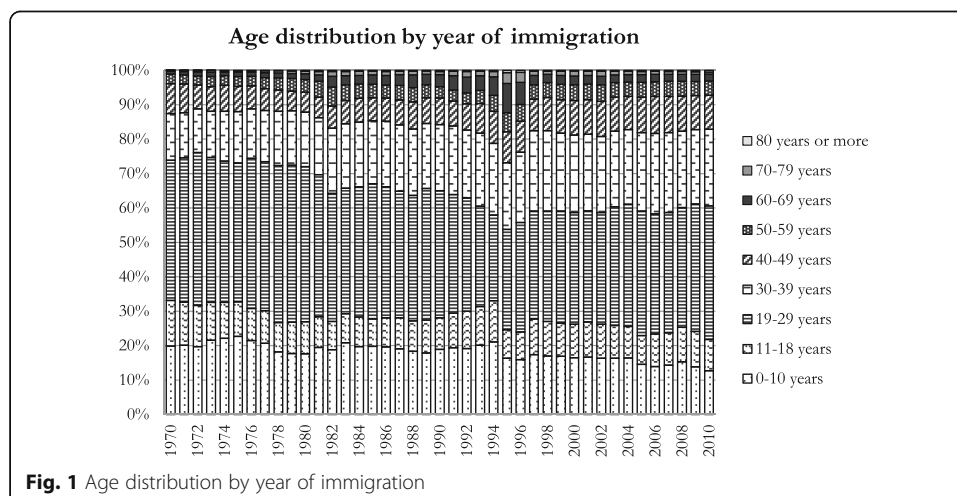
Further evidence that age plays a role in employment comes from studies of the experiences of workers subject to plant closure. Storrie (1996) reported rates of permanent exit from the labor market by age for workers who were employed at the Uddevalla Shipyard, Sweden. Three years after the closure in 1984, almost all workers who were aged 58 or older had permanently exited the labor market, and the same was true of 29 % of workers aged 53–57. An overwhelming proportion of the workers were natives, who could be expected to have advantages over immigrants with similar qualifications and age in finding a new job. These percentages suggest that there is a maximum age by which immigrants can be expected to find a job in a new country.

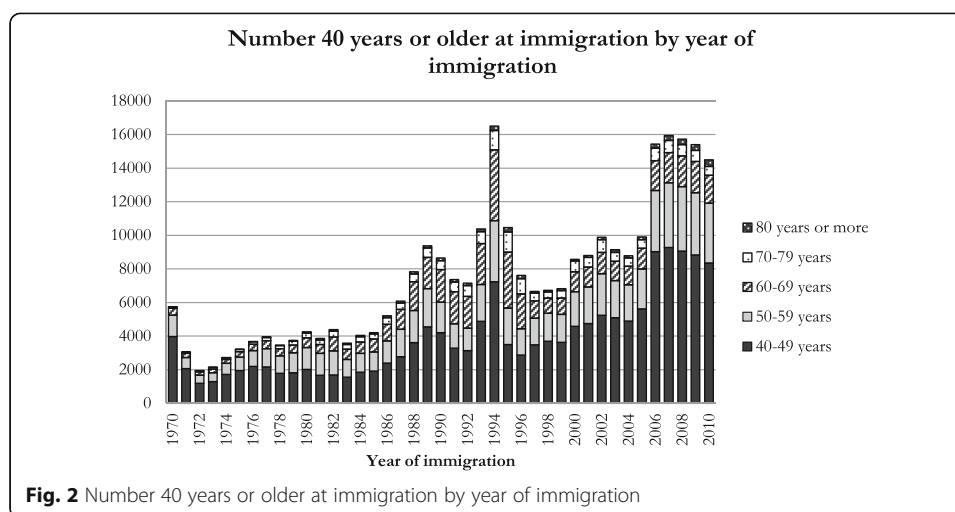
3 Context

Most people who migrate to Sweden are young adults. This is shown in Fig. 1, which illustrates the age composition of foreign-born immigrants to Sweden in each year from 1970–2010, a period of 41 years. This is based on our computation of the data we present in the next section. During one year, typically between one third and four fifths of all who immigrated were 19–29 years old. Adding children, we can conclude that persons under 29 have made up the majority of the foreign-born immigrants in every year. The highest proportions of people aged over 30 were observed in 1995 and 1996, due to migrant streams initiated by the civil war in the former Yugoslavia.

As the stream of migrants to Sweden has increased, an increasing number of middle-aged and older persons have arrived in Sweden.⁸ This is shown in Fig. 2, which reports the number of persons older than age 40 that arrived each year during the period 1970–2010 by age. Until 1987, less than 6000 foreign-born persons aged 40+ arrived annually. Thereafter, the number of arrivals in this age category increased. The flow of immigrants aged 40+ in 1994 and since 2006 were particularly large, when at least 14,000 individuals arrived each year. Our data show that, since 2006, Iraq is the single largest country of birth among immigrants aged 40+.

During the 1950s, 1960s, and until the middle of the 1970s, most migrants to Sweden originated from high- or middle-income countries, arriving as work migrants or as family members of work migrants. Since then, persons born in middle- and low-income





countries have made up a larger proportion of immigrants, many of whom have arrived as refugees or relatives of refugees. It is well known that many foreign-born immigrants who arrived in Sweden during the 1960s and 1970s could find a job relatively easily. Employment rates among foreign-born men were similar to those for native-born men. During this period, it was not uncommon for native-born women to be housewives, and employment rates among immigrant women were actually higher than for native-born women. However, this is history.⁹

Employment rates for native-born women in Sweden increased during the 1970s and 1980s and, since the beginning of the 1990s, have been almost as high as employment rates for men. In contrast, employment rates among foreign-born men and women dropped rapidly during the deep recession Sweden experienced during the first half of the 1990s and were more greatly affected than those of natives. As a consequence, the gap in employment rates and annual earnings between foreign-born and native-born individuals widened rapidly during those years (Ekberg and Hammarstedt 2002; Hammarstedt and Shukur 2007). Since then, low employment among foreign-born individuals in Sweden has become a great challenge for policymakers and has attracted much public attention.

