Is overqualification a stepping stone for career progression among children of immigrants?

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Abstract

Overqualification is one of the key labor market disadvantages that the children of immigrants born in the host society –the second generation (G2)–disproportionately experience compared to the majority population. Higher prevalence of overqualification among the G2 may result from their strategic choice to circumvent persistent unemployment and utilizing overqualification as a stepping stone into adequate employment – as predicted by career mobility theory. Our paper investigates 1) how overqualification and unemployment fit into the career progressions and 2) how this varies between the second generation and majority population. This study draws on Swedish register data on the total population and applies dynamic correlated random-effects multinomial logistic models. Our results show that the chances to move to adequate employment are higher for unemployed individuals than for overqualified workers. This result, that holds for both the majority population and G2 groups, is against the idea that overqualification serves as a stepping stone. We find that the chances to transit to adequate employment are higher for the majority population. This goes hand in hand with higher risks for G2 overqualified workers to fall into unemployment and for G2 unemployed individuals to remain entrapped into unemployment – thus creating a vicious cycle of disadvantages.

Keywords: Overqualification, unemployment, career mobility, second generation, Sweden, dynamic correlated random-effects multinomial logit model

Introduction

Children of immigrants born in the host society (the G2) face a number of challenges in labor markets across Europe. One key dimension where the G2 experiences disadvantage compared to the majority population is the risk to be overqualified—having educational qualifications that exceed those required to perform the job held. Overqualified workers experience lower returns to education and slower wage growth (Korpi & Tåhlin, 2009) compared to workers with the same education level who are adequately matched. Although overqualification is often considered a suboptimal labor market state, according to career mobility theory it may hold some benefits for long-term career prospects by serving as a stepping stone to more favorable, i.e. matched, positions (Sicherman & Galor, 1990). Given the widely observed barriers that the G2 faces to getting a job as compared to the majority population (Carlsson, 2010; OECD, 2017), we aim to understand whether overqualification acts as a hindrance or can be used as a catalyst for career progression among the G2. In other words, despite often being considered a suboptimal state, overqualification may serve the purpose of circumventing widespread labor market disadvantages, i.e. unemployment, among the G2. As such, this paper contributes to this area of research by examining heterogeneities in the career progressions of overqualified workers.

Career mobility theory argues that workers may intentionally choose positions for which they are overqualified in order to gain skills and labor market experience that can facilitate career progression. This argument suggests that unemployed people accept jobs for which they are overqualified in order to avoid persistent unemployment – which would offer worse opportunities for career development. At the same time, however, overqualification has been shown to be sticky such that career mobility may not be achievable (Mavromaras & McGuinness, 2012). Empirical support for the predictions of career mobility theory have provided dubious evidence that overqualification facilitates upward career development. For example, overqualified workers experience low chances of moving into adequately matched employment (Baert et al., 2013) and may even experience high risks of becoming unemployed (Esposito & Scicchitano, 2022; Mavromaras et al., 2015).

A dimension of the career mobility hypothesis that remains underdeveloped is the extent to which overqualification facilitates career progression among groups that face large barriers in the labor market, such as the G2 (Lu & Li, 2021). Research has consistently shown that employer bias disadvantages ethnic and racial minorities, the G2 included, in the job search process such that individuals with foreign sounding names or appearances are less likely to

receive call-backs or offered the job after an interview (Carlsson, 2010; Quillian et al., 2019). A strategy to circumvent this disadvantage may be for ethnic minorities to apply for jobs for which they are overqualified since this may offer a better signal to future employers than to remain unemployed (Baert & Verhaest, 2019). However, given that the G2 experiences higher persistent overqualification and unemployment risks, this strategy may backfire and lead to deepening labor market stratification. Surprisingly, to the best of our knowledge, the G2 has not been the focus of previous research on overqualification and career mobility.

Accordingly, we ask the following questions: How do overqualification and unemployment fit into an individual's career progression? And does this vary between the G2 and majority population? In light of the career mobility hypothesis, we examine the extent to which overqualification offers superior career progression prospects as compared to unemployment in terms of higher chances of transitioning to adequately matched employment.

This study draws on Swedish register data on the total population to examine the labor market transitions of a large number of G2 groups and the majority Swedish population. We follow individuals from labor market entry (approximately age 25) over a ten-year window, and apply dynamic correlated random-effects multinomial logistic models.

In doing so, this paper makes several contributions to the literature on immigrant labor market experiences. First, we consider all potential transitions across labor market states. Particularly, we examine transitions over the career to/from overqualification, unemployment, and adequately matched employment. Second, we examine a wide range of G2 origin groups characterized by varying degrees of labor market barriers. For example, previous research has consistently shown that G2 individuals with Middle Eastern and African origins are particularly disadvantaged in the labor market as compared to those with European origin (Aradhya et al., 2023; OECD, 2017). Finally, high quality register data and advanced methods allow us to adjust for a wider range of confounding factors that previous research has often overlooked.

Our results indicate that overqualification does not serve as a stepping stone compared to unemployment since the probability to transition to adequately matched employment is higher among unemployed than overeducated individuals. All results in our study were similar for women and men. We observe heterogeneity across groups with overqualification among G2 individuals, notably with Turkish and Middle Eastern and North African (MENA) origin, experiencing larger disadvantages compared to majority Swedes. Namely, G2 individuals experience higher risks of transitioning from overqualification into unemployment and

remaining persistently unemployed over time compared to the majority group. Our study also suggests that past overqualification and unemployment increase the risk of poor labor market outcomes generating a vicious cycle of accumulating labor market disadvantages over the career.

Overqualification and the second generation

The G2 shows a misalignment between educational and labor market outcomes in many European countries. On the one hand, over time there has been a notable convergence between the G2 and the majority population in terms of educational performance and attainment, with even higher educational aspiration among the G2 relative to the majority population (Engzell, 2019; Jackson et al., 2012; Jonsson & Rudolphi, 2011; Salikutluk, 2016). However, on the other hand, the G2 has consistently shown to experience higher level of labor market disadvantages, e.g. higher unemployment rates and lower occupational prestige, compared to the majority population (Drouhot & Nee, 2019; Heath et al., 2008; OECD, 2017). Importantly, while some migrant groups are able to close the gap with the majority population over time and across generations, others experience little to no convergence—a process known as segmented assimilation (Portes & Zhou, 1993).

One labor market disadvantage the G2 experiences is overqualification. Many G2 groups, especially with non-Western background, experience higher risks of overqualification compared to majority populations in Western Europe (Falcke et al., 2020; Kim, 2023). This notwithstanding the G2 encounter fewer obstacles than foreign born immigrants to adequate education-occupation match such as imperfect transferability of human capital (Lancee & Bol, 2017) and host-country language proficiency (Chiswick & Miller, 2010).

One possible explanation behind the higher risk of overqualification among the G2 than the majority is related to disadvantages in getting a job. This may lead G2 groups to disproportionately apply for jobs for which they are overqualified as a strategy to compensate for hiring discrimination and thus avoid persistent unemployment. As such, overqualification may serve a unique purpose for the G2 in the labor market since having a job may be a better signal to future employers than having no job at all, i.e. remaining unemployed (Baert & Verhaest, 2019). In other words, overqualification may serve as a stepping stone into adequate employment, especially for the G2.

Overqualification and career mobility

The potential advantage of overqualification to career progression was primarily expressed by Sicherman & Galor (1990). According to career mobility theory, an overqualification spell is an investment in work experience that improves prospects for advancement to higher positions inside or outside the firm. The idea that overqualification brings relative advantages for the subsequent career has been framed as the *stepping stone hypothesis* in later studies (e.g., Scherer, 2004).

Existing literature, however, does not provide solid evidence in favor of overqualification as a stepping stone. Some of the inconsistencies in existing research are related to who overqualified workers are compared—individuals in the same occupation who are matched or individuals with the same level of education who are matched. For example, while overqualified workers do experience considerable mobility towards better labor market outcomes over the career, they are not able to close the disadvantage associated with an initial poorly-matched employment compared to those with the same education who are matched (Scherer, 2004). Other longitudinal studies found that overqualified workers reported lower relative wage growth compared to the adequately matched workers with the same level of education/qualifications (Büchel & Mertens, 2004; Korpi & Tåhlin, 2009). Their sluggish wage growth is likely due to their entrapment into overqualification, i.e., state dependence (Joona et al., 2014; Mavromaras & McGuinness, 2012). In addition, a number of recent studies have reported that overqualified workers may even experience higher risks of becoming unemployed compared to the adequately matched counterparts (Esposito & Scicchitano, 2022; Mavromaras et al., 2015) and that overqualification does not provide better chances for career progression compared to remaining unemployed (Baert et al., 2013; Meroni & Vera-Toscano, 2017).

Yet, existing evidence that does not find support the stepping stone hypothesis focuses exclusively on the average effects of overqualification. Namely, it is largely unknown how overqualification and unemployment fit into the career progressions groups characterized by severe labor market disadvantage, i.e. the G2. In fact, as discussed above, it is possible that overqualification does serve as a stepping stone for those groups encountering high barriers to finding a job and a high likelihood to experience persistent unemployment. To our best knowledge, there is no research investigating this potential heterogeneity in the literature.

In order to address the stepping stone hypothesis and heterogeneities therein, we examine all possible transitions over the career across adequately matched employment, overqualification,

and unemployment.[1] These transitions are illustrated in Figure 1. Given the premises of the stepping stone hypothesis, we pay particular attention to upward mobility transitions – namely from overqualification towards adequately matched employment (path A in Figure 1); and from unemployment to adequately matched employment (path D). We examine these transitions for several G2 groups and compare them to majority Swedes in order to test whether the stepping stone hypothesis is relevant for the most disadvantaged groups.
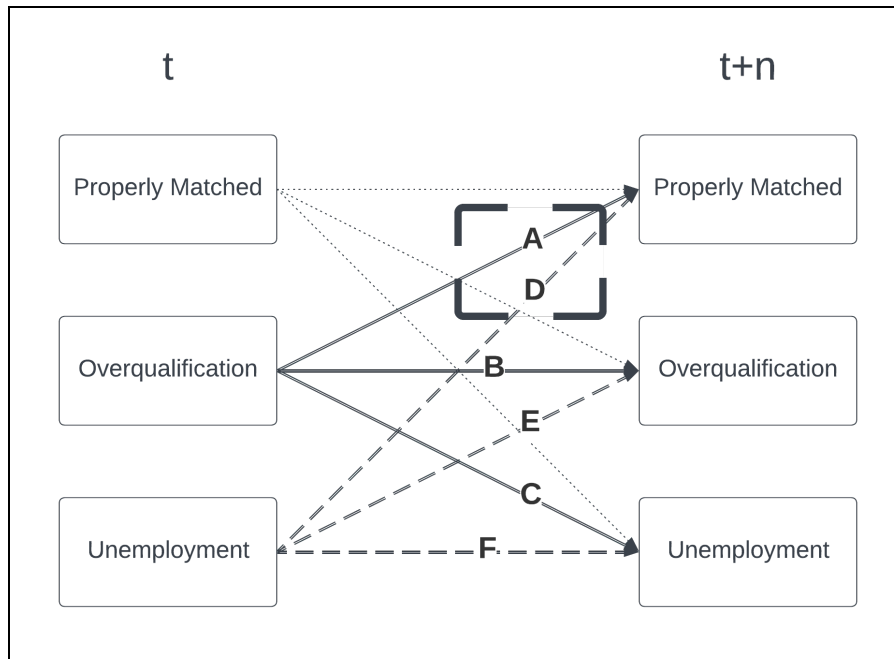
Figure 1. Transitions across adequately matched employment, overqualification, and unemployment between two points in time t and $t + n$.

The way we interpret the stepping stone hypothesis is by specifically comparing the probabilities of following path A and D, and expect that A is greater than D if overqualification is a stepping stone. In other words, accepting a job for which a worker is overqualified for provides better subsequent career progression than not having a job at all.

The core of this argument lies within career mobility theory which suggests that the accumulation/maintenance of human and social capital while employed leads to higher job prospects over time. This contrasts many of the disadvantages associated with being unemployed. First, human capital decay which implies that an individual's skills are not used

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[1] We introduce no specific expectations regarding underqualification (having less qualifications than are required for the job), as this represents a rather unusual scenario.

and kept up-to-date when a person is unemployed (Becker, 1964; Machin & Manning, 1999; Pissarides, 1992). Similar processes may take place among severely overqualified workers, however, at a much more gradual pace. Importantly, however, overqualified workers may also gain valuable work experience even though they are not actively using their education related human capital. Second, weakening social contacts hamper career progression far more for unemployed individuals since they do not engage with employment based networks that may provide information about potential job vacancies or other useful contacts (cf. Granovetter, 1977). Third, unemployment may provide a more negative signal about productivity and employability than overqualification (Baert & Verhaest, 2019; Stiglitz, 2002). Taken together, this suggests that overqualification may provide better chances for future career progression which is in line with the stepping stone hypothesis—path A is likely to be greater than path D.

