Title: The Effects of Gender and Origin on Overqualification Risk

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Abstract

This study examines the extent and determinants of overqualification in Sweden, with emphasis on the effects of gender and national origin. Based on longitudinal register data for individuals employed in 2003 and 2007, we test the role of country-specific human capital in explaining overqualification. Using binary logistic regression techniques we find that individuals born outside of Sweden have much higher risk of overqualification, especially those from Eastern Europe, Africa, Asia, and Latin America, controlling for human capital differences. We find a higher risk of overqualification for women within both native and foreign born groups, but also higher probability of improving job match over the period 2003 to 2007. However, there is no increased probability of improving job match among non-Western immigrants, indicating that their disadvantaged position in the Swedish labor market improves little over time.

Keywords

Overqualification; immigrant integration; human capital; gender; Sweden.

1 Introduction

Labor market opportunities are vital to the integration of immigrants into host societies. Two key aspects of labor market success are whether or not one finds a job, and how well matched the job is to one's skills. Whereas numerous studies have explored foreign-native unemployment gaps, few have examined the extent of overqualification among immigrants or the role of origin in work-education mismatches. Yet overqualification—possession of more education than one's job requires—has social and economic consequences at the individual, societal and international level.[1] It represents a loss of education investments, both for the individual and for taxpayers. According to human capital theory a worker's potential for economic productivity is increased by education and training; however, when the employee is overqualified his or her skills are not used efficiently. Moreover, overqualification decreases employees' satisfaction and commitment, leading to more frequent job searches (a cost to the employee) and higher turnover (a cost to the employer) (Vaisey, 2006; Wald, 2005). When having a job incommensurate with one's education is a communitywide phenomenon it may discourage youth from studies and lead to social alienation. Here we investigate the extent of overqualification in the Swedish labor market, particularly among foreign-born workers.

Given their disadvantaged labor market position in many developed countries, there is reason to expect that immigrants are disproportionately affected by overqualification. Many studies have found foreign--native gaps in earnings and employment (Borjas, 1995; Chiswick, 1978; Constant and Massey, 2005).[2] Since the 1970s, employment rates among immigrants in Sweden have declined and earnings have declined relative to the native-born, resulting in among the largest foreign-native earnings and employment gaps in the European Union (Adsera and Chiswick, 2007; Bevelander, 2000; Scott, 1999). Researchers have found that significant proportions of overqualified workers in highly developed countries, but little attention has been paid to this aspect of foreign-native labor market discrepancies.

Overqualification appears to be a long-term condition for individuals and its rate appears to be increasing in the U.S. and the U.K. (Brynin, 2002; Vaisey, 2006). Knowledge of its extent and determinants are therefore vital for policymakers and researchers on labor market integration. We use empirical evidence to test human capital theory and country-specific human capital theory, test the predictions of social capital and discrimination theories, and consider several hypotheses on the job mismatch process.

The purpose of this study is to shed light on overqualification in the Swedish labor market as it affects foreign- and native-born women and men. Section 2 provides a brief overview of theories relating to the job matching process, including considerations particular to migrants. Section 3 begins with a description of our dataset and sampling procedure, followed by an explanation of how the dependent variables are operationalized and a description of the explanatory variables and the models used to test their effects. Section 4 presents the results of four overqualification regressions and two job match improvement regressions. We conclude in Section 5 with remarks about the evidence for certain overqualification hypotheses and discuss policy implications and remaining questions about overqualification and labor market integration.

2 Theoretical background

The concept of worker overqualification has its foundation in the human capital theory proposition that education and training increase individuals' productivity (Becker, 1975). For this to be true, individuals must hold jobs in which their skills are utilized. Yet despite employer and employee costs, overqualification is common in developed countries such as Canada (Brisbois, 2003), the United States (Vaisey, 2006), the United Kingdom (Green and McIntosh, 2007), Germany (Büchel and Battu, 2003), Norway (Brynin and Longhi, 2009) and Sweden (Duvander, 2001). Some researchers interpret these findings as evidence that the rise in educational attainment exceeds the demand for highly educated workers in the labor market (McGuiness, 2006). However, this argument is undermined by evidence from

the United States that the college graduate premium has risen since 1980, indicating that demand for highly educated workers remains high (Goldin and Katz, 2008). Here we present four processes that have been proposed as causes of formal overqualification, followed by a discussion of the theoretical considerations relevant to gender differences and to labor market outcomes for migrants.

Labor economists have suggested several processes that may lead to overqualification. Among them are career mobility theory, search and match theory, screening theory and assignment theory. In the two former theories labor market entrants accept positions initially despite being overqualified. In career mobility theory this decision is based on employees' expectations of future advancement (Sicherman, 1991), while search and match theory says that imperfect information flow and job search costs lead to initial mismatches which are later corrected as the employee demonstrates competence (Chiswick and Miller, 2009; Wald, 2005). Search and match theory may be more applicable than the career mobility hypothesis for immigrants, since foreign-born labor market entrants face higher unemployment risks and may engage in a tradeoff between a poor job match or no employment at all, making assumptions about future advancement less important (Fernández and Ortega, 2008). The screening hypothesis also suggests that education merely signals underlying ability and that workers are sorted based on their skills, so instances of formal overqualification are expected to increase with time as employers make hiring or promotion decisions based on actual ability (Chiswick and Miller, 2009). Assignment theory, too, attributes overqualification to skill heterogeneity among those with similar credentials, and thus claims that formal overqualification does not necessarily represent skill underutilization (Green and McIntosh, 2007). For immigrants, career mobility and search and match theories would predict high initial rates of overqualification, decreasing with time in the workforce; the screening hypothesis predicts the opposite; and assignment theory predicts little change in formal overqualification rates over time. However, the two final hypotheses do not address issues specific to migration, nor an explanation for differential rates of

overqualification among migrants and non-migrants.

