The occupational trajectories and outcomes of forced migrants in Sweden. Entrepreneurship, employment or persistent inactivity?

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Abstract The current surge in forced migration to Europe is probably the largest and most complex since the Second World War. As population aging accelerates and fertility falls below replacement level, immigration may be seen as a key component of human capital to address labor and skill shortages. Receiving countries are, however, hesitant about the contribution that forced migrants can make to the local economy. Coupled with increasing pressure on welfare services, they are associated with increased job competition and crime. Underutilization of immigrants' skills is, however, a waste of resources that countries can scarcely afford. Understanding the labor market integration process of forced migrants is thus critical to develop policies that unleash their full skills potential and ultimately foster local economic productivity. While prior studies have examined the employment and salary outcomes of these immigrants at a particular point in time post-migration, they have failed to capture the temporal dynamics and complexity of this process. Drawing on administrative data from Sweden, we examine the occupational pathways of forced migrants using sequence analysis from their arrival in 1991 through to 2013. Findings reveal polarized pathways of long-term labor market integration with over one-third of refugees experiencing a successful labor market integration pathway and an equally large share facing a less fruitful employment outcomes. Our findings suggest education provision is key to promote a more successful integration into the local labor market by reducing barriers of cultural proximity and increasing the occurrence of entrepreneurship activity.

Keywords Entrepreneurship · Forced migration · Longitudinal occupational trajectories · Sequence analysis · Sweden · Labor market outcomes · Entrepreneurship

JEL classifications C33 · C55 · J15 · J24 · J31 · J61 · L26

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1 Introduction

The scale of global forced migration has rapidly accelerated over the last decade. The number of forced migrants increased from 37.5 million in 2005 to 51.2 million in 2013 and reached a historical landmark of 59.5 million by the end of 2014 (UNCHR 2015). Persecution, conflict, generalized violence, and human

rights violations have been major drivers of this surge in forced migration (Metcalfe-Hough 2015). Europe has become a major destination for the rapid increase in the number of forced migrants from North Africa and Middle Eastern countries, particularly Syria, Iraq, and Yemen (UNCHR 2014). Europe has absorbed more than 800,000 forced migrants, which represents the largest migration crisis the region has faced since the Second World War, with Turkey, Germany, and Sweden as the three main European destinations (UNCHR 2015).

Parallel with the sociopolitical instability in source countries, global attention has focused on the social, political, and economic challenges for host nations imposed by the flow of forced migrants. Legal, social, economic, and cultural integration of refugees[1] represents a substantial financial cost for local governments. Providing asylum requires the provision of housing, education, health, and other welfare services, as well as an extension of local entitlements and rights to migrants as they become new residents. Moreover, local governments need to address concerns regarding social cohesion and job competition and determine the period of residence for forced migrants in the country and therefore the period of time they need support. Global trends suggest that a long period of financial support is required, as more than half of the total refugee population in 2014 had been displaced for more than 10 years (Crawford et al. 2015).

The financial costs of integration, however, can be offset by long-term economic benefits. As population aging accelerates and fertility falls or remains below the replacement level in European countries, forced migration may represent a source of human capital to alleviate local labor and skill shortages. Evidence though points to a limited impact (Newsham and Rowe 2019). It also indicates that the surge of forced migration to Europe has comprised not only vulnerable people and children but also university-educated individuals (Bodewig 2015). Early intervention is critical to fulfill the economic benefits of this group of forced migrants. Early provision of adequate integration support can accelerate forced migrants' independence and self-sufficiency and provide opportunities for them to gain employment and contribute to the local economy (OECD 2015).

Despite these potential positive implications, host countries have been more concerned about the immediate burden on welfare services, job competition, and

social cohesion. Prior research has focused on the main global patterns of forced migration, migrants' employment integration (Kesler 2006; Bevelander 2011; Lundborg 2013), and their salary capacity (Edin et al. 2000). While these studies have used longitudinal data, analyses have remained descriptive (e.g., Aldén and Hammarstedt 2015) and focused on single employment transitions and year-to-year changes in refugee migrants' employment status. For example, prior research has examined year-to-year changes in the number of individuals and their duration in a status of unemployment (e.g., Lundborg 2013). Little progress, however, has been made to understand the trajectories of forced migrants regarding their individual labor market integration. Therefore, little is known about their long-term occupational trajectories: How long do individuals take to transition from arrival to full-time employment? What occupational pathways do individuals follow? Can distinct pathways be identified? And, how do they differ across migrants with respect to nationality, cohort, age, education, and gender?

In this paper, we seek to address these research questions by analyzing the individual occupational trajectories of forced migrants from arrival to settlement over a 22-year period (i.e., 1991–2013). We draw on a comprehensive longitudinal register dataset originating from Statistics Sweden, which offers detailed data for all individuals who legally reside in the country. Specifically, we examine the career pathways of the refugee immigrant population that entered Sweden between 1991 and 2013. To analyze the process of labor market integration and link it to key underpinning factors, previous studies have largely relied on event history analysis (e.g., Lundborg 2013). This approach effectively captures the temporal dependence of employment transitions and personal characteristics. However, by focusing on single employment transitions associated with individual circumstances, this approach neglects the broader context within which an individual transition occurs (Rowe et al. 2014). This context is better understood by embedding individual transitions within a wider framework of occupational *pathways* that is linked to individual circumstances and that encompasses education and employment transitions (Rowe et al. 2017). Thus, while the relationship between employment transitions and certain individual circumstances of the migrant population is well established (e.g., host-country language proficiency and social networks), we know little about the long-term association between

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[1] "Refugees" and "forced migrants" are used interchangeably.

employment and educational transitions and outcomes and the evolution of this relationship over time.

An understanding of occupational pathways calls for a biographical approach. Developed for the study of DNA, sequence analysis has been applied to examine and identify distinctive school-to-work and socioeconomic trajectories (Brzinsky-Fay 2007; Rowe et al. 2017; Patias et al. 2020). We use sequence analysis to first distinguish representative occupational pathways and identify pathways leading to higher and lower labor market integration. Career pathways are defined by analyzing transitions through various employment and educational statuses over time from the year of arrival, and the degree of labor market integration is assessed by determining the time taken to progress into full-employment or entrepreneurship. We then determine the personal characteristics that influence the probability that an individual will transition through one of these representative pathways by using logistic regressions.

Focusing on Sweden allow us to analyze these interesting patterns in a country with a history of a policy of openness and inclusion that has led to an influx of many forced migrants since the early 1990s. Previously, the majority of immigrants were driven by the labor market, and they could find employment more easily. Policy makers have devoted considerable effort and resources to the (labor market) integration of immigrants since the 1990s through various labor market policies and programs. In addition, Sweden is a country characterized by a rigid labor market with a lack of flexibility in firms' employment and firing decisions. This duality, with a generous support system and a rigid labor market, contributes to making Sweden an interesting case to study with regard to the integration of forced immigrants.

The remaining sections are organized as follows: Section 2 covers the literature review, which is followed by a short description of Swedish immigration policy. Section 4 describes how forced migrants are identified, followed by a discussion of the method in Section 5. Our findings are presented and discussed in Section 6, followed by a concluding section.

2 Literature review

A consistent finding in the literature is that immigrants experience poorer labor market outcomes than natives because of their lower level of human capital, discrimination experiences, limited country-specific

knowledge, and access to native networks (Chiswick 1978; Borjas 1994; Dustmann et al. 2010). Few studies have focused on forced migrants and their employment outcomes.[2] Existing scholarship indicates that refugees tend to experience poorer labor market outcomes than natives and other groups of migrants. There is consistent evidence from the UK (Bloch 2008; Feeney 2000), Canada (Bevelander and Pendakur 2014; Krahn et al. 2000), Australia (Miller 1986; Wooden 1991), and Sweden (Bevelander 1999, 2011; Kesler 2006; Kogan 2003) which indicates that refugees tend to have a lower probability to be employed and a higher probability to remain in unemployment or in underemployment than natives and other groups of migrants. These studies have also found that this disadvantage in the labor market is long lasting (Wooden 1991).

Social networks comprise a key platform for immigrants to secure jobs. Social networks expand local connections and represent a source of information about employment opportunities for immigrants (Hagan 1998; Sanders et al. 2002; Garcia 2005). Social networks also offer temporary job opportunities, providing an opportunity to build local working experience, adapt to the local culture, and produce provisional income while securing a permanent position (Drever and Hoffmeister 2008; Torezani et al. 2008).

