INGE DAHLSTEDT

SWEDISH MATCH?

Education, migration and labour market integration in Sweden

MALMÖ UNIVERSITY

SWEDISH MATCH?

Doctoral dissertation in International Migration and Ethnic Relations

Disertation series: Migration, Urbanisation and Societal Change

Faculty Culture and Society

Department: Global Political Studies, Malmö University

Information about time and place of public defence, and electronic verions of the dissertation:

<http://hdl.handle.net/2043/23356>

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ISBN 978-91-7104-785-4 (print)

ISBN 978-91-7104-786-1 (pdf)

Holmbergs, Malmö 2017

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Acknowledgement

Many have been engaged in this thesis over a (far too long) period of time, all of whom deserve a big Thank You.

First of all, I would like to thank my supervisor, Pieter Bevelander, for his patience with me and my work. His comments and ideas in the process have been invaluable. I would especially like to thank Pieter for his ability to push the work forward, especially during the last part of the process, convincing me that the goal line is within sight.

I would also like to thank my other supervisor, Björn Fryklund, for giving me the opportunity to do research back in 2001 when I was a student at IMER, and for the discussions we have had in our meetings.

Kirk Scott and Mikael Hjerm were my opponents on the 60 percent seminar and the Licentiate defense. Their comments and insights in the field have been of great importance for the continued writing process.

Benny Carlsson was my opponent on the 90 percent seminar and gave me valuable comments and suggestions. Thank you.

Per Broomé, Tobias Schölin and Sofia Rönqvist have been my ‘partners in crime’ on a number of projects, great friends outside of work, and have read many different versions (good and bad) of this thesis. A big thank you.

Jonas Otterbeck, thank you for your comments on the thesis and for being a great friend.

Further, I would like to thank all my fellow PhD researchers over the years, and my co-workers at MIM. There are many more people, more than I can name, who have read and commented on different versions of the thesis; I am grateful that you took the time.

Last, but not least, I would like to thank my family: Jenny – for your love and patience; Torunn and Vidar – for your love and craziness.

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INTRODUCTION

The issue

Over recent decades, globalization has made the world increasingly ‘narrower’, with greater social, cultural and economic connections across national borders. Markets for goods, labor, services and capital have become more and more international, with increasing numbers of states and firms participating in the global economy with links across borders (OECD 2010). The driving forces behind this are a global division of labor, with diminishing transaction and trade costs due to lower tariff barriers; technological development, which has made it cheaper to transport and communicate; and the digital revolution which has dramatically decreased the costs of both processing and transmitting information (OECD 2006). These developments have strengthened trade links, made production links increasingly international and made it easier for people to travel over greater distances, inducing short- and long-term mobility and migration.

Improved and cheaper transport technologies have resulted in greater numbers of potential movers in the world (Hatton and Williamson 2005). The former Secretary-General of the United Nations, Ban Ki-Moon, wrote in the *Guardian* that ‘As we enter the age of mobility, people will cross borders in ever greater numbers in pursuit of opportunity and a better life’ (Ki-Moon 2007). Also, in actual fact, this age of mobility can be traced by the increase in international migrants.¹ In 1960, about 100 million people were international migrants, by the year 2000 the number had increased

1 Defined as people living outside their country of birth for at least a year.

to 155 million, in 2010 the number was 214 million and, in 2015, the number had increased yet again to 244 million (Castles *et al.* 2014; UN DESA 2016).

The Swedish market for goods, labor, services and capital is also an integrated part of the global market, with increasing connections across borders. Swedish trade export has gone from about 419 billion Swedish kronor in 1990 to 1,896 billion kronor in 2015. Over the same period, the import of goods has increased from 418 billion to 1,689 billion (SCB 2017).