As mentioned earlier, human capital theory posits that higher levels of education lead to higher income and more prestigious occupations (Becker, 1975). A certain level of formal education is not necessarily sufficient for labor market success, however. It has been suggested that certain skills, known collectively as country-specific human capital, are place-specific and not internationally transferable among labor markets (Chiswick and Miller, 2009; Galarneau and Morissette, 2004). This may be one reason that overqualification rates are higher among foreign- than native-born workers in 19 of 21 OECD countries (Dumont, 2008). It has been suggested that the economic structural change from industry to services has been disadvantageous for recent immigrant cohorts because skills required for service sector jobs, especially communication skills, are less internationally transferable than skills required for manufacturing work (Bevelander, 2000). Host country language skills have been linked to higher earnings for many immigrant groups (Battu and Sloane, 2002; Chiswick and Miller, 1995; Rooth and Saarela, 2007). On the other hand, fluency does not always facilitate entry into the labor market: Duvander (2001) found no relationship between very good Swedish skills and unemployment rates, although language skills were associated with lower overqualification rates. English fluency, on the other hand, has been found to increase the likelihood of overqualification for immigrants to the U.S. (Chiswick and Miller, 2009) and the U.K. (Battu and Sloane, 2002). The effects of language skills on labor market success may further differ by gender. Occupational gender segregation, which is high in Sweden (Blackburn et al., 2000), may lead to different demand for and returns to language skills, as several studies have found (Adsera and Chiswick, 2007; Duvander, 2001; Saarela and Rooth, 2006). In general, language skills are expected to improve with migrants' duration of residence, so overqualification rates are expected to decrease as linguistic ability allows individuals to apply their knowledge in the host country's labor market context.

The international transferability of education itself has been questioned by some researchers (Chiswick

and Miller, 2009; Mattoo et al., 2005). A study of foreign-born men in the United States showed that returns on their university educations were related to tertiary education expenditures in the origin countries, suggesting that the earnings value of a degree is related to the quality or perceived quality of the institution where it was earned (Mattoo et al., 2005). The content of the study program may also cause imperfect transferability, as it may differ from country to country in certain fields. Even for non--immigrants having a foreign degree increases unemployment and overqualification risks, though the effect of birth origin is greater (Storen and Wiers-Jenssen, 2010). While possessing a Swedish degree does not reduce unemployment risk for immigrants to Sweden, it improves chances of correct job matching (Duvander, 2001). Though the returns on foreign education are usually lower shortly after the migration event (Chiswick, 1978; Constant and Massey, 2005) this may be mitigated by occupational mobility as language and other country-specific skills are developed (Adsera and Chiswick, 2007).

A third type of country-specific human capital known as cultural or social competence is sometimes named as a factor contributing to foreign-native gaps in labor market outcomes. While real discrepancies in social norms and behaviors may exist between immigrants and non-immigrants, the use of 'cultural difference' as an explanation for labor market gaps has met with criticism because it implies that immigrants are a homogenous group and legitimizes the otherness that such discourse produces (de los Reyes, 2000). Discussing cultural difference is especially problematic in quantitative studies, because it is so difficult to measure and because such a wide range of class, ethnic, and religious backgrounds is represented among immigrants. This kind of oversimplification may even contribute to the formation of stereotypes in public imagination, especially when it occurs in authoritative texts such as social science journal articles (Rydgren, 2004a). As Rydgren (2004a) points out, social categories are necessary to deal with the complex information encountered in the world but they fail to represent individual-level heterogeneity among human beings. In the labor market, stereotypes linked to negative emotions may

lead recruiters or employers to discriminate against foreign-born job applicants. Several theories of discrimination aim to describe the process by which this may occur.

Two types of discrimination—taste and statistical discrimination—may affect hiring practices that shape immigrants' labor market prospects. Taste discrimination theory suggests that employers are willing to pay more for the labor of members of a preferred group more because they desire social or psychological distance from other groups (Becker, 1971). Customer or employee preferences may also lead the employer to discriminate in hiring practices, if this is expected to increase profits (ibid.). Statistical discrimination describes the employer's choice not to hire members of a certain group based on a belief that the group is on average less productive than other groups (Phelps, 1972). For example, job applicants with foreign sounding names may not be hired because of recruiters' greater uncertainty about language fluency. It can be difficult to distinguish between taste and statistical discrimination in employers' behavior even when there is evidence of discrimination (Carlsson and Rooth, 2007; Giuliano et al. 2009; Hersch, 2008). In an analysis of the concept of multiculturalism in Swedish research, Paulina de los Reyes notes that, "…discrimination is always last in the list of possible explanations and then as a probable line of reasoning rather than as a statement about the actual relationship" (2000, p. 11).[3] In part this is because it is difficult to test employers' attitudes directly. This may be especially true when some attitudes may be politically unacceptable, which they are in Sweden given antidiscrimination laws (Swedish Code of Statutes, 1999; replaced by Swedish Code of Statutes, 2008). Even if attitudes were to be reported accurately, statistical discrimination may cause unconscious bias in hiring. Because of these issues, the existence of discrimination is often found *a posteriori*—based on observations of real labor market patterns.