The underlying reasons why refugees experience worse outcomes are similar to those for voluntary immigrants and relate to local language proficiency, cultural barriers, discrimination, lack of experience in the local labor market, and recognition of skills and qualifications (Bloch 2008; Feeney 2000; Wooden 1991). These factors however have a differentiated influence on labor market outcomes across different migration groups, which can be linked to the cultural proximity of migrants to the host society. Lundborg (2013) finds that refugees from countries more dissimilar to a receiving country tend to have a higher likelihood to

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[2] Within the international migration literature, there has been discussion about whether refugees are distinct from immigrants. One strand argues that the term refugee is a social construction formed for political reasons to label individuals. The other strand argues that refugees' experiences, such as war and flight, define and form the individual. The flows of immigrants and refugees do share common treats, routes, and host countries, but there are also differences, such as the composition of their networks, their ability to return to their home country, their demographic profile, the view of migration in the social context, and their status in the social welfare system (Hein 1993). Their social welfare status may prolong their labor market entrance (Rumbaut 1989). Refugees within the same cohorts are found to be more similar than those within a different cohort (Hein 1993).

experience unemployment than those originated from more similar countries.

In contrast to non-forced immigrants, refugees' employment outcomes are not underpinned by a skill-based selection process. Countries have strict immigration regulations and requirements which immigrants need to meet to be granted a visa to enter a country (Bevelander 1999; Chiswick 1999; Wooden 1991). Self-selectivity of immigration is thus limited. Assessment of refugees' immigration applications are based on a different set of criteria regarding conditions at the origin country and thus may be deemed as less compatible to the skill and labor gaps in the host country.

In Sweden, refugees are the most disadvantaged group of immigrants, and over time, their employment opportunities have worsened (SOU 2008, 2009). Immigrants who arrived in the 1950s and 1960s enjoyed positive labor market outcomes (Ekberg 1983; Ohlsson 1975), but they have worsened since the 1970s, compared to those for native Swedes. Declining national economic growth has contributed to reducing employment opportunities for immigrants (Bevelander 1998; Scott 1995). Changes in the service and manufacturing sector shifted labor needs for high level of human capital, incorporating both high levels of formal and informal skills and competences (Bevelander 1998; Scott 1995). Formal requirements in terms of education and skills were demanded to be complemented with informal skills, including language skills, understanding of work habits, norms, and cultural setting in society. These changes reduced the chances of immigrants with a formal skill set to secure a job (Bevelander 1998; Scott 1995).

Overall, existing evidence indicates a potential mismatch between refugees' skills and the host country's labor needs because refugees are displaced and do not necessarily intend to migrate. Additionally, economic conditions in Sweden were not less favorable during the 1970s and 1980s, when large immigration influxes occurred. Given these circumstances, the following key question arises: how successful have refugees been in integrating into the local labor market during the last two decades? In addition to language barriers and educational qualifications, cultural assimilation has been identified as a key predictor of successful labor market integration. Arguably, refugees from the Balkan region have closer cultural proximity to Swedish culture and would thus be expected to experience more

rapid transitions into employment than refugees from low-income African and Asian countries.

3 Swedish immigrant policy

The main inflow of individuals between 1945 to mid-1970s was labor market driven, when Sweden was experiencing a labor shortage and demanded skilled individuals. After the 1970s, immigrants to Sweden were mainly refugees or individuals with a preexisting tie to someone in Sweden. The drop in the number of immigrants for labor market reasons from non-Nordic countries was also influenced by a drastic change and sharpening in regulations on labor market migrants (Bevelander 1999). Since 2008, labor market immigration policy has been demand-driven and liberal (Berg and Spehar 2013). In 2015, the share of foreign-born individuals in Sweden reached approximately 17%. Half of the individuals in this group originate from another European country, with an overrepresentation of Nordic countries. The most common country of origin is Finland, followed by Iraq and Poland.

Swedish refugee policy has long been very generous, as Sweden has a history of being a country that accepts many refugees in absolute numbers, especially per capita.[3] For example, Sweden is one of few countries within the EU that has collaborated with the United Nations High Commissioner for Refugees (UNHCR) regarding the allocation of refugees (Lidén and Nyhlén 2014). The largest share of asylum seekers[4] between 2002 and 2013 comprised individuals from Iraq (15%), Somalia (10%), Syria (8%), and Afghanistan (5,5%). Irrespective of year, the largest share of asylum seekers originates from Former Yugoslavia, Iraq, Iran, Syria, and Somalia.

Regarding the location of refugees across Sweden, in 1985, the government imposed a new system, where the objective was to obtain a more even distribution across municipalities. By 1989, almost all municipalities agreed to host refugees. With the rise in the flow of immigrants, the initial idea of using municipalities that

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[3] There has been a shift, however, where parliament voted in 2016 for a much more restrictive policy.

[4] Data on asylum seekers are based on actual data from the Swedish Migration Agency based on their registration. We acknowledge that asylum seekers are not by definition the same as forced migrants, but we only have access to the data through the Swedish Migration Agency.

could provide jobs or education was abandoned, and housing opportunities became more important (Åslund 2005). A new reform after 1995 gave a clearer division of responsibility between municipalities and national authorities. The post-1995 reform also offered more freedom to immigrants and put more responsibility on individuals. In the new reform, refugees were given the option to choose their own initial location, given that they could find housing on their own. The allocation by the Swedish government is based on individuals' skills and experiences, and individuals are expected to be located in municipalities that provide economic and/or education opportunities. A disproportionally large share, however, has been assigned to municipalities with housing opportunities but a lack of labor market flexibility (Wennström and Öner 2015).

3.1 The Swedish labor market and labor market policies

The Swedish labor market system shares commonalities with corresponding systems in the other Nordic countries, but it differs from that in other EU countries and in the USA. The main difference is the strong position of different organizations in the Swedish labor market, such as trade unions and employer organizations. The labor market in Sweden is thus built on legislation and collective agreements. The legal framework sets the boundaries and basic rights, but in some cases, the laws are non-mandatory, and they can be restricted in certain predetermined ways if collective agreements other content are in place. For example, there is no legalized minimum wage in Sweden, but it is controlled by collective agreements. The legitimacy of collective agreements is provided by the high coverage by labor market organizations. Approximately 70% of employees in Sweden are organized in employee organizations, and almost 90% of all employees work in firms that are affiliated with employer organizations. A firm that is part of a collective agreement must treat all employees equally within the firm regardless of whether they are members of the contractual employee organization (Forslund and Skans 2007).

Employees in Sweden used to have among the strongest employment protection, and the government used labor market policies to encourage full employment (Burström et al. 2000). Although employment protection decreased since the 1990s, employees are still heavily protected. A firm is of course allowed to terminate an employee

contract, but it has to follow several rules and regulations in the process (Forslund and Skans 2007). These circumstances cause rigidity in the labor market. Another tentative outcome from this situation is the large share of temporary workers, of which Sweden has among the highest share in Europe (Eichhorst et al. 2016).

Several labor market policies have been introduced to the Swedish labor market in order to, for example, increase the mobility of individuals, decrease unemployment, and reintroduce individuals to the labor market as active participants. Labor market policies in Sweden generally concern education programs or subsidized employment. In their report, Forslund and Skans (2007) summarize studies on outcomes of individuals taking part in labor market policies in terms of employment or increased yearly salary. Based on the numerous studies they evaluated, Forslund and Skans (2007) show that the labor market policies that target educational programs differ across time: during the 1980s the policies had a positive effect on participants, while the labor market policies in the 1990s and afterward had a nonsignificant or even a negative impact on participants. Possible explanations are the economic recession in Sweden during the 1990s, structural changes in who received unemployment benefits and a larger inflow of non-natives. With regard to subsidized employment policies, programs that enable individuals to access the labor market through new firm formation subsidies or internships were the most successful. Regarding labor market policies focusing on immigrants, the government stated that individuals born outside Nordic countries are a prioritized group regardless of labor market policy. There are also labor market policies that target this group only (Statskontoret 2002). The success of one of these policies, "Job introduction for immigrants" (in Swedish: "Arbetsplatsintroduktion för vissa invandrare"), has been evaluated by Johansson and Åslund (2006). They find that the policy increased internship positions and increased the chance of employment for those that received internships.

4 Forced migrants

We used an unbalanced panel dataset from Statistics Sweden, which offers detailed data for all individuals who legally reside in the country. The dataset used provides individual-level information

on annual basis from 1990 to 2013, including data on sex, education, occupation, age, background, employment status, etc. Thus, for each year, it is possible to access the full working-age population (above the age of 16) for individuals who legally reside in Sweden. As each individual can be followed across time, the data create a large longitudinal dataset. For the purpose of this paper, we focus on immigrants. Such individuals are identified as those who are new residents in Sweden and who do not have Swedish parents or have been born in Sweden.

