UNEMPLOYMENT RISK AMONG NEWLY HIRED IMMIGRANTS

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Abstract. Unemployment among immigrants is one of the most pressing issues facing European policy makers. Most of the research on unemployment among immigrants has so far been directed towards those that are low-educated or long-term unemployed, while those that are closer to establish themselves on the labor market have received surprisingly little attention. Our aim is to address this shortcoming by investigating differences in unemployment risk between newly hired immigrants and native Swedes using comprehensive register data from Statistics Sweden. We find that unemployed immigrants are more likely to re-enter unemployment compared to natives in the same position, even after controlling for a wide range of individual- and firm-level factors. The differences in unemployment risk between immigrants and natives is reduced if immigrants are hired to a firm within the hotel- and restaurant sector, an older firm, or to a workplace with at least one manager born in a non-western country. It thus seems to exist systematic differences in the risk of re-entering unemployment among immigrants and native workers that are related to the firm and industry in which they are hired.

Keywords: labor market, diversity, integration, immigrant, unemployment, unemployment days, negative binomial model

JEL-codes: D22; D23; J15; J18; J63; J64

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1. Introduction

The European Union received more than one million asylum seekers in 2015 and 2016 (Eurostat, 2015), while the unemployment rates among immigrants was high and undoubtedly one of the most pressing challenges facing European policy makers. However, it is primarily those furthest from getting a job, e.g., the low-educated and the long-term unemployed, that has attracted attention among policymakers and researchers (see e.g., Krueger & Mueller, 2011; Kroft et al., 2013). We focus our analysis on immigrants who are offered jobs, but do not succeed to establish themselves permanently on the labor market. These job-seekers are first-in-line when firms hire employees, which means that they often need to get employed before those standing further from the labor market will receive job offers. This group of individuals are thus of considerable policy importance but has received little attention in the literature.

Previous research document the Swedish labor market as highly segregated in terms of ethnicity (Åslund & Nordström-Skans, 2010). The overarching pictures is that immigrants, especially those from the Middle East and Africa face adverse labor market outcomes compared to native Swedes (Arai et al, 2011), both in terms of wages (Edin et al, 2003, Le Grand & Szulkin, 2002) and unemployment risk (Arai & Vilhelmsson, 2004; Edin et al, 2003). Immigrants with a low education are also more likely to enter into self-employment compared to natives (Hammarstedt, 2001), and this effect seems to be more pronounced for immigrants with a Middle Eastern background (Hammarstedt, 2006).

We use comprehensive matched employer-employee data from Statistics Sweden, covering all Swedish residents aged 18 years or older. Using a research design that reduces heterogeneity caused by tenure and long-term unemployment, we compare the risk of re-entry into unemployment a year after becoming employed among native Swedes and immigrants during 2008-2015. Our study moves beyond individual-level explanations to unemployment risk by considering workplace-, firm-, and industry-specific heterogeneity.

Overall, we find that immigrants are more likely to re-enter unemployment compared to natives even after controlling for a wide range of individual-, and firm-level factors. The difference in unemployment risk is particularly pronounced for immigrants from African and Asian countries. The difference in unemployment risk between immigrants and native workers is reduced if unemployed immigrants are hired by a large firm or older firm, or a firm with non-westerners in top management positions. We find between-industry differences, with smaller differences in unemployment risk between immigrants and native Swedes for those that get hired by firms in the hotel- and restaurant sector. Our results indicate that it is of importance to consider firm-level characteristics when analyzing immigrants' labor market position.

Unemployment risk among employed immigrants have been researched before, albeit not with the same approach as ours. Skuterud & Su (2012) explore transition differentials between native and immigrant workers in high – and low-wage jobs. The results indicate that unemployment duration is not significantly longer among immigrants, but that immigrants have lower employment duration in high-wage jobs. Our study adds to the findings by Skuterud & Su (2012), by exploring unemployment risk differentials in different types of firms, rather than different types of jobs. Our data allows us to compare this risk between different immigrant groups, and to include controls for the demographic composition of the workplace. Furthermore, our rich data allows us to focus on immigrants close to the labor market, which substantially reduces individual-level heterogeneity.

Arai & Vilhelmsson (2004) investigate the difference in unemployment risk between natives and immigrants with similar levels of seniority, finding that immigrants face a higher unemployment risk than native workers. We will draw on this paper for model specification but focus on how the characteristics of the hiring firm rather than of the individual affects unemployment risk. Job separations among non-western immigrants have also been investigated by Åslund et al (2014), who found that non-westerners faced a lower risk of separation compared to those with a western background if they were employed by a firm with a non-western manager. Their study is different from ours since they do not focus primarily on individuals hired from unemployment, but on differences between immigrants and natives in general. Moreover, the authors use a more aggregate measure of immigrants, differing only between westerners and non-westerners.

There are also some studies exploring to which type of workplaces immigrants are hired. Recent work by Forslund et al (2017) shows that it takes more than 15 years for an immigrant cohort to get established on the Swedish labor market. The authors find that immigrants tend to get their first job in small firms offering low-wage service jobs. Our study complements and expands their analysis by investigating the unemployment risk of immigrants after they have been hired, and by taking the heterogeneity of the firms that are recruiting immigrants into account. Furthermore, Forslund et al (2017) focus on all immigrants, while we restrict our sample to those that are registered as unemployed.

The paper is structured as follows. The next section provides a theoretical background on reasons why immigrants might have more difficulties in keeping a job compared to natives. Data and descriptive statistics are presented in section three, while our empirical strategy is described in section four. The main results are presented in section five, while industry, firm, and workplace differences in unemployment risk among newly hired immigrants are investigated in section six. A number of robustness checks are conducted and described in section seven, and, finally, section eight summarizes and concludes.

2. Theoretical background

Most studies of unemployment risk focus on individual-level characteristics, such as gender, education and ethnicity, treating all firms as equal. Some studies suggest that firm-level heterogeneity also could impact the unemployment risk for individuals. (e.g. Åslund et al, 2014; Bygren, 2004). In this section, we first focus on individual-level explanations on why newly hired immigrants may face higher risk of separation than native workers. Thereafter, we present theories on why firm-level characteristics also might influence the unemployment risk of newly hired immigrants.

2.1. Individual-level determinants of unemployment risk

Job search and recruitment take place through formal as well as informal channels. Formal channels are for example employment agencies, while networks and personal contacts are examples of informal channels (Behtoui, 2008). Previous studies show that about half of all vacancies are filled through contacts (Loury, 2006), and also that employees hired through contacts have longer employment duration.

Matching models typically assume that the labor market is characterized by asymmetric information, and that both employers and job applicants have incentives to hide information to get the best applicants and jobs, respectively (Mortensen & Pissarides, 1999). These information asymmetries result in high search costs and incentives for employers to recruit through their network (Calvo-Armengol, 2006; Loury, 2006). Hence, another important factor in producing successful matching is the social network of the individual (Montgomery, 1991; Granovetter, 1973; Granovetter, 1995), especially for individuals in their early career (Hensvik & Nordstrom-Skans, 2013).

Employees withdraw valuable information from their network, such as tips on vacant positions (Mouw, 2003). If firms have preferences for informal recruitment methods, this disadvantages individuals with a limited or no professional network, such as immigrants (Behtoui, 2008) and young people (Hensvik & Nordstrom-Skans, 2013). Previous research further suggests that not only the size, but also the quality of the individual network is of great importance (Granovetter, 1995; Green et al, 1999). For example, the networks of low-income individuals tend to include fewer labor market contacts compared to high-income individuals (Korpi, 2001). Similarly, it is reasonable to assume that the quality of migrants' networks is low, since many immigrants in Sweden are unemployed or even outside the labor force (Arai et al, 2011). However, theories that stress the importance of social networks are suitable to explain why immigrants have more difficulties in receiving job offers than natives. They seem less relevant when it comes to explaining the unemployment risk for immigrants that already are employed, although the quality of the job network might influence whether an individual gets a permanent position or not.

The minority status could in itself explain observed differences in unemployment risk between immigrants and natives that are recruited from unemployment. Becker (1957) famously argued that employers prefer hiring majority group members. Hence, employees from a minority group will have to compensate for their minority status while searching for employment. Becker's theory has, despite being widely cited, been criticized for not specifying why the employers would be hesitant to employ minority workers (Guryan & Charles, 2013). Arrow (1972) suggested that discrimination of minorities is statistical rather than inherent, i.e., employers draw inference based on experiences of a group, e.g. immigrants, and form preferences based on that inference. For example, if a certain group is over-represented in crime and unemployment, this overrepresentation will form a bias against all individuals from this particular group.