One part of the picture is that employment, unemployment, and earnings among foreign-born individuals in Sweden are stronger related to the business cycle than among those who are native born (Gustafsson and Zhang 2006). This is understandable because a weak labor market is most keenly felt by those searching for their first job: recently arrived foreign-born individuals together with school leavers entering the labor market. In addition, when employers lay off workers, it is often those who were last hired—recent immigrants and young adults—who lose their jobs. Such a mechanism also works in reverse when the labor market improves. During the long phase of economic growth from the end of the 1990s until the downturn of the world economy hit Sweden in 2008, the immigrant–native gap in employment rates narrowed somewhat, but not thereafter (Eriksson 2010; Statistics Sweden 2014a, b; Aldén and Hammarstedt 2015).

The employment situation of immigrants in Sweden varies not only by the state of the economy but also among immigrants by country of origin. Immigrants who were born in high-income countries generally have higher employment rates than those from other countries. The latter are typically easier to distinguish from the majority of the population

by appearance, name, and language ability. People responsible for hiring workers are more likely to hire workers of the same ethnicity and most staff-hiring workers are natives (Åslund et al 2014). To date, a substantial number of correspondence-testing studies, surveyed in Ahmed (2015), have convincingly shown that employers discriminate against job applicants by name. There is also empirical support for the claim that persons with foreign-sounding names who change to native-sounding names achieve much better income development (Arrai and Skogman Thoursie, 2009).

Why is a name so strategic in the hiring decision? Potential employers might just not prefer foreign workers, thereby exhibiting preference discrimination. However, statistical discrimination might also prevail; employers, for various reasons, expect persons with a particular background to be on average less productive than natives. For example, they might expect that foreign-born individuals on average do not have the same knowledge of Sweden-specific institutions and cultural norms and have less language competence.

The economic situation of immigrants to Sweden also varies by years since immigration. Much information is from cross-sections and repeated cross-sections. Low employment rates are observed during the first years after arrival, when many receive social assistance.¹⁰ Higher employment rates can be observed among those who have lived in Sweden for 20 years or more, compared to those who have stayed for fewer years (Statistics Sweden 2012, 2014a). However, even for immigrants who have resided in Sweden for decades, the employment rate is lower than for natives (Statistics Sweden, 2012). Another marked difference is that employment rates start to decline by age earlier among foreign-born than native-born workers. The employment rate of Swedish-born persons in Sweden increases until the age of 30 and then stays stable at a relatively high level, 85–90 %. While the cross-sectional peak of employment occurs around 60 years of age among natives, it occurs some years earlier among foreign-born individuals (*ibid*). This is consistent with higher rates of disability pension among foreign-born individuals than among natives (Österberg and Gustafsson, 2006).

We now turn to the Swedish integration policy, which has not undergone any major changes during the period considered in the present study (Government of Sweden Bill 2009). The integration programs are voluntary, employment oriented, and, until 2010, decentralized to local governments.¹¹ When taking part in introduction programs, participants receive a transfer. There are courses in the Swedish language and Swedish society. Programs offering supplementary education were introduced in the early 1990s. There are also procedures for validating professional skills. In 2007, special subsidized employment for newcomers was introduced.

A recent governmental investigation (Government of Sweden 2012) concluded that there are several shortcomings in the programs and their interactions which create unnecessary difficulties for newcomers to receive support in order to establish themselves in the labor market. Men and women who have migrated as refugees are not offered activities based on their individual needs. Women who migrate as refugees or next of kin are offered relevant activities that will prepare them for the labor market to a lesser extent than men. For example, a newly arrived woman who is registered as unemployed at the employment office has to wait longer to be allocated to a program if she has children under 6 years of age and/or if she has a foreign-born spouse. In addition, some women do not return to program activities that require full-time participation after maternity leave. The existence of Sweden's generous parental allowance benefits, which

are more often used by mothers than by fathers, also makes integration into the labor market slower for immigrant women than for immigrant men (*ibid*).

4 Research design

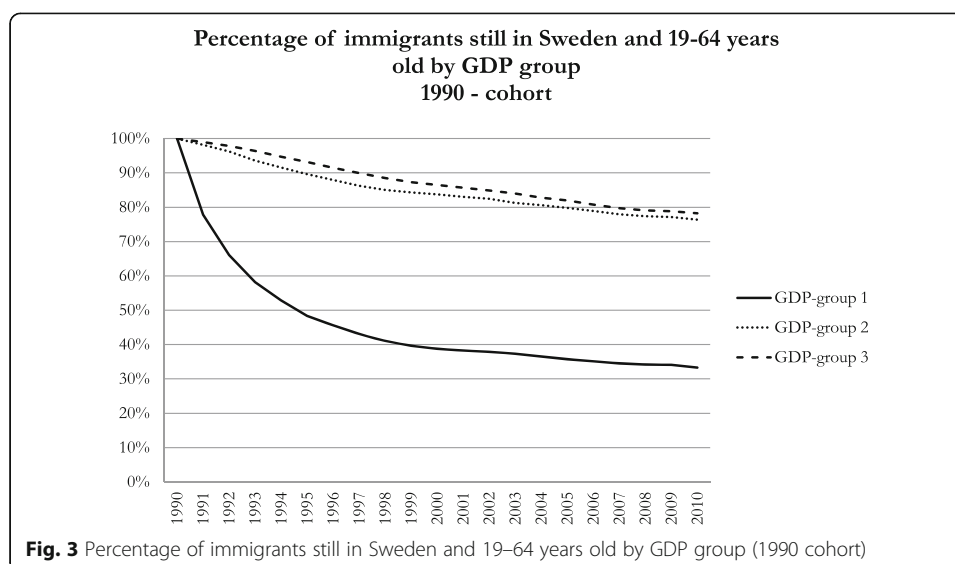
Sweden belongs to a small number of countries in which registry information on all immigrants to the country can be used for studies of immigrant integration into the labor market at the destination country. We worked with information from registers at Statistics Sweden available for researchers and, as stated in Section 1, analyzed the four arrival cohorts of foreign-born persons who arrived during each of the years 1990, 1994, 1998, and 2001.¹² Studying four arrival cohorts makes it possible to establish results that apply more generally than if focusing on one cohort only. However, it also means that we obtain many results, and we therefore have to be selective when reporting them.

An advantage of our design is that those 4 years were characterized by rather different macroeconomic situations, as indicated by the unemployment rates which, over the 4 years, were 1.6, 8.0, 6.5, and 4.0 %, respectively.¹³ Thus, the first arrival cohort studied entered Sweden when employment opportunities were plentiful, but they deteriorated rapidly during the first years after arrival. The second arrival cohort arrived during the most unfavorable labor market situation. In this respect, the situation was different for the two latter arrival cohorts. It should be remembered that differences across cohorts can also be attributed to differences in unmeasured characteristics of the immigrants arriving different years.