Although the data are rich in individual characteristics, there are two limitations for the purpose of this paper. First, to avoid the identification of individuals, Statistics Sweden does not provide each individual's country of origin. Instead, countries are grouped based on larger geographical regions (regions of origin, hereafter) and their level of income (see Table E1 in the Electronic Supplementary Material for the full list of regions of origins and countries). This paper will use these regions of origin instead of countries. A second limitation is that Statistics Sweden does not provide the identification of immigrants who arrived as refugees. To define forced migrants, we use data from Sweden's migration agency on asylum seekers (see Appendix, Fig. 5), which provides a list of countries and the number of residence permits granted in year to each of these countries. Based on this information, it is possible to have a general idea of the nationalities of individuals who are most likely to have entered Sweden in a particular year as a forced migrant. These patterns are then linked to the data from Statistics Sweden for the analysis (Fig. 6 in the Appendix). The data from these two sources show generally consistent patterns but with some lags in the register data from Statistics Sweden. The reason for the lag is that an individual is registered in the data first when she/he has received a residence permit and has been registered by the tax authority, which can take some time. A forced migrant is thus an individual who originates from a region of origin during a period of conflict (war or famine) in the asylum data and where the inflow of individuals from this region of origin is significantly higher than that in the previous years in the register data. Once individuals from a particular region of origin and year are identified as forced migrants, we follow them through the following years (until 2013) to evaluate their performance in the labor market.

The first region of origin identified is the *Balkans*. We defined forced migrants from this region as individuals from Balkan countries who arrived in Sweden between 1993 and 1995. As shown in Figs. 5 and 6 in the Appendix, there was a large increase in the number of migrants from these countries between 1993 and 1995, coinciding with the Croatian and Bosnian wars.

The second region of origin is the *Middle East*. We defined forced migrants from this region as individuals from Middle Eastern countries (listed in Table E1) who arrived in Sweden between 1991 and 1992, and between 2006 and 2008. As shown in Fig. 5, the number of granted residences and the number of migrants arriving through the Geneva Convention peaked during these two periods. These migrants mainly originated from Iraq, Iran, Turkey, Lebanon, and Syria following the Gulf war (1990–1991) and the Iraq war (2003–2011).

A third region of origin is *Asia*, *low-income*. We defined forced migrants from this region as individuals mainly from Afghanistan, Bangladesh, and Vietnam who arrived in Sweden between 2004 and 2010. The number of migrants granted with residence permits from Afghanistan increased sharply between 2000 and 2001, following the increased military presence of the USA in the country. These numbers remained constant until 2008 and were followed by an increase. Forced migrants from the Asia, low-income region includes individuals migrating for family reunification purposes, but their number is difficult to estimate.

The fourth region of origin is Africa, low-income We defined forced migrants from this region as individuals primarily from Eritrea, Ethiopia, Uganda, and Somalia who arrived in Sweden between 2006 and 2013. Individuals from these countries migrated to Sweden in increasing numbers between these years because of conflicts, instability, lawlessness, famine, and droughts in their country of origin. These migrants were granted residence status through the Geneva Convention as shown in Appendix Fig. 5.

Table 1 summarizes our definition of forced migrants based on both the data from Sweden's migration agency and Statistics Sweden. All individuals identified as forced migrants are followed in the dataset from the year of arrival to Sweden until 2013 or until they left Sweden.

Table 1 Identification of forced migrants

| Region of origin	Identified year of arrival in Sweden	Period of time: migrants are followed	Number of migrants arrived in the first year of arrival	Total number of migrants	Reason(s)
Balkans	1993–1995	1993–2013	12,970	36,097	Croatia war of Independence (1991–1995). Bosnian war (1992–1995)
Middle East	1991–1992[a] & 2006–2008[b]	1991–2013	9522	19,630[a] & 49,731[b]	Gulf war (1990–1991) Iraq war (2003–2011)
Asia, low income	2004–2010	2004–2013	1290	18,994	Afghanistan war (2001–2014)
Africa, low income	2006–2013[*]	2006–2013	4612	53,798	Several conflicts, among others: • Uganda-Congo (1998–2003) • Uganda, civil war (1987–present). • Eritrea-Ethiopia (1998–2000) • Somalia, civil war (1991–present)[c] Famine Drought, Horn of Africa (2006)

[a] First wave 1991–1992

[b] Second wave 2006–2008

[c] Although the Somalian Civil war started in 1991, we only considered the 2006–2013 period given that a large number of granted residences via the Geneva Convention until 2006 (see Fig. 5 in the Appendix)

5 Method

We analyze the labor market integration process of the cohorts of forced migrants identified in Table 1 by examining their employment status, income, and career pathways from their arrival to 2013 or their departure from the country. We first perform an exploratory analysis of the socioeconomic profile of these cohorts of migrants at the year of arrival in Sweden by examining individual characteristics (educational attainment, age and employment status) and area type of first settlement. Then, we examine the income distribution of forced migrants to determine their economic capacity and its evolution over time as their permanency in the country extends.

Next, we examine changes in the educational and employment statuses of forced migrants over time to identify representative types of "integrated" and "less integrated" occupational pathways into the labor market. For

this purpose, we employ sequence analysis to determine representative pathways and identify their underpinning personal factors, as outlined in Fig. 1. Sequence analysis was initially developed in molecular biology for DNA analysis and subsequently introduced to the social sciences by Abbott and Forrest (1986). More recently, this technique has also been applied to identify representative school-to-work pathways (Brzinsky-Fay 2007; Rowe et al. 2017). Sequence analysis techniques recognize the complexity of defining representative trajectories and enable one to capture differences in the occurrence, duration, and timing of transitions between statuses. Unlike event history analysis, which focuses on a single transition, sequence analysis can be used to examine employment and educational transitions as a single sequential unit, allowing the identification of unique trajectories while accounting for the life course context of each transition. This quantitative bibliographical approach contributes to expanding our understanding of how past experiences
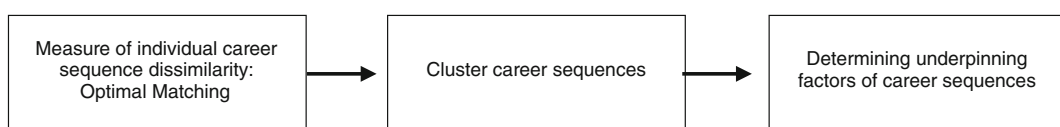
Fig. 1 Outline of empirical design

affect subsequent educational and employment outcomes.

5.1 Measuring similarities between employment pathways

The first stage in determining representative occupational pathways is to assess the dissimilarity of each individual longitudinal sequence of educational and employment transitions. Our input data for sequence analysis inform a longitudinal multistate variable that provides information on the educational and employment status of individuals in each survey year. Seven statuses were distinguished: Employed, Self-employed, Unemployed, Inactive, Studying, Studying and Employed, and Studying and Unemployed.[5]

Various methods can be employed to measure the dissimilarity between sequences, including the longest common prefix (LCP), the longest common subsequence (LCS), and an optimal matching algorithm (OMA). Following recent applications of sequence analysis for studying school-to-work transitions (Brzinsky-Fay 2007; Rowe et al. 2017), we use the OMA method. The OMA estimates distances for sequences of different length by computing the dissimilarity between two sequences as a function of the number of edits or steps required to transform one sequence into another. It assesses the cost of inserting/deleting (indel costs) or substituting (substitution costs) elements in one sequence in order to transform it into another. The greater the cost needed to make two sequences equal, the greater the dissimilarity between the two. Indel costs are, by default, set to one (Gabadinho et al. 2009), whereas substitution costs are derived from observed transition rates between two states (e.g., the probability of transitioning from being a student to being employed). Higher transitions rates indicate lower substitution costs. Substitution costs are calculated as follows:

$$s(n, m) = 2 - p(n|m) - p(m|n) \tag{1}$$

where $p(i|j)$ is the conditional probability of observing a transition between an educational or employment status i to another j from t to $t + 1$. In this study, t represents each year and ranges from 1991 to 2013 (22 periods). The TraMineR package in the statistical software R was used to implement the analysis (Gabadinho et al. 2009).

5.2 Clustering individual occupational trajectories

The second step to determine a small set of representative occupational pathways involved the clustering of individual career trajectories. The resulting minimum edit costs matrix from the first stage was used to create groups comprising the most similar sequences of educational and employment transitions. We used a *PAM (Partitioning Around Medoids)* clustering algorithm, which is a more robust to noise and outliers than the conventional k-means procedure. This is because the medoid algorithm clusters the data by minimizing a sum of pair-wise dissimilarities (Kaufman and Rousseeuw 2005),[6] rather than a sum of squared Euclidean distances as the k-means methodology. Because regional market conditions may affect individual career opportunities, we perform separate cluster analyses by municipality. Cluster solutions using $k = \{4, 5, 6\}$ medoids were assessed, and the $k = 4$ cluster solution was found to provide the maximal difference between clusters. Four representative occupational pathways were thus identified, visualized, and labeled: *Employment* dominant sequence (EMP), *Employment to Self-Employment* (or entrepreneurship) dominant sequence (EMP-SELF), *Inactive to Self-Employment* (or entrepreneurship) dominant sequence (INAC-SELF), and *Inactive* dominant sequence (INAC).