Empirical studies support theories of discrimination. Bertrand & Mullainathan (2004) show in an experiment on the US labor market that job-searchers with Afro-American or Arabic surnames are less likely to hear back from employers. A similar result in a Swedish setting is found by Carlsson & Rooth (2006). Åslund & Nordström-Skans (2012) find that immigrants are more likely to be considered for an interview when anonymous job applications are used, but that ethnic minorities were still disadvantaged in terms of being offered a job. Eriksson et al (2012) show that employers sort out applicants that are older, muslims, jews, obese or have a history of sick leave.

There is much less evidence on discriminatory behavior towards those immigrants that are already employed. One exception is Arai & Vilhelmsson (2004), who find that among workers with a similar level of seniority, non-European immigrants face a higher unemployment risk than native Swedes after controlling for region- and industry-specific effects, as well as unemployment history.

Differences in unemployment risk for those immigrants and natives that are recruited from unemployment might also depend on information asymmetries when evaluating the applicants. Such hurdles are likely to be more pronounced for immigrant applicants since their education level and labor market experience might be more difficult to assess for employers. Mismatch problem due to over-education might also be more apparent among immigrants because they cannot always validate and use their education in their new home-country (Nielsen, 2011; Chiswick & Miller, 2008). Hence, immigrants might to a greater extent be sorted into jobs that does not match their productivity and thus be more likely not to keep a job compared to native workers.

2.2. Firm-level heterogeneity and unemployment risk

Existing studies give reason to believe that firm-level factors could be incorporated into the matching equation and that the unemployment risk can be related to the existent employee composition of the firm. Studies of workplace homophily (e.g. McPherson et al,

2001; O'Reilly et al, 1989) contend that people prefer socializing with individuals that are demographically similar to themselves. Bygren (2004) finds evidence of a higher risk of separation among individuals belonging to a workplace minority. The result holds for women in male-dominated organizations (Bygren, 2010) as well as for ethnic minorities (Bygren, 2004). Similarly, Eliasson (2014) shows that it is easier for immigrants to get a bank loan if the bank clerk belongs to the same ethnic group. Tomaskovic-Devey et al (2015) find that wage differentials are smaller for immigrants working at workplaces with a high immigrant concentration and higher ratio of immigrant managerial representation.

Åslund et al (2014) use Swedish register data to show that non-western bosses are more likely to hire non-western employees, and that the risk of separation is lower among those employees compared to those with a western background. The authors find that these differences only exist before workers are protected by the Employment Protection Law (EPL). Giuliano et al (2009) and Giuliano & Ransom (2013) show in studies on US data that hispanic employers are more likely to hire other Hispanics and black employers to hire black workers, but also that manager ethnicity affects the risk of separation.

The hiring behavior of young firms have not been extensively researched, but existing studies provide contradictory evidence in terms of the diversity of new hires. Chen & Rider (2015) argue that new ventures enforce workforce segregation because founding themes tend to be homogenous, and new hires tend to be similar to the founding theme. On the contrary, Coad et al (2014) show that new and fast-growing ventures tend to employ a diverse workforce.

In general, the unemployment risk is higher in start-ups and young firms since they less likely to survive (Nightingale & Coad, 2014). However, no study (as far as we know) has investigated whether immigrants face higher unemployment risks than natives in new ventures than in older firms. Small firms are in general younger and employees in small firms may therefore face a larger risk of turnover since the risk of firm exit is higher.

There are reasons to believe that recruitment strategies differ a lot between small and large firms. Larger firms have in general more professionalized personnel practices, which reduces the risk of hiring and firing based on taste or "gut feeling" (Schmidt & Hunter, 1998; Colarelli & Thompson, 2008), which in turn ought to reduce the risk of discrimination. In line with that hypothesis, Giuliano & Ransom (2013) find that manager ethnicity only affects the hiring behavior of minority employees in stores with few employees.

Industry-specific factors may contribute to employment duration of newly employed individuals. Competition from low-wage countries has increased pressure on low-skilled jobs and increased demands for flexibility in the business sector (Kalleberg, 2000). Schmid

(2010) suggest that the share of short-term contracts is higher in industries such as retail, service and hotels and restaurants. These industries often employ groups that in general have a weaker attachment to the labor market, such as young people and immigrants; implying that these groups are also less likely than others to obtain a permanent position.

Previous research (Daunfeldt et al, 2018) on Swedish data shows that the hotel- and restaurant sector is particularly good at hiring unemployed immigrants. One explanation for this can be that a large share of the jobs in this sector are low-qualified. Since non-western immigrants on average have lower education than natives, it might be easier for them to find employment in low-wage jobs. Skuterud and Su (2012) find that the tendency for immigrants to remain in low-wage jobs appear to be explained by difficulties for this group to enter high-wage employment; and a large risk of separation if such a job is obtained. The study further shows that no such entry barriers exist for immigrants seeking low wage jobs and that the possibility of using low wage jobs as stepping stones for a more advanced one is limited.

Summing up, previous research indicates that both individual-level and firm-level factors can contribute to the risk of transitioning back into unemployment. It appears that it does not only matter who gets a job, but also where.

3. Data

We use register data from Statistics Sweden (SCB) that contains information on all legal residents of Sweden that are at least eighteen years old during 2007-2015. The data are compiled from the LISA database, which is generated from a number of registers (SCB, 2016) and contains a vast amount of demographic and financial information on the individuals.

Information on the employment status of the individual is of crucial importance for us since we want to investigate the unemployment risk for newly hired employees. Following Mörk et al (2014), we define an individual as employed if not registered at the Swedish Employment Agency (*Arbetsförmedlingen*) in November, and with a yearly income over an income base amount[1]. Using an income criterion for employment guarantees that all individuals counted as employed in our sample actually had some form of income from labor.[2]

[1] The income base amount ranged from 45 900 SEK to 58 100 SEK during the study period.

[2] We also tried using the ILO definition of employment (with no income restriction) counting an individual as employed if having worked at least four hours in November. Using this definition did not alter our results.

An individual is defined as unemployed if registered as full-time unemployed or as participating in some kind of labor market program[3] in November. This definition of unemployment is ideal for our purpose of studying individuals that are close to the labor market. Individuals registered at the unemployment agency are required to actively seek employment, and must at least have taken the step to actually register there.

We include workplace-based variables to control for workplace-specific characteristics in our analysis. This means that only individuals that can be connected to a specific workplace are included in our sample. About 11 percent of the individuals in the original sample have no workplace connection, and they are therefore left out of our sample[4].

3.1 Dependent variable

We investigate the unemployment risk for newly hired immigrants by constructing a binary variable that takes the value one if a newly hired individual in year *t* is unemployed again in year *t+1*, and zero if the individual still is coded as employed. This variable measures the unemployment risk for individuals that are hired from the pool of unemployed in year *t*[5]. Arai & Vilhelmson (2004) use a similar design when investigating the likelihood of being unemployed at some point during a five-year period.

3.2. Independent variables

Our main focus is to investigate whether there are differences in unemployment risk based on ethnicity among newly hired individuals. In order to capture whether the individual is an immigrant, we include information on region of birth collected from the Swedish population register (SCB, 2016). Our region of birth variable is based on the individual's own region of birth, and their parents' region of birth. Individuals in the data are classified into the following six groups:

(i) Swedish. Baseline case.

(ii) Second-generation immigrants. An indicator variable taking the value one if the individual is born in Sweden but both parents are born abroad, otherwise zero.

(iii) Nordic/Europe/North America. An indicator variable taking the value one if the individual is born in the Nordic countries (exclusive Sweden), Europe or North America, otherwise zero.

[3] This also includes the so-called "nystartsjobb" (*new start jobs*), which is a specific form of subsidized employment introduced by the Swedish liberal government in 2007.

[4] Robustness checks show that the inclusion or exclusion of this group did not alter the main results of the paper.

[5] We have also estimated a negative binomial model with the number of unemployment days in t+1 as the outcome variable measuring the risk of becoming unemployed again. The results are qualitatively similar to our main results, and presented in Appendix Section A1.

(iv) Africa. An indicator variable taking the value one if the individual is born in Africa, otherwise zero.

(v) South America. An indicator variable taking the value one if the individual is born in South America, otherwise zero.