Although the Swedish population register on which the official population statistics are based has an international perspective, it is not without limitations. One is that a person enters the register when he or she is registered, which can be later than when moving into the country. For example, asylum seekers and their families are often placed in centers and, when their application is approved, become registered. Another limitation, shared with the official population statistics on, for example, the size of the population in Sweden, is that some immigrants might not live in Sweden for all 12 months of the year under study and, in extreme cases, not during any month of a year. Although being registered as living in Sweden and not being so is illegal, it is difficult to detect. This problem may have biased our results as it is likely that in a few cases we will have reported some persons as not being employed in Sweden, when in reality they have left the country and perhaps have become employed in the true country of residence.

Among people who immigrate, some leave the new country and this often takes place relatively soon.¹⁴ This is illustrated in Fig. 3 where we, for the 1990 arrival cohort, show survival curves for immigrants born in high-, medium-, and low-income countries for a period of 20 years.¹⁵ The figure refers to persons who, upon arrival, were aged 19 or older. Migrants leave the register due to emigration from Sweden or death. It very clearly shows a different pattern depending on where the migrant was born. Migrants from high-income countries typically left the register after a few years; as many as half within the first 5 years after arrival. However, among migrants with such origins who stayed for a decade, few left the register during the next. Among immigrants born in middle- and low-income countries, as many as three fourths remained in the register for at least two decades after arrival.

From the registers, we also obtained information on a number of circumstances in addition to age at arrival, deemed to be of relevance for gaining a foothold in the Swedish

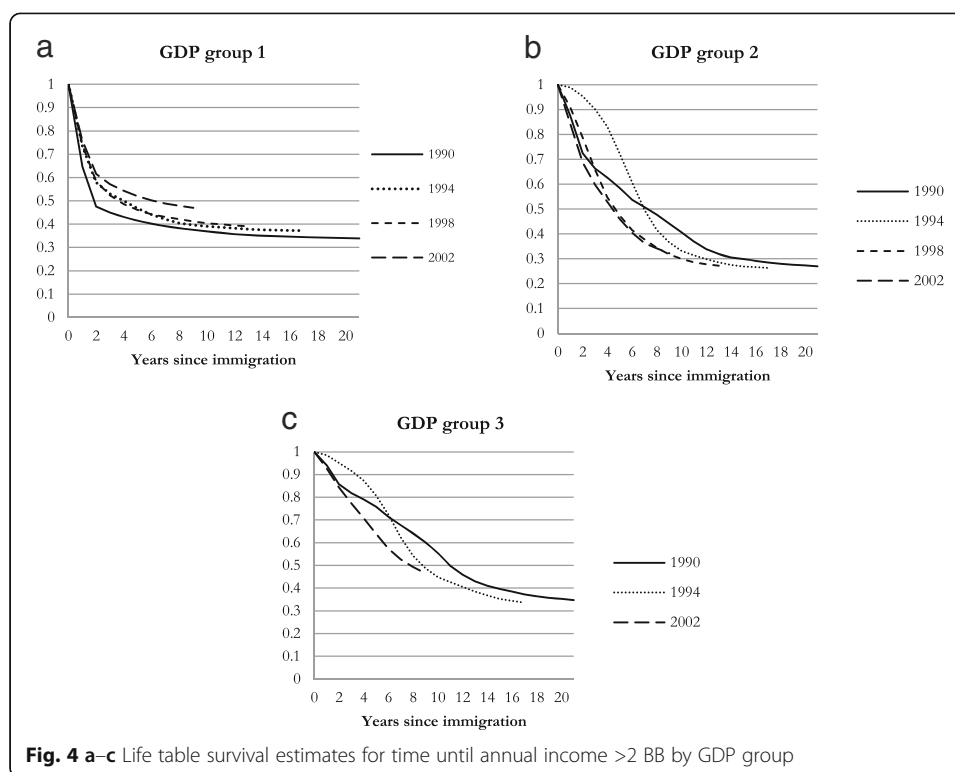


labor market. Most were measured when the person entered Sweden: family situation, country of birth, region where the person was first registered as living, and family circumstances.¹⁶ Education is measured the last year of observation.

The issue of immigrants' integration into the labor market of the host country has many dimensions. They include if age at exit from the labor market or re-employment probabilities after plant closure differ between immigrants and natives. The one we concentrate on here is the time taken to get a foothold in the labor market. We define the number of years until "a foothold" is achieved as the number of years until the person first receives earnings (wages, a salary, or self-employment income) of at least two Base Units. The Base Unit is used in different Swedish legislations, for example, in regulating some social insurance benefits. It is annually updated and is linked to the consumer price index. The level of two Base Units in 2015 was equal to 89,000 SEK. Such an amount can be earned by a full-time worker in the lowest paid occupations where he/she has a full-time job during 4–5 months a year or if working 2 days a week during a full year. In our data, there are relatively few persons with earnings lower than two Base Units, and the same also applied to the number of persons having positive earnings in the interval two Base Units to three Base Units.¹⁷