Structural change

The globalized economy of Sweden has, of course, also changed the premise for the Swedish labor market, which has gone through some profound structural changes in the last three to four decades. After the prosperous years of the 1950s and 1960s, with their high economic growth, the economy slowed down at the beginning of the 1970s, at the same time as service production increased and the industrial production of goods decreased. In addition to these changes, there was a move away from Fordist production principles and towards team-based production. These changes, together with the new information technology, created a labor market where the number of first-opportunity jobs (low-skilled jobs) decreased and the demand for employees with higher general competence and communicative skills increased (Bevelander 2000). This meant that low-skilled groups gradually lost their jobs relative to high-skilled groups, whereas, at the same time, newcomers, youth and immigrants had more difficulties in obtaining employment, which induced a general employment gap between immigrants and natives (Korpi and Tåhlin 2011; see also Bevelander 2000; Lundh and Ohlsson 1999; Broomé *et al* 1996).

Roughly during the same time as the structural changes in the Swedish labor market occurred, the immigration by country of origin changed. In actual numbers, in the 1950s the average yearly net migration was around 11,000 individuals, a number that increased to 14,000 in the 1980s and 21,000 in the 1990s. In the first decade after the millennium, the 2000s, the yearly average was almost double that of the decade before – 39,000 individuals. Whereas, in the 1950s and 1960s, labor migration to Sweden from Nordic and other European countries dominated, at the beginning of the 1970s, when the (global oil) economic crisis also hit the Swedish economy, the inflow shifted to one of refugee and family reunion migration from South-East European countries and countries outside Europe. This change in country of origin is also seen as an important factor in the gradual increase of the employment gap between natives and immigrants since the 1970s. In general, Swedish society has had a positive net population increase due to migration since WWII (see Figure 1).

Changing labour market situation

One way to measure the labour market integration of immigrants is by focusing on the unemployment level (see Figure 2). In an earlier study, Lundh *et al.* (2002) showed that the unemployment rate for foreign citizens was just a couple of percentage points higher than for Swedish citizens in 1977 – a gap that remained quite stable until 1990, when the unemployment gap began to increase. During 1997 and 1998, the unemployment rate gap peaked at around 15 percentage points higher for foreign citizens compared to Swedish citizens (Lundh *et al.* 2002). In Figure 2, the unemployment rate for the Swedish population between 2005 and 2015 is shown divided by gender and country of birth. In the first half of the 2000s, the unemployment gap becomes somewhat smaller;² the gap is quite stable over time but is higher again since the crisis in 2008 – around 10 percentage points higher for the foreign-born than for the native-born by 2015.

2 The unemployment statistics are based on an Arbetskraftsundersökningarna (AKU) (Labor Force Survey) which did not include any statistics on unemployment before 1977. From 1977 to 2002, AKU included unemployment statistics for both foreign and Swedish citizens. From 2005, AKU included unemployment rates for the foreign-born and the Swedish-born.

Figure 2. Unemployment rate (%) for the Swedish population aged 16 and 64 years by year, gender and country of birth

Although the unemployment gap between the Swedish-born and the foreign-born population is a good indicator of labour market integration, it does not give the whole picture. If, instead, we study the gap in the *employment* rate between the two population categories, we can see that the gap is, in fact, wider than the unemployment rate leads us to believe (see Figure 3 for the employment rate from 1960 to 2010).

In Figure 3 we can see that the labour market situation drastically changed during the postwar period. The economic boom of the 1950s and 1960s created a high demand for labor, especially within heavy industries like shipbuilding and car manufacture. The low unemployment levels and high employment rates of both foreign-born and Swedish-born males typifies the 1950s and 1960s, whereas Swedish females were outperformed by foreign-born females when it came to employment rates. This situation changed gradually from the 1970s on – see Figure 3, in which the employment rate by gender and country of birth from 1960 to 2011 is shown.

Figure 3. Employment rate (%) 1960–2011 by gender and place of birth

Source: Dahlstedt and Bevelander 2010 and own calculations

In Figure 3 we can see that the foreign-born population (both men and women) have a higher employment rate than the native population up until the 1970s, when it starts to fall at a steady pace until the beginning of the 1990s; in 1995 the rate drops to an all-time low. The economic crisis in the 1990s hit both natives and foreign-born alike but hit the latter much harder. The gap between the native population and the foreign-born population is cemented in this period and the gap has since closed a bit but is now around 22 percentage points for both men and women.

