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Abstract

A large body of research has studied the channels driving ethnic inequalities in unemployment rates. Especially recently, research has almost exclusively examined barriers to unemployment exit (becoming employed) in the form of hiring discrimination conveying the idea that inequality in unemployment is all about hiring. Roughly no studies, in fact, have focused on the role of unemployment entry in explain ethnic and racial inequalities in unemployment. We contribute to this debate by examining inequalities in exiting and entering unemployment across second-generation immigrants and natives in Sweden and propose two possible explanations: hiring discrimination and precariousness. This marks an important extension to existing research because we shed light on the most relevant dynamic in accounting for the ethnic unemployment gap. Analyses are based on Swedish population registers. Correlated random-effects dynamic models are used to derive group-specific steady-state probabilities (SSP). In addition, we estimate counterfactual SSP where second-generation immigrants have natives' unemployment 1) entry probabilities and 2) exit probabilities. Our results show that equalizing unemployment exit does not reduce unemployment inequality. Rather, the unemployment gap disappears when equalizing unemployment entry. This points towards differences in precariousness to be a likely force at work.

Keywords: Steady state probability, unemployment entry, unemployment exit, discrimination, precariousness, second generation immigrants

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Introduction

Second-generation immigrants have been shown to have poor labor market outcomes as compared to the children of natives across Western Europe. In 2015, unemployment rates among native-born children of immigrants (aged 15 to 34) were around twice as high as those of their peers from majority groups across several European countries (OECD and European Union 2015). The patterns observed across European countries are largely similar to inequalities in unemployment rates between black and white individuals in the United States (Austin 2013). Despite these well-documented differences in unemployment between ethnic and racial groups, little is known regarding the micro-level dynamics that drive these inequalities.

As a result of the growing popularity of correspondence tests to examine employer discrimination, research has implied that inequalities in unemployment between minorities and ethnic majority groups are the result of barriers to transitioning from unemployment to employment (i.e., unemployment exit). In fact, only one study (Longhi 2020) has focused on the opposite dynamic, namely unemployment entry or job termination, as an explanation for ethnic and racial inequalities in unemployment rates.

Accordingly, the aim of this study is to open this debate by asking: Do entry or exit dynamics matter more when considering ethnic differences in unemployment? This aim is motivated by the fact that designing effective policy interventions hinges on targeting the right dynamic – unemployment entry or exit. In other words, depending on which force prevails, different policies should be implemented, for example anti-discrimination policies to address unemployment exit or stronger protection for precarious employment to address entry.

To elaborate this issue further, much research has focused on the role of racial and ethnic hiring discrimination in explaining disparities in the labor market outcomes between non-White minorities and the White majority across Western countries. Two recent systematic reviews and meta-analyses show that racial and ethnic discrimination in hiring is present and sizeable across contexts (Quillian et al. 2019; Quillian, Lee, and Honoré 2020). In these studies researchers applied for real jobs with fictitious CVs of equal quality that only differ with respect to signals of race and/or ethnicity (e.g., names). This literature puts the emphasis on *hiring discrimination* by employers as a force contributing to inequalities in the stock of unemployment thus emphasizing the role that barriers to unemployment exit may play in explaining overall disparities in unemployment. Although this genre of research is elegantly designed and convincing in the identification of discrimination, it has fallen short in quantifying the societal consequences of the phenomenon.

On the opposite end, racial and ethnic inequality in unemployment entry (i.e., losing a job) is hardly considered in the research (Longhi 2020 being one exception). Specifically, unemployment experiences may be the result of a higher likelihood to lose a job due to, for example, being laid off or more likely being employed on non-stable contracts (Barbieri and Scherer 2009; Giesecke 2009). In this respect, if minorities are more likely to be precariously employed, they will have a higher likelihood of experiencing unemployment. As a result, this reflects an important omission from the research. We build on these considerations and propose *precariousness* as an alternative force contributing to inequalities in the stock of unemployment. Specifically, if second-generation immigrants are more often precariously employed they will also more likely experience unemployment.

In this study, we directly examine whether inequalities in the stock of unemployment across second-generation immigrant groups in Sweden is driven by unemployment exit or entry, respectively hiring discrimination and precariousness. We estimate unemployment transition

probabilities and create two counterfactual scenarios in which 1) second-generation immigrants and natives have the same unemployment exit probabilities and 2) they have the same unemployment entry probabilities. The findings show that equalizing exit probabilities does little to reduce unemployment inequalities across groups, whereas equalizing entry probabilities substantially equalizes unemployment differences. We speculate that inequality in unemployment is driven by a more precarious labor market situation, in contrast to hiring discrimination, for second-generation immigrant groups as compared to ancestral Swedes.

Background

Second-generation immigrants are born and raised in the host country and generally do not face the same labor market challenges as their parents, such as a lack of language skills or transferability of educational qualifications (Ayllón, Valbuena, and Plum 2022; Crul and Vermeulen 2003). Since they comprise a growing share of host country populations, their labor market outcomes serve as an important barometer of long-term ethnic stratification in host societies. In general across European countries, second-generation immigrants lag behind their peers with native-born parents in terms of employment and unemployment rates, and occupational attainment (OECD 2017).

The labor market outcomes of the second-generation in Sweden is similar to those shown in the rest of Europe. Importantly, evidence suggests that certain groups do not adapt, or only partially do so, such that they are more likely to experience inequality and disadvantage relative to the ancestral Swedish population (See Aradhya, Grotti, and Härkönen 2023 for a more detailed discussion on immigrants in Sweden). Second-generation immigrant groups with non-Western origins, in particular, have been shown to lag far behind their peers with Western and Swedish origins with respect to unemployment and occupational attainment. Similar to other Western countries, discrimination in hiring has been shown to follow patterns of perceived cultural and social distances between natives and different ancestry groups (Hagendoorn 1995; Hraba, Hagendoorn, and Hagendoorn 1989; Quillian et al. 2019; Strabac and Listhaug 2008). Field experiments from Sweden find that call-back rates show a negative correlation with ethno-cultural distance (Vernby and Dancygier 2019), with applicants with Arabic/North African/Middle Eastern names having the lowest call-back rates (Arai, Bursell, and Nekby 2016; Bursell 2012, 2014; Carlsson, 2010; Carlsson & Rooth, 2007). This ethnic hierarchy is mirrored among second-generation job applicants (Carlsson 2010).

A recent study published by Aradhya, Grotti, and Härkönen (2023) show that second-generation immigrants face an ethnic penalty where they have higher probabilities of remaining unemployed over time. Importantly, the findings from this study identified large group differences which correspond directly to data on unemployment rates across the groups. This raises the question whether the higher risk of experiencing unemployment in the first place is due to differences in unemployment entry or exit?

As discussed above, no research has quantified how much inequalities in unemployment entry and exit contribute to observed unemployment inequalities. Although employer discrimination certainly affects the labor market outcomes of these individuals, it may not be the main driver of unemployment inequality. For instance, we may observe no impact on unemployment inequalities if groups that experience the most employer discrimination when applying for jobs, compensate by applying for a proportionally larger number of jobs relative to the ancestral Swedish population and subsequently receive job offers. It is plausible, however, that second-generation immigrants may be more likely to lose their job as compared to ancestral Swedes thus affecting inequalities in unemployment through unemployment

entry. In general, the Swedish labor market presents high levels of strictness with respect to employment protection of permanent employees. According to the OECD EPL indicator, Sweden ranked higher than all of their Nordic neighbors; however, Sweden has some of the loosest regulations surrounding temporary contracts and has become increasingly lax over the past two decades. The contrasting employment protection regulations afforded to permanent and temporary employees exposes the latter to disproportionate risks of precariousness and employment-unemployment carousel (Barbieri and Cutuli 2016; Berglund et al. 2021; Giesecke 2009).