The existence unequal barriers in the labor market help to generate some clear expectations regarding why overqualification may serve as a stepping stone for the most disadvantaged groups but not so for the majority population. Average effects mask heterogeneity of smaller (minority groups in the population) and likely reflect the conditions for the majority. Here the overwhelming evidence shows that overqualification does not serve as a stepping stone (Baert et al., 2013; Mavromaras et al., 2015). These findings still leave room for heterogeneous effects if overqualification among majority population is driven by different factors as compared to the G2. The majority population does not experience labor market disadvantages related to discrimination and, on average, have access to higher quality networks than those with migrant background, overqualification is likely related to negative selection on observed and unobserved characteristics. Unlike the majority population, the G2 are exposed to employer discrimination and likely have access to poorer quality networks, on average, meaning that they may not have access to the information that allows them to find jobs for which they are adequately matched (Kracke & Klug, 2021; Roth & Weißmann, 2022). These disadvantages may affect their employment choices and possibilities. First, less access to information and or fatigue in the job search procedure may lead to lower reservation wages. As such, the G2 may be more likely to apply to and accept jobs for which they are overqualified (Deschacht & Vansteenkiste, 2021). Second, the G2 may adapt their job search methods in response to high employer discrimination. G2 search more broadly as compared the majority population and with a higher degree of uncertainty such that they are more likely to accept any job at the expense of waiting for a adequately matched employment offer. For these reasons, we expect

overqualification to serve as a stepping stone to a greater extent than the majority Swedish group.

The case of Sweden

Sweden is an interesting context for studying how overqualification and unemployment affect career prospect of the G2. First, according to Statistics Sweden, the share of the individuals who have at least one foreign-born parent among the total population in Sweden has grown from 9.6 percent to 14.3 percent over the last two decades. (Statistics Sweden, 2023). Moreover, the share of the G2 in the labor force is expected to grow in the future since the proportion of the G2 is larger among younger cohorts. Second, Sweden boasts a comparatively highly educated workforce – partly due to the fact that in Sweden higher education is publicly funded with no tuition fees and most students are eligible for student allowance (European Commission, 2023). Therefore, higher education contributes to equalizing labor market inequalities associated with parental socio-economic background. Third, strong trade unions and collective agreements result in strict employment protection legislation. Furthermore, trade unions are also heavily involved in the provision of unemployment benefit, which features a voluntary unemployment insurance subsidized by public authorities, sometimes referred to as *Ghent system* (Van Rie et al., 2011). However, Swedish labor market has recently witnessed a process of segmentation between highly protected permanent employees and less regulated temporary employees, implying that employment insecurity may be more widespread among the marginalized groups in the labor market (Berglund et al., 2023).

Data, Sample, and variables

Data

We used the collection of registers named Migrant Trajectories (MT) (registration number: 2017/1980-31/5) to construct an individual-level longitudinal dataset containing demographic and socioeconomic characteristics. Subsequently, we linked individuals to their parents to identify the parents' country of birth, as well as socioeconomic characteristics.

The Study population included 196,875 men (1,943,015 person-years) and 194,438 women (1,768,706 person-years) who were born in Sweden between 1977 and 1981, and received at least upper secondary education or more (we included those who attended, but did not receive an upper secondary degree). We excluded those who did not receive upper-secondary education because they are unlikely to experience overqualification (Jacobs et al., 2020), and they account

for only a small share of the Swedish-born population. We followed them from the age of 25, or since they transited from education to labor market, to the age of 39. We focus on the period from 2002 to 2016 due to this sample selection. The lower age limit of 25 is to exclude the ages in which individuals are likely still in full-time education. Furthermore, we limited the study data to person-years in which the individual was participating in the labor market, defined as registering positive labor earnings or being registered as unemployed in the public employment office. Person-years in education (measured by the occurrence of non-zero student allowances, 411,612 person-years), long-term illness (measured by the occurrence of non-zero long-term sickness benefit, 32,550 person-years), employment without a registered occupational code (measured by missing in occupational classification code in the occupation register, 277 person-years), and other forms of inactivity (332,878 person-years) were also excluded. The exclusion of the employed with missing occupation and inactive individuals was necessary because of this study's focus on unemployment and overqualification. However, inactive individuals may transit to employment or unemployment and thus enter the analytical population; while employed and unemployed individuals may transit to inactivity thus exiting the analytical sample.

Overqualification and Unemployment measure

Our outcome is employment status which distinguishes between employed as matched, employed as overqualified, and unemployed. We measure overqualification following the Realized Matches method (RM, Verdugo & Verdugo, 1989), which defines overqualification as having higher years of schooling than the modal years of schooling that workers in the same occupation block. We prefer the RM methods over other alternatives such as job analysis, or worker's self-assessment method for two reasons: first, the RM method is appropriate for a research design focusing on single country, and provides reliable measure without substantial economic structural changes or high level of credential inflations (Capsada-Munsech, 2019). Second, the realized match method is a suitable measure to compare relative differences across study groups (Larsen et al., 2018). We calculated the modal value of years of schooling within an occupation block, defined by four digits of occupational codes largely corresponding to the International Standard Classification of Occupations (*Standard för svensk yrkesklassificering, SSYK4*), and by year, age, and gender to adjust for compositional factors. SSYK4 largely corresponds to the International Standard Classification of Occupations 88 (between 2001-2013) and 08 (from 2014). Since our study is mainly interested in overqualification, those who

are adequately matched and underqualified are combined into one category. As such, an employed individual in a given year is classified either as *overqualified* or *matched*.

We define an individual as unemployed during a given year if she/he 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, a person is regarded as employed if they have been registered for less than 90 days and receive any labor earnings. Our measure generates comparable unemployment rates as those derived from the Labor Force Survey (LFS) and used in official statistics (cf. Aradhya et al., 2023). As robustness checks, we conducted our analyses using different cut-offs defining individuals as unemployed, such as 60 and 120 days. While there exist differences across cut-offs in unemployment rates, we find similar patterns in the associations between previous and current labor market participation states for men and women (see Table A3 and A4 in the Appendix for more information).

Second-generation and origin classification

We define second generations as a native born to at least one foreign-born parent. We included a variable to identify the 2.5 generations (G2.5), i.e., one parent was born abroad while the other one in Sweden. Origin is defined as father's country of birth. The reason for following father's country of birth is that it is more likely for the second generation to follow father's surname, and the surname is associated with ethnic identity in the Swedish context (Bursell, 2012). In case the G2.5, origin follows a foreign-born parent's country of birth. We distinguish between 10 ancestries: Sweden, Finland, Other Nordic, Other Western (including both European and non-European Western countries, such as the United States and Australia), Eastern Europe, Yugoslavia and Bosnia, Southern Europe, the Middle East and North Africa (MENA), Turkey, and Other Non-Western (see Table A5 in the Appendix for more information). While the origin classification primarily follows broad geographical areas, we also identify specific origin groups with unique integration experiences in Sweden. For instance, Finnish migrants have a long immigrant history in Sweden and the first-generation Finns were relatively well integrated into the labor market. Furthermore, a large number of them came from a Swedish-speaking ethnolinguistic minority population in Finland (Saarela & Scott, 2017). Meanwhile, integration into Swedish society was more challenging for groups such as those with Turkish origin (Bayram et al., 2009).

Control variables

We control for several characteristics that are likely to be associated with transition between overqualification and unemployment dynamics in the different groups. The time-varying controls include age, ranging between 25 and 39 (also including age squared); educational attainment, separating between upper secondary (vocational or academic) and post-secondary (vocational or university). We also control for marital status (non-married, married, and divorced) which has been known to affect the length of unemployment spell (Teachman et al., 1994), and for the number of children below 8 years of age (none, one, two, and three or more children), as presence of young children may influence job search intensity, especially for women. Marital status and the number of children may also affect mobility constraint associated with higher risks of overqualification as well (McGoldrick & Robst, 1996). Finally, we include a measure of individual health conditions proxied by whether she/he receives any sickness benefit in the previous year ($t - 1$). We used the past recipiency of sickness benefit to avoid reverse causality between health and overqualification (Madsen & Kittelsen Røberg, 2021).

The time-constant controls include academic performance (standardized grade point average (GPA) at age 16), in order to capture human capital; the years since completing education (when the highest educational level is achieved), which indirectly captures work experience before entering the analytic sample. We also control for 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. In addition, we control for parental socio-economic status (SES), which can affect ego's educational choices and proxy the size and quality of networks that can be used for searching for employment (Pedulla & Pager, 2019). We define parental SES as parental occupation measured in 1990. We followed the dominance criteria and took the highest occupation of the mother and father. It distinguishes between farmers, unskilled, low-skilled, medium-skilled, high-skilled and professionals, self-employed, not employed, and those with missing information. Finally, we control for the region of residence at the NUTS 2 level (8 categories) and year dummies.

Methods

We used a correlated dynamic random-effects multinomial logit model. This dynamic specification models every possible transition from past $(t-1)$ to current status in the labor market between two consecutive years, thus assuming a first-order Markov process. There are two challenges to estimate unbiased (genuine or causal) probability of each transition: first, unobserved heterogeneity correlated with the outcome (Heckman, 1981a); and second, the so-called initial condition problem—according to which the initial period y_{i0} that is observed may not be the period in which the stochastic process causing the observed outcome begins.

Previous literature has suggested several different approaches to solve these issues (Biewen, 2009; Heckman, 1981b; Rabe-Hesketh & Skrondal, 2013; Wooldridge, 2005). We employ the recent approach developed by Rabe-Hesketh and Skrondal, (2013) because it offers a parsimonious, yet flexible solutions which can be implemented with unbalanced panel data.

We first define the individual specific vector of labor market participation state in the previous period $(t-1)$ as follows:

$$\Omega_{it-1} = \left[y_{i,m,t-1}, y_{i,o,t-1}, y_{i,u,t-1}\right]$$

where each variable $y_{i,j,t-1}$ represents one of j different outcome states (with j = matched (m), overqualified (o), or unemployed (u)) for unit i ($i = 1, ..., N$) at time t. We model our outcome using the logistic distribution. Thus, the dynamic model that we estimated is specified as follows:

$$P(y_{it}^* = j|\,\Omega_{it-1}, Z_{it}, X_i, c_i, u_{it}) = \frac{\exp(\gamma Z_{it} + \delta X_i + \beta y_{it-1} * X_i + c_i + u_{it})}{1 + \sum_{j=1}^{K} \exp(\gamma Z_{it} + \delta X_i + \beta y_{it-1} * X_i + c_i + u_{it})} \tag{1}$$

where y_{it}^* represents one of j different labor market participation state for unit i ($i = 1, ..., N$) 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-specified unobserved effect c_i. y_{it-1}, denoting one of j different labor market participation state for unit i at previous year $(t-1)$, captures genuine state dependence of each labor market participation state and it is interacted with origin (X_i) in our model. u_{it} represents an idiosyncratic error term.

The unit-specific unobserved effect c_i is expressed as

$$c_i = \alpha_0 + \alpha_1 y_{i0} + \alpha_2 \bar{Z}_i + \alpha_3 Z_{i0} + a_i \tag{2}$$

where y_{i0} and Z_{i0} stand for the initial values of the outcome of interset and of the time-varying explanatory variables, respectively. We control for $\bar{Z}_\iota = \frac{1}{T}\sum_{i=0}^{T} Z_{it}$, which denotes the within-unit averages of the time-varying explanatory variable. The time-varying variables we rely on to capture unobserved heterogeneity include age, marital status, total number of children under 8, and one year-lagged health problems. Finally, $a_i \overset{\text{i.i.d.}}{\sim} N(0,1)$ is a unit-specific time-constant error term, assumed to be independent of the idiosyncratic error term u_{it} (Rabe-Hesketh & Skrondal, 2013).

Under the assumption that unobserved heterogeneity is absorbed by c_i, the parameter $\rho + \beta$ measures either genuine state dependence when individual i stays in the same outcome category ($y_{ijt} = y_{ijt-1}$) or genuine probability of transition if individual i chnages her state ($y_{ijt} \neq y_{ijt-1}$) —that is the causal effect exerted by labor market participation state in the previous year on labor market participation state in the current year. Based on the above equations, the model is then estimated as a standard random-effects (RE) multinomial logit model, using *xtmloigt* in STATA 18. All analyses are conducted separately for men and women.

Results

Descriptive findings

Table 1 presents descriptive statistics for the study population. The G2 represent 14 percent while majority Swedes make up the remaining 86 percent of the population. The proportion of G2 groups among the study population for men are similar to that for women. Overall, individuals are followed up between 11.0 (G2 Other Non-Western women) to 12.3 years (G2 Yugoslavian/Bosnian men). These differences are related to variation in age at labor market entry. Results for men show a similar pattern, although men enter the labor market earlier, and thus are followed up for a longer period.

The fifth column reports unemployment rate for each group. The overall unemployment rate during the period 2002–2016 was 5.3 percent for women and 5.6 percent for men. There exist differences across origin groups. Among women, the unemployment rate for majority Swedes is the lowest level of 5.0 percent, while all other origin groups show higher unemployment rates. Majority Swedish men's unemployment rate is similar to that of women, (5.2 percent), and the variation in unemployment rate is smaller among men.