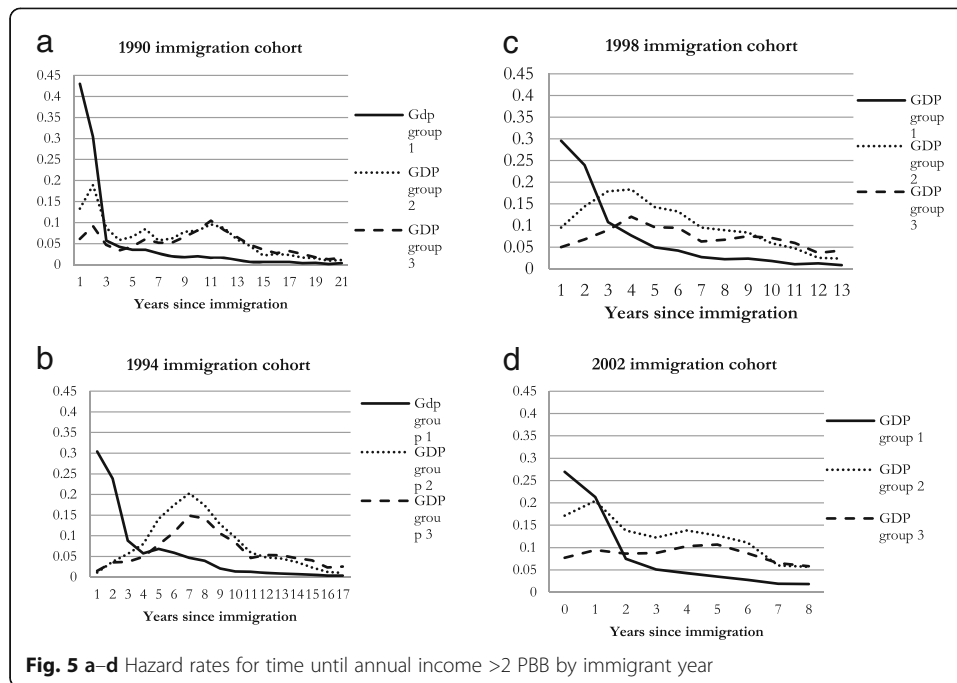
5 Descriptive analysis of the number of years taken to get a foothold in the Swedish labor market

For each of the three countries of origin categories, Fig. 4 reports survival curves for not having earnings of at least two Base Units by years since immigration for each of the four arrival cohorts. The curves are based on foreign-born individuals who lived in Sweden in the year under measurement and who were under 65 years of age in a particular year under study. By definition, the curves slope downwards, showing that less and less immigrants have not gained a foothold in the Swedish labor market. The curves for immigrants from high-income countries are particularly steep, reflecting that many have found a job in Sweden before or shortly after arrival. However, after some years, all curves are less steep, and after a decade since arrival, a considerable fraction of migrants from all countries of origin have still not gained a foothold in the Swedish labor market.



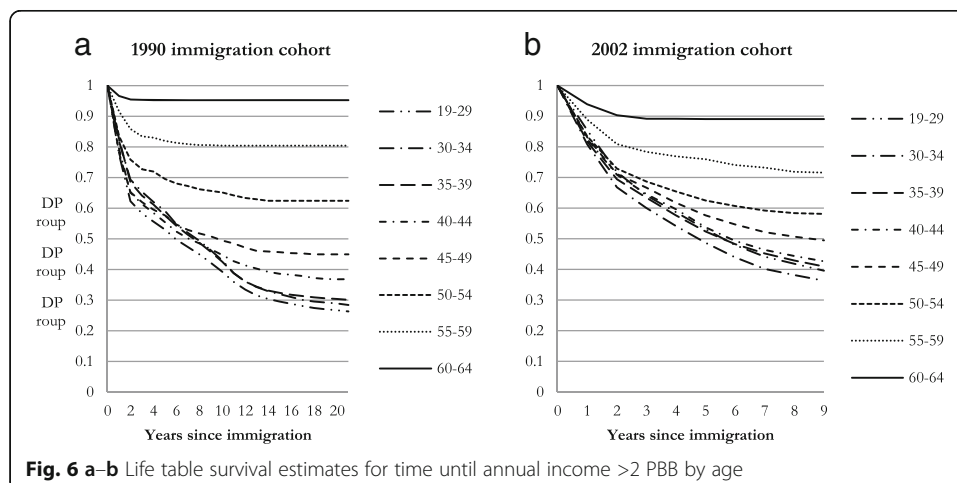
Substantial variation across arrival cohorts during the initial years after arrival is apparent, particularly for immigrants from middle- and low-income countries (see Appendix). The 1994 arrival cohort (who arrived when the employment situation in Sweden was highly problematic) stands out by a considerably higher fraction than those that arrived later with regard to not having gained a foothold in the Swedish labor market. However, some years after arrival, most of the cross-cohort differences had disappeared. Thus, there is support for the view that while the situation in the labor market in Sweden initially matters for how rapidly an immigrant from a low- or middle-income country gets a foothold in the Swedish labor market, such an influence vanishes over time.

The information in the survival curves in Fig. 4 can also be arranged as hazard rates. That is, they show how the probability of getting a foothold, conditioned that he or she had not gained a foothold, varies with years since immigration. For each arrival cohort, Fig. 5 shows hazard rates for each category of immigrant origin. Starting at the year after arrival, we see that the conditional probability of having a job is as high as over 40 % among immigrants from high-income countries who arrived in 1990, most probably because many such migrants moved after first having received and accepted a job offer. In the three later arrival cohorts, the initial probability of having a job just after arrival among immigrants from high-income countries is lower but is still higher than for the two other categories of foreign-born individuals. However, after only a few years, the hazard rate for immigrants from high-income countries becomes lower than for the two other categories, among which the hazard rate curve has another shape; the conditional probabilities of having a job have a tendency to increase a few years after arrival and then fall. This pattern most probably reflects that a considerable fraction of those immigrants were involved in integration programs that terminated after a period



of time. A decade after arrival, few immigrants get a foothold in the labor market. For the three earliest cohorts, which we can follow for more than a decade, we see that the conditional probability of establishing a foothold in the Swedish labor market is, after a decade, lower than 5 % per year or even lower.

Having shown the overall pattern, we now focus on differences by age at arrival, our main research question. Figure 6a show such survival curves for those who immigrated in 1990 for a period as long as two decades. Starting at 40 years of age, a very clear negative relationship between age at immigration and having ever found a foothold is shown. Among those aged 40–44 at arrival, as many as approximately two fifths never established a foothold in the Swedish labor market during the subsequent two decades, and the same was the case among approximately two thirds who arrived aged 50–54. It is rather unlikely than anyone who arrives in Sweden after age 60 ever gets a foothold in the Swedish



labor market. It is also notable that as many as almost one third of the youngest migrants never gained a foothold in the Swedish labor market during the two decades after migration. For comparison, we also show survival curves for the latest arrival cohort in Fig. 6b. The pattern is similar to the corresponding part of the figure for the 1990 cohort.

6 Modelling the relationship between age and getting a foothold in the Swedish labor market

In order to better understand how age at immigration and years until having a foothold in the Swedish labor market are related, we have specified and estimated hazard models. To model the time in years until annual income exceeds two price base amounts, we have estimated Cox proportional hazard models.

$$h(t) = h_0(t)e^{\beta X}$$

where h_1 is the hazard rate and h_0 is the unknown baseline hazard rate, X is a vector of covariates, and β is a vector of parameters. Censoring occurs in 2010 at the end of our observation period.