The role of employment precariousness in producing ethnic inequalities in unemployment is still understudied in the Swedish context. In 2019, roughly 17 percent of all employees in Sweden were in temporary employment, while among immigrants the share was roughly 25 percent as compared to 14 percent among the Swedish-born population (no statistics exist on second-generation immigrants).¹ Svalund and Berglund (2018), found that individuals signaling low human capital such as individuals who are less educated, younger, or of foreign background are more likely to have temporary contracts. Moreover, Berglund and colleagues (2021) show that temporary employment in Sweden is associated with higher risks of weak labor market attachment and precariousness as compared to Norway, a country with more even employer protection regulations between temporary and permanent contracts. In this respect, stratification in unemployment may be driven by a disproportionate share of second-generation immigrants entering unemployment due to such work arrangements. This may be the product of employer discrimination that is not manifested in unemployment exit, but rather affects unemployment by not keeping second-generation immigrants in employment or by offering them precarious employment conditions.

Previous work analyzing unemployment entry and exit by Longhi (2020) concluded that differences in unemployment exit were responsible for ethnic inequalities in unemployment in the United Kingdom, but was unable to quantify the extent to which each transition matters. Specifically, the results were unable to highlight which dynamic matters most – a central question when considering policy interventions.

Theory

A solid result in the existing research is the existence of an ethnic labor market penalty between the ancestral population and second-generation immigrants (Heath, Rethon, and Kilpi 2008). Across Western societies, immigrants tend to have lower employment rates, higher unemployment and lower job quality – although this may vary across origin groups and across host countries (Heath and Cheung 2007). Literature has put forward a number of explanations for such ethnic penalty. These explanations or determinants can be grouped into two broad groups: individual level determinants – that we interpret in terms of compositional factors – and job-related determinants.

Individual level or supply-side determinants

Group differences in individual characteristics, human capital being the most relevant one, has most often been offered as an explanation for poorer outcomes of the second-generation.

¹ <https://www.scb.se/en/finding-statistics/statistics-by-subject-area/labour-market/labour-force-surveys/labour-force-surveys-lfs/pong/statistical-news/labour-force-surveys-lfs--theme-development-for-temporary-employees-2005-2019/>

As a matter of fact, human capital theory has been extremely influential in explaining labor market outcomes. The chief premise of this theory is that education is a key resource to labor market success (Becker 1993). From this it follows that higher unemployment rates among immigrants may be due to immigrants' lower educational qualifications as compared to ancestral individuals. However, while education is certainly relevant in explaining unemployment difference between groups, it does not eliminate ethnic inequalities—also known as the ethnic penalty (Heath et al. 2008).

Scholars have stressed explanations other than education to explain the immigrant disadvantage in unemployment. Pedulla and Pager (2019) stress the importance of social capital or networks for labor market outcomes and the role of networks in finding a job has long been recognized (Granovetter, 1977). It has been shown that racial disparities in the access to networks and especially in the returns from networks are associated with racial inequality in the job search process (Pedulla and Pager 2019). Research on the role of social capital for labor market outcomes has often proxied networks via socioeconomic background, usually characterized by parental occupation and/or parental education. For example, socioeconomic background is seen to capture knowledge about labor market opportunities.² Furthermore, socioeconomic background is also associated with the social context in which individuals live and, therefore, with the size and quality of networks that can be activated to finding a job (Pedulla and Pager 2019). As a matter of fact, it has been shown that socioeconomic background affects labor market outcomes independently from its effect via education. In addition to individual-level socioeconomic characteristics, ethnic segregation and neighborhood deprivation may affect an individual's access to high quality networks (Patrick Sharkey 2016; Vogiazides and Mondani 2020). Despite the influential role of these additional processes, they do not explain ethnic inequalities which further reinforces the notion of an ethnic penalty (Heath et al. 2008).

Job related or demand-side determinants

A different set of factors that has been considered by the literature is not related to individual characteristics, but rather to the job or labor market itself. These factors include the unequal treatment by prospective employers in the form of discrimination – either statistical or taste-based discrimination; and job characteristics such as the type of employment relationship (contract) and the sector or occupation of employment. We can link these factors to unemployment by distinguishing between those which are associated with the chances of finding a job; and those which are associated with the risk of losing a job.

Employer discrimination imposes barriers to unemployment exit since it regulates the chances an unemployed individual has to get a job. Discrimination by prospective employers can contribute to immigrant disadvantages in access to employment, as has been documented by several field experiments (correspondence tests) of call-back rates to fictitious job applications (Quillian et al. 2019). Employers may discriminate against immigrants or ethnic/racial minorities either because they consider the groups as a whole to be less productive ('statistical discrimination'), or because they prefer to hire from their own national or ethnic group ('taste-based discrimination') (Arrow 2015; Becker 1993). Despite having the same education, experience and labor market skills, because of discrimination—irrespective of the motivation behind the discrimination—some groups will face higher barriers to

² Language proficiency, which is also associated with socioeconomic background, is often mentioned as an explanation for ethnic inequality. However, it seems to be less relevant when it comes to second generation immigrants (Esser 2006).

successfully obtaining a job (OECD 2013). It has been shown that the patterns of this discrimination follow perceived cultural and social distances between natives and different ancestry groups (Hagendoorn 1995; Hraba et al. 1989; Strabac and Listhaug 2008), and this has been observed also for Sweden (Bursell, Bygren, and Gähler 2021; Vernby and Dancygier 2019).

The second set of factors, instead, is associated with unemployment entry and relates to job and labor market-related characteristics that increase the risk of losing a job and thus transitioning into unemployment. Specifically, this may include being fired from a job or being precariously employed in industries with poor job security as a results of business cycle fluctuations in job availability or not being retained after employment in time-fixed contracts. Also in this case, discrimination by employers may be a possible factor if employers are more likely to fire ethnic minorities for reasons that are not related to their productivity or hire them systematically for non-permanent jobs. In fact, recent research has shown that ethnic minorities are more likely to be employed in low quality occupations characterized by less stable jobs. In this respect, being employed in non-stable or temporary jobs is a clear factor that can channel individuals into unemployment. Moreover, being employed in precarious jobs may leads to employment-unemployment carousels which increase unemployment experiences over the career (Barbieri and Cutuli 2016; Berglund et al. 2021; Giesecke 2009). A recent systematic review found stronger support for the ‘dead end hypothesis’, according to which temporary employees may fail in getting a stable position and instead develop a discontinuous career characterized by multiple unemployment spells , as compared to the ‘stepping stone hypothesis’, which sees temporary employment as a facilitator toward more stable employment (Filomena and Picchio 2022). However, while non-stable jobs expose all individuals to unemployment, ethnic segregation in low quality occupations expose immigrants to higher unemployment risks as compared to the ancestral population. It is worth reiterating that the overrepresentation of minorities in low quality jobs may well be due to employer discrimination in the job offers to minorities as compared to natives. Our own estimates based on Labor Force Survey data show that second-generation immigrants in Sweden are more likely to be employed in specific economic sectors, namely accommodation and food, wholesale and retails, and real estate, business and technical, administrative service activities. Importantly, these sectors have been shown to rely more heavily than others on temporary workforce (O’Reilly, Grotti, and Russell 2019).

What drives ethnic inequalities?