The last column shows overqualification rates for each group. The overall overqualification rate during the study period was 18.1 percent for women and 17.4 percent for men. Unlike unemployment, majority Swedish women and men do not show the lowest overqualification rates among origin groups. Instead, G2 Finnish, Other Nordic, Former Yugoslavian/Bosnian and Turkish women and men show lower overqualification rates compared to other groups. These results indicate that overqualification risks are not equally distributed among origin groups, but the pattern does not correspond to differences in unemployment rates.

Table 1 Descriptive statistics

Men	N. individuals	Size (%)	Mean N years	Mean age at LM entry	Unemployment rate	Overqualification rate
Sweden	173,330	86.4	12.2	21.6	5.2	17.4
Finland	10,060	4.9	12.2	21.0	7.8	14.5
Nordic	3,428	1.6	12.1	21.1	7.6	14.5
Other Western	3,591	1.6	11.9	21.8	6.2	20.4
East-EU	2,727	1.2	11.7	22.1	7.6	20.0
Yugoslavia/Bosnia	2,301	1.1	12.3	20.9	9.1	15.4
South-EU	1,864	0.9	11.9	21.4	8.8	16.7
MENA	1,401	0.6	11.5	21.6	9.3	18.4
Turkey	1,242	0.6	12.0	20.8	9.4	14.5
Other	2,483	1.1	11.4	21.7	8.5	20.7
Total	202,427	100.0	12.2	21.5	5.6	17.3
Women						
Sweden	170,770	86.1	11.9	22.2	5.0	18.1
Finland	10,348	5.0	11.9	21.6	6.8	16.7
Nordic	3,459	1.7	11.9	21.6	7.1	15.4
Other Western	3,589	1.7	11.5	22.4	5.7	20.4
East-EU	2,608	1.2	11.5	22.4	7.4	21.0
Yugoslavia/Bosnia	2,305	1.1	12.0	21.3	8.7	16.2
South-EU	1,840	0.8	11.5	21.8	7.2	18.8
MENA	1,402	0.6	11.4	21.7	9.3	19.2
Turkey	1,511	0.8	12.0	20.8	11.4	12.3
Other	2,396	1.0	11.0	22.4	8.3	20.4
Total	200,228	100	11.9	22.2	5.3	18.1

Overqualification, unemployment and upward career mobility
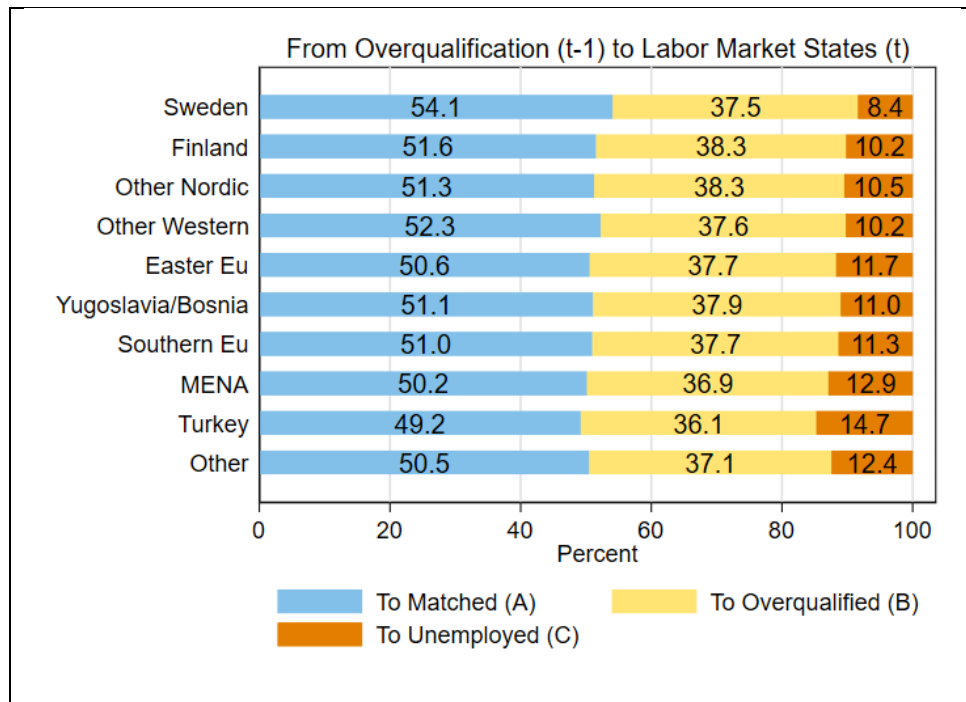
Figure 2. Predicted probability of transitioning from previous overqualification (t–1) to labor market states (t) for women, estimated from the correlated random-effects dynamic multinomial logit model.
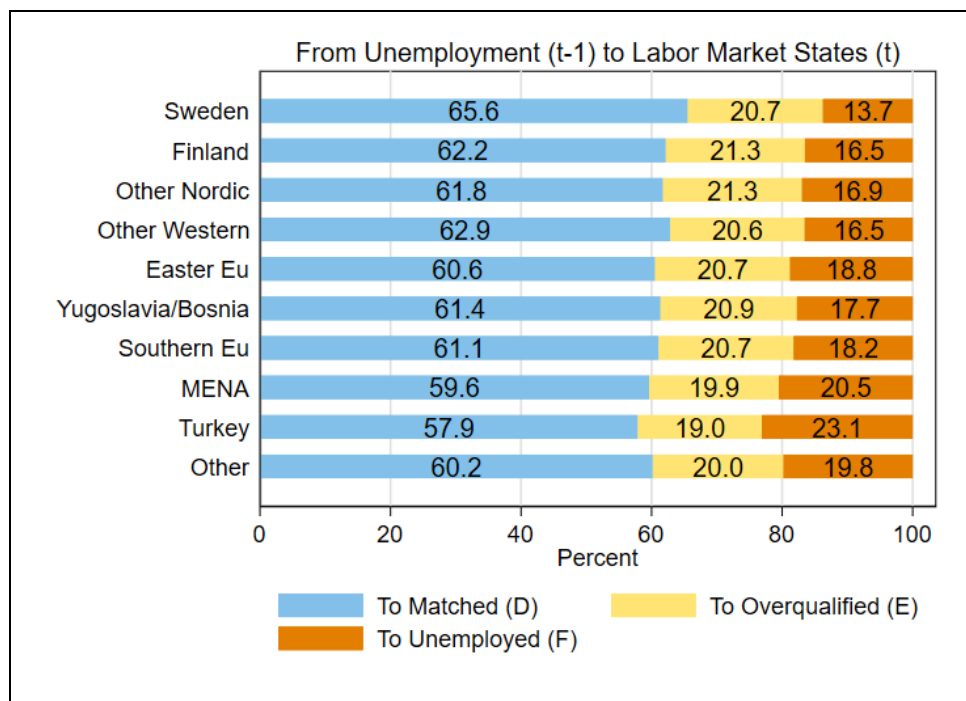
Figure 3. Predicted probability of transitioning from previous unemployment (t–1) to labor market states (t) for women, estimated from the correlated random-effects dynamic multinomial logit model.

Figures 2 presents average predicted probabilities for women of transitioning from overqualification at time $t-1$ to any labor market state at t which are adequately matched employment, overqualification and unemployment. Figure 3 is similar to Figure 2, but presents transition probabilities for those who are unemployed at time $t-1$.

The probability of transitioning from overqualification to adequate employment (denoted as A in Figure 2) is lower than that of transitioning from unemployment to adequate employment (denoted as D in Figure 3) for all G2 groups and majority Swedish women. In fact, on average, roughly 50 percent of overqualified individuals transition to adequately matched employment, while roughly 60 percent on unemployed individuals make the same transition. This result indicates that overqualification does not provide better chances for career progression in terms of moving to adequately matched employment. The results for men lead to the same conclusion, although men's probability of transitioning to adequate employment is higher than women for all groups. This confirms that overqualification is not a stepping stone for any group since pathway D is greater than pathway A (referring to Figure 1) and our findings are in line with previous research (Baert et al., 2013; Meroni & Vera-Toscano, 2017). Importantly, we find no support for our expectations that overqualification may serve as a stepping stone for disadvantaged groups.

There are, however, notable differences in the transition probabilities A and D between the majority Swedish population and G2 groups. Majority Swedish women report the highest probability of transitioning from overqualification to adequately matched employment (54.1 percent) among all groups, followed by G2 Other Western (52.3 percent), Finnish (51.6 percent), and Other Nordic (51.3 percent) women. Meanwhile, G2 Turkish and MENA women report substantially lower probability of transitioning from overqualification to adequately matched employment, 49.2 percent and 50.2 percent, respectively.

These findings have important implications for heterogeneity in the effects of overqualification. First, we find no support for the idea that overqualification serves as a stepping stone for G2 groups experiencing large barriers in the labor market. Specifically, the G2 Turkish and MENA groups, who have consistently been shown to experience large labor market disadvantages, are unable to use overqualification as a strategy to achieve career progression. And second, these two groups are even less likely than majority Swedes to experience positive career transitions from overqualified positions. This suggests that our expectation that overqualified majority Swedes would experience worse career progression

than G2 individuals since they were more negatively selected on observed and unobserved characteristics is not supported.

Figure 2 also highlights high levels overqualification persistence for all groups (denoted as B in Figure 2). Overqualification persistence ranges from 36.1 percent to 38.3 percent, meaning that more than one third of the overqualified workers remain overqualified in the subsequent year. Importantly, there is no substantive difference across groups. The results for men show similar patterns. Contrary to considerable variations in overqualification persistence between the G1 and majority population (Joona et al., 2014), it indicates that G2 women and men experience similar level of overqualification persistence compared to Majority Swedes.

At the same time, however, we find highly unequal transition probabilities from overqualification to unemployment (denoted as C in Figure 2). Majority Swedish women are much less likely to transition to unemployment from overqualification (8.4 percent) compared to all other groups (up to 14.7 percent among G2 Turkish women). This translates to 6.3 percentage point advantage, or roughly 75 percent lower transition rates. This suggests that instead of benefiting G2 groups, overqualification disproportionately disadvantages career progression by leading to unemployment.

Figure 3 shows clear group differences in the probability of transitioning from unemployment to the other labor market states (denoted as D in Figure 3). The figure presents three key findings. First, majority Swedish women are most likely to transition from unemployment to adequately matched employment (65.6 percent) as compared to all other groups, whereas G2 Turkish women display the lowest transition probability to adequately matched employment (57.9 percent). Second, we find no differences across groups in terms of the transition probabilities from unemployment to overqualification. This suggests that overqualification is not used as a strategy to gain employment among the G2. Finally, our findings support previous research showing highly unequal unemployment persistence (denoted as F in Figure 3) (Aradhya et al., 2023). Majority Swedish women report the lowest unemployment persistence (13.7 percent) whereas G2 Turkish women show the strongest unemployment persistence (23.1 percent), followed by G2 MENA women (20.5 percent). Taken together, unemployment is more disadvantageous labor market state for G2 women, especially with non-Western background, experiencing lower probability of upward career mobility and stronger unemployment persistence in comparison to majority Swedish women.

Discussion and conclusions

Although the G2 features higher socioeconomic achievements than their parents, they still experience disproportionate labor market disadvantages compared to the majority population, overqualification being one important dimension. Overqualification is considered an indicator of low-quality employment since it is associated with lower returns to education and slower wage growth. However, at the onset of this article, we argued that pursuing job opportunities for which one is overqualified may be a strategy the G2 apply to circumvent broader disadvantages (e.g., hiring discrimination) in the labor market that often lead to persistent unemployment. According to career mobility theory, an overqualified job may foster better long-term career prospects by functioning as a stepping stone to adequately matched employment compared to remaining unemployed. To date, no studies have examined how overqualification and unemployment fits into the career progression of the G2 despite their notably higher levels of overqualification and unemployment than the majority population.

We aimed to investigate whether the probability of transitioning to adequate employment from overqualification is higher than that of transitioning from unemployment, and whether this process was heterogeneous between the majority population and the G2 groups with various ancestral origins in Sweden. We used Swedish total population register data on birth cohort born between 1977 and 1981 and estimated correlated dynamic RE multinomial logit models of nine different labor market state transitions.

Our study discovered that, from one year to the next, overqualified employees are less likely to transit to adequately matched employment as compared to the unemployed. This finding is in contrast to the predictions of the stepping stone hypothesis. Importantly, and contrary to our expectations, there is no evidence that overqualification serves as a stepping stone for the G2 more than for the majority population. In fact, our results indicate the opposite: overqualification is less detrimental to career progression for the majority Swedish population and more detrimental for G2 individuals with non-Western backgrounds. Additionally, our findings revealed that the overqualified are more likely to become unemployed, and the unemployed are more likely to become overqualified in comparison to adequately matched employees.

Our findings confirm earlier research suggesting that the stepping stone hypothesis did not hold (Baert et al., 2013; Meroni & Vera-Toscano, 2017). Moreover, the stepping stone hypothesis did not selectively apply to the G2. Among the overqualified, the G2, especially with non-

Western origin turned out to perform the worst with lower probability of moving into adequately matched employment and higher risks of becoming unemployed. Indeed, our results imply substantial heterogeneity between the majority population and the G2 in the labour market state transitions. The majority population shows the highest probabilities of transitioning to adequately matched employment both from unemployment and overqualification while G2 Turkish and MENA groups show the lowest among the G2. In other words, among the overqualified, the majority population has the most promising career prospect, and among the unemployed, they are least likely to accumulate further disadvantages in their career after experiencing overqualification.