5.3 Determining the drivers of occupational pathways

We then used binomial logit regressions to identify the individual and regional factors that influence the probability of forced migrants to transition through one of these representative pathways. Four separate regression models were estimated—one for each representative pathway. The dependent variable corresponded to the cluster membership for each representative pathway, i.e., 1 if the individual transitioned through a particular pathway and 0 otherwise. These dependent variables are deemed to be mutually exclusive as they are based our pathways derived from cluster analysis which maximizes their dissimilarity. However, although it is tempting to estimate a multinomial logit model, given that the choice set is not pre-defined to individuals but constructed from the data, we performed separate binomial logistic regressions as they do not rely on the Independence of Irrelevant Alternatives (IIA) property.

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[5] Please see the Electronic Supplementary Material Section for an extended definition of these statuses.

[6] Medoids are representative objects of a dataset whose average dissimilarity to all the objects in a cluster is minimal.

A range of individual and regional variables were used. Table 2 describes these variables. At the individual level, differences in human capital are documented to affect individuals' career pathway (Portes 1995; Rooth 1999; Scott 1995). We control for individual differences in human capital at their arrival to Sweden, including individuals' *Educational Level*, *Age*, *Sex*, and *Region of Origin*. Additionally, since the labor market outcomes of migrants are also influenced by local conditions (Bevelander and Lundh 2007), we include a dummy that captures metropolitan municipalities (*Metro*), as these areas tend to accelerate human capital development and labor market integration (Faggian et al. 2017; Rowe et al. 2017). Our definition of Metro comprises the Stockholm, Gothenburg, and Malmö functional regions. We also include a dummy for rural areas (*Rural*) in Sweden, as these regions follow different growth and development patterns. Rural areas are those in Sweden that are not classified as a metropolitan municipality or any of the larger cities and their suburbs.[7]

6 Results and discussion

First, we analyzed the socioeconomic profile of refugees. Table 3 reports the mean values in relation to individual attributes, by region of origin, in the first year of arrival, after 5 years of arrival and after 10 years of arrival in Sweden. Considerable differences are noted by region of origin, revealing high heterogeneity across forced migrants. Individuals from the *Balkan* region stand out. They tend to be older, display a more equal gender balance, and are evenly spread across Sweden. *Low-income Asian* refugees display the highest education level at the time of arrival in Sweden. This educational advantage is preserved over time. As for other immigrant groups, Table 3 also reveals that forced migrants also concentrate in urban areas, especially those coming from the *Middle East* and *low-income Asian* countries. Eight out of ten of the refugees originated from these regions settle in a metropolitan area or larger cities.

Table 3 also reports the distribution of individuals across various educational and employment statuses. A common feature is inactivity. The largest share of refugees was not in work, actively seeking for a job,

Table 2 Description of variables

Variable	Description
Dependent variable in each Logit Model	
Career trajectory	EMP: Individuals who are persistently employed EMP-SELF: Individuals who move from employment to divergent labor market outcomes, where self-employed is the most common INAC: Individuals who are persistently inactive INAC-SELF: Individuals who move from inactive to divergent labor market outcomes, where self-employment is the most common
Independent variables	
Education, high school	Highest attained educational level corresponds to high school degree
Higher education 2–3 years	Highest attained educational level corresponds to 2 to 3 years at higher education
Higher education > 4 years	Highest attained educational level corresponds to 4 years at higher education
Higher education > 5 years	Highest attained educational level corresponds to 5 years at higher education
Research education	Highest attained educational level corresponds to a research education, either licentiate or a Ph.D.
Age	Age of the individual when first arriving to Sweden (number)
Sex	1 if male, 0 female (Baseline)
Country of origin	Four dummy variables by region of origin: - Balkans: 1 if Balkan; 0 otherwise - Middle East: 1 if Middle East; 0 otherwise - Asia, low income: 1 if Asia, low income; 0 otherwise - Africa, low income: (Baseline)
Metro	1 if an immigrant's first settlement area belongs to the local labor market in either Stockholm, Gothenburg or Malmö; 0 otherwise
Rural	1 if an immigrant's first settlement area is rural (i.e., not a metropolitan or a larger city); 0 otherwise

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[7] The definitions are explained in detail in Westlund (2011).

Table 3 Socioeconomic profile of the forced migrants, mean values

	Balkans			Middle East			Asia, low income		Africa, low income	
	At arrival	After 5 years	After 10 years	At arrival	After 5 years	After 10 years	At arrival	After 5 years	At arrival	After 5 years
Age	37.45	41.63	45.83	29.30	34.83	39.66	27.23	32.80	27.99	33.33
Sex	0.49	0.49	0.49	0.56	0.56	0.54	0.66	0.59	0.50	0.48
Education, high school	0.13	0.29	0.34	0.13	0.26	0.27	0.08	0.30	0.12	0.26
Higher education 2–3 years	0.15	0.39	0.35	0.04	0.27	0.32	0.03	0.18	0.04	0.17
Higher education > 4 years	0.00	0.00	0.04	0.06	0.05	0.05	0.13	0.16	0.02	0.03
Higher education > 5 years	0.00	0.00	0.01	0.00	0.02	0.01	0.01	0.08	0.00	0.01
Research education	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00
Employed	0.01	0.38	0.57	0.06	0.25	0.35	0.05	0.35	0.02	0.31
Self-employed	0.00	0.01	0.02	0.00	0.04	0.09	0.00	0.02	0.00	0.00
Unemployed	0.03	0.12	0.06	0.08	0.13	0.11	0.12	0.12	0.07	0.13
Inactive	0.94	0.45	0.32	0.78	0.51	0.38	0.53	0.42	0.85	0.49
Studying and employed	0.00	0.01	0.01	0.00	0.02	0.02	0.00	0.03	0.00	0.02
Studying and unemployed	0.00	0.02	0.01	0.02	0.03	0.02	0.08	0.03	0.02	0.02
Studying only	0.02	0.02	0.01	0.07	0.03	0.02	0.20	0.03	0.04	0.02
Urban[a]	0.53	0.52	0.52	0.79	0.79	0.74	0.82	0.78	0.65	0.74
Obs.	12,970	34,259	32,842	9522	18,801	17,843	1290	13,625	4612	35,668

[a] Classified as municipalities in either the Stockholm, Gothenburg, or Malmö functional region or regional centers outside the metropolitan municipalities and their "suburb" municipalities

Note: As some of the groups of forced migrants are first identified in later years (see Table 1), we are unable to follow individuals from *Asia, low income* and *Africa, low income* for 10 years

or studying the year of their arrival in Sweden. This situation, however, reversed over time. The share of individuals in employment gradually increased over time. Ten years after arrival over one third of the refugee population were employed. Consistent with existing literature, this finding indicates that as individuals settle in the host country, they tend to acquire key skills, such as language and country-specific knowledge which is needed to secure a job (Wooden 1991). Individuals from the *Balkan* region experience the highest level of employment after 5 years, while refugees from the *Middle East* region appears as the most entrepreneurial: approximately one of ten started were self-employed 10 years after arrival. By contrast, refugees from *low-income African* countries display the smallest proportion of self-employability, revealing low entrepreneurial capacity.

In terms of education, migrants from *low-income Asian* countries show a higher level of human capital. Approximately 13% of refugees from these countries have an education of at least 4 years at the university level, revealing migration self-selection effects. The *Asia, low-income* region constitutes a range of countries (Afghanistan, Bangladesh, Cambodia, Kyrgyzstan, Laos, Myanmar, Nepal, North Korea, Tajikistan, Uzbekistan, Pakistan, Vietnam, Sikkim) where the overall educational level is low. Thus, high educational levels among refugees from the *Asia, low-income* region appears to reflect a self-selection effect, rather than high average educational levels in the countries comprising this region.

A very small proportion of refugees leave Sweden to return to their home countries. Annually, less than 1% of refugees in our sample leave Sweden. When these

migrants leave Sweden, they go back to their home countries. Forced migrants from Asian low-income countries and the Balkans region are more likely to return to their home country, showing higher rates of return than migrants from African low-income and Middle Eastern countries in Sweden. The annual rate of return migration for the latter is less than 0.5 percentage points. While this has some influence on changing the sex and ethnic composition of the forced migrant population in Sweden, the main driver shaping the sex ratio of this population is a disproportionally large share of male migrants as first settlers and the migration of women under family reunification programs.