Other forms of discrimination do not involve the hiring practices of employers. Institutional discrimination can occur when rules and practices affect one group more than another, such as

implementation of formal language requirements beyond what is needed for a job in practice (Rydgren, 2004b). Institutional discrimination is especially likely to affect immigrants' chances of getting qualified jobs, since their formal qualifications are unlikely to be exactly equivalent to Swedish educational requirements. Spillover discrimination occurs when the distribution of skills differs among groups because of environmental differences such as schools, as when children of low-income parents attend worse performing schools, and end up with lower average skills (Rydgren, 2004b). In Sweden's major cities, attending school in an ethnically segregated neighborhood is associated with lower educational attainment (Nordin, 2007; Szulkin and Jonsson, 2007). This type of discrimination is mainly relevant to the children of immigrants, but adult immigrants may also be affected by residential segregation because it limits social contact with native-born individuals who might provide contacts or information about job opportunities.

Social capital theory says that the value found in relationships between individuals where acquaintance or mutual recognition gives the possessor access to resources, is a factor in individuals' academic and labor market success (Bourdieu, 1985; Coleman, 1988; Portes, 1998). According to the 'weak ties' theory of social capital, one's acquaintances comprise a low-density network where emotional support is not expected but through which information flows (Granovetter, 1983; Loury, 1998). Moving often during childhood decreases opportunities to build community social capital (Hagan et al. 1996), and the loss of community social capital could be especially pronounced for international migrants. One reaction to this loss might be to seek out co-nationals in the host country by congregating in ethnic enclaves, though many factors contribute to enclave formation. Living in a migrant-dense area improves labor market outcomes for less skilled immigrants to Sweden, particularly if the ethnic group overall has relatively high incomes (Edin et al. 2003). However, Canadian studies have found that living in an ethnic enclave has a negative impact on immigrants' earnings growth (Warman, 2007) and have found no consistent

association between concentration of co-ethnic coworkers and earnings (Hou, 2009). While so-called ethnic labor markets may provide employment for recently arrived or low skilled immigrants, access to jobs with potential for advancement may be limited and the development of host country language skills hindered.

The role of local social networks may be a factor explaining why duration of residence matters for immigrants' labor market outcomes, as demonstrated in many studies (Adsera and Chiswick, 2007; Chiswick, 1978; Constant and Massey, 2005; Duvander, 2001). A U.S. study showed that established ethnic or national origin communities improved labor market outcomes for even recently arrived members (Hatton and Leigh, 2009). The authors interpret this as evidence of the two-way process of immigrant integration: the longer the community has existed, the more the majority population comes to accept its members (ibid.). This leads to more opportunities for majority and minority groups to come into contact and for the majority to recognize heterogeneity within the minority group, thereby dispelling stereotypes (Rydgren, 2004a). As this knowledge spreads to labor market gatekeepers, statistical discrimination and taste discrimination are expected to decline, leading to greater access to better paid, higher status jobs for members of the minority group.

In this section we have outlined the main theories relating to overqualification and immigrant labor market integration. The search and match hypothesis, which suggests that overqualification is high upon labor market entry and then declines with as employees display their actual competence, is most applicable to immigrant labor market entry. Country-specific human capital theory is also relevant to an understanding of labor market integration: as migrants acquire host country skills such as language and host country education or training, their chances of finding appropriate job matches will increase (i.e. overqualification rates should decline). Discrimination on the part of labor market gatekeepers, however, could prevent foreign-born individuals from finding appropriately skilled jobs. This may be especially

pertinent among groups without well-established national or ethnic communities in Sweden, who lack social capital among both coethnics and natives. For women, differences in overqualification rates may be the result of demand for different skills due to gender segregation by labor market sector.

2.1 Research questions and hypotheses

What are the effects of gender and immigrant status on an individual's risk of overqualification in the Swedish labor market? Our hypotheses, based on the theories described above, are as follows.

Hypothesis 1. Foreign-born workers initially have higher risk of overqualification than Sweden-born individuals with the same level of education because of a lack of country-specific human capital.

Hypothesis 2. Duration of residence in Sweden reduces immigrants' overqualification risk, as they develop country-specific skills.

Hypothesis 3. Obtaining a Swedish university degree lowers immigrants' overqualification risk because it implies good language skills, social contact with Swedes, training relevant to the Swedish labor market, and qualifications that are easy for potential employers to evaluate.

Hypothesis 4. Immigrants from Nordic and Western/OECD countries have lower overqualification risk than immigrants from Eastern Europe, Africa, Asia, and Latin America because they are subject to less discrimination.

Hypothesis 5. Sweden-born women have greater risk of overqualification than Sweden-born men, but lower risk than foreign-born women and men, consistent with previous studies.

Hypothesis 6. Foreign-born individuals have higher probability of improving job match than Sweden--born individuals because their country-specific skills are developing.

3 Analyzing overqualification

This section presents the methodology used to analyze overqualification in the Swedish labor market, beginning with a description of the data source and samples used. Following is an explanation of the empirical models and operationalization of the dependent variables. Finally, the explanatory variables are described and descriptive statistics for the data samples are presented.

3.1 Data and sampling

The data used in this study were retrieved from Umeå University's ASTRID database, a longitudinal micro-level dataset constructed from Statistics Sweden's national register data. The data sample consists of individuals born between 1943 and 1980 who resided in Sweden continuously from 1998 to 2007 and were employed in 2003 and 2007. Thus they are between 18 and 64, a widely recognized retirement age, during the study period. These restrictions exclude those who lived in Sweden temporarily and provide a five year period to gain labor market experience. This period, when migrants presumably learn Swedish and may have educational qualifications evaluated by the Swedish National Agency for Higher Education, is the most difficult in terms of access to the labor market. Thus, the sample selects individuals who have had time to search for work in the Swedish labor market.