We estimated separate models for immigrants from high-, middle-, and low-income countries and for each of the four arrival cohorts; in total, there are 12 models. The covariates are all time invariant, and the specification includes eight dummy variables indicating age at immigration, six variables for family situation at arrival in combination with gender, six dummy variables for education of the person measured in 2010, and four dummy variables for region of arrival. We further include dummy variables for country of birth. Stated in Section 1 is the hypotheses under scrutiny that the number of years until a first job of substantial importance is held is longer for foreign-born immigrants originating from middle- and low-income countries who arrive when middle aged than for their peers who arrive when younger, as well as immigrants of the same age born in high-income countries.

In Table 1, we report the results for the 1994 cohort. For example, it is shown that the negative coefficients for age are statistically significant for those aged 30–34 among persons born in middle-income countries, after age 40 for those born in low-income countries, but not earlier than for those 50 and older among immigrants born in high-income countries. Similar are the results (not reported due to space limitations) for the other three arrival cohorts. The estimates also indicate that a number of other circumstances matter for the period until having a foothold in the Swedish labor market. For example, immigrant women tend to gain a foothold in the Swedish labor market later than men. However, compared to gender differences in employment in several of the countries of origin, such differences are small and indicate the existence of assimilation into labor supply behavior at the destination.¹⁸ The number of years until gaining a foothold in the Swedish labor market varies by country of birth within the three categories: high-, middle-, and low-income countries. Those who have a Swedish partner upon arriving have fewer years until gaining a foothold in the Swedish labor market.¹⁹ Education upon arrival also matters. In particular, we find that for persons among whom there is no education information in the data (probably due to having a short or no education), years taken to get a foothold are much longer.²⁰

We illustrate the importance of age at arrival and arrival cohort in Table 2 by predicting from the estimated model the number of years for the four arrival cohorts. The table relates to a single male born in Iraq, having secondary education, and who entered Sweden in Stockholm county. We report predictions that 25, 50, and 75 % of persons with such

Table 1 Hazard models estimating time from immigration until first time annual income >2 price base amounts, 1994 immigrants

Parameter	GDP group 1			GDP group 2			GDP group 3		
	Parameter estimate	Pr > ChiSq	Hazard ratio	Parameter estimate	Pr > ChiSq	Hazard ratio	Parameter estimate	Pr > ChiSq	Hazard ratio
Reference: age 19–29 years									
Age 30–34	0.197	<0.0001	1.217	–0.068	0.000	0.934	–0.027	0.419	0.974
Age 35–39	0.129	0.007	1.138	–0.164	<0.0001	0.849	–0.059	0.164	0.943
Age 40–44	0.130	0.025	1.139	–0.397	<0.0001	0.672	–0.279	<0.0001	0.757
Age 45–49	–0.012	0.845	0.988	–0.868	<0.0001	0.420	–0.688	<0.0001	0.502
Age 50–54	–0.363	<0.0001	0.696	–1.866	<0.0001	0.155	–1.118	<0.0001	0.327
Age 55–59	–0.634	<0.0001	0.530	–3.458	<0.0001	0.031	–2.528	<0.0001	0.080
Age 60–64	–1.037	<0.0001	0.354	–5.309	<0.0001	0.005	–2.546	<0.0001	0.078
Woman	–0.233	<0.0001	0.792	–0.284	<0.0001	0.752	–0.277	<0.0001	0.758
Reference: no children									
Woman and 1–2 children	–0.283	<0.0001	0.754	0.153	<0.0001	1.165	–0.095	0.015	0.910
Woman and 3 or more children	–0.563	<0.0001	0.570	–0.065	0.058	0.937	–0.221	0.001	0.802
Man and 1–2 children	0.139	0.013	1.149	0.142	<0.0001	1.152	0.060	0.217	1.062
Man and 3 or more children	0.068	0.533	1.070	–0.177	<0.0001	0.838	–0.145	0.053	0.865
Partner	0.005	0.919	1.005	0.092	<0.0001	1.097	0.029	0.376	1.029
Swedish partner	0.058	0.320	1.060	0.210	<0.0001	1.234	0.267	<0.0001	1.306
Reference: compulsory									
No information on education	–0.460	<0.0001	0.631	–1.482	<0.0001	0.227	–1.229	<0.0001	0.292
Less than compulsory	–0.196	0.049	0.822	–0.260	<0.0001	0.771	–0.104	0.068	0.901
Secondary 2 years	0.191	0.010	1.210	0.204	<0.0001	1.227	0.300	<0.0001	1.350
Secondary 3 years	0.138	0.063	1.148	0.275	<0.0001	1.316	0.213	<0.0001	1.237
Upper secondary less than 3 years	0.053	0.471	1.055	0.267	<0.0001	1.306	0.290	<0.0001	1.337
Upper secondary 3 years or more	0.373	<0.0001	1.453	0.299	<0.0001	1.349	0.337	<0.0001	1.401

Table 1 Hazard models estimating time from immigration until first time annual income > 2 price base amounts, 1994 immigrants (Continued)

Reference: larger Stockholm										
Larger Göteborg	-0.216	<0.0001	0.806	-0.261	<0.0001	0.770	-0.309	<0.0001	0.734	
Larger Malmö	-0.148	0.004	0.862	-0.320	<0.0001	0.726	-0.433	<0.0001	0.649	
Other Sweden	-0.202	<0.0001	0.817	-0.138	<0.0001	0.871	-0.128	<0.0001	0.880	
Forest counties	-0.153	0.001	0.858	-0.166	<0.0001	0.847	-0.135	0.001	0.874	
Reference: Finland										
Reference: Poland										
DE	-0.123	0.049	0.884	FY	-0.058	0.217	0.944	IQ	-0.091	0.054
DK	0.336	<0.0001	1.399	BA	0.100	0.029	1.105	SO	-0.174	0.001
NO or IS	-0.173	0.000	0.841	TR	-0.114	0.068	0.892	TH	0.670	<0.0001
UK	-0.066	0.297	0.936	CL	0.185	0.023	1.203	LB	-0.139	0.051
USA or CA	-0.315	<0.0001	0.730	RO	0.248	0.006	1.282	CN	0.159	0.035
Other Asia	-0.596	<0.0001	0.551	HU	-0.026	0.847	0.975	SY	-0.149	0.036
Other EU15	-0.134	0.011	0.875	FSU	-0.041	0.470	0.960	IN	0.090	0.444
				GR	-0.180	0.100	0.835	VN	0.237	0.023
				KR	-1.172	<0.0001	0.310	ET or ER	0.498	<0.0001
				CO	-0.132	0.251	0.876	AF	-0.128	0.247
				C or SA	-0.016	0.785	0.984	No Afr	0.196	0.001
				EU16	-0.193	0.009	0.825	SS AFR	0.152	0.028
				Oth EUR	-0.058	0.217	0.944	Oth ME	-0.263	0.006
								BD or PK	0.235	<0.0001
										1.264