As discussed, our results do not support the idea that overqualification serves as a stepping stone neither for majority Swedish nor G2 groups. But how then does overqualification and unemployment fit into career progression? Figure 2 and 3 display that notable shares of overqualified women at time $t-1$ transit to unemployment (denoted as C) and from unemployment at time $t-1$ to overqualification (denoted as E). The estimated probability to transition from overqualification to unemployment ranges between 8.4 percent and 14.7 percent, which is higher than the probability of transitioning from adequately matched employment to unemployment, ranging between 2.8 percent and 5.7 percent (as seen in Figure A3 in the Appendix). Likewise, the estimated probability to transit from unemployment to overqualification, ranging between 19 percent and 21.3 percent, is higher than the probability of transitioning from adequately matched employment to overqualification which ranges between 6.1 percent and 6.9 percent among women.[2] These findings support the idea of an interrelation between unemployment and overqualification or a vicious cycle of labor market disadvantage and are in line with previous research identifying vicious cycles between low-quality employment and unemployment undermining career security for those who are already disadvantaged (Cappellari & Jenkins, 2008; Shildrick et al., 2012).

To our knowledge, our study provides important empirical evidence for research on career mobility theory and the stepping stone hypothesis. First, by examining all possible transitions between labor market states, we were able to consider not only upward but also downward transitions from each labor market state. This allowed us to provide more nuanced evidence

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[2] The point estimates given in relative risk ratios regarding the association between previous unemployment/overqualification and current overqualification/unemployment are larger than 1 and statistically significant at the 5 percent level (as seen in Table A1 and A2 in the Appendix).

the development of labor market disadvantages over time. Secondly, by examining a wide range of origin groups, our paper is the only study to examine heterogeneities in the stepping stone hypothesis for G2 groups and the majority population. By examining all possible transitions across the studied groups, we were able to show that the most important heterogeneity was related to overqualification as a labor market trap that is most commonly experienced among the G2. Not only did overqualification for the G2 lead to lower transitions to adequately matched employment, but also to higher transition probabilities to unemployment. Finally, we were able to exploit high quality register data to adjust for a wide range of confounding factors that for which previous research has been unable to account.

Yet, our study comes with a few limitations. First, our measure of unemployment depends on the registered unemployment cases. Using registered unemployment information under the Ghent system is known to suffer from measurement error, especially for youth and immigrant populations. Although our measure of unemployment provides unemployment rates which are comparable to official statistics from the Labor Force Survey (LFS) (Aradhya et al., 2023), it may misclassify actual job seekers as inactive, thus exclude them from the study population. Second, our measure of overqualification, the RM approach has limitations. The RM method presumes that all relevant skills are acquired through formal education, which is a common limitation to all objective measures of educational mismatch (Capsada-Munsech, 2019). This method is also likely to be influenced by credential inflation. However, our measure accounts for this issue by standardizing based on age and year to minimize misclassification due to credential inflation. Moreover, observation is limited to the selected birth cohort so that credential inflation is not likely to be a serious issue. Therefore, RM method was the most suitable and feasible way to measure overqualification using the study data.

To conclude, our study suggests that the implementation of policy measures aimed at reducing both unemployment and overqualification would benefit the G2 not only in terms of alleviating their current disadvantages, but also serving as a preventive measure against their accumulating labor market disadvantages over their careers. However, when devising policy interventions for improving labor market outcomes, it is crucial to consider the quality of employment, i.e., the alignment between skill levels and occupation. Urging unemployed individuals to accept low-skilled employment despite their potential overqualification may increase their risks of falling into unemployment again, rather than serving as a means to advance towards better job opportunities. Most importantly, a policy lacking this specific focus risks widening labor

market stratification given that the negative consequence of poorly matched employment disproportionately disadvantages the G2.

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Disclosure statement

The Authors report there are no competing interests to declare.

Data availability statement

Data may be obtained from a third party and are not publicly available. Aggregated data can be made available by the authors, conditional on ethical vetting. The authors access the individual-level data through Statistics Sweden's micro-online access system MONA. The analyses have been approved by the Swedish ethical-vetting authority, Dnr 2017/1980-31/5.

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Online Appendix
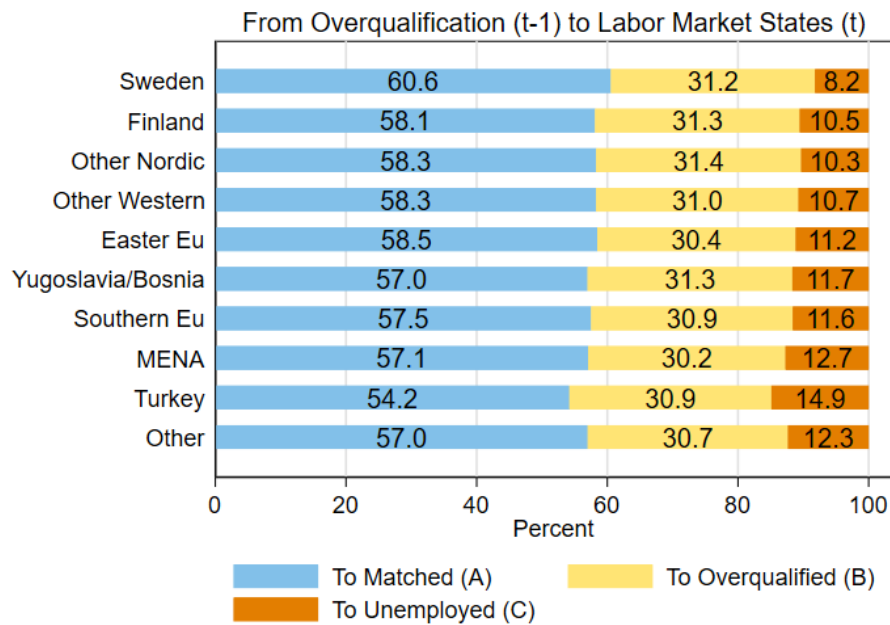
Figure A1. The predicted probability of transitioning from current overqualification (t-1) to labor market states (t) for men, estimated from the correlated random-effects dynamic multinomial logit model controlling for age, education level, marital status, number of children under 8, sickness leave, GPA, education field, parantel SES, and region
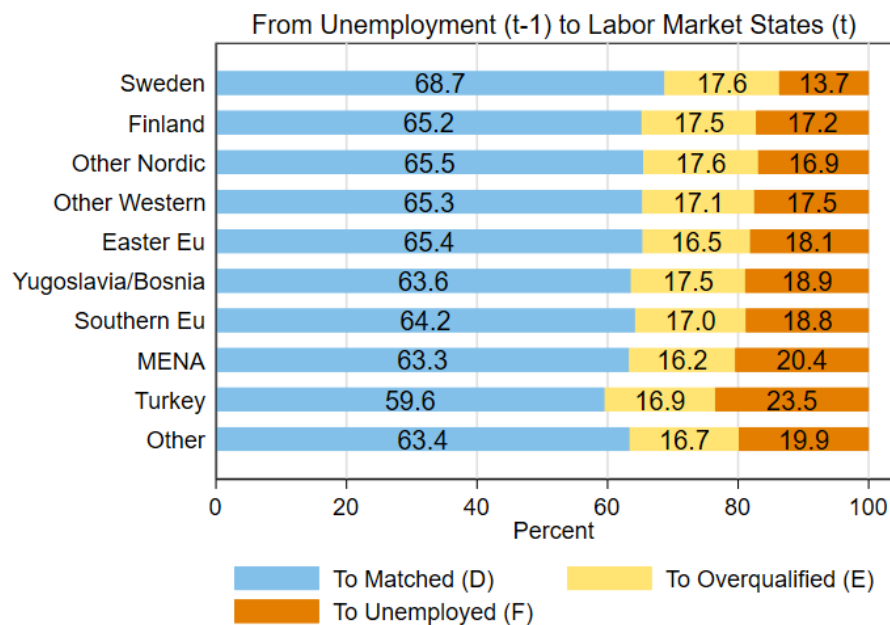
Figure A2. The predicted probability of transitioning from current unemployment (t-1) to labor market states (t) for men, estimated from the correlated random-effects dynamic multinomial logit model with the same control variables as Figure A1
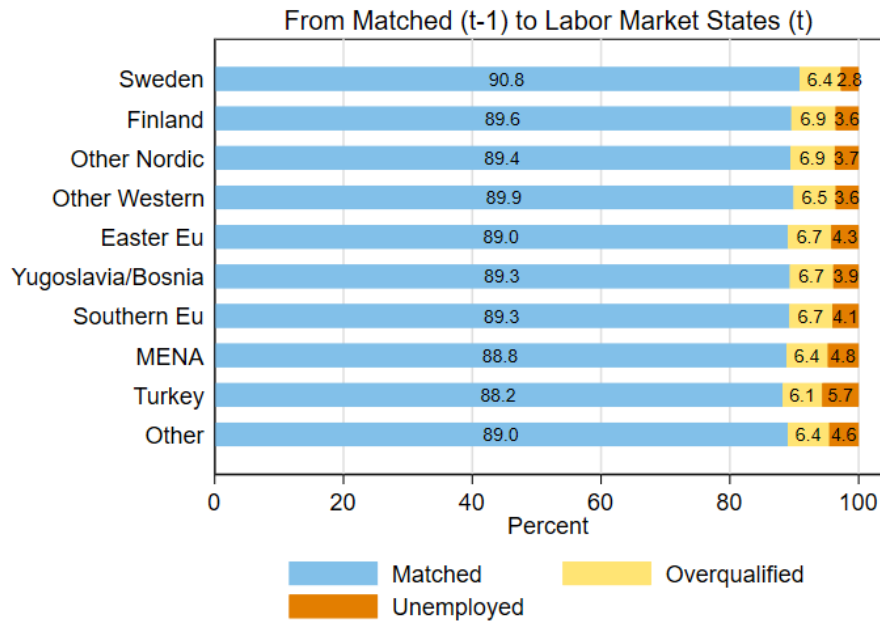
Figure A3. The predicted probability of transitioning from current adequately matched employment (t-1) to labor market states (t) for women, estimated from the correlated random-effects dynamic multinomial logit model with the same control variables as Figure A1
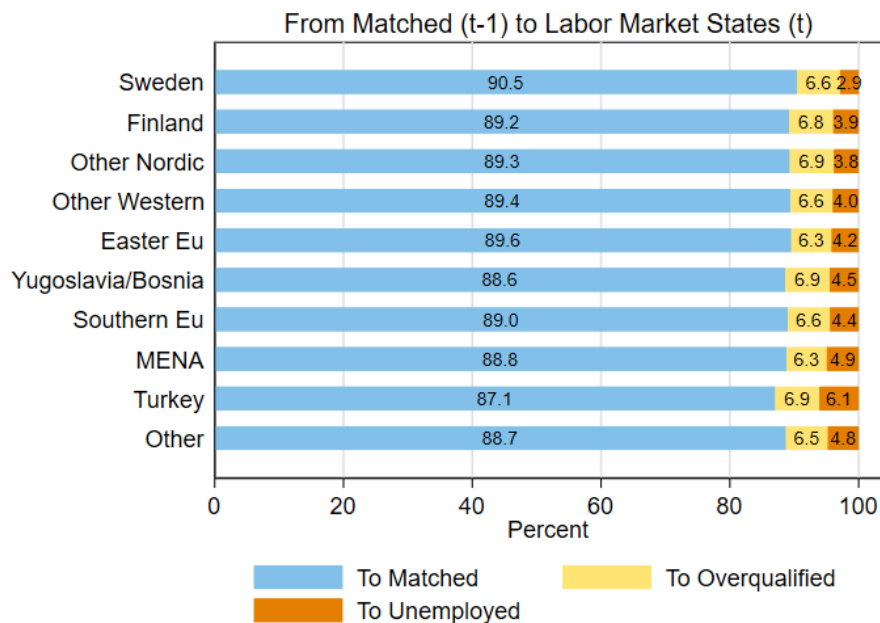
Figure A4. The predicted probability of transitioning from current adequately matched employment (t-1) to labor market states (t) for men, estimated from the correlated random-effects dynamic multinomial logit model with the same control variables as Figure A1

Table A1. Effect of past labor market participation state (t-1) on current labor market participation state (t) by origin groups, for men. Correlated random-effects dynamic multinomial logit model with interaction between origin and past labor market participation status, RRR.