In order to be overqualified, one must have completed some upper secondary education and one's occupation must have an educational requirement. Thus we excluded those with only primary school education or who were self-employed, worked as managers or government officials, or were members of the armed forces. Immigrants who arrived as children were excluded to avoid the complicating effects of childhoods spent in multiple countries. This study focuses on adult migrants, and does not attempt to discern labor market outcomes for child migrants or for children of migrants. Individuals are categorized into five broad country groups from the ASTRID database: Sweden; Nordic countries; Western Europe/OECD countries; Eastern Europe, including the former USSR; Africa, Asia, and Latin America.[4] Despite the great heterogeneity of background and experience represented by these groups, it was

necessary to aggregate country-level populations for the purposes of this macro-level study.

3.2 Empirical model and dependent variables

Three approaches to measurement found in the overqualification literature are employee self-assessment, official categorization of occupational skill requirements, and use of standard deviation cutoffs from mean years of education among workers in each occupation (Chiswick and Miller, 2009). We employ the official categorization approach using standards from Statistics Sweden (SCB). Occupational data was coded according to the Swedish Standard Classification of Occupations (Standard för svensk yrkesklassificering, SSYK) and educational data according to the Swedish Standard Classification of Education (Svensk utbildningsnomenklatur, SUN). The SSYK classification was converted into four expected skill levels for occupations according to the 1976 International Standard Classification of Education (ISCED) (Table 1). Evaluation of individuals' actual education level relied on the levels module in SUN. These levels, along with theoretical program length, were converted into years of education, from 7 (primary education) to 20 years (doctoral degree).

[Table 1 here]

By comparing the ISCED code with years of education, one can assess whether individuals are overqualified or correctly matched. Underqualification is treated as equivalent to a correct match in this study. The educational requirement for jobs of ISCED skill level 1, for example, is less than 10 years, so those who have attended high school are overqualified for 'elementary occupations.' Note that the term overqualification does not imply a value judgment of individuals' education and occupation; rather it designates the possession of more formal education than is necessary to complete the tasks required for one's job.

The dependent variables used in this analysis are overqualification and job match improvement. The latter

is a dummy variable indicating whether an overqualified individual in 2003 has found a job that matches or comes closer to matching his or her educational qualifications by 2007. To analyze determinants of overqualification and job match improvement we use binary logistic regression specified by the equations:

$$(1) \qquad p_i = 1/(1+e^{-z_i})$$

$$(2) \qquad z_i = \log(p_i/[1-p_i]) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots \beta_k X_k$$

In Equation (1), p_i is the probability of overqualification (or match improvement), and z_i is the log odds of being overqualified or improving the job match. In equation (2), β_0 is the intercept and the β_k terms are the logistic regression coefficients for the independent variables. The first two regressions are on overqualification in 2003 and 2007 for all employed individuals to test origin and gender effects. The following two regressions are on overqualification in 2003 and 2007 for the foreign-born only and include migrant-specific independent variables. In the final two regressions, the dependent variable is match improvement, first using the entire dataset, and then only foreign-born individuals.

3.3 Explanatory variables and descriptive statistics

The independent variables used in this analysis are country group of birth, gender, parenthood, years employed since 1998, years of education, and several migrant-specific variables described below. Control variables include birth year, civil status (single, married/registered partner, divorced or widowed), and municipality type (large metropolitan area, medium sized city and small town, after classification by the Swedish Association of Local Authorities [2005]). For civil status, single is the reference group, and for municipality type the reference group is large metropolitan areas. Migrant-specific variables include citizenship status, duration of residence in Sweden, and a dummy for having a Swedish university degree are also included. However, limitations in the data mean that only those who earned Swedish degrees since 1985 are included. We include citizenship as it may indicate strong ties to the host country and

intentions to stay permanently. Having earned a degree at a Swedish university indicates considerable contact with native-born Swedes, exposing the individual to Swedish norms, and gives knowledge of labor market conditions, so it is expected to decrease the probability of overqualification. Duration of residence in Sweden represents a proxy for language skills and country-specific knowledge, so it too is expected to decrease probability of overqualification, although this effect may be diminished by residential or social segregation.

We ran simple linear regressions on the dependent overqualification variable to test for multicollinearity in independent variables. Although age and age squared had high variance inflation factors, the Eigenvalue of the dimension with high age variance proportions was very low, so overall variance contributed to the model by this dimension is quite small. The gender variable also had a fairly high VIF, but no dimension showed variance proportions greater than 0.50 for two or more variables in combination. Therefore we concluded that multicollinearity is not a problem for the models overall, and did not remove any variables.

The complete data sample includes over 2.3 million individuals, of whom 17.1% were overqualified in 2003 (Table 2). Among the foreign-born (N = 140,978), 30.6% were overqualified in 2003. Women and immigrants, especially from Eastern Europe and Africa, Asia, and Latin America, are overrepresented among all overqualified workers, while parents are underrepresented. The overqualified are far more likely to have a university degree and have on average more 1.5 years of education than those who were not overqualified. Among those who improved their job match between 2003 and 2007, women and the Sweden-born were overrepresented while parents were underrepresented. On average, overqualified workers were younger than correctly matched workers, and those who improved their job match were younger than those who did not. Among the foreign born, those who were overqualified in 2003 had been in Sweden for less time on average than those who were not (14.2 versus 17.9 years), while those

who improved their job match by 2007 had been in Sweden an average of 13.0 years in 2003.

[Table 2 here]

4 Results

In this section we present the results of six regression models: four on overqualification and two on job match improvement. Two regressions are on overqualification in the entire sample (section 4.1), two are on overqualification among the foreign-born population (section 4.2), and two are on job match improvement (section 4.3).