DE Germany; DK Denmark; NO Norway; IS Iceland; UK United Kingdom; CA Canada; Other Asia other Asia, Australia, and Oceania; Other EU15 Belgium, France, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, and Austria; FY former Yugoslavia; TR Turkey; CL Chile; RO Romania; HU Hungary; FSU Former Soviet Union; GR = Greece; KR Korea; CO Colombia; C or SA central or south America; EU16 EU 16–27 Estonia, Latvia, Lithuania, Bulgaria, Cyprus, Malta, Slovakia, Slovenia, Czech Republic; Oth EUR other Europe; IQ Iraq; SO Somalia; TH Thailand; LB Lebanon; CN China; SY Syria; IN India; VN Vietnam; ET Ethiopia; ER Eritrea; AF Afghanistan; No Afr North Africa; SS Afr Sub-Saharan Africa; Oth ME other Middle East; BD Bangladesh; PK Pakistan; BA Bosnia and Herzegovina

Table 2 Number of years until a certain percent of the Iraqi immigrants have annual income exceeding 2 PBB

Year of immigration/age at immigration	19–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64
25 %								
1990	4	4	4	6		8	>21	>21
1994	5	5	5	6	7	8	>17	>17
1998	3	3	4	4	4	6	>13	>13
2002	3	3	3	3	4	5	7	>9
50 %								
1990	9	10	10	11	17	>21	>21	>21
1994	7	8	8	8	12	>17	>17	>17
1998	6	6	6	8	9	>13	>13	>13
2002	6	6	6	6	8	>9	>9	>9
75 %								
1990	15	17	18	>21	>21	>21	>21	>21
1994	12	12	13	>17	>17	>17	>17	>17
1998	11	12	13	>13	>13	>13	>13	>13
2002	>9	>9	>9	>9	>9	>9	>9	>9

Predicted for an individual with secondary education of 2 years, male with no children, no partner, and Stockholm county

characteristics will have gained a foothold. For example, we see that among the youngest (depending on arrival cohort) it takes between 3 and 5 years until one quarter gain a foothold and 5 and 10 years until half have done so. The corresponding number of years for those aged 45–49 is between 4–9 and 8–20, respectively. It is only in the 1998 arrival cohort that half of all persons aged 50–54 are predicted to gain a foothold before the general retirement age.

Keeping education, family situation, and region of entry constant in Table 3, we illustrate the importance of country of birth by reporting predictions made for the 1994 arrival cohort for three large categories of foreign-born individuals: Finland (a high-income country), former Yugoslavia (a middle-income country), and Iraq (a low-income country). We see that the difference in number of years until gaining a foothold following migration from Finland is much larger than between the other two countries. It is predicted to take not more than 3 years for half of Finnish-born immigrants aged under 45 to get a foothold in the Swedish labor market, while the corresponding time for those born in Yugoslavia is up to 7 years, and for those from Iraq up to 8 years. The majority of immigrants from these two countries who were over 50 when immigrating, according to the predictions, never got a foothold in the Swedish labor market during the sample period. The same was also predicted for at least one fourth of immigrants from Finland who were aged 45–49 when arriving to Sweden.

Finally, we illustrate the importance of region at entry by simulations, shown in Table 4, based on the 1998 arrival cohort for a single male person with secondary education. As expected, the number of years taken to get a foothold is shortest for those who enter Sweden in the region of the capital Stockholm. The opposite is the case for those who enter in the Malmö region.²¹ For example, it is predicted

Table 3 Number of years until a certain percent of the 1994 immigrants have annual income exceeding 2 PBB

Education/age at immigration	19–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64
25 %								
Finland	1	1	1	1	1	2	2	3
Former Yugoslavia	5	5	5	5	6	11	>17	>17
Iraq	5	5	5	6	7	8	>17	>17
50 %								
Finland	3	2	2	2	3	5	10	>17
Former Yugoslavia	6	7	7	7	10	>17	>17	>17
Iraq	7	8	8	8	12	>17	>17	>17
75 %								
Finland	15	7	8	8	>17	>17	>17	>17
Former Yugoslavia	9	9	10	>17	>17	>17	>17	>17
Iraq	12	12	13	>17	>17	>17	>17	>17

Predicted for an individual with secondary education of 2 years, male, no children, no partner, and Stockholm county

that it would take 6 years until half of the immigrants aged 35–39 who entered Stockholm would get a foothold in the labor market, while the corresponding prediction for those who entered Malmö is 11 years. The estimated model predicts that the majority of those aged over 40 with given characteristics who entered Malmö never got a foothold in the Swedish labor market, while the corresponding majority appeared in Stockholm when aged 50 or older.

Table 4 Number of years until a certain percent of the 1998 Iraqi immigrants have annual income exceeding 2 PBB

Region/age at immigration	19–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64
25 %								
Larger Stockholm	3	3	4	4	4	6	>13	>13
Larger Göteborg	4	4	4	5	5	8	>13	>13
Larger Malmö	5	5	5	6	7	13	>13	>13
Other Sweden	4	4	4	5	6	9	>13	>13
Forest counties	4	4	4	5	6	9	>13	>13
50 %								
Larger Stockholm	6	6	6	8	9	>13	>13	>13
Larger Göteborg	7	8	8	10	13	>13	>13	>13
Larger Malmö	10	11	11	>13	>13	>13	>13	>13
Other Sweden	8	8	9	10	13	>13	>13	>13
Forest counties	9	9	10	12	>13	>13	>13	>13
75 %								
Larger Stockholm	11	12	13	>13	>13	>13	>13	>13
Larger Göteborg	>13	>13	>13	>13	>13	>13	>13	>13
Larger Malmö	>13	>13	>13	>13	>13	>13	>13	>13
Other Sweden	>13	>13	>13	>13	>13	>13	>13	>13
Forest counties	>13	>13	>13	>13	>13	>13	>13	>13

Predicted for an individual with secondary education of 2 years, no partner, and male with no children

7 Conclusions

This study has investigated the length of the process for foreign-born immigrants to Sweden to gain their first foothold in the labor market. The hypothesis under scrutiny is that the number of years until a first job of substantial importance is held is longer for foreign-born immigrants originating from middle- and low-income countries who arrive when middle aged than for their peers who arrive when younger, as well as immigrants of the same age born in high-income countries. Coupled with this, we ask if a substantial proportion of middle-aged and older immigrants born in middle- or low-income countries never succeed in having a job in their destination country.