This gap in employment rate, as discussed above, is due to two converging developments – first the increasing demand for higher skills in the labor market and the changing migration pattern to Sweden. Hatton and Williamson (2005) argue that the changing migration pattern is due to many countries (on the richer end of the spectrum) going through a demographic transition, with an ageing population which decreases the number of adults of working age, at the same time as other countries (on the poorer end of the spectrum) are going through another transition, with improvements

in healthcare, a decrease in child mortality and a surplus of adults of working age.

This emigration fact implies an immigration corollary that has important political economy implications: relative to native-born host country populations, world immigrants have fallen in ‘quality’ over time – at least judged by the way host country markets value their labor” (Hatton and Williamson 2005: 2; see also Borjas 1985, 1987, 1989).

More immigrants come from developing countries relative to industrialized countries and are generally less skilled and therefore less successful in host countries. The increase in the proportion of family and refugee immigration and the decrease in that of independent immigrants have changed the average level of positive self-selection of the total and newly arrived immigrant population. The new immigrant groups are no longer supposed to be selected on human capital/employability criteria, and might be expected to do less well on average in the labor market compared to independent immigrants (Wright and Maxim 1993). The lack of labor market access, as shown above, is one of the most pressing issues in today’s Swedish society and is high on both the public and the political agenda. The key reasons and motivation for studying this issue in more depth in this thesis are set out below.

1. To have a large group of people who are unemployed in a society is expensive for the public coffers. Costs are both direct, in subsidies and transfers to the individual, as well as indirect, connected to health and other welfare issues like pensions by exclusion from the labor market. The attitude of the native population can affect those who are excluded and, in turn, can cause social tensions between included and excluded groups in society. For the individual, it is important to be able to sustain oneself, support one’s family and be part of wider society.
2. As can be seen in Figure 1, the current migration trend in the world, which is also affecting Sweden, has been but will not be fading in the future; rather global mobility and migration

pressure will increase (Keeley 2009). Currently Sweden is experiencing a rise in immigration by people fleeing Syria, Afghanistan, Somalia and other parts of the world due to poverty, war and political turmoil. Many of these will settle in Sweden and try to obtain employment in the Swedish labour market. The majority of those settling in Sweden come from so-called 'refugee countries' and a number of studies have shown that refugees and their families have greater difficulty in obtaining employment (Bevelander and Pendakur 2014).

3. Of those who settled in Sweden, a large proportion had tertiary education – 37 per cent of foreign-born men and 42 per cent of the foreign-born women (see Table 1). The share of the foreign-born with secondary education is 35 per cent for men and 32 per cent for women. The foreign-born with only compulsory education is 19 per cent for men and 20 per cent for women. All in all, the foreign-born have an overall educational level that is slightly lower than that of native Swedes, with the greatest difference at the low end of the educational spectrum – slightly bigger for women than for men (SCB 2014). This overall educational level of the foreign-born population obscures two facts; first, that the educational level of those who migrated after 2000 is higher than that of those who migrated before then (SCB 2014) and, second, that the educational level differs to a high degree depending on the country of origin (as discussed in the first article of this thesis). This means that a large share of those who migrate to Sweden are already educated and could be seen as a valuable resource for the labor market. However, this is, of course, dependent on these individuals being able to enter the labor market (i.e. getting a job) and whether or not they have the opportunity to use their knowledge and competence at an appropriate occupational/skill level in line with their qualifications.
4. The issue of how the children of the immigrants fare in the labor market becomes increasingly urgent in all immigration countries. Classical studies by Chiswick (1978) and Borjas (1992, 1993) on the US labor market and Crul *et al.* (2012) on European

labor markets, together with studies of the Swedish labor market by, for example, Behrenz *et al.* (2007), Behtoui (2006), Hammarstedt (2002, 2009), Hammarstedt and Ekberg (2004), Hammarstedt and Palme (2012), Rooth and Ekberg (2003) and Schröder and Wilhelmsson (1998) all seem to indicate that, even though the children do better in the labor market than their parents, they still seem to be at a disadvantage compared to the native-born population. The studies all analyze the wage differences and/or the employment status of the children. However, the occupational match and mismatch has not been studied before in relation to the second generation.