In the previous section we have discussed individual-related or supply-side characteristics, as well as job-related or demand-side characteristics and their relation to unemployment experiences. As opposed to most past research that focused on differences in individual endowments to explain ethnic gaps in unemployment (i.e. human and social capital), we follow a more recent stream of research that investigates the role of demand-side factors. Accordingly, our interest is in understanding whether unemployment differences between natives and immigrants are due to factors which are independent from individual endowments and therefore can be attributed to the extent to which the labor market processes disadvantage minority groups. In other words, how labor market conditions impact unemployment entry and exit dynamics independently from supply-side factors.

In order to address the role of demand side factors, we need to account for compositional differences across groups. Therefore, we study the association between ethnic background and unemployment while empirically adjusting for (much of) supply-side characteristics. We

argue that the remaining differences in unemployment between second-generation immigrant groups and Swedish ancestral population should to a larger extent relate to job-related factors rather than to differences in individual characteristics.

Based on our discussion in the previous section, we expect ethnic inequality in both unemployment exit and entry. Hiring discrimination is the main factor that we expect can lead to group differences in exiting unemployment. Concerning unemployment entry, instead, possible discrimination by employers in firing does not seem to be a plausible factor at play since employment protection in Sweden is among the strictest in the world. The Swedish labor market is characterized by comparatively high levels of protection of the employment relationship for workers with open-ended contracts. At the same time, however, Sweden presents comparatively low protection for temporary workers – especially from the late 1990s on (OECD statistics). Coupled with this, temporary employment relationships make up a substantial share of work contracts even as compared to other European countries (Eurostat statistics). These considerations together with the fact that immigrant groups are more likely to be employed via temporary employment with respect to ancestral Swedes leaves room for employment precariousness to be the main channel driving inequality in unemployment entry.³

To summarize, we speculate employer discrimination to be the force driving unemployment exit while precariousness to be the force driving unemployment entry. We do not have clear expectations, however, regarding the relative contribution of these two dynamics to inequality in unemployment since existing evidence does not provide a clear indication. Nonetheless, we argue that answering this question represents a major contribution to the debate.

Analytical strategy

At the aggregate level, the unemployment rate or stock in a given year can be conceptualized as the results of two different flows: the flow of individuals who move from employment to unemployment (inflow) and the flow of individuals who move from unemployment to employment (outflow). Accordingly, the unemployment rate U_j for each immigrant group j can be expressed through the following equation:

$$U_j = \frac{I_j}{I_j + O_j}, \quad (1)$$

where I_j represents the unemployment inflow of group j while O_j stands for the unemployment outflow of group j .

Macro-level measures, such as this, can be useful in informing us about group specific unemployment flows. However, this perspective falls short if we are interested in group differences which are not related to compositional effects due to individual observable (and unobservable) characteristics. In order to overcome this limitation, we first employ a micro-level perspective on unemployment dynamics and, based on individual level transitions,

³ Unfortunately, information on the prevalence of temporary employment across second generation groups is not publicly available. However, our own estimates based on LFS data reveal that second-generation immigrants are more likely to be in a temporary employment relationship than ancestral Swedes – more than 3 percentage points for individuals aged 20-45. This is likely to be an underestimation of the phenomenon given that we have only been able to identify the second generation as those individuals born in Sweden with non-Swedish nationality.

estimate aggregate unemployment entry (\hat{I}_j) and exit probabilities (\hat{O}_j) for each immigrant group.

Second, we compute the estimated unemployment rate \hat{U}_j for each group j by plugging the two estimated quantities \hat{I}_j and \hat{O}_j into equation 1. This measure is known in the literature as *steady-state probability (SSP)* and can be interpreted as an individual's probability to be unemployed in any given year, thus approximating a 'standard' cross-sectional unemployment rate.⁴

$$SSP_j = \hat{U}_j = \frac{\hat{I}_j}{\hat{I}_j + \hat{O}_s}, \quad (2)$$

To the best of our knowledge, no previous studies take a dynamic perspective on ethnic inequalities in unemployment stocks. Studies which apply this approach are generally rare, even when considering outcomes beyond unemployment. In fact, the few studies which have done so have applied it to study poverty (Workneh and Eshete 2021) and low-income dynamics (Cappellari and Jenkins 2004), and above all the study of welfare reciprocity (Boskin and Nold 1975; Cappellari and Jenkins 2008; Immervoll, Jenkins, and Königs 2015).

As a final step, we evaluate the extent to which each unemployment flow accounts for inequalities in unemployment rates between ancestral Swedes and second-generation immigrants by generating two hypothetical *steady-state probability* scenarios. In the first scenario all origin groups have their own estimated unemployment inflow or entry probability (\hat{I}_j) but the unemployment outflow or exit probability (\hat{O}_s) of the ancestral Swedish group. In other words, we make equal the unemployment exit probabilities across groups. The related steady state probability is computed as follow:

$$\hat{U}_j = \frac{\hat{I}_j}{\hat{I}_j + \hat{O}_s}, \quad (3)$$

where the subscript s indicates ancestral Swedes specific flow.

Conversely, in the second scenario we keep the estimated group-specific unemployment outflows or exit probabilities (\hat{O}_j) but reassign all groups the ancestral Swedish unemployment inflow or entry probability (\hat{I}_s) according to the following equation:

$$\hat{U}_j = \frac{\hat{I}_s}{\hat{I}_s + \hat{O}_j}. \quad (4)$$

Comparing the observed with the hypothetical steady state probabilities we are able to evaluate the role that group differences in unemployment exit and entry play for unemployment ethnic inequalities. Specifically, if employer discrimination is the main driver, we expect to see that equalizing unemployment exit (equation 3) reduces overall unemployment inequality to a greater extent. However, if one finds the opposite, equalizing unemployment entry reduces inequalities in unemployment to a larger extent, this would indicate that precariousness is the likely mechanism (equation 4).

⁴ This statistic can also be interpreted as the expected proportion of time in which the individual is in unemployment over the career.

Empirical analysis

The model

The micro-level analysis is based on correlated random-effects dynamic logit models. Building on Rabe-Hesketh and Skrondal (2013), the dynamic model that we estimate is specified as follows (see Grotti and Cutuli 2018 for its implementation):

$$y_{it}^* = \gamma Z_{it} + \rho y_{it-1} + \delta X_i + \beta y_{it-1} * X_i + c_i + u_{it} \quad (5)$$

where y_{it}^* in equation (1) represents unemployment for unit i ($i = 1, \dots, N$) at time t . It is a function of a set of time-varying explanatory variables Z_{it} which are considered exogenous, conditional on the unit-specific unobserved effect c_i . y_{it-1} captures (genuine) state dependence and in our model is interacted with ancestry (X_i). Finally, u_{it} represents an idiosyncratic error term.

The unit-specific unobserved effect c_i is expressed as

$$c_i = \alpha_0 + \alpha_1 y_{i0} + \alpha_2 \bar{Z}_i + \alpha_3 Z_{i0} + \alpha_4 y_{i0} * X_i + a_i \quad (6)$$

where y_{i0} and Z_{i0} stand for the initial values of the outcome and of the time-varying explanatory variables, respectively. $\bar{Z}_i = \frac{1}{T} \sum_{t=0}^T Z_{it}$ represents the within-unit averages of the time-varying explanatory variables. The time-varying variables we rely on to capture unobserved heterogeneity include age, marital status, number of children, and health problems. Furthermore, following Wooldridge (2005) ancestry is also interacted with the initial condition y_{i0} . Finally, a_i is a unit specific time-constant error term.

Under the assumption that unobserved heterogeneity is absorbed by c_i , the parameter ρ measures genuine state dependence – that is the causal effect exerted by unemployment in the previous year on unemployment in the current year. Based on the above equations, the model is then estimated as a standard random-effects (RE) logit model. All analyses are conducted separately for men and women.