	RRR	Std. err.	z	P>|z|	95% CI Lower	95% CI Upper
Outcome=Overqualified (t)						
Overqualified (t-1)	29.11	0.28	349.20	0.00	28.57	29.67
Unemployed (t-1)	5.88	0.11	94.75	0.00	5.67	6.10
Origin (Ref. Sweden)						
Finland	1.06	0.04	1.46	0.15	0.98	1.14
Other Nordic	1.05	0.06	0.74	0.46	0.93	1.18
Other Western	1.03	0.05	0.58	0.56	0.93	1.14
Eastern Europe	0.96	0.05	-0.76	0.45	0.86	1.07
Yugoslavia/Bosnia	1.06	0.07	0.92	0.36	0.93	1.21
Southern Europe	1.03	0.07	0.46	0.64	0.90	1.19
MENA	0.94	0.07	-0.72	0.47	0.81	1.10
Turkey	1.08	0.10	0.87	0.38	0.91	1.29
Other	1.02	0.06	0.38	0.71	0.91	1.15
Previous state # Origin						
Overqualified # Finland	1.01	0.04	0.31	0.76	0.93	1.10
Overqualified #Other Nordic	1.02	0.07	0.35	0.73	0.89	1.18
Overqualified #Other Western	0.94	0.05	-0.99	0.32	0.84	1.06
Overqualified #Eastern Europe	0.96	0.06	-0.67	0.50	0.84	1.09
Overqualified #Yugoslavia/Bosnia	1.06	0.09	0.70	0.48	0.90	1.25
Overqualified #Southern Europe	0.98	0.09	-0.20	0.84	0.82	1.17
Overqualification # MENA	0.98	0.10	-0.16	0.87	0.81	1.20
Overqualified #Turkey	1.03	0.12	0.28	0.78	0.82	1.30
Overqualified #Other	0.95	0.07	-0.73	0.47	0.82	1.09
Unemployed # Finland	0.89	0.07	-1.60	0.11	0.77	1.03
Unemployed # Other Nordic	0.99	0.12	-0.04	0.97	0.78	1.27
Unemployed # Other Western	1.09	0.12	0.81	0.42	0.88	1.36
Unemployed # Eastern Europe	0.97	0.12	-0.22	0.83	0.77	1.24
Unemployed # Yugoslavia/Bosnia	0.90	0.13	-0.72	0.47	0.68	1.20
Unemployed # Southern Europe	0.85	0.14	-1.00	0.32	0.62	1.17
Unemployed # MENA	1.07	0.19	0.39	0.70	0.76	1.52
Unemployed # Turkey	0.85	0.16	-0.84	0.40	0.59	1.23
Unemployed # Other	0.97	0.13	-0.24	0.81	0.75	1.25
Mixed (Ref. No)						
Yes	1.00	0.03	0.01	0.99	0.94	1.06
Age	1.25	0.04	7.54	0.00	1.18	1.33
Age squared	1.00	0.00	-4.73	0.00	1.00	1.00
standardized GPA	0.86	0.01	-23.54	0.00	0.85	0.87
Civil status (Ref. Non-married)						

Married	1.04	0.01	2.43	0.02	1.01	1.06
Divorced	0.98	0.04	-0.54	0.59	0.90	1.07
Health problems (t-1, Ref. No)						
Yes	0.96	0.02	-1.93	0.05	0.92	1.00
Number of children up to 8						
1	1.00	0.05	-0.08	0.94	0.90	1.10
2	1.02	0.05	0.42	0.67	0.92	1.14
3 or more	0.99	0.06	-0.18	0.86	0.87	1.12
Parental occupation (Ref. High skilled & professionals)						
Farmers	0.99	0.05	-0.18	0.86	0.90	1.09
Unskilled	1.13	0.02	6.01	0.00	1.08	1.17
Low skilled	1.13	0.02	6.96	0.00	1.09	1.17
Medium-skilled	1.04	0.01	3.57	0.00	1.02	1.06
Self-employed	1.05	0.02	2.40	0.02	1.01	1.09
Missing	1.01	0.04	0.29	0.77	0.94	1.08
Not unemployed	1.05	0.05	1.09	0.28	0.96	1.15
Region (Ref. Stockholm)						
East Middle	1.07	0.02	4.96	0.00	1.04	1.11
South	1.09	0.02	5.70	0.00	1.06	1.12
North Middle	1.13	0.02	5.65	0.00	1.08	1.17
Middle Norrland	1.15	0.03	5.20	0.00	1.09	1.22
Upper Norrland	1.21	0.03	8.77	0.00	1.16	1.27
Smaland & islands	1.21	0.02	9.66	0.00	1.16	1.25
West	1.12	0.01	8.51	0.00	1.09	1.15
Year (Ref. 2003)						
2004	2.86	0.15	19.71	0.00	2.58	3.18
2005	1.50	0.08	7.84	0.00	1.36	1.67
2006	1.14	0.06	2.54	0.01	1.03	1.27
2007	1.10	0.06	1.74	0.08	0.99	1.22
2008	1.18	0.07	2.88	0.00	1.05	1.32
2009	0.95	0.06	-0.89	0.38	0.84	1.07
2010	0.90	0.06	-1.70	0.09	0.79	1.02
2011	1.00	0.07	-0.01	0.99	0.88	1.14
2012	0.87	0.06	-2.05	0.04	0.75	0.99
2013	0.88	0.06	-1.79	0.07	0.76	1.01
2014	0.22	0.02	-19.60	0.00	0.19	0.25
2015	0.49	0.04	-8.80	0.00	0.42	0.57
2016	0.77	0.07	-3.10	0.00	0.65	0.91
Field of education (Ref. General)						
Teaching methods and teacher edu.	0.32	0.02	-18.22	0.00	0.29	0.37
Humanities and arts	0.81	0.05	-3.36	0.00	0.72	0.92
Social sciences, law, commerce, admin.	0.61	0.04	-8.23	0.00	0.54	0.69
Natural Sciences, maths & computing	0.67	0.04	-6.61	0.00	0.59	0.75

Engineering and manufacturing	0.73	0.04	-5.36	0.00	0.65	0.82
Agriculture and forestry	1.05	0.08	0.73	0.46	0.92	1.21
Health care, nursing, social care	0.37	0.02	-15.95	0.00	0.33	0.42
Services	0.37	0.02	-16.18	0.00	0.32	0.41
Unknown	0.94	0.12	-0.50	0.62	0.73	1.20
Education level (Ref. Upper secondary)						
Tertiary	718.26	31.32	150.81	0.00	659.42	782.35
Years from highest degree	1.06	0.00	28.87	0.00	1.06	1.07
Within-unit averages						
Marital status (Ref. Non-married)						
Married	0.89	0.02	-4.65	0.00	0.85	0.94
Divorced	1.01	0.08	0.18	0.86	0.87	1.19
Health problems (Ref. No)						
Yes	1.67	0.10	8.36	0.00	1.48	1.89
Number of children up to 8 (Ref. None)						
1	0.82	0.11	-1.55	0.12	0.63	1.06
2	0.76	0.10	-2.13	0.03	0.59	0.98
3 or more	0.75	0.11	-1.88	0.06	0.56	1.01
age	0.91	0.01	-10.33	0.00	0.90	0.93
Initial condition (t=0)						
Marital status (Ref. Non-married)						
Married	1.09	0.03	3.89	0.00	1.05	1.14
Divorced	0.93	0.10	-0.65	0.52	0.75	1.15
Health problems (Ref. No)						
Yes	1.08	0.03	2.56	0.01	1.02	1.15
Number of children up to 8 (Ref. None)						
1	1.18	0.13	1.43	0.15	0.94	1.47
2	1.17	0.13	1.46	0.14	0.95	1.45
3 or more	1.25	0.16	1.75	0.08	0.97	1.61
age	0.99	0.00	-2.55	0.01	0.98	1.00
State (Ref. Matched employment)						
Overqualified	1.83	0.02	51.58	0.00	1.79	1.87
Unemployed	1.45	0.02	23.20	0.00	1.41	1.50
Outcome=Unemployed (t)						
Overqualified (t-1)	5.42	0.11	79.76	0.00	5.20	5.65
Unemployed (t-1)	9.76	0.13	171.69	0.00	9.51	10.02
Origin (Ref. Sweden)						
Finland	1.50	0.05	11.31	0.00	1.40	1.61
Other Nordic	1.44	0.08	6.46	0.00	1.29	1.61
Other Western	1.47	0.09	6.30	0.00	1.30	1.66
Eastern Europe	1.63	0.10	7.71	0.00	1.44	1.84
Yugoslavia/Bosnia	1.73	0.10	9.52	0.00	1.54	1.93

Southern Europe	1.79	0.13	8.16	0.00	1.55	2.05
MENA	2.05	0.16	8.94	0.00	1.75	2.40
Turkey	2.75	0.21	13.50	0.00	2.37	3.18
Other	1.82	0.12	9.17	0.00	1.60	2.07
Previous state # Origin						
Overqualified # Finland	1.01	0.08	0.07	0.95	0.86	1.17
Overqualified #Other Nordic	0.97	0.13	-0.21	0.84	0.75	1.26
Overqualified #Other Western	1.05	0.12	0.43	0.67	0.84	1.31
Overqualified #Eastern Europe	1.03	0.13	0.25	0.80	0.81	1.32
Overqualified #Yugoslavia/Bosnia	1.07	0.15	0.46	0.64	0.81	1.42
Overqualified #Southern Europe	1.09	0.17	0.54	0.59	0.80	1.49
Overqualification # MENA	0.95	0.17	-0.31	0.76	0.67	1.34
Overqualified #Turkey	0.94	0.18	-0.34	0.73	0.65	1.36
Overqualified #Other	1.00	0.13	0.03	0.97	0.78	1.30
Unemployed # Finland	0.92	0.04	-1.94	0.05	0.85	1.00
Unemployed # Other Nordic	0.96	0.07	-0.61	0.54	0.83	1.10
Unemployed # Other Western	1.06	0.09	0.70	0.48	0.90	1.24
Unemployed # Eastern Europe	0.88	0.07	-1.56	0.12	0.74	1.03
Unemployed # Yugoslavia/Bosnia	0.98	0.08	-0.31	0.76	0.84	1.14
Unemployed # Southern Europe	0.79	0.08	-2.44	0.02	0.66	0.95
Unemployed # MENA	0.86	0.10	-1.39	0.17	0.69	1.07
Unemployed # Turkey	0.80	0.08	-2.18	0.03	0.65	0.98
Unemployed # Other	1.08	0.10	0.88	0.38	0.91	1.29
Mixed (Ref. No)						
Yes	0.82	0.03	-6.17	0.00	0.77	0.87
Age	0.74	0.03	-8.37	0.00	0.69	0.79
Age squared	1.01	0.00	10.33	0.00	1.00	1.01
standardized GPA	0.67	0.01	-49.98	0.00	0.66	0.68
Civil status (Ref. Non-married)						
Married	0.89	0.02	-5.38	0.00	0.85	0.93
Divorced	1.22	0.06	4.31	0.00	1.12	1.34
Health problems (t-1, Ref. No)						
Yes	1.64	0.03	30.07	0.00	1.59	1.70
Number of children up to 8						
1	0.90	0.04	-2.50	0.01	0.83	0.98
2	0.91	0.05	-1.86	0.06	0.83	1.01
3 or more	0.95	0.06	-0.84	0.40	0.84	1.07
Parental occupation (Ref. High skilled & professionals)						
Farmers	0.65	0.04	-6.43	0.00	0.57	0.74
Unskilled	1.17	0.03	7.21	0.00	1.12	1.22
Low skilled	1.06	0.02	2.76	0.01	1.02	1.11
Medium-skilled	1.00	0.02	0.01	0.99	0.97	1.04
Self-employed	0.95	0.02	-2.06	0.04	0.90	1.00

Missing	1.23	0.05	5.08	0.00	1.14	1.33
Not unemployed	1.38	0.06	7.23	0.00	1.26	1.50
Region (Ref. Stockholm)						
East Middle	1.62	0.03	24.34	0.00	1.56	1.69
South	1.84	0.04	29.86	0.00	1.77	1.92
North Middle	2.14	0.05	32.72	0.00	2.04	2.24
Middle Norrland	2.40	0.07	30.26	0.00	2.27	2.55
Upper Norrland	2.34	0.06	32.95	0.00	2.23	2.47
Smaland & islands	1.38	0.04	12.78	0.00	1.32	1.45
West	1.52	0.03	22.04	0.00	1.47	1.58
Year (Ref. 2003)						
2004	1.13	0.04	3.54	0.00	1.05	1.20
2005	0.74	0.03	-8.71	0.00	0.69	0.79
2006	0.51	0.02	-18.69	0.00	0.48	0.55
2007	0.24	0.01	-36.30	0.00	0.22	0.26
2008	0.21	0.01	-35.58	0.00	0.19	0.23
2009	0.67	0.03	-8.62	0.00	0.61	0.73
2010	0.34	0.02	-21.01	0.00	0.30	0.37
2011	0.19	0.01	-29.50	0.00	0.17	0.21
2012	0.23	0.01	-24.31	0.00	0.20	0.25
2013	0.22	0.01	-23.29	0.00	0.19	0.25
2014	0.12	0.01	-30.38	0.00	0.10	0.14
2015	0.11	0.01	-29.73	0.00	0.09	0.12
2016	0.09	0.01	-29.65	0.00	0.08	0.11
Field of education (Ref. General)						
Teaching methods and teacher edu.	0.66	0.03	-9.49	0.00	0.61	0.72
Humanities and arts	1.59	0.04	17.01	0.00	1.50	1.67
Social sciences, law, commerce, admin.	1.04	0.03	1.70	0.09	0.99	1.10
Natural Sciences, maths & computing	1.20	0.04	5.33	0.00	1.12	1.29
Engineering and manufacturing	0.76	0.02	-13.05	0.00	0.73	0.80
Agriculture and forestry	0.72	0.03	-7.73	0.00	0.67	0.79
Health care, nursing, social care	0.75	0.02	-9.37	0.00	0.70	0.80
Services	0.74	0.02	-11.23	0.00	0.70	0.78
Unknown	1.05	0.04	1.37	0.17	0.98	1.14
Education level (Ref. Upper secondary)						
Tertiary	1.25	0.03	9.60	0.00	1.19	1.30
Years from highest degree	1.04	0.00	11.18	0.00	1.03	1.05
Within-unit averages						
Marital status (Ref. Non-married)						
Married	0.55	0.02	-18.16	0.00	0.52	0.59
Divorced	1.36	0.11	3.81	0.00	1.16	1.59
Health problems (Ref. No)						
Yes	4.14	0.21	27.75	0.00	3.75	4.58
Number of children up to 8 (Ref. None)						