(vi) Asia. An indicator variable taking the value one if the individual is born in Asia, otherwise zero.

An individual is thus defined as native born if born in Sweden, with at least one parent born in Sweden. Individuals that are born in Sweden, but with both parents born abroad, are defined as second-generation immigrants. They receive an own category since previous research indicates that these individuals are closer to the labor market compared to more recent immigrants (Behrenz et al, 2007). We exclude individuals born in Oceania or the former Soviet Union, since these groups are too small to compare with the categories outlined above.[6]

It is important to note that the Asia category is very diverse, including individuals from the Middle East as well as from South-East and Central Asia. Statistics of immigrant groups on the Swedish labor market show that in 2013 a majority (64 percent) of Asian immigrants to Sweden originated from Middle Eastern countries, such as Syria, Iran and Iraq. About 24 percent came from South East Asian countries, for example China and India (SCB, 2017). Most likely, most of the Middle Eastern immigrants are refugees, while immigrants from South East Asia immigrated for other reasons, such as job opportunities, studies or family reasons. Since a lot of media attention is directed towards labor market difficulties for refugee immigrants, it is important to stress that in this paper, we cannot make any specific conclusions concerning this group.

Educational attainment can affect the risk that employees move back into unemployment (Riddell & Song, 2011; Chevalier, 2013). We include a categorical variable measuring the highest educational level of the individual. The variable includes the following categories:

- Primary education (baseline category). Indicator variable that takes the value one if the individual at most has completed elementary school, i.e., 9 years of education, and zero otherwise.
- Upper secondary education. Indicator variable that takes the value one of if the individual at the most has completed upper secondary education, otherwise zero.
- Some college/university education. Indicator variable that takes the value one if the highest educational attainment of the individual is less than 2 years at a university college or university, and zero otherwise.

[6] These individuals constitute less than 0.005 percent of the sample and excluding them did not affect the estimation results.

- College/university education. Indicator variable that takes the value one if the highest educational attainment of the individual is more than 2 years at a university college or university, and zero otherwise.
- Research/PhD education. Indicator variable that takes the value one if the individual has completed a PhD, otherwise zero.

Gender might also affect the unemployment risk since previous studies indicate that women are more likely to exit into unemployment than men (Theodossiou & Zangelidis, 2009). We control for gender by including an indicator variable that takes the value one if the individual is a female, and zero if a male. Another factor that might affect the likelihood of being unemployed is age (Behrenz et al, 2007), and it is therefore included in our set of controls. Older individuals can, for example, be expected to have more labor market contact and experience than younger employees (Hensvik & Nordström-Skans, 2013), suggesting that they are more likely to keep a job. We also include a squared variable for age since the effect of age on unemployment risk might be non-linear.

Since previous research show that the family situation of an individual affect labor market outcomes (e.g. Angelov & Karimi, 2012; Kennerberg, 2007), we control for civil status by including an indicator variable that takes the value one if the individual is married or has a registered partner, and zero otherwise. We also control for the number of children under 18 years' old that are living in the household.

Individuals might possess characteristics that contribute to the risk of moving back into unemployment, but that cannot be directly observed. Examples of such characteristics are cognitive and non-cognitive skills (Cawley et al, 2001). If such factors are correlated with the immigrant status and our dependent variables, then the estimated effect of region of birth may suffer from omitted variable bias. In our case, an individual's cognitive and social skills can affect the risk of moving back into unemployment, as well as the chance of getting an employment at all. We therefore need to somehow account for the differences in distance to the labor market between the individuals in our sample to reduce the risk of bias in our regression estimates.

Since we do not have data measuring ability, we choose to include a variable aggregating each individual's unemployment history. The unemployment history variable is computed as the total number of days in unemployment three years before moving from unemployment to employment in year *t*, i.e., it is the sum of all days in unemployment in year *t-3*, *t-2* and *t-1*. Previous studies have indicated that low cognitive and social ability are negatively correlated with labor market attachment, and including unemployment history should thus capture at least some of the variation in ability (Heckman et al, 2006). Unemployment history could also be argued to capture variation in network quality among

the individuals since the composition of the social network is associated with higher chance of employment (Granovetter, 1973, Green et al, 1999).

We include industry-specific fixed effects based on the standardized industry classification system for Swedish businesses (SNI) on the 2-digit level[7], according to the coding scheme for 2007 (SCB, 2015), since previous research indicate that industry may play a role for unemployment risk. The SNI classification system is equivalent to the European classification system NACE[8].

We also employ a set of firm-specific variables in our empirical analysis to study how firm-level characteristics affect the unemployment risk of newly hired employees. These variables are subsequently used to split our sample into smaller datasets for comparative analyses.

First, using the Eurostat firm size classification, we investigate whether the likelihood of maintaining a job depends on the size of the firm. This means that we estimate the unemployment risk separately for individuals that are hired by micro firms (3-9 employees), small firms (10-49 employees), medium-sized firms (50-249 employees) and large firms ($>$ 249 employees). Number of employees at the workplace in year t is also included as an independent variable to control for the overall effect of firm size. We exclude all firms with 5,000 employees or more to eliminate the risk that our results are driven by the existence of extreme outliers in firm size. We exclude firms that with only one or two employees, since we in the first case are dealing with self-employed individuals, and in the second case cannot rule out the possibility that the individual is a co-owner of the firm.

Since most new firms also are small, factors attributed to firm size instead might be explained by firm age (Haltiwanger et al., 2013). We therefore control for firm age using information on the first time a company appears in the database as to determine the start-up year of the firm. This means that the firm age variable is truncated and has a "spike" in 1990 when the LISA database started and many companies therefore appeared for the first time. However, this should not affect our results since we simply use this information to distinguish between old and young firms in the data. We exclude firms that are reported as zero years old, due to high risk of exit.

Previous studies (e.g. Åslund et al, 2014) have indicated that immigrant employees face a lower risk of separation in companies run by an immigrant boss. We use information from the Swedish system for occupation classifications (SSYK) to identify which employees that are in top management positions of a firm, and then construct an indicator variable that takes the value one if the workplace has at least one non-western immigrant in a top

[7] Using a finer definition of SNI (3-digit level) did not affect the results in our baseline regressions.
[8] SNI has a five-digit detailed level of classifications, while the most detailed NACE-level is four-digit (SCB, 2015).

management position[9]. Some workplaces do not have any manager according to the SSYK definition. We choose to keep these workplaces in our sample since there might be a systematic reason for having no managers based on the SSYK definition. For example, in small firms, the boss might not be defined as a top manager[10].

Following Behrenz et al (2007) and Arai & Vilhelmsson (2004), we include county dummies in our regression models to take into account that employment opportunities may differ between regions. We use the Stockholm region as our reference category because urban spaces have been shown to promote better matching between employer and employees (Andersson et al, 2007).

Means, standard deviations and definitions of the dependent variable and the independent variables included in our analysis are presented in Table 1. The summary statistics show that 72 percent of the individuals in our sample have a Swedish background, while 5 percent are second-generation immigrants (born in Sweden but with foreign-born parents). The share that originate from another Nordic country, Europe or North America is 11 percent. 3 percent have an African origin, 2 percent are from South America, and 8 percent are born in Asia. Only 6 percent of the workplaces in the sample have a non-western manager.

The descriptive results in Table 1 also show that 41 percent of the individuals in our sample are female, and 27 percent are married or registered partner. The mean age is 35 years old, and the average number of children living in the household is 0.6. 23 percent of the individuals have completed higher education (more than two years of college/university studies). The average age for the hiring firms is 14 years old, and the average number of employees is 622.

[9] We thus allow the workplace to have more than one manager.