Following Immervoll et al. (2015), entry probabilities $Pr(1|0)$ and persistence probabilities $Pr(1|1)$ are predicted based on the estimated model – which ensures that unobserved heterogeneity is taken in to account in the prediction – and then averaged across individuals – which ensures that the aggregate transition rates take into account the distribution of characteristics in the sample. This also implies that origin group-specific transition rates are estimated net of compositional effects.

Therefore, building on equation (5), the entry probability is estimated as

$$Pr(1|0) = Pr(y_{it} = 1 | y_{it-1} = 0, Z), \quad (7)$$

while the persistent probability is estimated as

$$Pr(1|1) = Pr(y_{it} = 1 | y_{it-1} = 1, Z), \quad (8)$$

where Z includes all the time-constant explanatory variables, the time-varying explanatory variables and all the variables capturing unobserved heterogeneity.

Steady state dynamics

As explained above, in this study, we measure the stock of unemployment via *steady state probability* (*SSP*). Empirically, we can rewrite equation 1 as follows:

$$SSP = [Pr(1|0)/(Pr(1|0) + Pr(0|1))] , \quad (9)$$

where $Pr(1|0)$ and $Pr(0|1)$ represent the probabilities of entering (\hat{I}_j) and exiting (\hat{O}_j) unemployment. Note that the exit probability $Pr(0|1)$ is indirectly derived from $1 - Pr(1|1)$; and that $Pr(1|0)$ and $Pr(1|1)$ derive from equation 7 and 8 above and are estimated separately for each ancestry group.

Importantly, the steady state probability is computed under the assumption of a steady scenario where individual characteristics are assumed to be the same for all t , and of stable entry $Pr(1|0)$ and exit $Pr(0|1)$ probabilities (Boskin and Nold 1975; Cappellari and Jenkins 2008). We are aware that this may be a limitation as the steady state assumption is likely not to hold. Nonetheless, following Cappellari and Jenkins (2008), we believe that the statistic can be very useful for interpretative purposes when group comparison is the focus of the analysis, as in our case.

Data

Analyses are based on a collection of Swedish total population registers - Migrant Trajectories Dataset. We linked information from several administrative registers for a study population which includes 215,516 men (2,391,138 person-year) and 203,139 women (2,108,340) born in Sweden between 1977 and 1981, and followed from the age of 25, or since they transited from education to the labor market, to the age of 39. Accordingly, we focus on the study period 2002 to 2016. We set the lower age limit to 25 to exclude years in which many individuals were still in full-time education. We limited the data to person-years in which the individual was in the labor market, defined as receiving any labor earnings or being registered as unemployed in the public employment office. Person-years in education (measured by reciprocity of student allowances), long-term illness (reciprocity of long-term sickness benefits) and other forms of inactivity were excluded.

Our outcome of interest is unemployment, which we measure using information on the number of days a person has been registered as unemployed during a calendar year. Specifically, we define an individual as unemployed during a given year if he or she was registered in the public employment office (Arbetsförmedlingen) as unemployed for 90 days or more – irrespective of whether the days of unemployment were consecutive or not. Conversely, an individual is considered employed if he/she is registered for fewer than 90 days and receives any labor earnings. We are confident about the validity of our measure as it is comparable to official statistics from the Labour Force Survey (LFS).

The independent variable of main interest capture individual's immigrant background. Second-generation immigrants are defined according to their parents' country of birth; if the parents' foreign countries of birth differ, we define ancestry based on the father. In the case of the 2.5 generation immigrants (one parent was born in Sweden while the other one abroad), individuals are categorized according to the country of birth of the foreign-born parent. In our model we include a variable to identify the 2.5 generation. We distinguish between the following 11 ancestries based on the parents' country of birth: Sweden, Finland, Other Nordic, Other Western (including both European and non-European Western countries,

such as the US and Australia), Eastern Europe, Yugoslavia and Bosnia, Southern Europe, Middle East, Iran, Turkey, and Other (Non-European). While we mainly classify countries within broader geographical areas, we also separate particular origin groups that have had unique integration experiences in Sweden.

Our models also control for a set of characteristics that are likely to be associated with unemployment dynamics in the different groups. Time varying controls include age, ranging between 25 and 39 (we also include age squared); level of educational attainment, separating between primary, lower secondary, upper secondary (vocational or academic), post-secondary (vocational or university), and doctoral education; years since completing education (when the highest educational level is achieved), which indirectly captures work experience and marital status (single, in couple, and separated or divorced). We further control for marital status and the number of children below 8 years of age (none 1, 2, 3, and 4 or more children). Finally, we include a measure of individual health problems proxied by whether he/she receives any sickness benefits.

The time-constant controls include field of study (of the highest education achieved) which is used to capture individual preferences regarding the occupation and sector in which individuals decide to select and distinguishes between General education; Teaching methods and teacher education; Humanities and arts, Social sciences, law, commerce, administration, Natural sciences, mathematics and computing, Engineering and manufacturing, Agriculture and forestry, veterinary medicine, Health care and nursing, social care, Services. Furthermore, we control for academic achievement, captured by a standardized measure of GPA at age 16, as an additional variable to capture human capital. We also control for parental SES, which is defined by parental occupation when the individual was 15 years old, and distinguishes between farmers, unskilled, low-skilled, medium-skilled, high-skilled and professionals, self-employed, not employed, and those with missing information. We followed the dominance criteria and took the highest occupation of the mother and father. Finally, we control for region of residence at the NUTS 2 level and year dummies.

Results

Table 1 reports descriptive statistics for the study population. Second-generation immigrants represent 13 percent of the population, while ancestral Swedes make up the remaining 87 percent. The size of second-generation immigrant groups ranges from 0.1 to 5.2 percent for Iranian and Finnish origins individuals, respectively. Overall, individuals are followed up between 10.84 (second-generation Iranians) and 12.19 (second-generation Finns) years on average. These differences reflect variations in age at labor market entry, for which Iranian origins individuals are those who enter the labor market at the oldest age—22.13 years old. Age at labor market entry reflects educational achievements—origins groups characterized by higher age at labor market entry also display higher shares of tertiary education. It is worth noting, however, that there are no large differences in the average number of years of follow-up or age at labor market entry across groups. Results for women show a similar pattern, although they are followed for a slightly shorter period, since they enter the labor market at later ages.

Table 1. Descriptive statistics of the study population

	N. ind.	Group size (%)	Mean N. of years	Mean age at LM entry	Unempl. rate	Entry rate	Exit rate
Men							
Sweden	185,996	86.81	12.18	21.19	5.73	2.49	53.78
Finland	11,255	5.19	12.19	20.46	8.70	3.59	48.49
Other Nordic	3,721	1.68	12.11	20.55	8.62	3.66	48.94
Other Western	1,452	0.62	11.69	21.33	6.56	2.71	50.48
Eastern Europe	2,810	1.21	11.66	21.69	8.20	3.44	50.12
Yugoslavia & Bosnia	2,598	1.19	12.25	20.33	10.27	4.25	46.91
Iran	239	0.10	10.84	22.13	7.57	3.74	57.64
Southern Europe	1,952	0.86	11.90	20.83	8.97	3.93	51.43
Middle East	579	0.25	11.61	20.71	10.52	4.37	47.01
Turkey	1,646	0.75	12.08	19.79	11.43	5.10	47.24
Other	3,268	1.34	11.31	21.19	9.87	3.98	46.61
Total	215,516	100.00	12.15	21.12	6.16	2.65	52.78
Women							
Sweden	175,185	86.80	11.76	22.02	5.30	2.46	57.82
Finland	10,847	5.21	11.68	21.19	7.61	3.36	52.44
Other Nordic	3,560	1.71	11.70	21.18	7.74	3.37	51.32
Other Western	1,347	0.62	11.29	22.27	5.82	2.91	59.6
Eastern Europe	2,637	1.22	11.35	22.17	7.72	3.44	52.09
Yugoslavia & Bosnia	2,374	1.16	11.79	21.05	9.20	3.73	48.58
Iran	198	0.09	10.74	22.18	6.54	3.39	58.16
Southern Europe	1,838	0.85	11.40	21.46	7.75	3.69	55.81
Middle East	513	0.24	11.45	21.02	11.63	4.88	47.09
Turkey	1,638	0.81	11.88	20.44	12.62	5.28	45.64
Other	3,002	1.30	10.87	22.06	8.43	3.84	53.14
Total	203,139	100.00	11.74	21.93	5.68	2.61	56.67