	Coef.	SE	z	p	Lower	Upper
1	0.67	0.06	-4.24	0.00	0.56	0.81
2	0.61	0.06	-5.11	0.00	0.50	0.74
3 or more	0.60	0.07	-4.12	0.00	0.47	0.76
age	0.81	0.01	-25.88	0.00	0.79	0.82
Initial condition (t=0)						
Marital status (Ref. Non-married)						
Married	1.29	0.05	7.06	0.00	1.20	1.38
Divorced	0.96	0.10	-0.35	0.73	0.78	1.18
Health problems (Ref. No)						
Yes	1.08	0.03	3.08	0.00	1.03	1.13
Number of children up to 8 (Ref. None)						
1	1.07	0.09	0.78	0.43	0.91	1.25
2	0.83	0.07	-2.11	0.04	0.71	0.99
3 or more	0.90	0.09	-1.00	0.32	0.73	1.11
age	1.24	0.01	37.41	0.00	1.23	1.25
State (Ref. Matched employment)						
Overqualified	1.18	0.03	7.17	0.00	1.13	1.24
Unemployed	3.63	0.06	77.12	0.00	3.51	3.75
Var(u2)	0.82	0.01			0.79	0.85
Var(u3)	1.57	0.02			1.53	1.62

N. groups	196,875
N. observations	1,943,015
AIC	1,092,712.8
BIC	1,095,084.0

Table A2. Effect of past labor market participation state (t-1) on current labor market participation state (t) by origin groups, for women. Correlated random-effects dynamic multinomial logit model with interaction between origin and past labor market participation status, RRR.

	RRR	Std. err.	z	P>|z|	95% CI Low	95% CI Upp
Outcome=Overqualified (t)						
Overqualified (t-1)	36.72	0.39	343.39	0.00	35.97	37.49
Unemployed (t-1)	8.10	0.15	115.73	0.00	7.81	8.39
Origin (Ref. Sweden)						
Finland	1.13	0.04	3.21	0.00	1.05	1.22
Other Nordic	1.11	0.07	1.66	0.10	0.98	1.25
Other Western	1.16	0.06	2.62	0.01	1.04	1.29
Eastern Europe	1.12	0.07	1.92	0.06	1.00	1.26
Yugoslavia/Bosnia	1.08	0.08	1.07	0.28	0.94	1.24
Southern Europe	1.03	0.08	0.43	0.67	0.89	1.20
MENA	1.16	0.10	1.78	0.07	0.99	1.36
Turkey	0.97	0.09	-0.33	0.74	0.81	1.17
Other	1.17	0.07	2.41	0.02	1.03	1.32
Previous state # Origin						
Overqualified # Finland	0.97	0.04	-0.70	0.49	0.90	1.05
Overqualified #Other Nordic	1.02	0.07	0.32	0.75	0.89	1.18
Overqualified #Other Western	0.82	0.05	-3.24	0.00	0.73	0.93
Overqualified #Eastern Europe	0.93	0.07	-1.07	0.29	0.81	1.06
Overqualified #Yugoslavia/Bosnia	1.03	0.09	0.39	0.69	0.87	1.23
Overqualified #Southern Europe	1.11	0.11	1.11	0.27	0.92	1.34
Overqualification # MENA	0.76	0.08	-2.67	0.01	0.62	0.93
Overqualified #Turkey	1.04	0.12	0.31	0.76	0.82	1.31
Overqualified #Other	0.80	0.06	-2.88	0.00	0.69	0.93
Unemployed # Finland	0.87	0.06	-1.89	0.06	0.75	1.01
Unemployed # Other Nordic	0.94	0.12	-0.48	0.63	0.73	1.21
Unemployed # Other Western	0.68	0.08	-3.30	0.00	0.54	0.85
Unemployed # Eastern Europe	0.89	0.11	-0.94	0.35	0.70	1.13
Unemployed # Yugoslavia/Bosnia	1.03	0.15	0.20	0.84	0.78	1.36
Unemployed # Southern Europe	0.76	0.13	-1.64	0.10	0.55	1.05
Unemployed # MENA	0.90	0.15	-0.63	0.53	0.64	1.25
Unemployed # Turkey	0.91	0.17	-0.52	0.60	0.63	1.30
Unemployed # Other	0.73	0.10	-2.29	0.02	0.56	0.96
Mixed (Ref. No)						
Yes	0.94	0.03	-1.75	0.08	0.89	1.01
Age	1.05	0.03	1.44	0.15	0.98	1.11
Age squared	1.00	0.00	2.63	0.01	1.00	1.00
standardized GPA	0.93	0.01	-10.90	0.00	0.91	0.94
Civil status (Ref. Non-married)						

Married	1.03	0.02	1.74	0.08	1.00	1.06
Divorced	1.01	0.04	0.34	0.73	0.94	1.09
Health problems (t-1, Ref. No)						
Yes	0.95	0.01	-4.23	0.00	0.93	0.97
Number of children up to 8						
1	1.06	0.04	1.69	0.09	0.99	1.14
2	1.09	0.04	2.09	0.04	1.00	1.17
3 or more	1.01	0.05	0.18	0.86	0.92	1.11
Parental occupation (Ref. High skilled & professionals)						
Farmers	1.02	0.05	0.50	0.62	0.93	1.12
Unskilled	1.11	0.02	5.00	0.00	1.06	1.15
Low skilled	1.06	0.02	3.02	0.00	1.02	1.09
Medium-skilled	1.02	0.01	1.24	0.22	0.99	1.04
Self-employed	1.06	0.02	2.93	0.00	1.02	1.10
Missing	1.07	0.04	1.87	0.06	1.00	1.16
Not unemployed	1.11	0.05	2.32	0.02	1.02	1.22
Region (Ref. Stockholm)						
East Middle	1.03	0.02	1.79	0.07	1.00	1.06
South	1.02	0.02	1.28	0.20	0.99	1.05
North Middle	0.92	0.02	-3.80	0.00	0.88	0.96
Middle Norrland	0.97	0.03	-0.97	0.33	0.92	1.03
Upper Norrland	1.12	0.03	4.72	0.00	1.07	1.17
Smaland & islands	1.02	0.02	0.93	0.36	0.98	1.06
West	1.00	0.01	-0.06	0.95	0.97	1.03
Year (Ref. 2003)						
2004	2.27	0.12	15.24	0.00	2.04	2.53
2005	1.13	0.06	2.29	0.02	1.02	1.25
2006	1.08	0.06	1.49	0.14	0.98	1.20
2007	1.02	0.06	0.44	0.66	0.92	1.14
2008	0.77	0.04	-4.50	0.00	0.69	0.86
2009	0.78	0.05	-4.00	0.00	0.69	0.88
2010	0.65	0.04	-6.74	0.00	0.57	0.73
2011	0.66	0.05	-6.02	0.00	0.58	0.76
2012	0.57	0.04	-7.68	0.00	0.50	0.66
2013	0.50	0.04	-9.07	0.00	0.43	0.58
2014	0.13	0.01	-25.74	0.00	0.11	0.15
2015	0.29	0.02	-14.58	0.00	0.25	0.34
2016	0.49	0.04	-7.92	0.00	0.42	0.59
Field of education (Ref. General)						
Teaching methods and teacher edu.	0.59	0.05	-5.96	0.00	0.50	0.70
Humanities and arts	1.10	0.10	1.07	0.28	0.92	1.31
Social sciences, law, commerce, admin.	0.92	0.08	-0.96	0.34	0.77	1.09
Natural Sciences, maths & computing	0.94	0.08	-0.66	0.51	0.79	1.12

Engineering and manufacturing	0.71	0.06	-3.85	0.00	0.60	0.85
Agriculture and forestry	1.18	0.11	1.74	0.08	0.98	1.42
Health care, nursing, social care	0.45	0.04	-9.05	0.00	0.38	0.54
Services	1.08	0.10	0.85	0.40	0.90	1.29
Unknown	1.63	0.23	3.49	0.00	1.24	2.13
Education level (Ref. Upper secondary)						
Tertiary	446.48	25.79	105.61	0.00	398.68	500.01
Years from highest degree	1.07	0.00	28.96	0.00	1.06	1.07
Within-unit averages						
Marital status (Ref. Non-married)						
Married	0.95	0.02	-1.94	0.05	0.91	1.00
Divorced	1.07	0.07	0.97	0.33	0.93	1.22
Health problems (Ref. No)						
Yes	1.06	0.04	1.74	0.08	0.99	1.14
Number of children up to 8 (Ref. None)						
1	0.81	0.07	-2.30	0.02	0.68	0.97
2	0.81	0.07	-2.42	0.02	0.68	0.96
3 or more	0.82	0.09	-1.81	0.07	0.66	1.02
age	0.92	0.01	-9.45	0.00	0.90	0.93
Initial condition (t=0)						
Marital status (Ref. Non-married)						
Married	1.10	0.02	4.46	0.00	1.05	1.14
Divorced	0.87	0.07	-1.88	0.06	0.75	1.01
Health problems (Ref. No)						
Yes	1.06	0.02	3.17	0.00	1.02	1.10
Number of children up to 8 (Ref. None)						
1	1.03	0.08	0.38	0.71	0.88	1.20
2	0.92	0.07	-1.18	0.24	0.79	1.06
3 or more	0.93	0.08	-0.78	0.43	0.78	1.11
age	1.01	0.01	2.82	0.01	1.00	1.03
State (Ref. Matched employment)						
Overqualified	3.23	0.04	85.68	0.00	3.14	3.31
Unemployed	1.94	0.03	36.62	0.00	1.87	2.01
Outcome=Unemployed (t)						
Overqualified (t-1)	6.18	0.12	93.11	0.00	5.94	6.42
Unemployed (t-1)	9.96	0.14	159.11	0.00	9.69	10.25
Origin (Ref. Sweden)						
Finland	1.39	0.05	8.96	0.00	1.29	1.49
Other Nordic	1.45	0.08	6.43	0.00	1.29	1.62
Other Western	1.37	0.09	4.98	0.00	1.21	1.55
Eastern Europe	1.66	0.11	7.85	0.00	1.46	1.89
Yugoslavia/Bosnia	1.46	0.09	6.18	0.00	1.29	1.64

Southern Europe	1.74	0.13	7.43	0.00	1.51	2.02
MENA	1.97	0.16	8.42	0.00	1.68	2.31
Turkey	2.36	0.16	12.98	0.00	2.07	2.68
Other	1.85	0.13	9.05	0.00	1.62	2.11
Previous state # Origin						
Overqualified # Finland	0.92	0.07	-1.18	0.24	0.80	1.06
Overqualified #Other Nordic	0.90	0.11	-0.89	0.38	0.70	1.14
Overqualified #Other Western	0.90	0.10	-0.92	0.36	0.72	1.13
Overqualified #Eastern Europe	0.85	0.11	-1.30	0.19	0.67	1.09
Overqualified #Yugoslavia/Bosnia	1.20	0.16	1.34	0.18	0.92	1.56
Overqualified #Southern Europe	0.78	0.13	-1.54	0.12	0.56	1.07
Overqualification # MENA	0.86	0.14	-0.90	0.37	0.62	1.19
Overqualified #Turkey	0.99	0.17	-0.06	0.95	0.71	1.39
Overqualified #Other	1.00	0.13	0.01	0.99	0.78	1.29
Unemployed # Finland	0.94	0.04	-1.33	0.18	0.86	1.03
Unemployed # Other Nordic	0.97	0.07	-0.47	0.64	0.83	1.12
Unemployed # Other Western	0.95	0.08	-0.61	0.54	0.80	1.12
Unemployed # Eastern Europe	1.12	0.10	1.24	0.22	0.94	1.34
Unemployed # Yugoslavia/Bosnia	1.09	0.09	1.03	0.31	0.92	1.29
Unemployed # Southern Europe	0.79	0.09	-2.19	0.03	0.64	0.98
Unemployed # MENA	0.97	0.11	-0.26	0.79	0.78	1.21
Unemployed # Turkey	1.02	0.09	0.25	0.80	0.86	1.22
Unemployed # Other	0.88	0.09	-1.31	0.19	0.73	1.07
Mixed (Ref. No)						
Yes	0.81	0.03	-6.21	0.00	0.76	0.87
Age	0.89	0.03	-2.93	0.00	0.83	0.96
Age squared	1.00	0.00	5.50	0.00	1.00	1.00
standardized GPA	0.72	0.01	-40.29	0.00	0.71	0.74
Civil status (Ref. Non-married)						
Married	0.99	0.02	-0.57	0.57	0.95	1.03
Divorced	1.13	0.05	3.01	0.00	1.04	1.23
Health problems (t-1, Ref. No)						
Yes	1.44	0.02	28.70	0.00	1.41	1.48
Number of children up to 8						
1	1.11	0.04	2.97	0.00	1.04	1.19
2	1.39	0.05	8.35	0.00	1.29	1.50
3 or more	1.67	0.08	10.36	0.00	1.52	1.85
Parental occupation (Ref. High skilled & professionals)						
Farmers	0.78	0.05	-4.03	0.00	0.69	0.88
Unskilled	1.12	0.03	5.04	0.00	1.07	1.17
Low skilled	1.06	0.02	2.75	0.01	1.02	1.11
Medium-skilled	0.99	0.02	-0.31	0.76	0.96	1.03
Self-employed	1.01	0.03	0.29	0.77	0.96	1.06