Although one would expect to find a large number of studies which have addressed the relationship between age at immigration and assimilation in the labor market of the host country, this seems not to be the case. We have used registry information on all immigrants to Sweden and followed persons over time, concentrating on the cohorts that arrived in 1990, 1994, 1998, and 2001, and distinguished between people born in high-, middle-, and low-income countries. It is widely acknowledged that the labor market situation of many immigrants to Sweden is problematic, leading to a number of policy initiatives. However, the relationship between age at immigration and labor market establishment is not well understood. The present study is, to our knowledge, the first to demonstrate that age at immigration plays a large role for large categories of immigrants to Sweden.

Several reasons lead one to assume that it is more difficult to find a job, the older a person is when immigrating. What this study has shown is that the relationship is remarkably strong and starts around the age of 40 for those born in middle- and low-income countries. Persons with such a background who immigrate after the age of 50 have bleak prospects of ever finding a substantial job in Sweden. It is very unlikely that a person who immigrates after being 60 years of age will ever have a job at the destination country, similar to natives who become laid off following plant closure (Storrie 1996).

By investigating different arrival cohorts, we have found support for the view that the general labor market situation in the country of destination origin is related to how rapidly a migrant is integrated in the labor market at the destination. Another important result is that a substantial fraction of all foreign-born immigrants has not gained a foothold in the Swedish labor market, even after many years. This applies to more than one third of those aged 40–44 who arrived in 1990 and whom we could follow for two decades.

Our study has also shown that a number of other circumstances affect how rapidly a foreign-born individual finds a foothold in the labor market at their destination country. Men tend to find a job faster than women, as do those who have a Swedish partner upon arrival. Education also plays a role. The time to the first substantial job varies by country of birth also within the three categories high-, middle-, and low-income countries. Those who enter Sweden by moving to the region of the capital Stockholm tend to find a job somewhat quicker than those who enter in other regions, particularly the Malmö region.

What implications do our results have? One is that they can contribute to understand why the employment gap between immigrants and natives is larger in Sweden than in most other similar countries. Sweden has received larger and larger numbers of foreign-born individuals who are middle aged or upper middle aged and who originate from middle- and low-income countries. Based on our results, one can argue that if this had not occurred the employment gap between foreign born and natives would have been smaller. Our results also indicates that many immigrants from middle-

income and low-income countries that have arrived as middle aged and older will have, compared to natives, reduced opportunities to consume for the rest of their lives due to no or low earnings and low pensions. From this follows that immigrants from middle- and low-income countries who arrive in Sweden when middle aged run a high risk of being poor at old age. This issue has, according to our perception, not received the attention it deserves in policymaking and policy discussion, as well as in research.

Turning to the wider present policy debate in Sweden, our results show that many middle-aged persons who arrive never gain a foothold in the Swedish labor market. This could be used as arguments by members of the different political camps. It can be used as ammunition for those who push for a more restrictive admission policy. However, the results also underscore claims that Swedish integration policy makes too little difference and therefore has to be developed and allowed to become costlier, as well as better targeted.

Endnotes

¹Kesler (2015) shows that disparities in poverty between natives and immigrants are larger in Sweden than in Germany and the UK and demonstrates that this is due to immigrants' severe labor market disadvantages. Obućina (2014) reports that poverty transitions are more frequently associated with employment transition among immigrants to Sweden than among natives. Statistics Sweden (2012) shows that, among persons aged 65 or more, the income of those who immigrated when middle aged or older is considerably lower than among persons who immigrated as young adults, as well as among native-born individuals.

²Another difference is that our data covers also the more recent the years 2001 to 2010.

³On Norway, Blom (2004) analyzed refugees who settled during each of the years 1987–1999 and remained in Norway during the period of study. For Sweden, Bevelander (2000) investigated the process until first employment for male and female immigrants from 16 countries and natives for a period that ended in 1996. Hedberg and Tammaru (2013) studied first entry into the Swedish labor market among persons aged 25–49 who, in 1993, lived in various neighborhoods of the cities of Stockholm and Malmö and who did not have a job immediately upon arrival for a period until 2002. Manhica et al. (2015) studied the transition to first employment among migrants of African origin who immigrated to Sweden between 1994 and 2008.

⁴The starting point of the process is when the immigrants arrive in Sweden according to the register-information. A starting point for the process among natives to get a foothold in the Swedish labor market is not equally straightforward to define. Furthermore, even if that had been possible to define in our data, we would not have been able to observe it for middle-aged native workers. Therefore, we do not as in many studies of earnings assimilation of immigrants include natives in the analysis.

⁵There is some empirical evidence indicating that employers' attitudes towards older workers are changing (Wieteke et al. 2011) and that older workers whose tasks rely on cognitive abilities are less likely to decrease their productivity compared to workers with more physically demanding jobs (Skirbekk 2008). Although this may seem to be good news, a substantial part of those migrating to Sweden are low skilled and are, therefore, not likely to benefit from an improved situation for older workers in the labor market.

⁶However, we are not aware of any empirical study that has attempted to investigate how access to various programs is related to the age of a migrant.

⁷For a discussion of the methodology, see Rooth (2014).

⁸Between 2005 and 2013, the number of foreign-born persons aged 16–64 living in Sweden increased by 290,000, while that of native-born persons decreased by 42,000 (see Statistics Sweden 2014a, b).

⁹For more on migration to Sweden and the labor market situation of migrants during the latter part of the 1900s, see Bengtsson et al. (2005).