The fifth column in Table 1 illuminates about the starting point of this paper, namely ethnic inequalities in the unemployment rate or stock. The overall unemployment rate over the period 2002-2016 was 6.2% for men and 5.7% for women. There are differences across origin groups. Among men, the unemployment rate for ancestral Swedes is among the lowest at 5.7 percent. For the other groups, unemployment ranges between 6.6 percent for Other Western origin men and 11.4 percent for men with Turkish origins. The unemployment rate for women displays larger variation, ranging between 6.1 percent and 12.6 percent for Other Western and Turkish origins women, respectively. In general, second-generation Other Western and Iranian men and women report among the lowest rates of unemployment, whereas second-generation Turkish, Middle Eastern, and Yugoslavian and Bosnians report the highest unemployment rates. These results confirm the substantial inequality in unemployment rates across origin groups.

The final two columns in Table 1 provide the unconditional unemployment entry and exit rates by group. Specifically, these figures measure the percentage of individuals who are employed in $t-1$ but unemployed in t (entry rate) and the percentage who are unemployed in $t-1$ but employed in t (exit rate) without accounting for compositional factors that differ across groups. These measures provide a first glimpse into the magnitude of inequalities in unemployment entry or exit. Both ancestral Swedish men and women experience the lowest entry rates across all groups at 2.49 and 2.46, respectively, while second-generation Turkish men and women experience the highest rates at 5.10 and 5.28, respectively. The latter groups experience more than twice as high entry rates as compared to ancestral Swedes. In fact, second-generation groups of men experience entry rates between roughly 9 and 105 percent higher than ancestral Swedes and in the case of women the corresponding figure is between roughly 18 and 115 percent higher.

When turning to exit rates, we observe that across all groups roughly half of the unemployed find a job from one year to the next, while the other half experience persistent or recurrent unemployment. In this case, the group with the highest exit rates for men and women were second-generation Iranians (57.64 percent) and other Western (58.18 percent), respectively. Importantly, there were much smaller differences across groups in exit rates among both genders and ancestral Swedes do not stand out as the group with the lowest levels. Based on these unconditional rates, we start to see a clearer picture that the largest shares of inequality are observed in entry rates.

Table 2 presents the conditional – net of compositional differences and unobserved heterogeneity – transition rates, estimated using the model specified in equation 5 (see models result in Table A1 in the Appendix). Conditional unemployment entry rates increased for all groups after adjustment for observed and unobserved individual level factors, whereas persistence rates display a sizeable decrease as compared to the unconditional figures. This is unsurprising given that persistent unemployment has been shown to be rather selective regardless of country of origin. Interestingly, after adjustment only second-generation Iranian men and women experience lower persistence rates (higher unemployment exit rates) as compared to ancestral Swedes in their respective gender groups.

Conditional (estimated) transition rates

Table 2. Conditional unemployment transition rates and Steady-State Unemployment Probabilities

	Entry Pr.	Exit Pr.	Persistence Pr.	Steady State Pr.
Men				
Sweden	3.48	85.65	14.35	3.91
Finland	4.45	82.33	17.67	5.12
Other Nordic	4.40	82.07	17.93	5.09
Other Western	4.10	82.11	17.89	4.76
Eastern Europe	4.86	82.60	17.40	5.56
Yugoslavia & Bosnia	4.85	80.84	19.16	5.66
Iran	5.15	86.18	13.82	5.64
Southern Europe	5.17	80.77	19.23	6.02
Middle East	5.33	80.14	19.86	6.23
Turkey	5.87	78.91	21.09	6.93
Other	5.23	80.26	19.74	6.12
Women				
Sweden	3.32	86.46	13.54	3.70
Finland	3.91	84.09	15.91	4.45
Other Nordic	3.85	83.75	16.25	4.39
Other Western	4.00	85.34	14.66	4.48
Eastern Europe	4.49	82.53	17.47	5.16
Yugoslavia & Bosnia	3.96	82.78	17.22	4.57
Iran	4.47	87.52	12.48	4.85
Southern Europe	4.51	83.93	16.07	5.10
Middle East	5.38	79.08	20.92	6.37
Turkey	5.60	76.48	23.52	6.83
Other	4.69	83.17	16.83	5.34

Based on the conditional entry and exit probabilities, we estimated the steady state unemployment probability (SSUP) based on equation 9. The SSUP presented in the last column of Table 2 is interpreted as the probability an individual in each group experiences unemployment in any given year and is a useful way to compare groups in relation to their

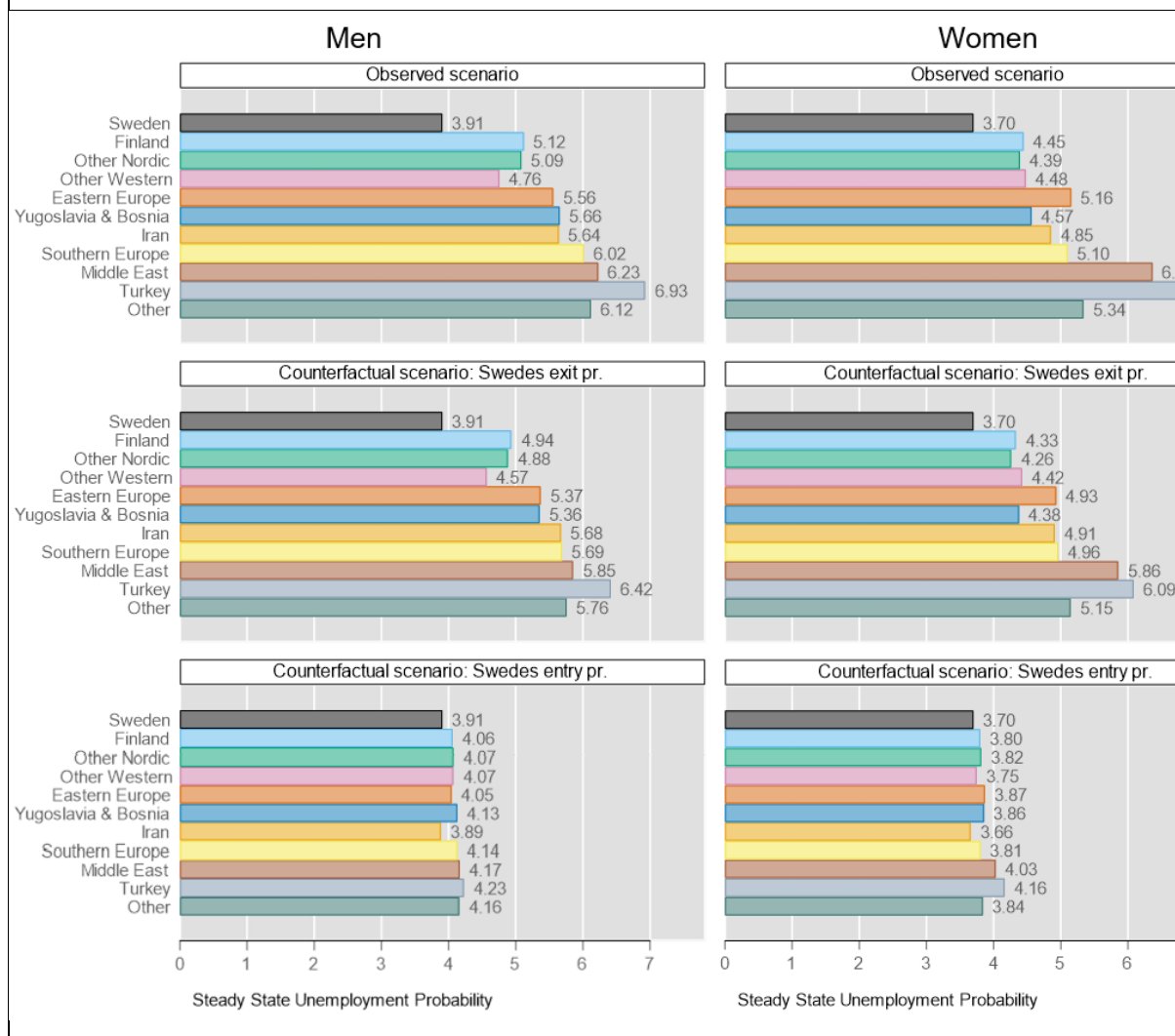
unemployment experiences since it incorporates both entry and exit probabilities. We see that ancestral Swedes experience the lowest SSUP: in any given year, respectively 3.91 and 3.70 percent of men and women are unemployed. The groups with the highest SSUP are second-generation Turkish men and women with 6.93% and 6.83%, respectively. Although the second-generation Iranian group displayed higher exit rates as compared to ancestral Swedes in Table 2, they still experience higher SSUP since they also display higher entry rates.