4.1 Overqualification in the entire population

Table 3 shows the results of a binary logistic regression predicting overqualification in 2003 and 2007 using all human capital and control variables with the exception of migrant-specific variables. The Chi Square test is significant, indicating that the 2003 entire population model is significantly different from an intercept-only model and at least one independent variable is significantly related to the response variable (log odds of overqualification). The Nagelkerke pseudo-R^2 is 0.204. The 2007 entire population model also shows significant overall performance and the Nagelkerke pseudo-R^2 value is 0.201. The overall percentage of overqualified individuals is 17.1% in 2003 and 16.9% in 2007, and the Δp values, given in percentage points, indicate change in probability associated with independent variables.

[Table 3 here]

Standard human capital indicators, education and work experience, contribute strongly to overqualification risk. Each year of education increases one's probability of being overqualified by about 5 percentage points, whereas employment years have a negative effect on probability of being overqualified. The employment effect has a magnitude of 3.56 percentage points in 2003 and 3.10 percentage points in 2007.

Significant effects are also associated with gender. That gender affects the probability of being overqualified is an expected result: it has been reported as early as 1978 (Frank) that women are more often overqualified than men. Males have about 4 percentage points lower probability of overqualification in 2003 and 2.5 percentage points lower in 2007 (all results are significant at the $p<0.001$ level unless otherwise mentioned). The decrease in gender effect after four years may be related to a greater age disadvantage for young women. This decrease is reflected in the higher chances of improving the job match for females discussed below. Another aspect of gender influences emerges in parenthood effects, which are decomposed into motherhood (Female*Kids) and a fatherhood (Male*Kids) effects. Both mothers and fathers have lower risk of overqualification than nonparents by 23 percentage points. Parenthood may increase individuals' motivation to find jobs that maximize the use of their educations, or those individuals who become parents may also display other behaviors that protect against job mismatch. Another possibility is that employers treat parents preferentially in terms of hiring or opportunities for advancement.

Finally, foreign birth is consistently associated with increased probability of overqualification, although the magnitude of the effect varies by country group. The smallest origin effect is for those born in Nordic countries: their probability of overqualification is about 6 percentage points higher than for Swedes in 2003 and 2007. Similarly, those born in Western Europe/OECD countries have increased probability of overqualification by about 7 percentage points. The risk of overqualification is considerably higher among Eastern Europeans (20 percentage points) and those from Africa, Asia, and Latin America (23 percentage points)—more than doubling the probability of overqualification, all else equal. The origin effect decreases slightly between 2003 and 2007 for all country groups, but the difference is quite small after four additional years of residence. As of 2007, the average duration of residence is 21.7 years and the minimum is nine years.

4.2 Overqualification in foreign-born population

The models on overqualification among the foreign-born test the effects of various country-specific human capital variables. We repeated the binary logistic regression including the variables years since arrival, Swedish degree and Swedish citizenship dummy variables (Table 4). Both models are significant according to a Chi-Square test, with Nagelkerke R^2 values of 0.207 for the 2003 model and 0.211 for the 2007 model. The share of overqualified individuals was 30.75% in 2003 and 30.46% in 2007.

[Table 4 here]

The results above indicate that country-specific human capital improves chances of correct job matching among immigrants. Overall, slightly over 30% of the foreign-born were overqualified in 2003 and in 2007. Each year of residence in Sweden is associated with a 0.82 0.85 percentage point decrease in probability of overqualification, as predicted by country-specific human capital theory. This is in contrast to the increase in overqualification risk associated with additional years of age of 0.28 percentage points in 2003 and 0.81 in 2007. The age effect for the total population, on the other hand, is a decrease in probability of overqualification by 0.740.58 percentage points for each year (Table 3). This could be an effect of the Employment Protection Act, which stipulates that employees with longer tenure will be fired last in case of layoffs, and which has lead to low turnover among Swedish workers (Swedish Code of Statutes, 1982). Having graduated from a Swedish university—a good indicator of country-specific skills—also lowers immigrants' overqualification probability significantly, by nearly 9 percentage points. Possessing a university degree in general, on the other hand, increases risk of overqualification by similar amounts for the foreign-born and the population overall, about 6 percentage points in 2003 and 8 percentage points in 2007. Naturalized citizens have about a 1.5 percentage point lower probability of overqualification than their noncitizen counterparts. This may reflect a decision to make Sweden a permanent home and thereby be associated with greater motivation to acquire Swedish language skills, or may relate to differences in social networks between immigrants with family ties and those with other motives for coming to Sweden.

4.3 Job match improvement

In order to test individuals' probability of finding a job better matched to their formal educational attainment we performed a binary logistic regression predicting 'improved match,' a dummy variable equal to one for individual who were overqualified in 2003 but not (or less so) in 2007. The data sample is thus restricted to individuals who were overqualified in 2003, a total of 398,911 observations. All of these were included in the 'all improved match' regression, while only foreign-born individuals (N = 43,168) were included in the 'foreign improved match' model. Both of these were significant according to Chi-square tests and had Nagelkerke R^2 of 0.083 and 0.048, respectively (Table 5). The share who had improved their job match was 14.5% of the entire population and 11.1% among the foreign born.

[Table 5 here]

Human capital variables associated with greater overqualification risk are also associated with higher probability of improving job match. Each year of education increases the probability of an improved match by 3 percentage points overall and 2 percentage points among the foreign-born. Each year of work is associated with decreased probability of improving one's job match, though the effect is small (0.5 percentage points). More years of work may indicate longer tenure at a workplace, higher income and greater job security, which could lead to lower occupational mobility.