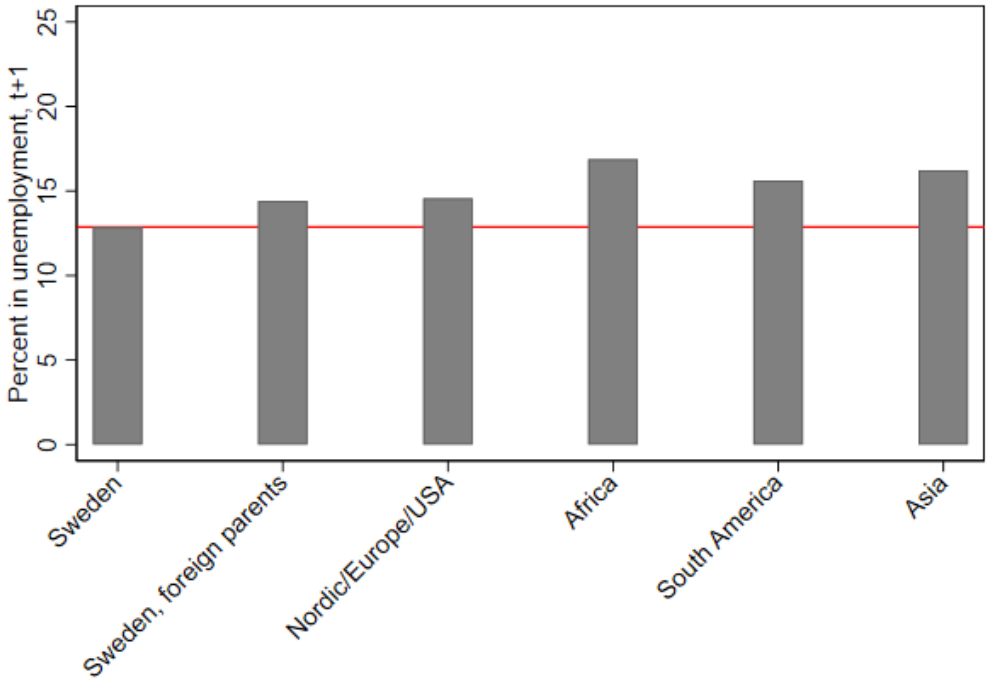
[10] One solution (employed by for example Åslund et al, 2014) is to use income data to define the manager of a workplace if SSYK data are missing. The problem with this approach is that the reported income of the employees might not reflect real-world income. For some managers in small firms it might not be possible to take out a proper salary, and hence an income definition may be misleading.

Table 1. Descriptive statistics of independent variables

Variable	**Obs**	**Mean**	**Std.Dv.**	**Min**	**Max**
Unemployed (*t+1*)	401 505	0.14	0.34	0	1
Region of birth					
Sweden	401 505	0.72	-	0	1
Sweden, foreign parents	401 505	0.05	-	0	1
Nordic/EU/USA	401 505	0.11	-	0	1
Africa	401 505	0.03	-	0	1
South America	401 505	0.02	-	0	1
Asia	401 505	0.08	-	0	1
Female	401 505	0.41	0.49	0	1
Age	401 505	35	12	18	64
Married	401 505	0.27	0.44	0	1
Number of children	401 505	0.58	0.93	0	12
Unemployment history	401 505	427.9	365.1	0	2192
Highest level of education					
Less than secondary education	401 505	0.15	-	0	1
Secondary education	401 505	0.63	-	0	1
College/university $<$ 2 years	401 505	0.05	-	0	1
College/university $>$ 2 years	401 505	0.17	-	0	1
PhD/Research education	401 505	0.05	-	0	1
Workplace has a non-western boss (0-1)	401 505	0.06	0.24	0	1
Firm age	401 505	14	7.37	1	24
Number of employees	401 505	622	1114	3	4999

Figure 1 summarizes the differences in unemployment status in year *t+1* by region of birth. The results show that more non-natives than natives are unemployed again the year after being hired by a firm. For example, 16.9 percent of the newly hired individuals from Africa and 16.2 percent of those from Asia moved back into unemployment the year after getting employed, which can be compared to 12.8 percent of the native Swedes. A larger share of second-generation immigrants, and immigrants from other Western countries and South America, also move back into unemployment compared to native Swedes. The difference is smaller than for employees originating from Africa or Asia.

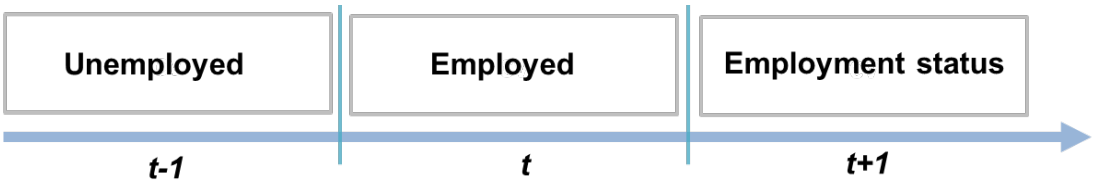
Figure 1. Unemployed in year t+1 (%) by region of birth



4. Empirical strategy

We sample all individuals that transitioned from unemployment in year *t-1* to employment in year *t*. We then investigate the employment status of those individuals in year *t+1* to analyze what determines the risk of re-entry into unemployment.

Figure 2. Selection criteria for our sample



Note that we only study individuals moving from unemployment to employment, and then back to unemployment. We do not study which individuals that move out of the labor force. The motivation behind this censoring in the outcome is that those individuals that leaves the labor force is a very heterogeneous group that includes, for example, students, retired individuals and discouraged workers.

We use a binary measure that takes the value 1 if the individual is unemployed again in year *t+1*, and 0 otherwise, to measure the unemployment risk the year after being hired. We then use a logit regression model, to estimate the probability of our dependent variable

(unemployment risk) taking the value 1 or 0 conditional on a set of independent variables. The logit regression model is a common model choice for binary dependent variables (Wooldridge, 2010; Long & Freese, 2014). The reason is that a least squares estimation technique will produce biased estimates for binary outcomes because it builds on the assumption that the dependent variable is continuous and normally distributed around its expected value. Using OLS when these conditions are not fulfilled can lead to an underestimation of the standard errors, which means that the statistical significance of the estimated coefficients becomes exaggerated (Gardner et al., 1995; Wooldridge, 2010). An OLS approach may also generate inconsistent estimates, i.e., that the estimated value is asymptotically different from the true value. Furthermore, OLS can predict negative results, which is not possible in our case since our dependent variable only is allowed to equal 1 or 0.

The logit model generates estimates in form of so called log odds, which are transformed into odds ratios (the exponential of the log odds) for a more straightforward interpretation. For a categorical variable, the odds ratio is simply the ratio between the odds of y = 1 for group A and the corresponding odds for group B. For example, if the odds ratio of the dummy variable female (versus male) equals 2.5, females have 150 % higher odds of having y = 1. For continuous variables, the odds ratio is the change in the odds when the variable in question is increased by one unit. For example, if the odds ratio for age is 2.5; the odds for a 20-year-old is 150 % higher than for a 19-year-old.

We estimate the following logit model:

$$U_{it+1} = a_0 + \beta_j' \mathbf{I}_{it} + \boldsymbol{\Theta}_k' \mathbf{Q}_{it} + \boldsymbol{\lambda}_l' \mathbf{X}_{it} + \boldsymbol{\varphi}_l' \mathbf{Z}_{it} + a_b + a_R + a_t + \varepsilon_{it} \qquad (1)$$

where U_{it+1} is a binary variable taking the value 1 if individual *i*, who was unemployed in year *t-1* and became employed in year *t*, is unemployed again in *t+1*, and 0 otherwise; $\mathbf{I}_{it}$ is a vector of variables for region of birth; $\mathbf{Q}_{it}$ is a vector of indicator variables capturing the educational level of the individual; $\mathbf{X}_{it}$ is a vector of individual demographic variables; $\mathbf{Z}_{it}$ is a vector of firm-specific characteristics; a_b, a_R and a_t are controls for level of industry, region and time; β_j', $\boldsymbol{\Theta}_k'$, $\boldsymbol{\lambda}_l'$ and $\boldsymbol{\varphi}_l'$ are parameters to be estimated; and $\boldsymbol{\varepsilon_{it}}$ is the error term.

As we are interested in how the risk of becoming unemployed again differ between different types of firms, we run our regressions on different samples based on in which industry the hiring firm is active, firm age, firm size and whether the workplace has a non-westerner in a top management position.

5. Immigrants' risk of re-entering unemployment

We present the results for our full sample (401,505 individuals) in Table 2. Thereafter, we split the sample into subsamples that allows us to explore industry-, firm- and workplace-level effects.

Our results provide strong support for the hypothesis that foreign-born individuals who becomes hired after being unemployed experience greater difficulties in keeping the job than native Swedes. There are significant differences in terms of unemployment risk between immigrants and native-born, even after including a wide set of individual- and firm-level controls.

Table 2. Estimation results from logit model. Standard errors clustered at the individual level. Industry and region fixed effects.