Figure 2 shows the evolution of the income distributions by region of origin. Income is an outcome of an individual's skills and knowledge and evidences their human capital development in the Sweden, capturing also informal skills. As portrayed in Fig. 2, for refugees from all four regions, the income distribution shifted to the right as they accumulate local knowledge, secure jobs, and move up the occupational ladder. At the same time, Fig. 2 shows a shift to a binomial income distribution years after arrival, pointing to a situation of economic polarization, with high concentration of refugees earning none or very low salaries, and concentration of refugees earning incomes over SEK 2000. Yet, the median income remains lower than that earned by Swedish natives (SCB 2013).

Refugees from the *Balkan* region appear as the most successful in terms of income performance over time. Their income growth is notably higher than refugees from the *Middle East* who also arrived during the1990s. Refugees from low-income Asian and African countries started to arrive later in the 2000s, so probably they may not have had the sufficient time to develop local knowledge and secure jobs to improve their income performance. Also, refugees from low-income Asian and African countries may have faced a more difficult economic environment with fewer opportunities, as they entered Sweden when new regulation was put in place constraining who could be employed.

Table 4 displays the average number of years in various educational and employment statuses. It is important to note that the number of years spent in Sweden differs across regions of origin (see Table 1), and hence, the comparison of the values should be within region of origin groups rather than across them.

Starting with refugees from the *Balkans*, Table 4 reveals that the dominant educational and employment

statuses were inactivity and employment. They spent over 8 years in each of these statuses transitioning through one of two pathways: inactivity or employment stability. This reveals a polarized pattern of labor market integration. Refugees from other regions display a long average duration in inactivity followed by employment. Statuses involving studying and self-employment are less common.

Table 5 shows the average number of years for refugees to transition into first employment from the year of arrival. Refugees from low-income *African* and *Asian countries* display the shortest average number of years to first employment. They took only 2 years to transition to first employment which is remarkable given that they arrived later than Balkan and Middle East nationals. This pattern is underpinned by the higher economic growth experienced by the Swedish economy at the time of arrival of low-income *African* and *Asian* refugees (see Electronic Supplementary Material). In contrast, during the period in which individuals from the *Balkans* (1993–1995) and the first wave of *Middle East* (1991–1992) arrived, the economy experienced a high unemployment rate, which is expected to have influenced their employment chance. Additionally, existing scholarship has pointed that it is more difficult to find employment for migrants compared with natives during economic recessions (Barrett and Kelly 2012; Chiswick et al. 1997).

Figures 3 and 4 display the distribution of refugees across educational and employment statuses. These figures display the general pattern of the entire set of occupational pathways by plotting the distribution of refugees by educational and employment states in each year. In other words, these figures show the percentage of people in each state at each point in time and provide an idea of the evolution of the relative importance of the various educational and employment states over time. Figure 3 displays the distribution of refugees by region of origin and includes their time spent outside Sweden. We can thus determine both the timing of arrival in Sweden and subsequent transitions in the local educational and job market. As indicated earlier, on the first year of arrival, refugees remain inactive and start transitioning into employment after 2 to 5 years post-arrival.

There is greater degree of stability in particular statuses. After transitioning into employment, refugees tend to remain in that status, reflecting strong path dependency and little change over time. Except for the Balkan refugees between 1994 and 2000, the share of employment remained fairly stable. Similarly, there
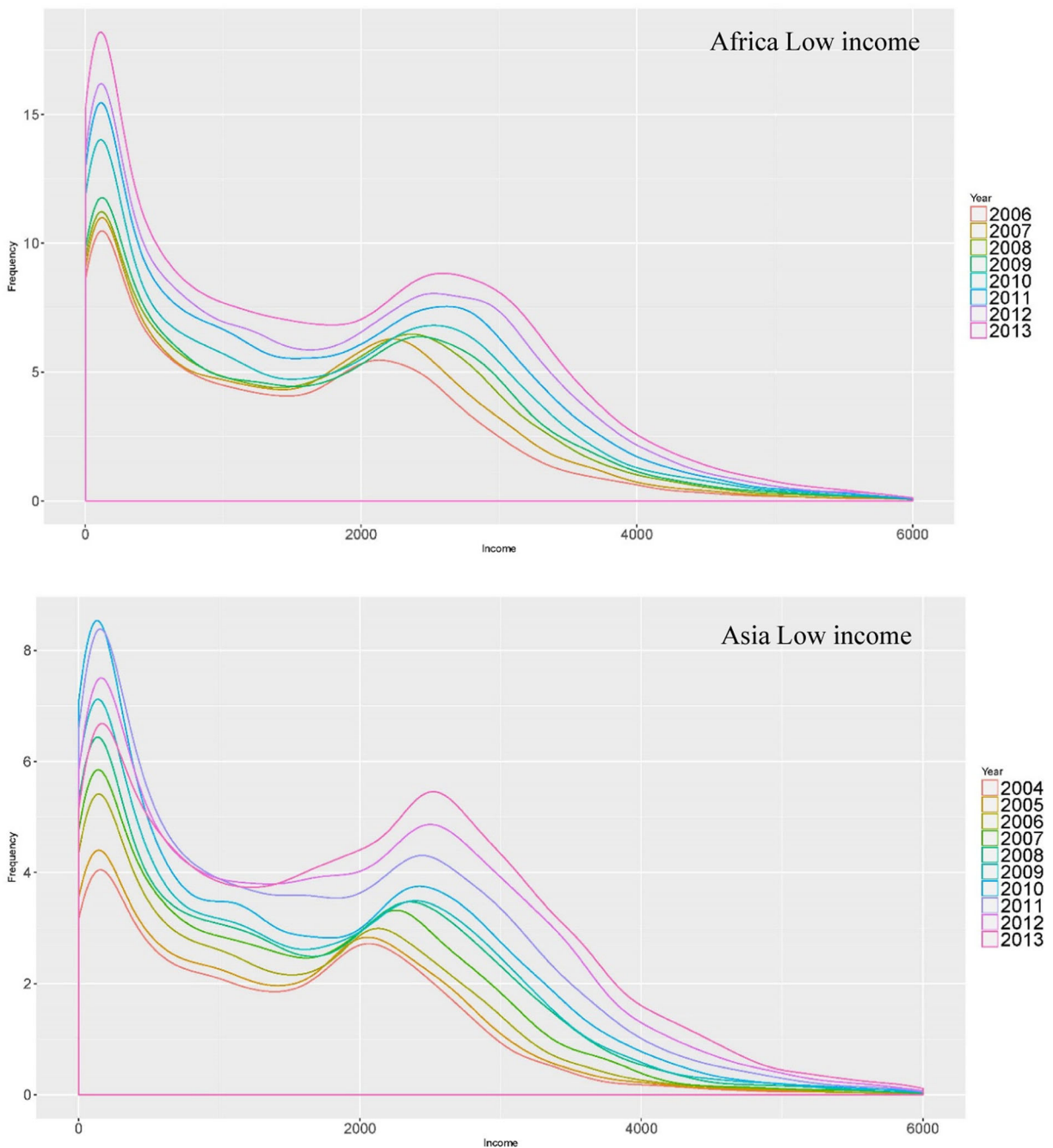
Fig. 2 Income distributions over time by region of origin

seems to be a high degree of stability for refugees in inactivity, particularly those from low-income Africa. A large share of the refugee population remained inactive, not participating in the educational or labor market. This may reflect the large proportion of dependent migrants, children, and women. Figure 3 also reveals a relatively high share of refugees from *low-income Asia* undertaking education, generally coupled with work. This share is prominent compared to refugees from *low-income Africa* who started arriving at around the same years.