The results from these regressions also show that women have greater chances of improved job match than men, as was suggested by the decrease in gender effects in 2007 versus 2003. Men have 2 percentage points lower probability of improving job match relative to women ('all improved match' model). Among foreign-born individuals, the gender effect is non-significant, in line with the results from the overqualification regressions showing smaller (though significant) gender differences in overqualification risk among the foreign-born than among the Sweden-born. Parenthood has a similar effect for women

and men in the all improved match model: both mothers and fathers are less likely to improve their labor market positions than nonparents (by about 1 percentage point), both overall and among the foreign-born only. These effects suggest lower job mobility among parents, who may be less willing than nonparents to give up a stable job to search for a better match.

In terms of origin effects, the all improved match model shows a significant effect for the Nordic and Western/OECD groups compared to the Sweden-born, but in opposite directions: while Western/OECD individuals have a 1.64 percentage point higher probability of improving their job matches over time ($p<0.01$), Nordic-born individuals are less likely (by 1.26 percentage points) than the Sweden-born to improve job match ($p<0.05$). Migrants from Eastern Europe and Africa, Asia, and Latin America show no significant difference in probability of improving job match relative to the Sweden-born (Table 5). However, migrants from Eastern Europe, Africa, Asia, and Latin America have a much greater probability of being overqualified in the first place. The absolute share of overqualified workers is twice as high among these groups as the share of Sweden-born overqualified workers (Table 2), and the origin effect gives approximately twice the probability of overqualification for non-Western migrants compared to Swedes (Table 3). For Sweden-born women and for Western European/OECD immigrants the probability of overqualification appears to decrease with time, albeit slowly. The same appears not to be true for non-Western immigrants, which may well be a sign of discrimination against them.

There are however signs that immigrants who invest in Swedish education have greater chances at improving their labor market position. In comparison to immigrants without a Swedish university degree, those who graduated from a Swedish university have a greater probability of improving their job match by almost 6 percentage points. The effect of possessing a university degree in general is about a 4 percentage point decrease in probability of improved job match, both overall and among the foreign-born. Those living in major metropolitan areas are more likely than others to find better job matches over time, among

the Sweden- and foreign-born (about 1.6 percentage points lower probability for those in medium and small towns, $p<0.01$).

5 Discussion and concluding remarks

The results of this analysis show that a significant portion of the working population in Sweden— about one in six of those who attended upper secondary school—possess higher qualifications than necessary for their jobs. Overqualification is an especially significant problem for people of foreign origin and for women. Women's probability of overqualification is greater than men's by 2.5 to 4 percentage points, though the gender gap decreased from 2003 to 2007. The difference may be a result of skill demand distributions due to occupational gender segregation. Further, overqualification risk is twice as high among individuals from Eastern Europe, Africa, Asia, and Latin America as among Swedes—and this discrepancy changed little over time. Job search processes and hiring practices contributing to these gaps require further attention in studies of labor market integration.

Both discrimination and country-specific capital theories predict heightened risk of overqualification shortly after migration. Discrimination theory says that this situation persists over time, while country-specific human capital theory predicts eventual convergence of foreign-native overqualification rates. We find some support for the latter in the significant negative effect of duration of residence on immigrants' overqualification probability 0.85 percentage points per year. These results also support career mobility and search and match hypotheses, which predict that career advancement and information flow, respectively, cause declining overqualification risk with time. However, given that average duration of residence is 17 years in 2003, it would take over 30 years of residence for the gap to close between Swedes and non-Western migrants at the rate given above. Discrimination on the part of labor market gatekeepers—whether intentional or not— appears to be a more important force than possession of Sweden-specific skills in determining immigrants' job opportunities.

We also find evidence to support the hypothesis that non-Western migrants face greater discrimination than Western migrants. First is the much larger origin-effect among Eastern Europeans, Africans, Asians, and Latin Americans relative to that of Nordic or Western immigrants. The second is that the probability of improving job match over the 200307 is heightened only for migrants from Western/OECD countries. Country-specific human capital theory predicts that for all immigrants, presuming they have the opportunity to develop language and other country-specific skills, overqualification risk will decrease over time. Yet this does not occur among immigrants of certain backgrounds. This could be due to either taste discrimination or statistical discrimination, or a combination of the two. Because of greater historical contact, Swedish employers might find it easier to evaluate the value of European and North American educational qualifications. On the other hand, relatively little social contact between Swedes and people from Eastern Europe, Africa, Asia, and Latin America may allow prejudiced stereotypes to persist and to shape hiring practices.

One type of Sweden-specific capital, a Swedish university degree, did have a strong negative effect on the probability of overqualification for immigrants. Having earned a Swedish degree decreased the probability of overqualification by 9 percentage points (from 30 to 21%), and increased the probability of improving one's job match by 5 percentage points, from 11 to 16%. Though this was not enough of a boost to eliminate foreign-native gaps in overqualification and match improvement, it caused those gaps to decrease considerably. While it is difficult to evaluate whether those who chose to invest in education in Sweden differ systematically from those who do not, there is a clear advantage to doing so. This supports both country-specific capital theory and statistical discrimination theory: since it is easier for labor market gatekeepers to evaluate a Swedish degree than a foreign degree, they may be more inclined to hire graduates of Swedish universities. It also underscores the value of post-migration education.