It is interesting to note that SSUPs are more similar for certain groups of country of origin – this is more easily visible from the top panel in Figure 1 which plots SSUPs from Table 2. The first group of countries, that presents the smallest SSUPs differences with respect to the Swedes, includes immigrants with Finnish, Nordic and other Western origins. A second group, characterized by higher SSUP (roughly 5.5 percent), includes immigrants from Eastern Europe, Former Yugoslavia and Bosnia, and Iran. Much higher SSUPs, around 6 percent, are shown by immigrants with Southern European, Middle-East or other origin. Finally, the Turks stand out as the origin group that experiences the highest SSUP, around 7 percent. This ranking, which is particularly clear for men, represents a sort of hierarchy where the risk of unemployment is particularly strong among groups with larger social distance from the native population.

Finally, in order to evaluate the relative contribution of unemployment entry and exit rates to the unemployment stock, we estimated SSUPs according to two counterfactual scenarios: 1) where all groups had the same exit rates as ancestral Swedes but observed exit rates (as in equation 3); and 2) all groups have the same entry rates but observed entry rates (as in equation 4). This exercise allowed us to directly test whether the SSUP were driven by exit or entry rates. These counterfactual scenarios are shown respectively in the second and third panel in Figure 1 and are reported in Table A2 in the Appendix.

In counterfactual scenario 1, presented in the second panel of Figure 1, if all groups maintained the same exit probabilities as the Swedes, we observe a somehow contained decrease in SSUP. For example, second-generation Turkish men and women, the groups with the highest SSUPs, experienced a decrease from 6.93 to 6.42 and from 6.83 to 6.09, respectively. These corresponds to a reduction of 17 and 24 percent, respectively. Second-generation Iranians in fact experience increased SSUPs if they experienced the same exit probabilities as ancestral Swedes. The counterfactual values are still far from the Swedish observed SSUP which suggests that unemployment exit is not a strong determinant of unemployment.

Figure 1. Conditional Steady-State Probabilities and Counterfactual Scenarios



In counterfactual scenario 2, in the third panel of Figure 1, we observe that if all groups have the same entry probabilities as the Swedes, nearly all of the inequality in SSUP disappears. As a matter of fact, the ethnic hierarchy that we observed for actual rates has disappeared in this scenario. Again, focusing on second-generation Turkish men and women, SSUPs decrease by roughly 90 and 85 percent, respectively. For men this constituted a change in SSUP from 6.93 to 4.23, and for women from 6.83 to 4.16 percent. All groups experienced equally sizeable reductions in SSUP, and second-generation Iranian men and women even displayed lower SSUP as compared to ancestral Swedes of the same gender. Our results strongly indicate that the largest portion of inequality in unemployment is driven by unemployment entry—the probability to lose a job.

Conclusions

At the onset of this study, we opened a debate as to whether unemployment exit or entry was the dynamic responsible for inequalities in unemployment stock across ethnic groups. This was motivated by the implicit emphasis that in the literature has been placed on unemployment exit (hiring discrimination) with the growth of correspondence test studies

testing for hiring discrimination (barriers to unemployment exit). In fact, unemployment entry has arguably become a forgotten dynamic that leads individuals to unemployment. This omission has been reasonable since the factors that lead an individual to lose a job are most often unobserved and methodological challenges accompany this line of research. Nonetheless, testing the relative importance of the two dynamics is a vital step forward in understanding ethnic differences in unemployment and for constructing effective policy interventions to address them.

To the best of our knowledge, this is the first study to compare the two dynamics, and in doing so we found that unemployment exit plays a much smaller role than assumed. Instead we found strong evidence that inequalities in unemployment entry drive inequalities in unemployment stock between second-generation immigrants and ancestral Swedes. Although we were unable to identify the mechanisms, our results indicate that it is related to demand-side processes or job-related factors. We argued that the most likely way of entering unemployment is through involuntary job termination. Specifically, temporary work contracts may be more common among second-generation groups and these individuals are subsequently exposed to higher risks of transiting from employment to unemployment. According to Eurostat statistics, in 2016 the transition rate from employment to unemployment was seven times higher among temporarily employed as compared to permanently employed aged 25-54.⁵ We referred to this channel as precariousness.

It is important to point out that this study does not invalidate discrimination as a driver of ethnic differences in unemployment. Firstly, although unemployment exit played a much smaller role than unemployment entry, making unemployment exit equal across groups did attenuate some of the group differences. This may be the case since hiring discrimination may be easier to circumvent by adapting job search methods accordingly. One of the main criticisms of correspondence studies is that they do not translate their conclusive experimental findings of hiring discrimination to the societal consequences thereof. In other words, it is unclear whether hiring discrimination actually makes individuals remain unemployed overtime. It is possible for example, that second-generation immigrants apply to a broader set of jobs for which they are overqualified or jobs with temporary contracts. This would mean that the second-generation displays the same chances of transitioning from unemployment to employment as ancestral Swedes, but is at higher risk of being mismatched or in precarious employment. Importantly, this may still be the result of employer discrimination.

The current study contributed to existing research in several ways. First, it theoretically considered and empirically addressed ethnic inequalities in unemployment rates from a dynamic perspective and examined both unemployment exit and entry dynamics. By estimating how group dynamics translate into unemployment rates, we identified unemployment entry in the form of precariousness as a relevant factor driving unemployment differences.