Table 1. Educational level in 2015, population aged between 25 and 64 years, by gender and place of birth (%)				
		Compulsory	Secondary	Tertiary
Born in Sweden	Men	13	51	36
	Women	8	44	48
Foreign-born	Men	19	35	37
	Women	20	32	42
Source: Statistics Sweden				

General focus of the thesis and research questions

Aim of the thesis

The aim is to analyze and discuss the role of education, for both immigrants and their descendants in Sweden,³ in the process of becoming a part of the labor market of the host society. In other words, the relationship between education and work.

This thesis is about the labor market situation in Sweden for the immigrant population and their descendants. My primary focus here is the relationship between education, employment and occupational level. The primary questions posed in the thesis are:

³ The children of immigrants are often referred to as second-generation immigrants or just the second generation. I think that this is a problematic concept in that it implies that the children of immigrants have also migrated, which obviously is not the case. Instead I will use either the concept descendants of immigrants or just children of immigrants.

- Does level of education matter for labor market access?
- Does the educational level of the individual match the skill level of the job?
- Is the occupational match dissimilar for different country-of-birth groups?
- Do the children of immigrants have a higher occupational match than their parents?
- How does the relationship between education and work look when a part of the population has obtained their education in another country?

By focusing on these important questions, this thesis tries to add to the existing knowledge on the relationship between immigration, education and employment in a Post-industrial country like Sweden. The analysis is based on three empirical articles. In the first article (Dahlstedt and Bevelander 2010) the focus is on how education affects migrants' chances of obtaining employment in the Swedish labor market. In the second article (Dahlstedt 2011) the focus is on the employed segment of the population and how their education affects their chances of being employed on a matching skill level (an occupational match). Finally, in the third article (Dahlstedt 2015), the focus is on the children of immigrants and their risk of being mismatched on the labor market, i.e. working at a skill level that is below the educational level of the individual.

Disposition

The following sections of this chapter include a Background, which covers Swedish migration history together with a description of the development of the Swedish labor market, both with an international outlook. In the Methods section my methodology and data collection used in the three articles are described, and the definitions of variables and samples are discussed. This is followed by an extensive summary of the three articles of the thesis. In the main empirical findings section, the contribution of the articles is discussed from a critical perspective, with a snapshot of the labor market in Sweden today.

BACKGROUND

Migration to Sweden

The 1950s, 1960s and the beginning of the 1970s can be said to be the golden age of Swedish industry (Schön 2014). Economic growth during the 1950s and 1960s developed in a both stable and even pattern – was about 4 per cent per year in the 1950s and even 5 per cent yearly in the 1960s. Both production and consumption grew, as did employment – within the industrial sector it increased in both absolute and relative numbers until the 1960s, when it began to decrease. At the same time the service sector started to grow, which gave way to a decline in the number of women in unpaid work from 1.5 million in the early 1950s to around 500,000 by the end of the 1960s. Swedish exports also grew considerably and increased fourfold during the two decades of the 1950s and 1960s. The exports changed character from iron and wood to machines, cars and transportation. Machines and transport vehicles represented 20 per cent of exports at the beginning of the 1950s and 40 per cent at the beginning of the 1970s. During this period, Sweden accounted for about 10 per cent of the world's shipbuilding (Schön 2014).

The high economic growth in the period between 1950 and the beginning of the 1970s created a high demand for labor, a demand that could not be satisfied by domestic labor alone. Thus Swedish immigration policies started to liberalize. In 1954 a common Nordic labor market was created, enabling citizens of the Nordic countries to work in any other of the others (Fischer and Straubhaar 1996; Wadensjö 1973). Workers from Finland, Norway and Denmark started to work in Swedish industries. In addition to the common

Nordic labor market, Sweden also started an organized recruitment of labor from European countries which supplied its industries with workers. This recruitment drive, together with the possibility to go to Sweden on a tourist visa and search for jobs, was an important liberalization of Swedish immigration policy designed to fill the demand for labor in the country's industries. In addition to this, Sweden signed the Geneva Convention in 1954 which enabled political refugees to seek asylum in Sweden.