¹⁰Lundborg (2013), who analyzed refugees using data on blue collar workers in the private sector between 1997 and 2007, showed how days registered as unemployed were related to years since immigration. For a survey on studies of social assistance receipt among immigrants to Sweden, see Gustafsson (2013).

¹¹See, for example, Valenta and Bunar (2010) and Wiesbrock (2011).

¹²The 1990 arrival cohort numbered 46,000 foreign born aged at least 19 years but less than 65 years old, the 1994 cohort numbered 58,000, the 1998 cohort 32,000, and the 2002 arrival cohort had 40,000 foreign-born persons. Rooth (1999) studied refugees and tied motives who received permanent resident permits in Sweden during the years 1987–1991 and followed them up until the end of 1995. Statistics Sweden (2014a, b) studied foreign-born persons aged 20–49 years upon arrival during a 13-year period.

¹³See Statistics Sweden (2005).

¹⁴See Klinthäll (2003, 2007) and Nekby (2006).

¹⁵For the definitions of the categories, see Table 1.

¹⁶In our data, only a few migrants were registered as married or cohabiting with a Swedish-born partner upon arrival, but such frequencies increase with years since immigration. Here, we do not try to determine if marrying a native after arrival decreases the years until getting a foothold in the Swedish labor market. The process of marrying a native once the migrant has arrived in Sweden can be positively related to having a foothold in the Swedish labor market. On this, see Dribe and Nystedt (2015) and references therein.

¹⁷From an international perspective, this level does not appear to be an overly ambitious policy goal. For example, India has introduced the Mahatma Ghandi Employment Guarantee act, according to which rural households should be entitled to 100 days of work in a year (see <http://nrega.nic.in/netnrega/home.aspx>).

¹⁸The small gender differences can be illustrated by predictions made for after how many years 50 % of a category of immigrants from Iraq, aged 40–45, having secondary education, and who entered Stockholm county, had gained a foothold in the labor market. The number of years read: For a male with no, one, or two children 8 years, for males with three or more children 9 years, for women without children 10 years, women with one or two children upon arrival 11 years, and for women with at least three children upon arrival 13 years.

¹⁹Although the coefficient is not statistically significant in the estimates for immigrants from high-income countries for the 1994 arrival cohort, it is in the other three arrival cohorts.

²⁰The differences can be illustrated by predictions made for after how many years 50 % of a category of male immigrants from Iraq aged 35–39 who entered Stockholm county in 1994 had gained a foothold in the labor market. In cases of having, for example, at least post-secondary education, it is 5 years, but in cases where no information on education is available, the prediction is out of the sample period.

²¹For more information on the employment situation in Malmö, see, for example, Panican et al. (2013).

Appendix

Table 5 Descriptive statistics by immigration cohort

Variable	1990				1994				1998				2002			
	GDP group 1 (%)	GDP group 2 (%)	GDP group 3 (%)	GDP group 1 (%)	GDP group 2 (%)	GDP group 3 (%)	GDP group 1 (%)	GDP group 2 (%)	GDP group 3 (%)	GDP group 1 (%)	GDP group 2 (%)	GDP group 3 (%)	GDP group 1 (%)	GDP group 2 (%)	GDP group 3 (%)	GDP group 3 (%)
Age 19–29	58	45	50	48	33	54	42	43	46	42	43	46	42	46	44	44
Age 30–34	14	18	19	18	20	20	19	19	20	16	19	20	16	17	20	20
Age 35–39	10	14	12	12	17	12	13	13	14	12	13	14	12	13	14	14
Age 40–44	8	8	7	7	12	6	9	10	9	8	10	9	8	9	10	10
Age 45–49	5	5	3	6	7	3	7	6	5	7	7	7	7	7	6	6
Age 50–54	2	3	3	4	4	2	5	4	3	6	5	3	6	5	3	3
Age 55–59	2	3	3	3	5	2	3	3	2	5	3	2	5	2	2	2
Age 60–64	1	5	3	1	3	1	2	2	1	4	2	1	4	2	1	1
Woman	40	56	45	43	52	55	43	52	52	41	52	52	41	55	50	50
No child	81	57	64	76	37	62	77	62	65	81	62	65	81	64	66	66
Woman and 1–2 children	10	22	14	10	25	17	10	19	15	8	19	15	8	18	15	15
Woman and 3 or more children	2	5	6	2	8	6	2	3	6	2	3	6	2	3	6	6
Man and 1–2 children	6	12	10	9	21	10	9	14	10	8	14	10	8	12	10	10
Man and 3 or more children	1	4	5	2	8	4	2	3	5	2	3	5	2	3	3	3
Partner	13	35	27	19	46	32	18	33	34	16	33	34	16	32	28	28
Swedish partner	4	6	3	9	3	6	7	7	5	6	7	5	6	8	5	5
No information on education	22	9	9	27	7	13	46	15	16	30	15	16	30	11	12	12
Less than compulsory	7	15	19	4	16	15	4	10	15	3	10	15	3	9	17	17
Compulsory school	15	12	16	6	4	8	6	7	10	6	7	10	6	6	8	8

Table 5 Descriptive statistics by immigration cohort (Continued)

Secondary 2 years	19	20	18	9	22	15	9	21	17	9	16	13
Secondary 3 years	14	16	13	10	22	16	6	14	12	8	14	12
Upper secondary less than 3 years	8	10	10	12	11	12	8	11	12	12	13	13
Upper secondary 3 years or more	14	18	15	32	17	21	21	22	18	31	32	24
Larger Stockholm	33	30	22	36	13	35	38	30	36	27	31	32
Larger Göteborg	11	10	9	9	7	11	11	11	14	9	10	12
Larger Malmö	6	11	6	10	8	7	7	11	9	13	12	10
Other Sweden	27	33	32	25	43	28	30	39	33	34	38	34
Forest counties	14	8	22	12	15	13	14	9	9	16	9	12

All variables are measured in the year of immigration except level of education. Level of education is measured in 2010. If there is no information on education in 2010, educational level is measured in the year of immigration

Acknowledgements

We would like to thank the editor and an anonymous referee for the useful remarks. This research was financially supported by a grant from Swedish Research Council for Health, Working Life and Welfare (FAS / FORTE). Responsible editor: Denis Fougère

Competing interests

The IZA Journal of Migration is committed to the IZA Guiding Principles of Research Integrity. The authors declare that they have observed these principles.

Received: 4 June 2016 Accepted: 8 October 2016

Published online: 21 April 2017

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