Missing	1.22	0.05	4.92	0.00	1.13	1.32
Not unemployed	1.38	0.06	7.50	0.00	1.27	1.51
Region (Ref. Stockholm)						
East Middle	1.48	0.03	20.02	0.00	1.43	1.54
South	1.69	0.03	25.96	0.00	1.62	1.75
North Middle	1.75	0.04	23.54	0.00	1.67	1.83
Middle Norrland	1.91	0.06	21.22	0.00	1.80	2.03
Upper Norrland	1.97	0.05	24.63	0.00	1.87	2.08
Smaland & islands	1.35	0.03	12.01	0.00	1.29	1.42
West	1.40	0.03	17.90	0.00	1.35	1.45
Year (Ref. 2003)						
2004	1.20	0.05	4.70	0.00	1.11	1.30
2005	0.99	0.04	-0.17	0.86	0.92	1.07
2006	0.63	0.03	-11.41	0.00	0.58	0.68
2007	0.35	0.02	-24.36	0.00	0.32	0.38
2008	0.28	0.01	-26.62	0.00	0.26	0.31
2009	0.54	0.03	-12.16	0.00	0.49	0.59
2010	0.38	0.02	-17.65	0.00	0.34	0.42
2011	0.25	0.02	-22.81	0.00	0.23	0.29
2012	0.24	0.02	-22.47	0.00	0.21	0.27
2013	0.20	0.01	-23.27	0.00	0.18	0.23
2014	0.12	0.01	-29.55	0.00	0.10	0.13
2015	0.11	0.01	-28.57	0.00	0.09	0.13
2016	0.09	0.01	-28.72	0.00	0.08	0.11
Field of education (Ref. General)						
Teaching methods and teacher edu.	0.61	0.02	-15.39	0.00	0.57	0.65
Humanities and arts	1.66	0.04	20.81	0.00	1.58	1.74
Social sciences, law, commerce, admin.	1.12	0.03	4.68	0.00	1.07	1.17
Natural Sciences, maths & computing	1.50	0.06	10.25	0.00	1.39	1.62
Engineering and manufacturing	1.03	0.03	0.86	0.39	0.97	1.09
Agriculture and forestry	1.21	0.04	5.13	0.00	1.12	1.30
Health care, nursing, social care	0.66	0.01	-18.44	0.00	0.63	0.69
Services	1.05	0.03	1.67	0.09	0.99	1.11
Unknown	1.22	0.06	4.17	0.00	1.11	1.34
Education level (Ref. Upper secondary)						
Tertiary	0.92	0.02	-3.86	0.00	0.88	0.96
Years from highest degree	1.04	0.00	13.80	0.00	1.04	1.05
Within-unit averages						
Marital status (Ref. Non-married)						
Married	0.69	0.02	-12.44	0.00	0.65	0.73
Divorced	1.19	0.08	2.61	0.01	1.04	1.35
Health problems (Ref. No)						
Yes	1.59	0.06	12.88	0.00	1.48	1.71
Number of children up to 8 (Ref. None)						

1	0.86	0.06	-2.15	0.03	0.75	0.99
2	0.58	0.04	-7.92	0.00	0.50	0.66
3 or more	0.48	0.04	-8.21	0.00	0.40	0.57
age	0.80	0.01	-27.27	0.00	0.79	0.81
Initial condition (t=0)						
Marital status (Ref. Non-married)						
Married	1.12	0.03	4.44	0.00	1.07	1.18
Divorced	1.06	0.07	0.86	0.39	0.93	1.21
Health problems (Ref. No)						
Yes	1.10	0.02	5.15	0.00	1.06	1.14
Number of children up to 8 (Ref. None)						
1	0.82	0.05	-3.29	0.00	0.72	0.92
2	0.69	0.04	-6.14	0.00	0.61	0.78
3 or more	0.81	0.06	-2.82	0.01	0.70	0.94
age	1.22	0.01	37.14	0.00	1.21	1.24
State (Ref. Matched employment)						
Overqualified	1.60	0.03	22.38	0.00	1.53	1.66
Unemployed	3.20	0.06	65.28	0.00	3.09	3.32
Var(u2)	1.23	0.02			1.19	1.27
Var(u3)	1.50	0.03			1.45	1.55
N. groups						194,438
N. observations						1,768,706
AIC						1061718.4
BIC						1064071.7

Table A3. Robustness checks. Correlated random-effects dynamic multinomial logit models for different definitions of unemployment, for men, RRR (standard errors in parentheses)

	60 days		120 days	
	Overqualified	Unemployed	Overqualified	Unemployed
Previous state (ref. matched)				
Overqualified (t-1)	29.148***	5.386***	28.990***	5.500***
	(0.270)	(0.099)	(0.266)	(0.119)
Unemployed (t-1)	5.905***	10.466***	5.693***	8.959***
	(0.094)	(0.116)	(0.108)	(0.123)
Origin (Ref. Sweden)				
Finland	1.056	1.436***	1.056	1.523***
	(0.035)	(0.044)	(0.036)	(0.054)
Other Nordic	1.049	1.420***	1.061	1.515***
	(0.051)	(0.068)	(0.052)	(0.083)
Other Western	1.006	1.437***	1.012	1.518***
	(0.044)	(0.072)	(0.045)	(0.088)
Eastern Europe	0.938	1.556***	0.940	1.591***
	(0.041)	(0.079)	(0.042)	(0.093)
Yugoslavia/Bosnia	1.074	1.654***	1.084	1.816***
	(0.054)	(0.077)	(0.055)	(0.097)
Southern Europe	1.015	1.597***	1.007	1.780***
	(0.057)	(0.093)	(0.057)	(0.119)
MENA	0.949	1.843***	0.941	2.198***
	(0.057)	(0.119)	(0.057)	(0.160)
Turkey	1.084	2.325***	1.093	2.897***
	(0.074)	(0.145)	(0.075)	(0.203)
Other	0.986	1.754***	1.000	1.919***
	(0.046)	(0.091)	(0.047)	(0.114)
Mixed (Ref. No)				
Yes	1.003	0.824***	0.999	0.805***
	(0.031)	(0.025)	(0.031)	(0.028)
Age	1.255***	0.732***	1.254***	0.749***
	(0.038)	(0.024)	(0.038)	(0.029)
Age squared	0.998***	1.006***	0.998***	1.006***
	(0.000)	(0.001)	(0.000)	(0.001)
standardized GPA	0.858***	0.691***	0.856***	0.651***
	(0.006)	(0.005)	(0.006)	(0.006)
Civil status (Ref. Non-married)				
Married	1.031*	0.890***	1.037*	0.887***

	(0.015)	(0.017)	(0.015)	(0.021)
Divorced	0.974	1.239***	0.976	1.286***
	(0.043)	(0.053)	(0.043)	(0.066)
Health problems (t-1, Ref. No)				
Yes	0.956*	1.644***	0.957*	1.697***
	(0.021)	(0.025)	(0.021)	(0.030)
Number of children up to 8				
1	0.996	0.892**	0.991	0.868**
	(0.051)	(0.036)	(0.051)	(0.040)
2	1.026	0.901*	1.005	0.898*
	(0.055)	(0.041)	(0.054)	(0.048)
3 or more	0.991	0.905	0.973	0.940
	(0.063)	(0.052)	(0.062)	(0.065)
Parental occupation (Ref. High skilled & professionals)				
Farmers	0.997	0.686***	0.995	0.593***
	(0.049)	(0.041)	(0.049)	(0.045)
Unskilled	1.125***	1.160***	1.133***	1.165***
	(0.022)	(0.024)	(0.023)	(0.028)
Low skilled	1.132***	1.068***	1.134***	1.051*
	(0.020)	(0.021)	(0.020)	(0.025)
Medium-skilled	1.042***	1.015	1.041***	0.989
	(0.012)	(0.017)	(0.012)	(0.019)
Self-employed	1.045*	0.960	1.049*	0.944*
	(0.020)	(0.023)	(0.020)	(0.026)
Missing	1.019	1.222***	1.017	1.257***
	(0.036)	(0.046)	(0.037)	(0.056)
Not unemployed	1.050	1.345***	1.047	1.427***
	(0.047)	(0.056)	(0.047)	(0.067)
Region (Ref. Stockholm)				
East Middle	1.075***	1.551***	1.076***	1.681***
	(0.016)	(0.028)	(0.016)	(0.037)
South	1.086***	1.746***	1.090***	1.919***
	(0.016)	(0.033)	(0.016)	(0.043)
North Middle	1.120***	2.061***	1.132***	2.185***
	(0.023)	(0.044)	(0.024)	(0.055)
Middle Norrland	1.149***	2.285***	1.163***	2.475***
	(0.031)	(0.061)	(0.032)	(0.078)
Upper Norrland	1.215***	2.206***	1.226***	2.433***
	(0.027)	(0.053)	(0.027)	(0.069)
Smaland & islands	1.209***	1.354***	1.211***	1.394***

	(0.023)	(0.031)	(0.024)	(0.039)
West	1.119***	1.469***	1.120***	1.553***
	(0.015)	(0.026)	(0.015)	(0.033)
Year (Ref. 2003)				
2004	2.830***	1.145***	2.834***	1.057
	(0.151)	(0.036)	(0.151)	(0.039)
2005	1.476***	0.768***	1.481***	0.706***
	(0.077)	(0.025)	(0.077)	(0.026)
2006	1.142*	0.541***	1.132*	0.458***
	(0.060)	(0.018)	(0.059)	(0.018)
2007	1.100	0.267***	1.074	0.216***
	(0.059)	(0.010)	(0.058)	(0.009)
2008	1.179**	0.239***	1.158**	0.180***
	(0.067)	(0.010)	(0.066)	(0.009)
2009	0.953	0.727***	0.929	0.594***
	(0.057)	(0.032)	(0.056)	(0.030)
2010	0.905	0.376***	0.886	0.281***
	(0.057)	(0.018)	(0.056)	(0.016)
2011	1.000	0.213***	0.985	0.160***
	(0.067)	(0.011)	(0.066)	(0.010)
2012	0.869*	0.259***	0.853*	0.189***
	(0.061)	(0.015)	(0.060)	(0.012)
2013	0.883	0.248***	0.864*	0.178***
	(0.065)	(0.015)	(0.064)	(0.013)
2014	0.224***	0.141***	0.211***	0.096***
	(0.017)	(0.009)	(0.016)	(0.007)
2015	0.494***	0.129***	0.480***	0.086***
	(0.040)	(0.009)	(0.039)	(0.007)
2016	0.772**	0.111***	0.759**	0.071***
	(0.066)	(0.008)	(0.065)	(0.006)
Field of education (Ref. General)				
Teaching methods and teacher edu.	0.327***	0.765***	0.323***	0.621***
	(0.020)	(0.029)	(0.020)	(0.030)
Humanities and arts	0.820**	1.578***	0.817***	1.580***
	(0.051)	(0.040)	(0.050)	(0.046)
Social sciences, law, commerce, admin.	0.617***	1.042	0.610***	1.027
	(0.037)	(0.024)	(0.036)	(0.028)
Natural Sciences, maths & computing	0.676***	1.181***	0.665***	1.184***
	(0.041)	(0.038)	(0.041)	(0.044)
Engineering and manufacturing	0.735***	0.770***	0.724***	0.751***