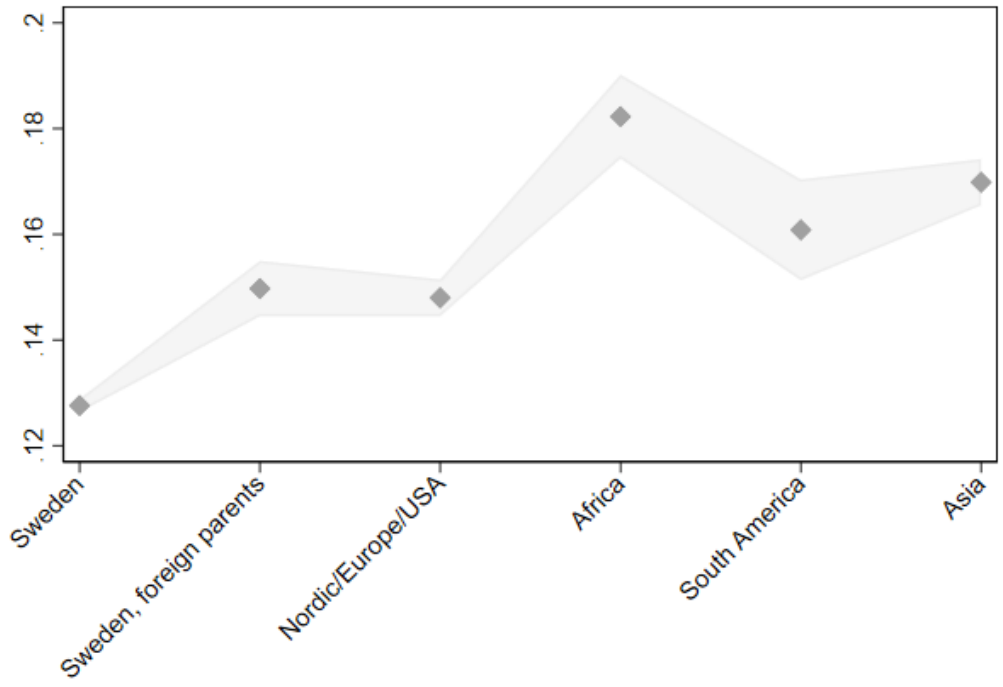
	DV: unemployment in *t+1* (0-1)
Sweden, foreign parents	1.212***
	(8.498)
Nordic/Europe/USA	1.195***
	(11.14)
Africa	1.549***
	(14.96)
South America	1.324***
	(7.356)
Asia	1.417***
	(19.38)
Female (0-1)	0.884***
	(-11.25)
Age	1.008**
	(2.553)
Age squared	1.000
	(1.227)
Married/registered partner (0-1)	0.832***
	(-14.48)
Number of children living in household	0.976***
	(-4.110)
Unemployment history	1.001***
	(58.69)
Secondary education	0.835***
	(-13.66)
College/university < 2 years	0.736***
	(-12.17)
College/university > 2 years	0.658***
	(-23.19)
PhD/Research education	0.571***
	(-6.589)
Firm size (number of employees)	0.999***
	(-8.342)
Firm age (years)	0.990***
	(-14.51)
Foreign boss (0-1)	0.951**
	(-2.276)
Constant	0.194***
	(-28.04)
N	386,848

Robust z-statistics in parentheses,
*** p<0.01, ** p<0.05, * p<0.1

Newly hired individuals from Africa have on average about 55 percent higher odds of re-entering unemployment compared to native Swedes, and those with an Asian background are 42 percent more likely to move back into unemployment compared to native Swedes. The estimated coefficients for other groups of first-generation immigrants and second-generation immigrants are also positive and statistically significant, albeit smaller than for individuals with an African or an Asian background.

To assess the economic significance of the regression estimates, we plot the marginal effects in Figure 3 to illustrate the effects of region of birth on the unemployment risk after being hired from unemployment. The risk on the margin of moving back into unemployment is significantly larger (point estimates outside the 95 percent confidence interval) for non-natives compared to native Swedes, especially for individuals with an African or Asian background. The risk of moving back into unemployment for employees born in Africa is, on average, about 5 percentage points higher than for native Swedes (the baseline category), and about 4 percentage points higher for Asian immigrants.

Figure 3. Marginal effects of region of birth on unemployment risk in year t+1, point estimates and 95 % confidence intervals.



Another central explanation to why some previously unemployed individuals experience larger difficulties in entering the labor market is that they possess a low level of education. In line with previous research, our estimates show that newly recruited unemployed

individuals with high education have significantly lower unemployment risk than those with a lower level of education. As seen in Table 2, newly hired with a university - or college degree has, on average, about 26 percent (less than 2 years of college education) and 34 percent (more than 2 years of college education) lower likelihood of moving back into unemployment compared to those that have at most completed primary school. For individuals with a PhD education, the difference is even larger. The same pattern can be seen comparing those that have a secondary education to those that have at most completed primary school, but the effect is smaller (-16 percent) than for unemployed individuals who completed higher studies.

We find a negative effect for gender, with women being about 12 percent less likely to move back into unemployment compared to men. The effect of age is positive and significant, but very small. Individuals that are married/partner have a lower risk of moving back into unemployment. The effect of number of children in the household is negative and significant, but small.

Finally, we note that the number of days in unemployment during the three years prior to employment (in period *t*) is positively associated with a higher likelihood of re-entering unemployment.

6. Industry-, firm- and workplace-level determinants of immigrants' risk of re-entering unemployment

In the baseline regression (Table 2) we find that the size of the firm has a negative and statistically significant effect on unemployment risk and the labor market attachment for unemployed individuals that get hired. This implies that the risk of moving back into unemployment is higher if the individual is hired into a small workplace. We find a negative and significant effect of firm age, indicating that the likelihood of re-entering unemployment is higher if individuals are recruited by young firms. This is expected since it is well-known that younger firms are less likely to survive compared to older firms (e.g., Nightingale & Coad, 2014). The dummy for whether the workplace has a non-western manager is negative and significant, indicating that an individual hired at workplaces with a non-western manager is about four percent less likely to move back into unemployment.

In order to investigate if the risk that newly hired immigrants re-enter unemployment depends on the industry of occupation, or the characteristics of the workplace and firm, we make separate estimations based on industry of occupation, firm age, workplace size, and whether the workplace has a non-western boss or not. We present only the regression coefficients for the region of birth variable in the tables below because this is our main variable of interest. All models are run with the same set of controls as the baseline regressions, with standard errors and fixed effects for industry and region.

6.1. Sample split on industry

The unemployment risk for immigrants might depend into which industry they are hired, and we therefore present separate results for ten different industries. All industries that have less than 10,000 employees are excluded in order to avoid that our results are driven by sample size bias when we investigate sub-sample groups. No study has, as far as we know, investigated whether differences in unemployment risk between immigrants and natives is dependent on the industry of occupation.

Studying unemployment risk across industries is of significant policy interest. If some industries seem particularly good at integrating immigrants, these could serve as "best practices" for industries where integration works less smoothly. If we can establish that immigrants seem to be easier integrated in particular sectors, it tells us something about the jobs that the newly hired immigrants get, which is of interest when designing policy strategies for increasing employment as well as policies targeting mismatch problems such as over-education (see e.g. Leuven & Oosterbeek, 2011). The regression results for the selected industry sub-samples are presented in Table 3 below.

Our results indicate that the relative unemployment risk between immigrants and native Swedes is not primarily driven by in which industry the individual is hired. In general, immigrants have a higher unemployment risk the year after getting a job compared to native Swedes. We find smaller differences between natives and immigrants in the hotel- and restaurant sector, which might be an outcome of the fact that many immigrants work in this sector, and hence that the risk of discrimination is lower (Bygren, 2004; O'Reilly et al, 1989).

Table 3. Estimation results for region of birth, sample split on industry.