Second, the paper provided a methodological contribution to sociological literature through the implementation of steady-state probabilities and the related counterfactuals based on dynamic models. While the use of steady-state probabilities is not new in other fields, including economics, to the best of our knowledge current research has used such techniques only to model welfare dependency or low wage. Importantly, this strategy would strongly

⁵ Eurostat dataset [LFSI_LONG_E05_custom_4454293] accessed on 10 January 2023 (https://ec.europa.eu/eurostat/databrowser/view/LFSI_LONG_E05_custom_4454746/default/table?lang=en).

benefit sociological scholarship as it allows to connect individual micro-level dynamics to societal macro-level outcomes, a link which is roughly always missing. A further methodological contribution is represented by the implementation of counterfactual scenarios which have not appeared in existing research so far. We believe that this empirical strategy can be very fruitful in future research given that it can find application to the study of inequalities across many other groups and for many other outcomes, including for example poverty.

Finally, the results emerging from the paper allows to contribute to the policy debate. In fact, it can be argued that the expected effectiveness of policy measures is dependent on the main mechanisms and factors driving unemployment. For example, anti-discrimination policies directed at regulating the hiring process can be expected to reduce inequalities in unemployment rates if discrimination plays a significant role for unemployment. According to our results, instead, this type of policies would be largely ineffective. Conversely, given the importance of unemployment entry dynamics in accounting for inequality, policies aimed at strengthening the protection for temporary employment would disproportionately favor immigrants and reduce inequality.

This paper comes of course with several limitations. The first limitation regards the extent to which we are able to measure discrimination and precariousness directly. As a matter of fact, we are not in the position to conclude that discrimination is unimportant for unemployment inequalities. In fact, immigrant groups might be strongly discriminated but nonetheless have the same chances to find employment because they apply to a higher number of job positions as compared to the ancestral population. At the same time, we are not able to conclude that unemployment entry captures precariousness only and no other factors. While most of the workers transit to unemployment because of involuntary job separation or decide to separate voluntarily to escape unsatisfactory working conditions, other might decide to separate from work voluntarily for several other reasons related to individual preferences not related to precariousness. Moreover, we theoretically referred to discrimination and precariousness to exemplify exit and entry dynamics but we did not explicitly model these mechanisms. Future research should address these mechanisms explicitly and in particular focus on precariousness as a possible mechanism leading to unemployment.

Another limitation regards the implementation of steady state probabilities. As described in the method section, steady state probabilities are computed under the assumption of a steady scenario where individual characteristics are assumed not to change over time (including for example age) and where entry and exit probabilities are constant over individuals' working career. Of course, these assumptions are rather unrealistic, but nonetheless we believe that this statistic can be a very useful summary measure of unemployment at societal level especially when comparison across groups is the core of analysis. In this respect, we second Cappellari and Jenkins (2008: pp. 26) who claim that this measure is "[...] useful for interpretative purposes even if transition rates are not in fact constant over time".

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Appendix

Table A1. Effect of past unemployment (t-1) on current unemployment (t) by origin groups. Correlated random-effects dynamic logit model, OR (s.e.)

	Men	Women
Unemployed t-1	2.033*** (0.0110)	1.940*** (0.0121)
Country of origin (ref. Natives)		
Finland	0.390*** (0.0308)	0.265*** (0.0326)
Other Nordic	0.390*** (0.0494)	0.242*** (0.0520)
Other Western	0.230** (0.0807)	0.271*** (0.0805)
East-Eu	0.475*** (0.0551)	0.399*** (0.0573)
Yugoslavia and Bosnia	0.539*** (0.0502)	0.286*** (0.0554)
South-Eu	0.619*** (0.0606)	0.449*** (0.0652)
Middle-East	0.674*** (0.109)	0.767*** (0.106)
Iran	0.421* (0.187)	0.300 (0.206)
Turkey	0.829*** (0.0606)	0.833*** (0.0589)
Other	0.558*** (0.0505)	0.474*** (0.0535)
Country of origin*Unemployment t-1		
Finland	-0.0113 (0.0350)	0.0155 (0.0394)
Other Nordic	0.0200 (0.0595)	0.0715 (0.0666)
Other Western	0.146 (0.114)	-0.129 (0.124)
East-Eu	-0.137 (0.0735)	0.0157 (0.0798)
Yugoslavia and Bosnia	-0.00503	0.125

	(0.0651)	(0.0745)
South-Eu	-0.0811	-0.150
	(0.0804)	(0.0919)
Middle-East	-0.0731	0.00838
	(0.140)	(0.145)
Iran	-0.535*	-0.467
	(0.270)	(0.314)
Turkey	-0.112	0.150*
	(0.0759)	(0.0760)
Other	-0.00994	-0.113
	(0.0649)	(0.0736)
Mixed background	-0.190***	-0.119***
	(0.0272)	(0.0291)
Age	-0.377***	-0.200***
	(0.0321)	(0.0353)
Age square	0.00641***	0.00404***
	(0.000501)	(0.000551)
Standardized GPA	-0.292***	-0.223***
	(0.00692)	(0.00721)
Marital status (ref. Single)		
Couple	-0.120***	0.00464
	(0.0197)	(0.0194)
Separated	0.213***	0.132***
	(0.0402)	(0.0372)
Health problems	0.165***	-0.0172
	(0.0149)	(0.0123)
Level of education (ref. Primary and lower secondary - less than 9 years of education)		
Primary and lower sec. 9-10y	0.138	-0.129
	(0.190)	(0.219)
Upper secondary 1-2y	0.162	-0.305
	(0.191)	(0.220)
Upper secondary 3y	-0.168	-0.548*
	(0.191)	(0.220)
Post sec. 1-2y	-0.273	-0.649**
	(0.193)	(0.222)
Post sec. 3-5y	-0.636**	-1.209***
	(0.195)	(0.223)

PhD	0.0650 (0.205)	-0.166 (0.230)
N. children up to age 8 (ref. None)		
1	-0.106** (0.0350)	0.102*** (0.0304)
2	-0.116** (0.0408)	0.326*** (0.0342)
3	-0.0946 (0.0521)	0.486*** (0.0434)
4 or more	-0.205** (0.0723)	0.460*** (0.0609)
Parental occupation (ref. High skilled & professionals)		
Farmers	-0.374*** (0.0582)	-0.192*** (0.0565)
Unskilled	0.120*** (0.0191)	0.0657** (0.0202)
Low skilled	0.0418* (0.0189)	0.0184 (0.0198)
Medium-skilled	-0.0120 (0.0163)	-0.0126 (0.0170)
Self-employed	-0.0617** (0.0226)	-0.00195 (0.0234)
Missing	0.179*** (0.0335)	0.156*** (0.0348)
Not employed	0.292*** (0.0355)	0.215*** (0.0366)
Region (ref. Stockholm)		
East Middle	0.383*** (0.0171)	0.325*** (0.0177)
South	0.497*** (0.0178)	0.417*** (0.0182)
North Middle	0.588*** (0.0200)	0.454*** (0.0213)
Middle Norrland	0.681*** (0.0250)	0.495*** (0.0275)
Upper Norrland	0.639*** (0.0224)	0.482*** (0.0247)

Smaland & islands	0.270*** (0.0217)	0.239*** (0.0228)
West	0.340*** (0.0166)	0.266*** (0.0169)
Years since completion of highest level of education	-0.00545 (0.00344)	-0.0101** (0.00319)
Field of study (ref. General education)		
Teaching methods and teacher education	-0.117** (0.0416)	-0.256*** (0.0309)
Humanities and arts	0.333*** (0.0254)	0.382*** (0.0229)
Social sciences, law, commerce, administration	0.109*** (0.0237)	0.157*** (0.0227)
Natural sciences, mathematics and computing	0.101** (0.0330)	0.327*** (0.0377)
Engineering and manufacturing	-0.178*** (0.0193)	0.129*** (0.0290)
Agriculture and forestry, veterinary medicine	-0.242*** (0.0390)	0.143*** (0.0346)
Health care and nursing, social care	-0.172*** (0.0290)	-0.279*** (0.0214)
Services	-0.243*** (0.0251)	0.00583 (0.0260)
Unknown	-0.0372 (0.0358)	0.0781 (0.0445)
Year (ref. 2016)		
2003	2.008*** (0.0655)	2.016*** (0.0689)
2004	2.025*** (0.0595)	2.086*** (0.0618)
2005	1.705*** (0.0553)	1.994*** (0.0571)
2006	1.368*** (0.0516)	1.585*** (0.0534)