	(0.044)	(0.015)	(0.043)	(0.017)
Agriculture and forestry	1.052	0.768***	1.059	0.682***
	(0.075)	(0.029)	(0.076)	(0.031)
Health care, nursing, social care	0.374***	0.760***	0.367***	0.719***
	(0.023)	(0.022)	(0.023)	(0.024)
Services	0.373***	0.761***	0.364***	0.702***
	(0.023)	(0.019)	(0.023)	(0.021)
Unknown	0.955	1.028	0.956	1.035
	(0.121)	(0.037)	(0.120)	(0.043)
Education level (Ref. Upper secondary)				
Tertiary	734.384***	1.237***	697.100***	1.250***
	(32.308)	(0.026)	(30.072)	(0.031)
Years from highest degree	1.062***	1.042***	1.064***	1.033***
	(0.002)	(0.003)	(0.002)	(0.004)
Within-unit averages				
Marital status (Ref. Non-married)				
Married	0.905***	0.600***	0.891***	0.513***
	(0.022)	(0.018)	(0.021)	(0.019)
Divorced	1.012	1.342***	1.016	1.334**
	(0.082)	(0.100)	(0.083)	(0.117)
Health problems (Ref. No)				
Yes	1.664***	3.956***	1.709***	4.235***
	(0.102)	(0.190)	(0.106)	(0.233)
Number of children up to 8 (Ref. None)				
1	0.811	0.734***	0.832	0.654***
	(0.105)	(0.064)	(0.108)	(0.065)
2	0.756*	0.693***	0.797	0.570***
	(0.096)	(0.062)	(0.102)	(0.060)
3 or more	0.750	0.694**	0.780	0.516***
	(0.113)	(0.080)	(0.118)	(0.070)
age	0.916***	0.822***	0.916***	0.784***
	(0.008)	(0.006)	(0.008)	(0.007)
Initial condition (t=0)				
Marital status (Ref. Non-married)				
Married	1.090***	1.224***	1.100***	1.294***
	(0.025)	(0.040)	(0.026)	(0.051)
Divorced	0.938	0.978	0.930	0.983

	(0.102)	(0.096)	(0.102)	(0.111)
Health problems (Ref. No)				
Yes	1.083**	1.064**	1.077*	1.093***
	(0.033)	(0.024)	(0.033)	(0.028)
Number of children up to 8 (Ref. None)				
1	1.188	1.021	1.156	1.105
	(0.134)	(0.078)	(0.132)	(0.097)
2	1.183	0.793**	1.137	0.845
	(0.129)	(0.063)	(0.125)	(0.078)
3 or more	1.255	0.863	1.218	0.993
	(0.160)	(0.084)	(0.156)	(0.113)
age	0.986**	1.223***	0.986**	1.264***
	(0.005)	(0.007)	(0.005)	(0.008)
State (Ref. Matched employment)				
Overqualified	1.842***	1.205***	1.815***	1.116***
	(0.022)	(0.026)	(0.021)	(0.029)
Unemployed	1.427***	3.296***	1.466***	3.998***
	(0.021)	(0.049)	(0.026)	(0.076)
Var (u2)	2.253***		2.309***	
	(0.034)		(0.035)	
Var (u3)	4.219***		5.536***	
	(0.088)		(0.152)	
N groups	196875		196875	
N Observations	1943015		1943015	

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

Table A4. Robustness checks. Correlated random-effects dynamic multinomial logit models for different definitions of unemployment, for women, RRR (standard errors in parentheses)

	60 days		120 days	
	Overqualified	Unemployed	Overqualified	Unemployed
Previous state (ref. matched)				
Overqualified (t-1)	36.930***	6.161***	35.979***	6.210***
	(0.371)	(0.103)	(0.356)	(0.125)
Unemployed (t-1)	7.829***	9.852***	7.873***	10.013***
	(0.118)	(0.116)	(0.147)	(0.151)
Origin (Ref. Sweden)				
Finland	1.104**	1.317***	1.102**	1.414***
	(0.037)	(0.041)	(0.037)	(0.051)
Other Nordic	1.104	1.383***	1.115*	1.487***
	(0.057)	(0.066)	(0.058)	(0.083)
Other Western	1.023	1.252***	1.028	1.368***
	(0.049)	(0.063)	(0.049)	(0.081)
Eastern Europe	1.077	1.598***	1.080	1.785***
	(0.052)	(0.081)	(0.053)	(0.105)
Yugoslavia/Bosnia	1.096	1.459***	1.094	1.609***
	(0.059)	(0.070)	(0.059)	(0.088)
Southern Europe	1.074	1.471***	1.055	1.661***
	(0.065)	(0.089)	(0.064)	(0.117)
MENA	1.024	1.734***	1.024	1.990***
	(0.067)	(0.111)	(0.068)	(0.145)
Turkey	0.990	2.104***	0.990	2.596***
	(0.071)	(0.114)	(0.072)	(0.157)
Other	1.019	1.683***	1.024	1.885***
	(0.053)	(0.090)	(0.053)	(0.116)
Mixed (Ref. No)				
Yes	0.955	0.848***	0.955	0.788***
	(0.031)	(0.026)	(0.031)	(0.028)
Age	1.040	0.878***	1.041	0.902*
	(0.032)	(0.030)	(0.032)	(0.038)
Age squared	1.001**	1.003***	1.001**	1.003***
	(0.000)	(0.001)	(0.000)	(0.001)
standardized GPA	0.926***	0.745***	0.924***	0.710***
	(0.007)	(0.006)	(0.007)	(0.006)
Civil status (Ref. Non-married)				
Married	1.028	0.977	1.026	1.017

	(0.015)	(0.018)	(0.015)	(0.023)
Divorced	1.013	1.096*	1.012	1.160**
	(0.038)	(0.041)	(0.038)	(0.052)
Health problems (t-1, Ref. No)				
Yes	0.953***	1.411***	0.950***	1.474***
	(0.012)	(0.017)	(0.012)	(0.021)
Number of children up to 8				
1	1.058	1.087*	1.067	1.080*
	(0.039)	(0.035)	(0.039)	(0.042)
2	1.079	1.331***	1.083*	1.378***
	(0.042)	(0.048)	(0.042)	(0.059)
3 or more	1.005	1.595***	1.006	1.690***
	(0.049)	(0.072)	(0.049)	(0.092)
Parental occupation (Ref. High skilled & professionals)				
Farmers	1.034	0.809***	1.027	0.755***
	(0.048)	(0.045)	(0.048)	(0.052)
Unskilled	1.111***	1.083***	1.105***	1.137***
	(0.022)	(0.022)	(0.022)	(0.028)
Low skilled	1.056**	1.035	1.053**	1.065**
	(0.019)	(0.020)	(0.019)	(0.025)
Medium-skilled	1.017	0.983	1.015	1.001
	(0.013)	(0.016)	(0.013)	(0.020)
Self-employed	1.060**	1.014	1.063**	1.003
	(0.021)	(0.024)	(0.022)	(0.028)
Missing	1.067	1.206***	1.066	1.253***
	(0.041)	(0.045)	(0.041)	(0.054)
Not unemployed	1.110*	1.323***	1.109*	1.429***
	(0.051)	(0.053)	(0.051)	(0.066)
Region (Ref. Stockholm)				
East Middle	1.028	1.419***	1.031	1.551***
	(0.016)	(0.025)	(0.016)	(0.033)
South	1.017	1.588***	1.025	1.775***
	(0.016)	(0.029)	(0.016)	(0.039)
North Middle	0.915***	1.686***	0.925***	1.792***
	(0.020)	(0.037)	(0.020)	(0.047)
Middle Norrland	0.967	1.831***	0.980	1.946***
	(0.027)	(0.051)	(0.028)	(0.065)
Upper Norrland	1.106***	1.908***	1.130***	2.047***
	(0.026)	(0.048)	(0.027)	(0.061)
Smaland & islands	1.018	1.314***	1.022	1.383***

	(0.021)	(0.030)	(0.021)	(0.038)
West	0.998	1.351***	1.002	1.443***
	(0.014)	(0.023)	(0.014)	(0.030)
Year (Ref. 2003)				
2004	2.223***	1.238***	2.355***	1.176***
	(0.119)	(0.045)	(0.128)	(0.051)
2005	1.140*	0.993	1.154**	0.998
	(0.060)	(0.035)	(0.061)	(0.043)
2006	1.082	0.687***	1.100	0.603***
	(0.057)	(0.026)	(0.059)	(0.027)
2007	1.036	0.391***	1.045	0.327***
	(0.057)	(0.016)	(0.058)	(0.016)
2008	0.789***	0.323***	0.771***	0.259***
	(0.045)	(0.014)	(0.045)	(0.014)
2009	0.796***	0.583***	0.794***	0.514***
	(0.049)	(0.027)	(0.049)	(0.028)
2010	0.657***	0.425***	0.652***	0.353***
	(0.042)	(0.022)	(0.043)	(0.021)
2011	0.675***	0.295***	0.668***	0.235***
	(0.046)	(0.016)	(0.046)	(0.015)
2012	0.583***	0.279***	0.578***	0.219***
	(0.042)	(0.016)	(0.042)	(0.015)
2013	0.512***	0.244***	0.505***	0.185***
	(0.039)	(0.015)	(0.039)	(0.014)
2014	0.131***	0.141***	0.124***	0.104***
	(0.011)	(0.009)	(0.010)	(0.008)
2015	0.299***	0.140***	0.293***	0.097***
	(0.025)	(0.010)	(0.025)	(0.008)
2016	0.505***	0.122***	0.502***	0.083***
	(0.045)	(0.009)	(0.045)	(0.007)
Field of education (Ref. General)				
Teaching methods and teacher edu.	0.571***	0.688***	0.585***	0.582***
	(0.050)	(0.020)	(0.051)	(0.021)
Humanities and arts	1.069	1.661***	1.098	1.664***
	(0.094)	(0.037)	(0.097)	(0.043)
Social sciences, law, commerce, admin.	0.898	1.121***	0.908	1.119***
	(0.079)	(0.025)	(0.079)	(0.029)
Natural Sciences, maths & computing	0.916	1.470***	0.934	1.553***
	(0.082)	(0.053)	(0.084)	(0.066)
Engineering and manufacturing	0.693***	1.004	0.705***	1.070*

	(0.061)	(0.028)	(0.062)	(0.035)
Agriculture and forestry	1.132	1.205***	1.181	1.215***
	(0.108)	(0.041)	(0.113)	(0.048)
Health care, nursing, social care	0.439***	0.667***	0.443***	0.659***
	(0.039)	(0.014)	(0.039)	(0.016)
Services	1.052	1.086**	1.079	1.023
	(0.094)	(0.028)	(0.097)	(0.031)
Unknown	1.566**	1.199***	1.644***	1.211***
	(0.217)	(0.053)	(0.228)	(0.062)
Education level (Ref. Upper secondary)				
Tertiary	457.079***	0.962*	431.300***	0.883***
	(26.517)	(0.019)	(24.690)	(0.021)
Years from highest degree	1.066***	1.047***	1.069***	1.045***
	(0.002)	(0.003)	(0.002)	(0.004)
Within-unit averages				
Marital status (Ref. Non-married)				
Married	0.956	0.713***	0.953*	0.648***
	(0.023)	(0.019)	(0.023)	(0.022)
Divorced	1.078	1.237***	1.083	1.195*
	(0.073)	(0.075)	(0.074)	(0.085)
Health problems (Ref. No)				
Yes	1.047	1.564***	1.071	1.616***
	(0.037)	(0.052)	(0.038)	(0.063)
Number of children up to 8 (Ref. None)				
1	0.826*	0.909	0.805*	0.878
	(0.075)	(0.059)	(0.073)	(0.067)
2	0.822*	0.620***	0.811*	0.566***
	(0.072)	(0.040)	(0.072)	(0.043)
3 or more	0.832	0.497***	0.824	0.482***
	(0.092)	(0.041)	(0.092)	(0.047)
age	0.915***	0.824***	0.920***	0.783***
	(0.008)	(0.006)	(0.008)	(0.007)
Initial condition (t=0)				
Marital status (Ref. Non-married)				
Married	1.095***	1.109***	1.099***	1.140***
	(0.023)	(0.026)	(0.023)	(0.032)
Divorced	0.879	1.047	0.875	1.042
	(0.066)	(0.066)	(0.066)	(0.075)

Health problems (Ref. No)

Yes	1.064**	1.099***	1.062**	1.115***
	(0.020)	(0.018)	(0.021)	(0.022)
Number of children up to 8 (Ref. None)				
1	1.024	0.807***	1.030	0.808**
	(0.079)	(0.046)	(0.080)	(0.053)
2	0.913	0.700***	0.907	0.687***
	(0.067)	(0.039)	(0.067)	(0.045)
3 or more	0.928	0.819**	0.920	0.800**
	(0.083)	(0.056)	(0.083)	(0.064)
age	1.016**	1.206***	1.013*	1.237***
	(0.005)	(0.006)	(0.005)	(0.007)
State (Ref. Matched employment)				
Overqualified	3.246***	1.580***	3.220***	1.590***
	(0.045)	(0.030)	(0.044)	(0.036)
Unemployed	1.931***	2.970***	1.947***	3.473***
	(0.031)	(0.046)	(0.040)	(0.072)
Var (u2)	3.384***		3.507***	
	(0.066)		(0.070)	
Var (u3)	4.022***		4.879***	
	(0.087)		(0.140)	
N groups	196875		196875	
N Observations	1943015		1943015	

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

Table A5. Definition of origin groups according to parental country of origin

	Finland	Other Nordic	Western	E. European	Y/B	S. European	MENA	Turkey	Non-Western
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			
Somalia and Djibouti							X		
Eritrea							X		
Ethiopia							X		
North Africa (except Egypt)							X		
Egypt							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
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
Other	X

Western, Other Western; E. Europe, Eastern European; Y/B, Former Yugoslavia and Bosnia; S. Europe, Southern European; Non-Western, Other Non-Western

Stockholm
University

Demography Unit