DV: unemployment (0-1) *t+1*	Manufacturing	Construction	Wholesale trade	Retail trade	Hotel – and restaurant	Transport	Administration and support	Education	Health care
Sweden, foreign parents	1.312***	1.258***	1.250***	1.263***	1.246**	1.191**	1.160***	1.242**	1.222*
	(4.811)	(2.987)	(2.659)	(3.239)	(2.491)	(2.069)	(2.718)	(2.186)	(1.730)
Nordic/Europe/USA	1.296***	1.354***	1.196***	1.174**	1.111*	1.242***	1.132***	1.000	1.023
	(7.072)	(5.630)	(2.803)	(2.562)	(1.702)	(3.908)	(3.103)	(-0.00625)	(0.294)
Africa	1.392***	1.909***	1.787***	1.855***	1.223**	1.612***	1.621***	1.403***	1.416***
	(3.350)	(4.325)	(3.777)	(4.515)	(1.979)	(6.115)	(7.955)	(3.143)	(3.525)
South America	1.337**	1.858***	1.447**	1.032	1.238	1.222*	1.300***	1.195	1.328*
	(2.543)	(5.280)	(1.976)	(0.178)	(1.148)	(1.801)	(3.340)	(1.245)	(1.789)
Asia	1.532***	1.502***	1.437***	1.441***	1.191***	1.450***	1.365***	1.367***	1.339***
	(9.186)	(4.606)	(4.989)	(5.637)	(2.623)	(7.340)	(7.021)	(4.384)	(3.458)
Constant	0.578***	0.172***	0.269***	0.0855***	0.106***	0.0801***	0.229***	0.0894***	0.168***
	(-3.915)	(-9.817)	(-6.066)	(-12.61)	(-10.17)	(-12.14)	(-9.758)	(-9.576)	(-6.210)
N	62,886	32,748	27,977	37,699	29,542	28,444	49,565	23,707	20,696

Robust z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

6.2. Sample split on firm age

We make separate estimations for four firm age categories (1-2 years; 3-6 years; 7-12 years; and >12 years). Our results (Table 4) indicate that the difference in unemployment risk between non-westerners and native Swedes is large across different firm age groups, with some smaller variation. For individuals from Africa, South America and Asia, the risk of falling back into unemployment is slightly smaller in older firms (>7 years). However, these differences are not statistically significant. Marginal effects for region of birth in the four sub-samples are presented in Appendix Figure A2.1.

Table 4. Estimations results for region of birth, sample split on firm age

	DV: unemployment in *t+1* (0-1)			
	Firm age			
Region of birth	1-2 yrs	3-6 yrs	7-12 yrs	>12 yrs
Sweden, foreign parents	1.261***	1.081	1.187***	1.247***
	(3.930)	(1.138)	(3.440)	(7.054)
Nordic/Europe/USA	1.367***	1.241***	1.114***	1.170***
	(7.649)	(4.651)	(2.927)	(7.191)
Africa	1.710***	1.797***	1.385***	1.548***
	(7.143)	(6.777)	(4.839)	(10.99)
South America	1.655***	1.426***	1.159*	1.242***
	(6.056)	(3.283)	(1.673)	(3.845)
Asia	1.541***	1.509***	1.380***	1.366***
	(9.751)	(8.064)	(8.087)	(12.18)
N	48,646	39,548	72,660	225,994

Robust z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

6.3. Sample split on firm size

We split our sample into four groups based on the size of the firm where the unemployed individual gets hired, distinguishing between micro-sized firms (3-9 employees), small firms (10-49 employees), medium-sized firms (50-249 employees), and large firms (>249 employees)[11].

The results (Table 5) show that the differences in unemployment risk between natives and immigrants are larger in small firms. The risk of moving back into unemployment is, for

[11] It is likely that even though a firm has many workplaces, hiring and firing decisions is to a large extent centrally governed, which motivates sub-sampling based on firm- rather than workplace size.

example, 100 percent higher in micro firms for immigrants from Africa than for a native Swedes, whereas the corresponding average difference is 50 percent in large firms. The difference is statistically significant at the 5 percent level. A similar pattern can be seen for Asian immigrants, even though the differences between the firm size groups is not as pronounced. Marginal effects for region of birth in the four sub-samples are presented in Appendix Figure A2.2.

Table 5. Estimation results region of birth, sample is split on firm size.

	DV: unemployment in *t+1* (0-1)			
	Firm size			
Region of birth	Micro firm	Small firm	Medium firm	Large firm
Sweden, foreign parents	1.127**	1.280***	1.175***	1.234***
	(2.207)	(5.816)	(3.195)	(5.325)
Nordic/Europe/USA	1.300***	1.310***	1.131***	1.067**
	(7.445)	(9.225)	(3.474)	(2.172)
Africa	2.000***	1.832***	1.411***	1.495***
	(8.781)	(10.60)	(5.292)	(8.489)
South America	1.597***	1.449***	1.238**	1.152*
	(5.336)	(5.596)	(2.444)	(1.945)
Asia	1.502***	1.494***	1.300***	1.333***
	(10.43)	(11.78)	(6.295)	(8.692)
N	67,653	109,160	78,842	131,193

Robust z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6.4. Sample split on whether workplace has a non-western boss

Theoretically, the risk for a newly hired non-western immigrant to leave the workplace may be reduced if there is someone with a similar ethnic background in the top management of the workplace (Bygren, 2004; Åslund et al, 2014). To address this possibility, we split our sample depending on whether there is a non-westerner in the top management team of the workplace or not[12].

The results in Table 6 indicate that first-generation immigrants that are working at a workplace with a non-westerner in a top management position is less likely to move back

[12] When dividing the sample, we make sure that the individuals included in the sample are not coded as managers themselves.

into unemployment compared to those employed at a workplace with only western top managers. On the other hand, second-generation immigrants are more likely to become unemployed again if they are recruited to a workplace with at least one non-western top manager. Marginal effects for region of birth in the four sub-samples are presented in Appendix Figure A2.3.

Previously unemployed individuals with an African background have a 59 percent higher unemployment risk than native Swedes if they are working at a workplace with only Swedish managers in the top management position, while corresponding differential for Africans employed at a workplace with at least one non-western top manager is only 27 percent. This difference is statistically significant at the 5 percent level. Individuals from South America are more likely than native Swedes to re-enter unemployment if recruited to a workplace with no manager with a non-western background, whereas there is no significant difference in unemployment risk compared to native Swedes if the workplace has a non-western boss.

Table 6. Estimation results for region of birth when sample is split on non-western boss dummy

	DV: unemployment in *t+1* (0-1)	
	Non-western boss	
Region of birth	No	Yes
Sweden, foreign parents	1.201***	1.342***
	(7.761)	(3.412)
Nordic/Europe/USA	1.198***	1.150**
	(10.96)	(2.064)
Africa	1.592***	1.266**
	(15.06)	(2.550)
South America	1.339***	1.188
	(7.297)	(1.369)
Asia	1.423***	1.340***
	(18.71)	(4.738)
N	364,385	22,463

Robust z-statistics in parentheses,
*** p<0.01, ** p<0.05, * p<0.1

Our results provide some support to earlier findings (e.g. Bygren, 2004; Åslund et al, 2014) reporting that the risk of separations, here specifically unemployment, is larger among immigrants working at workplaces with a western boss[13].

7. Robustness checks

This section includes robustness checks that address potential biases or problems in our main regressions. First, employment status in the data from Statistics Sweden is measured in November each year. Using only the employment status in November implies that we cannot know how much the individual actually have worked. Even if we put an income restriction on those coded as employed, we know little about their actual attachment grade to the labor market in terms of how much they actually work. To make sure that this lack of information does not bias our results, we run our baseline estimates on a restricted sample that only includes individuals with zero days in unemployment in year *t*. This implies that these individuals were employed between November and December in *t-1*.

The second potential problem that we want to address is the possibility that employees might re-enter unemployment due to firm closures, rather than as a consequence of individual or firm-specific characteristics. We therefore estimate our baseline models on a sample that only consists of surviving firms, i.e., firms that have survived during the whole study period (2008-2013). This leaves us with a slightly smaller sample of 289 081 observations.

The third and last consideration relates to the estimates based on the non-western boss variable. Splitting the sample on the non-western boss dummy is based on sociological theories postulating that minority individuals face a higher risk of separation since they are perceived different from the majority (Bygren, 2004; O'Reilly et al, 1989). This requires some interaction between groups of employees. We therefore also restrict our sample to include only individuals that are working at a workplace with less than 50 employees (Åslund et al, 2014).

The logit estimation results from all three reduced samples are presented in Table 7 and show no substantial differences compared with the results from the baseline regressions presented in Table 2. Model 1 shows the results when implementing a stricter employment criterion (zero days in unemployment in period t). The results for the region of birth variable is not substantially different from our baseline results, indicating the estimations are robust to a stricter definition of employment. The results from the sample with only

[13] A natural extension of this analysis would be to analyse the risk of moving back into unemployment if the workplace has a manager from the same region of birth. However, this is not possible to do with our data, due to too small sample sizes.

surviving firms is presented in Model 2. Similar to Model 1, the results are not qualitatively different from our baseline findings.