2007	0.681*** (0.0486)	1.024*** (0.0502)
2008	0.588*** (0.0454)	0.863*** (0.0469)
2009	1.785*** (0.0409)	1.541*** (0.0428)
2010	1.162*** (0.0380)	1.257*** (0.0397)
2011	0.577*** (0.0354)	0.884*** (0.0368)
2012	0.783*** (0.0317)	0.852*** (0.0334)
2013	0.770*** (0.0282)	0.738*** (0.0301)
2014	0.420*** (0.0255)	0.460*** (0.0274)
2015	0.199*** (0.0235)	0.235*** (0.0255)
<i>Initial condition (t 0)</i>		
Unemployed	2.288*** (0.0153)	2.320*** (0.0167)
Unemployed × Finland	-0.196*** (0.0469)	-0.174*** (0.0513)
Unemployed × Other Nordic	-0.237** (0.0795)	-0.170 (0.0870)
Unemployed × West-Eu	-0.0454 (0.145)	-0.107 (0.165)
Unemployed × East-Eu	-0.0992 (0.0965)	-0.0489 (0.103)
Unemployed × Yugoslavia and Bosnia	-0.302*** (0.0884)	-0.192* (0.0967)
Unemployed × South-Eu	-0.289** (0.111)	-0.185 (0.121)
Unemployed × Middle-East	-0.337 (0.182)	-0.530** (0.194)
Unemployed × Iran	0.266 (0.323)	0.225 (0.378)
Unemployed × Turkey	-0.425***	-0.587***

	(0.102)	(0.103)
Unemployed × Other	-0.0551	-0.106
	(0.0848)	(0.0936)
Marital status (ref. Single)		
Couple	0.178***	0.0408
	(0.0280)	(0.0224)
Separated	-0.0847	-0.0371
	(0.0742)	(0.0527)
Health problems	0.136***	0.126***
	(0.0199)	(0.0154)
N. children up to age 8 (ref. None)		
1	0.141*	-0.143**
	(0.0588)	(0.0476)
2	0.0118	-0.327***
	(0.0632)	(0.0482)
3	0.0865	-0.192**
	(0.0786)	(0.0591)
4 or more	0.303**	-0.159*
	(0.106)	(0.0796)
Age	0.257***	0.230***
	(0.00477)	(0.00444)
<i>Within-unit averages</i>		
Marital status (ref. Single)		
Couple	-0.474***	-0.294***
	(0.0278)	(0.0268)
Separated	0.232***	0.113*
	(0.0637)	(0.0551)
Health problems	1.049***	0.439***
	(0.0405)	(0.0305)
N. children up to age 8 (ref. None)		
1	-0.337***	-0.0940
	(0.0677)	(0.0542)
2	-0.478***	-0.388***
	(0.0725)	(0.0549)
3	-0.524***	-0.637***
	(0.0950)	(0.0731)
4 or more	-0.400**	-0.247*
	(0.144)	(0.112)

Age	-0.222*** (0.00600)	-0.208*** (0.00603)
Constant	0.392 (0.547)	-1.975** (0.604)
Var(u_i)	1.085*** (0.0160)	1.028*** (0.0172)
N. groups		
Observations	2,144,602	1,858,110

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A2. Conditional Steady-State Probabilities and Counterfactual Scenarios

				Observed	Counterfactual scenarios			
					Swedes Entry Pr.		Swedes Exit Pr.	
	Entry	Exit	Persistenc	Steady	Steady	% Gap	Steady	% Gap
	Pr.	Pr.	e Pr.	State Pr.	State Pr.	Explained	State Pr.	Explained
Men								
Sweden	3.48	85.65	14.35	3.91	3.91		3.91	
Finland	4.45	82.33	17.67	5.12	4.06	87.56	4.94	15.53
Other Nordic	4.40	82.07	17.93	5.09	4.07	86.11	4.88	17.17
West-Eu	4.10	82.11	17.89	4.76	4.07	80.95	4.57	22.11
East-Eu	4.86	82.60	17.40	5.56	4.05	91.60	5.37	11.35
Yugoslavia	4.85	80.84	19.16	5.66	4.13	87.23	5.36	17.21
South-Eu	5.17	80.77	19.23	6.02	4.14	89.24	5.69	15.36
Middle-East	5.33	80.14	19.86	6.23	4.17	88.91	5.85	16.25
Iran	5.15	86.18	13.82	5.64	3.89	101.33	5.68	-1.89
Turkey	5.87	78.91	21.09	6.93	4.23	89.41	6.42	16.89
Other	5.23	80.26	19.74	6.12	4.16	88.64	5.76	16.39
Women								
Sweden	3.32	86.46	13.54	3.70	3.70		3.70	
Finland	3.91	84.09	15.91	4.45	3.80	86.57	4.33	15.61
Other Nordic	3.85	83.75	16.25	4.39	3.82	83.34	4.26	19.06
West-Eu	4.00	85.34	14.66	4.48	3.75	93.98	4.42	7.15
East-Eu	4.49	82.53	17.47	5.16	3.87	88.36	4.93	15.31
Yugoslavia	3.96	82.78	17.22	4.57	3.86	81.70	4.38	21.50
South-Eu	4.51	83.93	16.07	5.10	3.81	92.33	4.96	10.15
Middle-East	5.38	79.08	20.92	6.37	4.03	87.56	5.86	19.21
Iran	4.47	87.52	12.48	4.85	3.66	103.75	4.91	-4.91
Turkey	5.60	76.48	23.52	6.83	4.16	85.18	6.09	23.69
Other	4.69	83.17	16.83	5.34	3.84	91.40	5.15	11.77

Table A3. Country of origin groups

	Finland	Other Nordic	Other Western	Eastern European	Yugoslavia & Bosnia	Southern European	Middle East	Iran	Turkey	Other
Finland	X									
Denmark		X								
Iceland		X								
Norway		X								
UK and Ireland			X							
Germanic states			X							
Netherlands			X							
France and Benelux			X							
USA and Canada			X							
NZ and Australia			X							
Poland				X						
Latvia and Lithuania				X						
East Europe				X						
Bulgaria				X						
Romania				X						
Czech R and Slovakia				X						
Hungary				X						
Estonia				X						
Bosnia Herzegovina					X					
Yugoslavia					X					
South Europe						X				
Greece and Cyprus						X				
Italy and Malta						X				
Other Middle East							X			
Lebanon							X			
Syria							X			
Iraq							X			
Afghanistan							X			
Iran								X		
Turkey									X	
Central America and Caribbean										X
Chile										X
South America										X
Somalia and Djibouti										X
Eritrea										X
Ethiopia										X
North Africa (except Egypt)										X
Other Africa										X
China (excluding Taiwan and HK)										X
Other East Asia										X
Other South-East Asia and Pacific										X
Philippines										X
Vietnam										X
Thailand										X
Pakistan and Bangladesh										X
India Nepal Bhutan										X
Sri Lanka										X
North and South Korea										X
Brazil										X
Egypt										X
Other										X

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