The Swedish labor market has changed considerably since the era of labor migration in the 1960s and

1970s, when labor immigrants came to work in manufacturing. Employment in the manufacturing sector has gradually declined, whereas new employment has been created mainly in a plethora of old and new service activities. This change has implied a profound shift in job assignments. The new layers of economic restructuring tend to produce jobs that require problem solving and social interaction to a much greater extent than before. People who carry out such tasks need strong communication skills, both oral and written. Education, language fluency and social skills are crucial assets in professions where negotiation, reasoning and persuasion play a central role for success. The fact that Swedish education is the most important positive factor for job matching among foreign-born workers highlights the importance of Sweden-oriented communication skills and knowledge in a service-based economy. This structural shift is unlikely to reverse in coming decades—if anything, the demand for technological expertise and communication skills will likely continue to expand to include an even greater share of the Swedish workforce. The share of Sweden's population that is foreign-born or of non-Swedish ethnicity, meanwhile, is projected to increase, and the workforce participation rate is expected to remain high. If discrimination in the labor market continues to disadvantage immigrants and their children, the result could be a widening social divide and an obstructed process of integration. Furthermore, the loss of investments in education and inefficient use of workers' skills could harm competitiveness in the global economy. Research into the processes of evaluating educational qualifications, employers' hiring practices and immigrants' job search processes could contribute to a better understanding of how immigrants' qualifications can be utilized more efficiently, and how access to qualified jobs can be made more equal.

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Tables

Table 1. Coding of occupations and educational attainment, and equivalent years of education.

ISCED	SSYK Occupations	Years	SUN Level Module
1	Elementary occupations	0-9[v]	1-2 Primary-Lower Secondary
2	Clerks, service, shop sales, skilled agriculture, fishery, craft & related trades workers, plant & machine operators and assemblers	10-12	3 Upper Secondary
3	Technicians & associated professionals	13-14	4-5.2 Post-secondary < 2 yrs
4	Professionals	15-20	5.3-6 Post-secondary > 2 yrs

Table 2. Descriptive statistics of individuals by overqualification status in 2003, and by match improvement 2003-2007. Includes 2003 data for entire sample ('All') and for foreign-born only in the 'Overqualified 2003' section. Includes data for all overqualified individuals and foreign-born overqualified individuals (as of 2003) in the 'Improved match' section.

	Overqualified 2003				**Improved match 2003-07**			
	Entire pop.		Foreign only		All OQ		Foreign OQ.	
	Yes	No	Yes	No	Yes	No	Yes	No
Origin								
Sweden %	89.2	95.0			91.7	88.7		
Nordic %	1.6	1.4	14.5	27.4	1.0	1.7	12.3	14.8
Western/OECD %	1.1	.6	9.7	12.0	1.0	1.1	11.8	9.5
Eastern Europe %	3.8	1.6	35.3	30.8	2.9	4.0	35.3	35.3
Africa, Asia, L. Amer. %	4.4	1.5	40.5	29.8	3.4	4.6	40.6	40.5
Human capital								
Years of education	14.1	12.5	14.1	12.5	14.5	14.0	14.6	14.0
University degree %	44.8	16.6	45.8	19.1	40.8	45.4	49.8	45.3
Years of work (98-03)	5.1	5.6	4.9	5.3	4.8	5.2	4.8	4.9
Sweden-specific human capital								
Swedish degree %			17.7	12.2			27.9	16.5
Naturalized %			43.1	47.2			39.2	43.6
Years since arrival			14.2	17.9			13.0	14.4
Gender								
Female %	58.2	50.9	55.5	53.7	61.2	57.7	56.4	55.4
Parent %	59.8	73.2	81.1	83.7	46.4	62.1	77.6	81.6
Control variables								
Age	38.7	41.6	43.4	44.8	34.6	39.5	41.4	43.7
Single %	49.5	40.9	15.3	16.1	61.5	47.5	17.4	15.0
Married %	40.4	47.6	63.5	62.2	31.7	41.9	62.8	63.6
Divorced %	9.4	10.8	20.0	20.3	6.5	9.9	19.0	20.2
Widowed %	.6	.8	1.2	1.4	.3	.7	.7	1.3
Count %	17.1	82.9	30.6	69.4	14.5	85.5	11.1	88.9
N observations	398920	1937577	43177	97801	58021	340899	4803	38374

Table 3. Binary logistic regression models predicting overqualification in 2003 and 2007 for the entire population.

	Entire pop., 2003			**Entire pop., 2007**		
Origin	B	Sig.	Δp	B	Sig	Δp
Sweden (ref)		.000			.000	
Nordic	.377	.000	6.02	.361	.000	5.69
Western/OECD	.462	.000	7.56	.419	.000	6.73
Eastern Europe	1.039	.000	19.72	1.028	.000	19.36
Africa, Asia, L. Amer.	1.177	.000	22.98	1.168	.000	22.66
Human Capital						
Years of education	.345	.000	5.45	.329	.000	5.14
University degree	.240	.000	3.67	.324	.000	5.05
Years of work (98-03)	-.276	.000	-3.56	-.239	.000	-3.10
Gender						
Male	-.312	.000	-3.98	-.193	.000	-2.54
Female*Kids	-.238	.000	-3.11	-.159	.000	-2.12
Male*Kids	-.190	.000	-2.53	-.258	.000	-3.33
Control variables						
Age	-.053	.000	-0.74	-.042	.000	-0.58
Age²/100	.046	.000	0.66	.033	.000	0.47
Large city (ref)		.000			.000	
Medium city	.063	.000	0.91	.121	.000	1.77
Small town	.136	.000	2.01	.215	.000	3.24
Single (ref)		.000			.000	
Married	-.210	.000	-2.77	-.202	.000	-2.65
Divorced	-.045	.000	-0.63	-.049	.000	-0.68
Widowed	-.029	.221	-0.41	-.089	.000	-1.21
Constant	-3.129	.000		-2.712	.000	
N	2332759			2344418		
-2 Log likelihood	1829360			1832706		
Nagelkerke R^2	.204			.201		

Table 4. Binary logistic regression models predicting overqualification in 2003 and 2007 (foreign-born population only).