Finally, the estimation results using the sample including only workplaces with less than 51 employees are displayed in Model 3. Here, the results for African immigrants persist and are even stronger than previously reported, while the results for the Asia category is not robust to this workplace-based restriction. When excluding the larger workplaces, Asian immigrants employed at a workplace with a non-western boss is actually more likely to return into unemployment, compared to Asian immigrants at workplaces with a western boss. We conclude from this that the results concerning the impact of having a non-western boss is inconclusive and should be further explored.

Table 7. Results from robustness checks

	Model 1	Model 2	Model 3	
Restriction of sample	Zero unemployment days in period t	Only surviving firms	Workplace <51 employees	
Region of birth			Western boss	Non-western boss
Sweden, foreign parents	1.345***	1.237***	1.190***	1.692***
	(4.150)	(7.836)	(5.888)	(3.432)
Nordic/Europe/USA	1.384***	1.171***	1.264***	1.131
	(6.568)	(8.139)	(11.56)	(0.900)
Africa	2.029***	1.666***	1.797***	1.329*
	(7.955)	(14.78)	(14.41)	(1.706)
South America	1.222	1.267***	1.425***	1.305
	(1.535)	(4.962)	(7.259)	(1.336)
Asia	1.580***	1.422***	1.454***	1.459***
	(8.346)	(15.91)	(16.06)	(3.639)
N	55,691	289,081	237,729	5,888

There are, finally, multiple ways to define who is employed and unemployed and we have therefore implemented several definitions of these central variables. First, we have run all our regressions on a sample where we defined employed as individuals coded as such in the register data. This coding corresponds to the ILO definition of employment and includes all individuals that have an income corresponding to at least 4 hours of work in November. It is thus a much less restrictive definition of employment than the one used in the main estimations. Using this definition did not imply any qualitative changes to our results. Furthermore, we tried running the models with a more restrictive definition of unemployment, where an individual was defined as unemployed only if he or she was registered as full-time unemployed. Individuals participating in some kind of labor market

program, such as subsidized employment or education, was instead coded as employed. This change in the definition did not either alter the results in any significant ways. The results discussed above are omitted to save space, but are available upon request.

8. Conclusions

The literature on the labor market position of immigrants have mainly been focused on immigrants that are unemployed and have severe difficulties in entering the labor market. Using comprehensive register data from Statistics Sweden, we have instead examined whether immigrants who are close to entering the labor market have a higher unemployment risk than natives after controlling for a wide range of individual- and firm-level characteristics. We believe that this group of workers are of particular policy interest because they are first-in-line when firms hire new employees, and likely to become employed before individuals who stand further from the labor market.

We make two main contributions to the literature on immigrants' unemployment. First, we focus on a group that has attracted little attention in previous research. Second, we highlight the role of industry-, firm- and workplace-level factors in shaping the unemployment risk differentials between immigrants and native Swedes, a perspective that has been scarcely explored.

We found that immigrants recently hired from unemployment have a significantly higher unemployment risk than native Swedes in the same position. Our results support previous findings of a weaker attachment to the labor market among immigrants, but show specifically that this applies also to immigrants that are close to finding employment. As a foreign-born individual, you face both a higher risk of becoming unemployed again and more difficulties in establishing a permanent job compared to native Swedes, even after controlling for educational attainment, unemployment history and industry of occupation.

Our results support theories predicting that differences in unemployment risk can be explained by the immigrant status of the individual, either because of discrimination, networking effects, or because employers believe that the risk when hiring foreign born individuals is too high. Unemployed individuals that were born in Africa, for example, had significantly higher unemployment risk compared to native Swedes which we interpret as an indication of weaker attachment to the labor market. Similar results are found for individuals from Asia.

Human capital seems to play an important role in reducing the risk of moving back into unemployment. Unemployed individuals with a higher education, or even just a high school education, had significantly lower unemployment risk and also fewer days of unemployment compared to those individuals that only had completed primary school. This suggests that

there may be beneficial to re-allocate training efforts from the long-term unemployed towards those individuals who get jobs, but still have problems entering the labor market.

Our results reveal that industry-, firm- and workplace-level factors matter for immigrants' risk of becoming unemployed again. The subsamples on industry suggest that industries with a high share of low qualified jobs, such as the hotel- and restaurant sector seem to be a safer haven for newly hired immigrants, compared to for example the construction industry. This finding is important when designing policies for improved labor market integration, where the hotel – and restaurant sector appears to be a good source in the search for best practices.

We also found that the difference in unemployment risk between immigrants and native Swedes partly could be explained by characteristics of the firm and the workplace. The risk of moving back into unemployment was, for example, higher among individuals hired by micro firms than by larger firms. This can most likely be explained by a more erratic hiring and firing pattern in small (often young) firms, compared to that in larger firms that tend to have more professionalized personnel practices.

The ethnic composition of the top management team furthermore seems to affect immigrants risk of re-entering unemployment. Non-western immigrants that were employed at workplaces with a non-western boss in general faced a higher unemployment risk than natives compared to those working at workplaces with at a non-western boss. However, a robustness check using only small workplaces partly contradicted this result. Even though we cannot make any causal claims, and despite inconclusive evidence, we interpret our result as an indication of that ethnic discrimination can be one factor explaining the unemployment risk differentials between immigrants and native Swedes.

From a policy perspective, our study highlights the importance of targeting not only groups that stand far away from the labor market, but also those that are close to getting established on the labor market but keep falling back into unemployment. Our study confirms that the relatively high unemployment risk for immigrants is a multi-faceted problem, that needs to be targeted from several angles. Policies directed towards improving individual human capital, such as education and language proficiency, may not be enough. Policy makers should also aspire to understand how firm-level characteristics can affect unemployment risk.

Since the risk of re-entering unemployment can partly be assigned to characteristics of the particular employer, unemployed job seekers and employment agencies may benefit from considering not only how to receive a job, but also to consider the relative stability of those jobs.

This paper shall be seen as a first attempt to investigate the unemployment risk and attachment to the labor market for previously unemployed individuals that gets a job

position. We believe that there is a further need to look at this group of individuals, and in particularly investigate what causally can explain the observed differences between immigrants and natives. Can the difficulties of immigrants to keep their jobs be explained by discrimination, lack of networks, or a preference towards homogeneity among many business leaders? Answers to these questions are of vital importance to make the large inflow of immigrants a resource rather than a burden.

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Appendix

Section A1. Results from negative binomial regressions

Table A1.1. Estimation results from negative binomial model. Standard errors clustered at the individual level. Industry and region fixed effects.

DV: days in unemployment in *t+1*	
Sweden, foreign parents	1.160***
	(8.656)
Nordic/Europe/USA	1.121***
	(9.219)
Africa	1.460***
	(16.60)
South America	1.231***
	(7.143)
Asia	1.322***
	(19.62)
Female (0-1)	0.929***
	(-8.990)
Age	0.991***
	(-4.225)
Age squared	1.000***
	(8.018)
Married/registered partner (0-1)	0.851***
	(-16.32)
Number of children in household	0.976***
	(-5.441)
Unemployment history	1.001***
	(66.80)
Secondary education	0.856***
	(-15.94)
College/university < 2 years	0.803***
	(-11.45)
College/university > 2 years	0.727***
	(-23.49)
PhD/Research education	0.686***
	(-5.558)
Firm size (number of employees)	1.000***
	(-9.702)
Firm age (years)	0.993***
	(-12.80)
Foreign boss (0-1)	0.949***
	(-3.070)
Constant	57.54***
	(94.80)
N	386,848

Robust z-statistics in parentheses,*** p<0.01, ** p<0.05, * p<0.1

Table A1.2. Estimation results for region of birth, sample split on industry.