Figure 4 presents the distribution of refugees by representative sequence cluster (see Section 5).
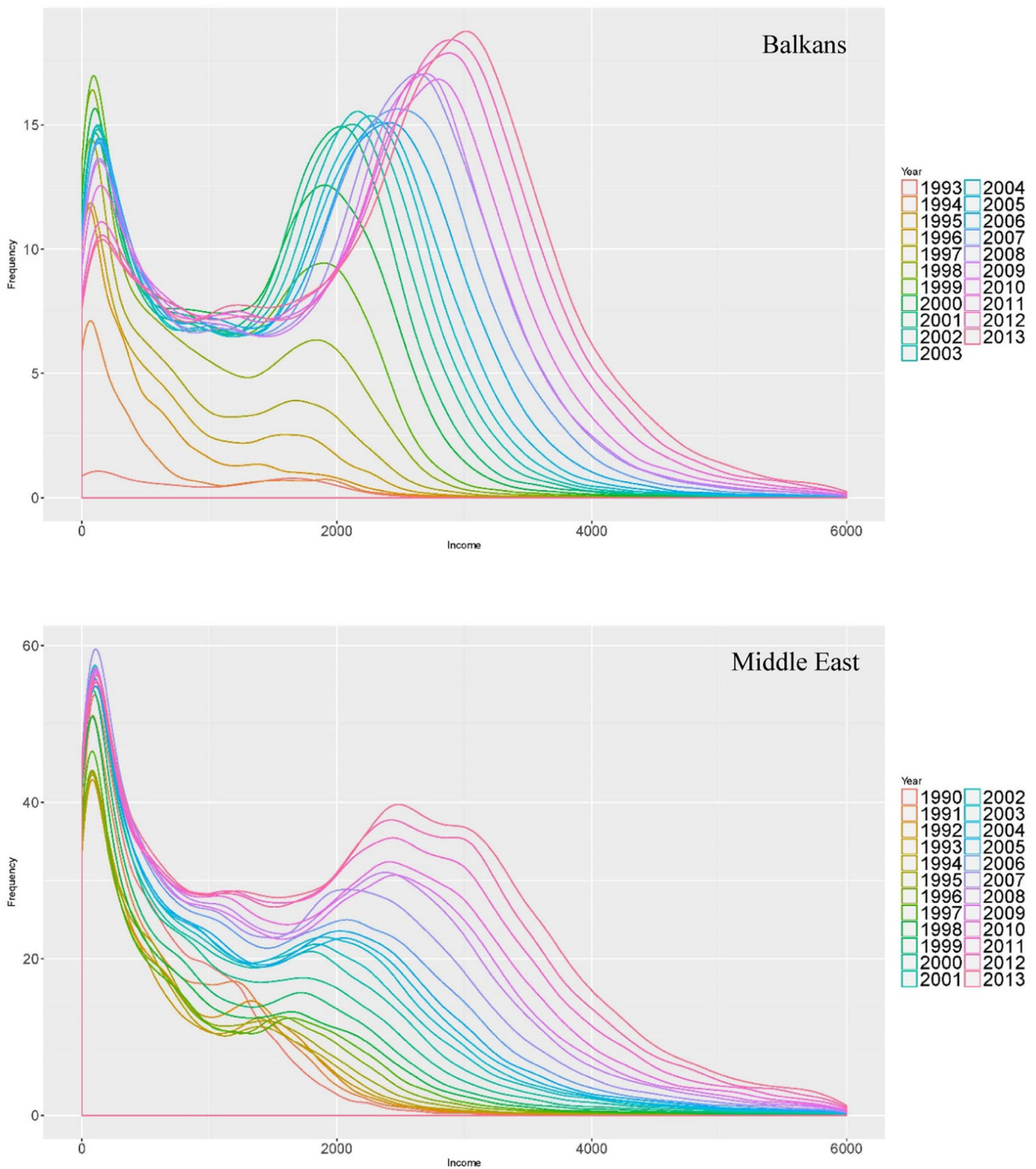
Fig. 2 (continued)

While these sequences are only presented here for Stockholm for computational limitations, comparable pathways were defined for all of Sweden. Figure 4 displays the share of individuals in a particular status in each year. Each plot reveals the occupational pathways in terms of the distinct sequence of educational and employment statuses to which individuals transitioned. These career pathways are used

Table 4 Average number of years in each state by country of origin

	Balkans	Middle East	Asia, low income	Africa, low income
Employed	8.04	1.47	1.26	0.53
Self-employed	0.30	0.28	0.08	0.01
Unemployed	1.26	0.69	0.72	0.50
Inactive	8.29	3.45	2.30	2.52
Studying and employed	0.12	0.07	0.20	0.03
Studying and unemployed	0.17	0.18	0.47	0.10
Studying only	0.19	0.28	0.53	0.15

as the dependent variable in our regression analysis. Cluster 1 is dominated by a remarkable pattern of stability in inactivity, with consistently less than 20% of refugees in employment, and it is thus labeled INAC. With large proportions of people in employment, Cluster 2—labeled EMP-SELF—is characterized by sequences comprising transitions from employment to self-employment, occurring particularly in the late 1990s and early 2000s. Cluster 3 (INAC-SELF) is typified by transitions to self-employment after a prolonged period of inactivity, with over 70% of people in self-employment in the late 2000s. Cluster 4 is characterized by rapid transitions from inactivity into employment (EMP), particularly occurring in the first 5 years of the 1990s.

Table 6 reveals the frequency of occurrence of these pathways for the different region of origin. The main two pathways that refugees followed were the INAC

pathway of inactivity (36.2%) and the EMP-SELF pathway of employment leading to self-employment (37.5%). Refugees from the Middle East (62%) and low-income African (25%) countries were more likely to transition through these pathways, while refugees from Balkan countries (61%) display a higher propensity to have transitioned through the EMP pathway, dominated by transitions of rapid progression to employment.

6.1 Regression analysis

Next, we seek to identify the individual and regional factors underpinning the four occupational trajectories discussed above. In particular, we seek to determine the factors influencing the probability to transition through each of the identified pathways. Binary variables were defined for each trajectory, i.e., 1 if the individual transitioned through a particular trajectory and 0 otherwise. Four separate binary logit regressions were estimated. Table 7 reports the results.

The results show that, compared with low-income African refuges, refugees from other regions have a higher probability of transitioning through an employment trajectory (EMP) and a lower probability of following an inactivity-dominated pathway (INAC). This confirms our previous observation-polarized labor market outcomes with refugees from a particular region experiencing either high income and a pathway of employment stability or a c labor market pathway of long inactivity. This result can be attributed to scarring effects with refugees being scarred by early experiences of unemployment and labor market inactivity (Wooden 1991).

Table 5 Number of years from arrival to first-time employment

|	Balkans	Middle East	Asia, low income	Africa, low income
25th percentile	2	1	1	1
Median	5	2	2	2
Av. number of years before first employment	4.69	3.15	2.21	2.21
75th percentile	6	5	3	3
Year of arrival	1993–1995	1991–1992 2006–2013	2004–2010	2006–2013
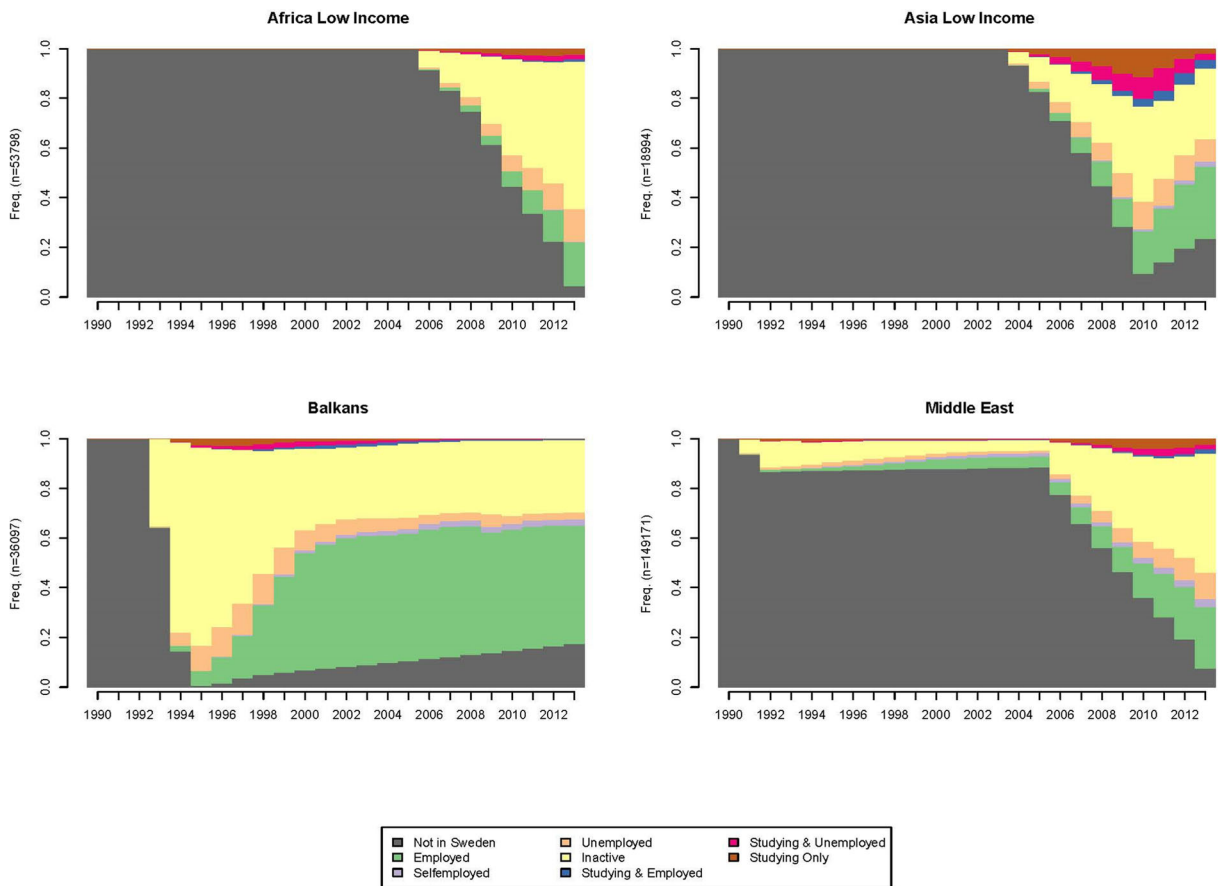
Fig. 3 Distribution of refugees by region of origin and time spent outside Sweden

Additionally, refugees from the *Balkans* show a higher probability of transitioning through a pathway of stable employment. This finding supports previous research (Lundborg 2013) suggesting that refugees from the Balkan region are culturally more similar to the Swedish population and thus able to more quickly adapt to the local work environment. In contrast, refugees from Middle Eastern and African countries arguably have more dissimilar background and are more likely to experience spells of unemployment. While these findings reveal the importance of the cultural proximity in underpinning differences in the employment trajectories of forced migrants, we note that economic business cycles and time spent in Sweden are likely to be more influential in shaping these trajectories.