	Foreign-born 2003			**Foreign-born 2007**		
Origin	B	Sig.	Δp	B	Sig.	Δp
Nordic (ref)		.000			.000	
Western/OECD	-.033	.202	-0.70	-.058	.022	-1.21
Eastern Europe	.410	.000	9.34	.429	.000	9.76
Africa, Asia, L. Amer.	.638	.000	14.92	.650	.000	15.16
Human capital						
Years of education	.297	.000	6.66	.291	.000	6.49
University degree	.264	.000	5.89	.345	.000	7.75
Years of work (98-03)	-.180	.000	-3.70	-.164	.000	-3.36
Sweden-specific capital						
Swedish degree	-.462	.000	-8.89	-.483	.000	-9.19
Citizen	-.075	.000	-1.57	-.069	.000	-1.44
Years since arrival	-.040	.000	-0.85	-.039	.000	-0.82
Gender						
Male	-.160	.000	-3.30	-.125	.000	-2.58
Female*Kids	-.047	.054	-0.99	-.027	.288	-0.57
Male*Kids	-.078	.002	-1.64	-.102	.000	-2.12
Control variables						
Age	.013	.091	0.28	.038	.000	0.81
Age²/100	.006	.540	0.13	-.017	.060	-0.36
Large city (ref)		.000			.000	
Medium city	-.077	.000	-1.61	-.036	.009	-0.76
Small town	.000	.981	0.00	.050	.021	1.07
Single (ref)		.000			.000	
Married	-.079	.000	-1.66	-.106	.000	-2.20
Divorced	.014	.535	0.30	-.030	.200	-0.63
Widowed	.042	.478	0.90	.031	.560	0.66
Constant	-4.018	.000		-4.260	.000	
N	140325			142182		
-2 Log likelihood	150962			151781		
Nagelkerke R^2	.207			.211		

Table 5. Binary logistic regression models predicting improved job match from 2003 to 2007 (entire population and foreign-born only).

	All improved match			**Foreign improved match**		
Origin	B	Sig.	Δp	B	Sig.	Δp
Sweden (ref. All)		.006				
Nordic (ref. Foreign)	-.105	.018	-1.26		.000	
Western/OECD	.126	.007	1.64	.258	.000	2.82
Eastern Europe	.005	.858	0.06	.139	.016	1.45
Africa, Asia, L. Amer.	-.025	.337	-0.31	.056	.333	0.57
Human capital						
Years of education	.234	.000	3.16	.189	.000	2.01
University degree	-.399	.000	-4.29	-.450	.000	-3.73
Years of work (98-03)	-.038	.000	-0.47	-.052	.000	-0.50
Sweden-specific capital						
Swedish degree				.478	.000	5.67
Citizen				-.037	.318	-0.36
Years since arrival				-.003	.420	-0.03
Gender						
Male	-.168	.000	-1.97	-.028	.718	-0.27
Female*Kids	-.087	.000	-1.05	-.090	.130	-0.86
Male*Kids	-.089	.000	-1.07	-.108	.099	-1.02
Control variables						
Age	-.166	.000	-1.94	-.065	.002	-0.63
Age²/100	.142	.000	1.86	.040	.075	0.40
Large city (ref)	.	.000		.	.000	
Medium city	-.132	.000	-1.57	-.185	.000	-1.70
Small town	-.149	.000	-1.76	-.174	.003	-1.61
Single (ref)		.000			.458	
Married	-.068	.000	-0.82	.020	.688	0.20
Divorced	-.023	.230	-0.28	.008	.885	0.08
Widowed	-.099	.116	-1.19	-.221	.166	-2.00
Constant	-.133	.193		-1.993	.000	
N	398911			43168		
-2 Log likelihood	311793			29080		
Nagelkerke R^2	.083			.048		

[1] Although many studies refer to the phenomenon of having more education than is formally required for a job as 'overeducation', we follow Vaisey (2006) and Green and McIntosh (2007) in using 'overqualification' due to its emphasis on the utilization of qualifications in the workplace, rather than on the value of education in general.

[2] Choosing terminology to use in comparisons of national origin groups is fraught with political and philosophical implications. On the one hand, calling the groups 'native-born' and 'foreign-born' is accurate in that it distinguishes by birthplace, which is how the groups are operationalized in the data. On the other hand, such terms inaccurately imply homogeneity within the groups. We do not attempt to differentiate between effects of ethnicity/race and nationality, although we try to minimize the confusion of nationality and childhood environment effects by excluding child migrants. Though the role that social science research plays in legitimizing oversimplified categories is acknowledged, we argue that it is an unfortunate but unavoidable effect of doing research on social patterns that affect groups differently.

[3] Author's translation from Swedish: *Förekomsten av diskriminering är alltid sist i raden av möjliga förklaringar och då mer utifrån ett sannolikhetsresonemang än som ett konstaterande om det faktiska förhållandet.*

[4] The OECD countries included in the category along with Western Europe are Canada, the United States, Australia, New Zealand and Japan. Turkey and Mexico are included in the Africa, Asia, and Latin America category.

[v] For older generations of Swedes it was possible to attend up to 10 or 11 years of lower secondary school in *realskolor* before moving to gymnasium, or upper secondary education. This school model ceased to exist in 1972. Those who attended realskolor are coded as having attended primary school.