DV: days in unemployment in *t+1*	Manufacturing	Construction	Wholesale trade	Retail trade	Hotel – and restaurant	Transport	Administration and support	Education	Health care
Sweden, foreign parents	1.231***	1.147***	1.210***	1.291***	1.121	1.293***	1.118***	1.232***	1.095
	(4.690)	(2.618)	(2.837)	(4.537)	(1.568)	(4.274)	(2.834)	(3.100)	(0.927)
Nordic/Europe/USA	1.190***	1.296***	1.121**	1.156***	1.058	1.154***	1.086***	1.052	0.995
	(5.818)	(6.993)	(2.181)	(2.957)	(1.085)	(3.376)	(2.764)	(1.044)	(-0.0801)
Africa	1.402***	1.927***	1.810***	1.800***	1.362***	1.517***	1.449***	1.283***	1.207**
	(4.326)	(6.944)	(4.963)	(5.593)	(3.619)	(6.897)	(8.078)	(3.175)	(2.266)
South America	1.216**	1.654***	1.611***	1.003	1.093	1.248***	1.220***	1.134	1.050
	(2.081)	(6.024)	(3.329)	(0.0223)	(0.608)	(2.810)	(3.408)	(1.325)	(0.387)
Asia	1.355***	1.392***	1.468***	1.351***	1.131**	1.384***	1.284***	1.391***	1.197**
	(7.987)	(5.127)	(6.435)	(5.692)	(2.246)	(8.455)	(7.416)	(6.542)	(2.545)
Constant	186.8***	60.16***	67.45***	23.70***	29.44***	23.30***	75.47***	26.08***	38.67***
	(49.41)	(34.89)	(25.37)	(20.55)	(19.29)	(20.04)	(39.50)	(18.61)	(15.77)
N	62,886	32,748	27,977	37,699	29,542	28,444	49,565	23,707	20,696

Robust z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A1.3. Estimations results for region of birth, sample split on firm age

	DV: days in unemployment in *t+1*			
	Firm age			
Region of birth	1-2 yrs	3-6 yrs	7-12 yrs	>12 yrs
Sweden, foreign parents	1.221***	1.109**	1.133***	1.175***
	(4.628)	(2.030)	(3.414)	(6.730)
Nordic/Europe/USA	1.229***	1.191***	1.094***	1.090***
	(6.678)	(4.988)	(3.153)	(5.079)
Africa	1.569***	1.632***	1.418***	1.435***
	(7.866)	(7.560)	(6.867)	(11.45)
South America	1.326***	1.341***	1.187***	1.192***
	(4.379)	(3.729)	(2.689)	(4.073)
Asia	1.474***	1.403***	1.299***	1.272***
	(11.23)	(8.560)	(8.411)	(11.78)
N	48,646	39,548	72,660	225,994

Robust z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A1.4. Estimations results for region of birth, sample split on firm size

	DV: days in unemployment in *t+1*			
	Firm size			
Region of birth	Micro firm	Small firm	Medium firm	Large firm
Sweden, foreign parents	1.158***	1.220***	1.127***	1.133***
	(3.704)	(6.341)	(3.137)	(4.080)
Nordic/Europe/USA	1.211***	1.189***	1.089***	1.025
	(7.309)	(7.730)	(3.038)	(1.057)
Africa	1.787***	1.624***	1.403***	1.427***
	(10.25)	(11.18)	(6.811)	(9.201)
South America	1.451***	1.305***	1.214***	1.066
	(5.943)	(5.441)	(2.892)	(1.131)
Asia	1.387***	1.399***	1.219***	1.253***
	(10.87)	(12.69)	(6.040)	(8.579)
N	67,653	109,160	78,842	131,193

Robust z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A1.5. Estimations results for region of birth, sample split on foreign boss dummy

	DV: days in unemployment in *t+1*	
	Non-western boss	
Region of birth	No	Yes
Sweden, foreign parents	1.155***	1.205***
	(8.101)	(2.802)
Nordic/Europe/USA	1.124***	1.078
	(9.192)	(1.352)
Africa	1.481***	1.375***
	(16.38)	(4.151)
South America	1.224***	1.293***
	(6.600)	(2.696)
Asia	1.328***	1.281***
	(19.11)	(4.738)
N	364,385	22,463

Robust z-statistics in parentheses,
*** p<0.01, ** p<0.05, * p<0.1

Section A2. Marginal effects for region of birth from logit regressions on sub-samples.

Figure A2.1. Marginal effects for region of birth, sample split on firm age

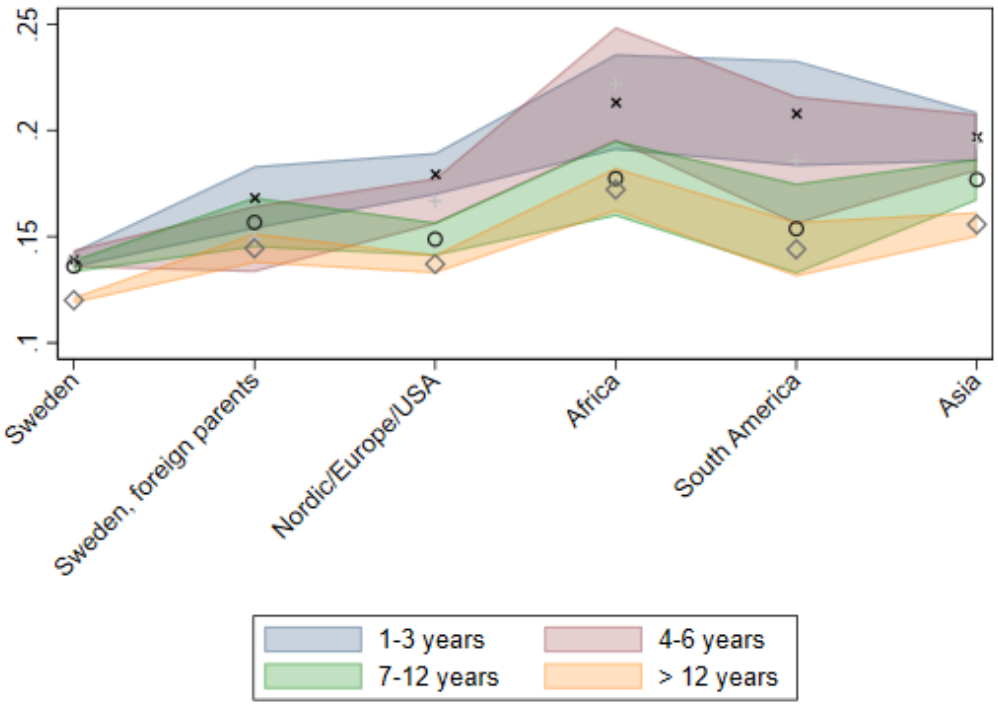

Figure A2.2. Marginal effects for region of birth, sample split on firm size

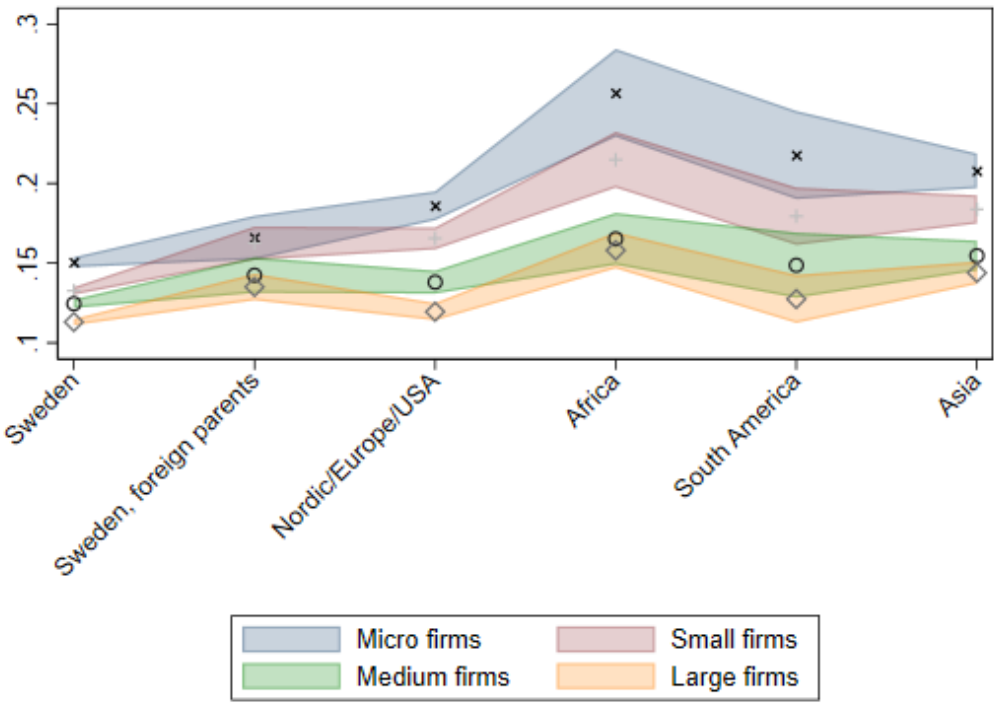

Figure A2.3. Marginal effects for region of birth, sample split on foreign boss dummy