Table 7 reveals a negative association between education and the probability to through a pathway of stable employment, except for 2 or 3 years of higher education. This suggests that education per se does not necessarily lead to a successful career pathway of stable employment. Education is however negatively correlated to the pathway of inactivity, indicating that education can help preventing refugees from experiencing a persistent period of inactivity. It should be noted that the education data used in our models relates to the characteristics of refugees at the time of arrival, so it does not capture any education gained in Sweden post-arrival. The results thus indicate that the educational qualification acquired in the origin country is generally not very helpful to secure a job in Sweden. This raises interesting policy implications for Sweden as to facilitating educational qualification recognition of foreign degrees and accessibility to education for refugees.
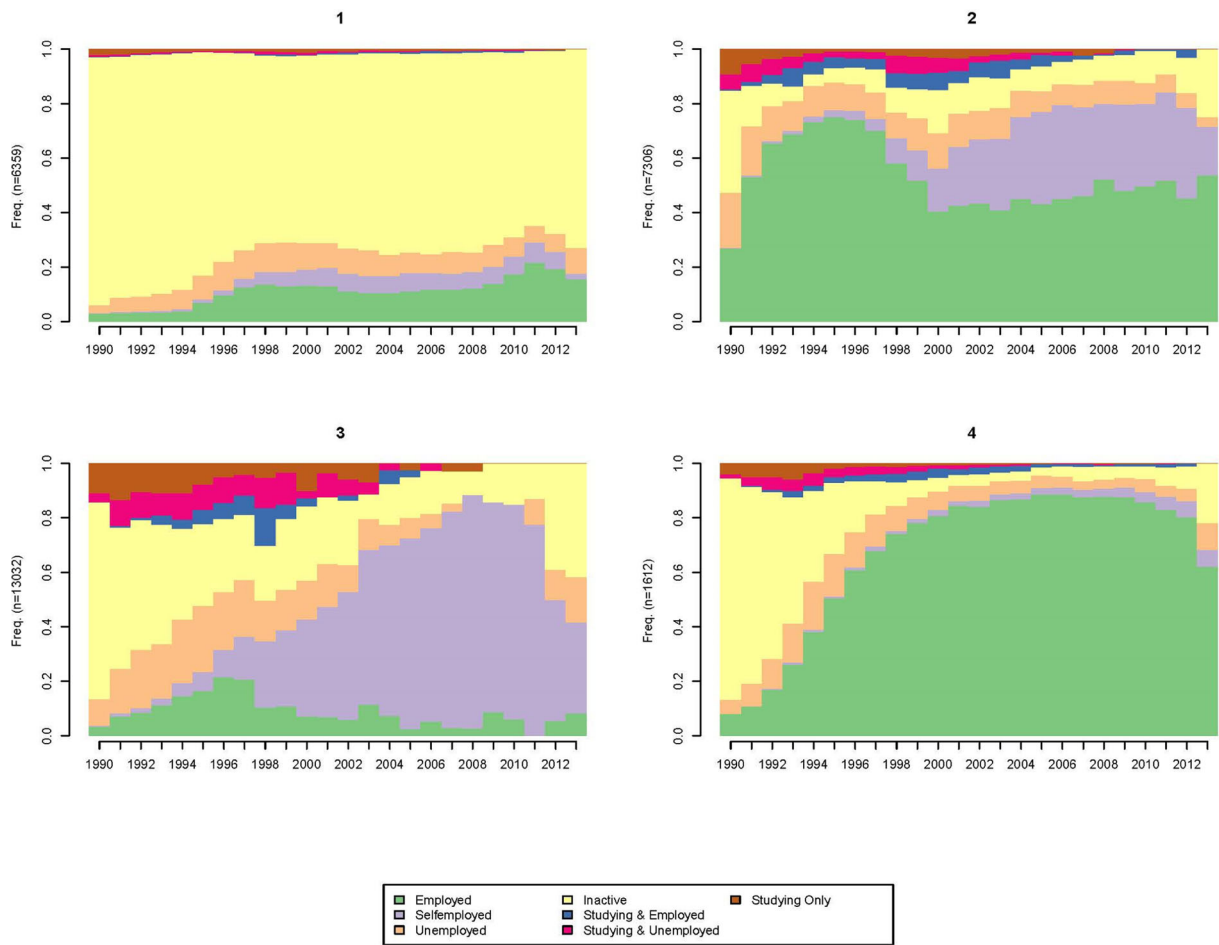
Fig. 4 Distribution of distribution of refugees by representative sequence cluster

Age and gender differences also affect the career pathway of refugees in Sweden. Younger and female refugees are more likely to transition through a pathway of stable employability or transition from employment to self-employment, At the same time, they are less likely to transition though a pathway of

Table 6 Career pathways divided according to the region of origin and for the total sample

	Pathway			
Region of origin	Inactivity (INAC)	Employment leading to self-employment (EMP-SELF)	Inactivity leading to self-employment (INAC-SELF)	Employment (EMP)
Africa, low income	24.8	25.0	14.0	0.9
Asia, low income	8.3	8.8	6.0	0.3
Balkan	4.7	3.3	32.0	61.0
Middle East	62.2	62.9	48.0	37.8
Sum	100	100	100	100
Total sample	36.2	37.5	17.3	9.1

Table 7 Binomial logit regressions for each cluster affiliation

Variables	EMP = 1	EMP-SELF = 1	INAC = 1	INAC-SELF = 1
Country of origin				
Balkans	6.298***	− 3.096***	1.942***	− 1.793***
	(0.068)	(0.029)	(0.025)	(0.020)
Middle East	2.781***	− 0.142***	0.712***	− 0.289***
	(0.067)	(0.011)	(0.022)	(0.010)
Asia, low income	0.793***	0.063***	0.456***	− 0.175***
	(0.103)	(0.018)	(0.036)	(0.018)
Individual variables				
Education, high school	− 0.119***	0.585***	− 0.691***	− 0.225***
	(0.026)	(0.014)	(0.024)	(0.014)
Higher education 2–3 years	0.265***	0.259***	− 0.636***	0.005
	(0.029)	(0.021)	(0.030)	(0.020)
Higher education > 4 years	− 0.863***	0.175***	− 0.518***	0.165***
	(0.076)	(0.019)	(0.036)	(0.019)
Higher education > 5 years	− 0.004	0.493***	− 0.668***	− 0.188***
	(0.184)	(0.070)	(0.143)	(0.071)
Research education	− 0.163	0.495***	− 0.680***	− 0.048
	(0.177)	(0.081)	(0.136)	(0.080)
Age	− 0.062***	− 0.025***	0.045***	0.015***
	(0.001)	(0.0004)	(0.0005)	(0.0003)
Sex	− 0.234***	− 0.578***	0.585***	0.378***
	(0.017)	(0.009)	(0.014)	(0.009)
Regional factors				
Metro	− 0.235***	− 0.449***	0.792***	0.190***
	(0.019)	(0.010)	(0.016)	(0.010)
Rural	− 0.020	0.139***	− 0.197***	− 0.045***
	(0.020)	(0.011)	(0.019)	(0.011)
N	251,523	251,523	251,523	251,523
Log-likelihood	− 52,308	− 151,024	− 74,690	− 157,331
AIC	104,642	302,074	149,406	314,689

***indicates significant at the 5% level or lower. Standard errors in parentheses

persistent inactivity or pressure to transition from inactivity to self-employment. These findings are partly consistent with prior studies pointing to the better adaption of younger immigrants into a new society (Treas and Mazumdar 2002), but to a lower chance of employment for immigrant women (Grand and Szulkin 2002).

Finally, location in a metropolitan municipality is negatively related with a career path of being persistently employed and increases the probability of being persistently inactive. These results contradict those of previous studies that find positive traits of metropolitan regions related to employment possibilities for immigrants (Rowe et al. 2017). This result may be driven by

the sharp competition that exists in these locations, in relation to cities outside metropolitan regions (used as a base). Individuals in rural locations have a lower tendency of being persistently inactive. Bevelander and Lundh (2007) find similar results, where they state that refugees located in areas with lower levels of human capital, i.e., rural areas, have a higher employment probability.

7 Conclusions

Forced migration has gained increasing salience in policy debates in developed countries. The integration of

involuntary migrants in host society is challenging. They involve a need for public provision and welfare services, but they also represent a valuable source of skills and knowledge. Prior research has studied their patterns of labor market integration into the host community, but there is little understanding of their long-term occupational trajectories years after their arrival. We analyzed the frequency, timing, duration, and sequencing of educational and employment transitions from the year of arrival for a period of up to 22 years (1991–2013) in a country with a long-standing tradition of welcoming refugees, Sweden. We identified representative occupational trajectories, examined the time taken to transition into full-time and self-employment, and identified the factors underpinning each trajectory.

The findings revealed a mixed picture of long-term labor market integration for refugees in Sweden. Refugees tended to follow one of four representative occupational pathways, with the two most prominent pathways reflecting "successful" and "less successful" trajectories of labor market integration. Over one-third of refugees followed a "less successful" pathway, characterized by a consistent long period of inactivity in the educational system and labor market. An equally large share of refugees embarked on a more successful pathway of labor market integration, experiencing rapid transition to employment and then to entrepreneurship (i.e. self-employment). Less prominent trajectories involved transitions from inactivity to self-employment—or prolonged periods of employment stability. Only 9% of the refugees in the sample enjoyed stable employment conditions since arrival. Refugees took an average number of 3 years to transition to first-time employment since their arrival in Sweden.

Underpinning these trajectories, cultural proximity appears to be a key predictive factor. Refugees from Balkan countries are arguably more similar to Swedish natives than refugees from other regions and were as much as six times more likely to transition and then remain in employment. However, they were also more likely to experience long periods of inactivity, and refugees from low-income African countries were the least likely to remain in employment despite a rapid transition to first employment (only 2 years after arrival). Our findings also revealed that older and female refugees have a higher probability of experiencing "less successful" labor market integration pathways, i.e., pathways of recurrent inactivity, or a prolonged period of inactivity forcing a transition into self-employment. Education also plays a key role in shaping the career pathway of refugees. Having educational qualifications decreases the likelihood of transitioning through a pathway of inactivity, increasing the chances of embarking on a pathway of rapid transition to employment leading to self-employment. However, holding a higher educational qualification does not ensure a pathway of employment stability.

Our findings have wide-ranging implications for the way in which future policy might manage the settlement of refugee migrants in Sweden and thus produce successful labor market integration pathways. Integrating education in the refugee settlement program by providing direct access to local education and/or by channeling refugees through student visas as the entry point to Sweden would help to expand their educational qualifications and skills. The development of such new policies targeted at promoting education is likely to promote more successful integration into the local labor market by reducing barriers of cultural proximity and increasing the occurrence of entrepreneurship activity.

By applying sequence analysis to analyze the long-term sequencing of educational and employment transitions, the present study makes a significant methodological contribution to the understanding of the integration process of immigrants. Unlike prior work that assesses labor market integration by measuring employment outcomes at particular points in time, sequence analysis explicitly examines the chronological succession of activities that refugees transition through and considers differences in the occurrence, duration, timing, and sequencing of transitions to define representative trajectories. It recognizes path dependence effects, revealing how past experiences affect subsequent life outcomes. We can thus identify contrasting past employment experiences, employment or inactivity leading to entrepreneurship in Sweden, and can thus inform the development of more targeted labor market integration policies.

Appendix
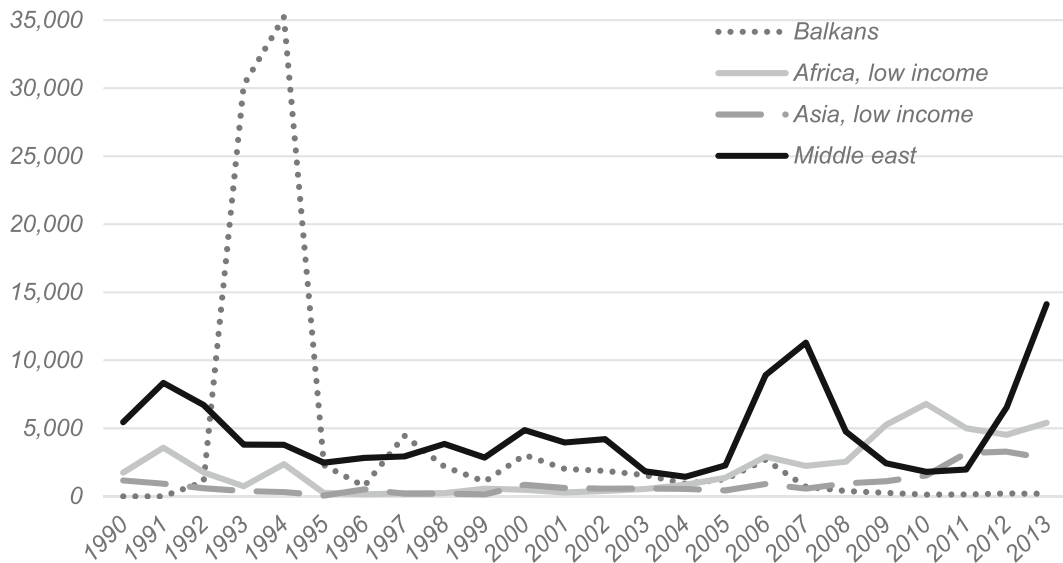
Fig. 5 Granted residence under the Geneva Convention, 1990–2013. Each region of origin includes a limited number of countries: Balkans (Bosnia Herzegovina, Kosovo, Serbia, and Montenegro), Africa, low income (Eritrea, Ethiopia, Somalia, Uganda), Asia, low income (Afghanistan, Bangladesh, Vietnam), and Middle East (Iraq, Iran, Turkey, Lebanon, Syria). Source: Sweden's migration agency
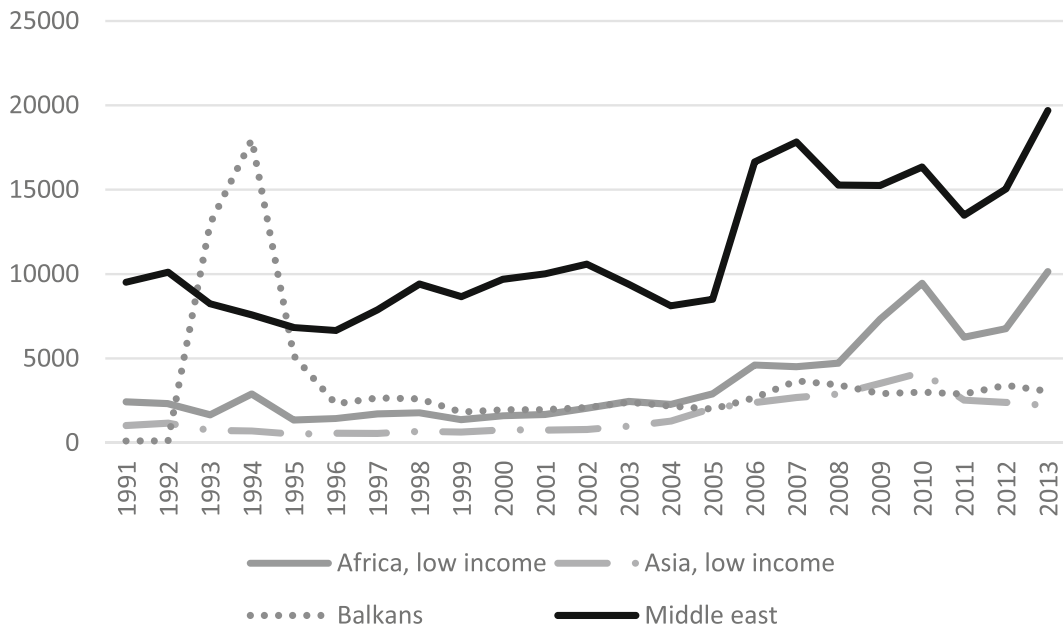
Fig. 6 Number of new migrants from Balkans; Middle East; Asia, low income, and Africa, low income. Source: Statistics Sweden

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