About 60 per cent of the migration during the 1950s and 1960s had its origins in the neighboring Nordic countries, with Finland as the single largest country (see Table 2). Migration from Europe was about 30 per cent of the total migration to Sweden and consisted of migrants from West Germany, Belgium, the Netherlands, Greece, Italy and the former Yugoslavia as well as Turkey (Lundh and Ohlsson 1999).

Table 2. Immigrants by region of emigration, 1950–2015 (%)							
	1951 – 1960	1961 – 1970	1971 – 1980	1981 – 1990	1991 – 1999	2000 – 2009	2010 – 2015
Nordic countries	61	60	50	30	17	18	12
Other European countries	30	30	25	23	40	35	33
Non-European countries	9	10	25	47	43	47	55
Source: Hammarstedt 2001 (1950–1999) and Statistics Sweden (2000–2015).							

In the middle of the 1960s, the labor unions' position on immigration changed and they argued for a more restrictive immigration policy (Lundh 1994). In 1968, restrictions were put in place to regulate non-Nordic labor migration and, in 1972, the policy became even stricter, with a total stop put on it. Moreover, when the oil crisis struck the booming Swedish economy in 1973, it created a high level

of return migration (especially to Finland) and, over the next few years, more people left the country than arrived.

During the second half of the 1970s, migration to Sweden changed, partly due to the restrictions on non-Nordic labor migration. European migration dropped significantly while, at the same time, an increasing number of asylum-seekers arrived on the Swedish borders, especially from Latin America and Turkey. The general lower economic growth after the oil crisis also meant that the demand for foreign labor decreased substantially. This gradual lowering of Nordic migration to Sweden was mainly due to higher labor demand in their origin countries.

During the 1980s, migration to Sweden consisted mostly of asylum-seekers – who subsequently obtained asylum – and family reunion with earlier migrants and asylum-seekers. During the previous period (from the 1950s to 1970s) only about 5 per cent of all migrants consisted of refugees (Lundh and Ohlsson 1999).⁴ During the 1980s, this figure increased to 47 per cent – and to 47 per cent for family-reunion migrants – indicating that few came as labour migrants with the Swedish labor market their first priority in their move to Sweden (see Table 3). Also, when it comes to the mix of countries of origin, the 1980s show a different picture compared to earlier decades. By then, half of the immigration to Sweden was from non-European countries, following conflict in various parts of the world. Refugees from Iran, and Iraq came for this reason, as did Chileans, Ethiopians and Vietnamese refugees. This pattern of refugee and family-reunion migration to Sweden – most apparent in the 1980s – continued into the 1990s, 2000s and 2010s. Wars, conflicts and political turmoil around the world were key factors behind more people seeking safety in Sweden. Moreover, during the 1990s, first with the signing of the European Economic Area (EEA) agreement and later with the country's entrance into the European Union in 1995, migration from EES and EU countries also represented an important percentage of the number of migrants to Sweden, although it took a backseat compared to refugee and family-reunion migration.

4 In 1956, during the crisis in Hungary, and in 1968 during the Prague Spring, asylum-seekers went to Sweden. There is some evidence to suggest that many of the immigrants who came as workers were, in fact, refugees or at least came from countries where oppression and violence were present, since many of the workers came from countries that were dictatorships during this time – countries like Yugoslavia, Turkey, Greece and Spain (Winai Ström 1992).

Table 3. Reason for residence permits 1980–2015 (%)								
	Total number of permits	Refugees	Family ties	Labor market	Guest students	Adoption	EU/EEA	Yearly average net migration
1980– 1989	206,839	47	47	0	3	3	0	14,740
1990– 1999	427,220	37	49	0	4	2	8	21,159
2000– 2009	710,766	16	37	16	10	1	20	38,945
2010– 2015	632,063	23	36	17	9	0	16	60,970
Source: Swedish Migration Board.								

In volume, the 1990s reached a new and historic high and a yearly average of 53,043 individuals immigrating to Sweden (with 1994 as the highest year with 83,598 immigrants). The yearly net migration during the 1990s was 21,159 individuals compared to the yearly average of 14,470 in the 1980s. During this period, European migration increased to 40 per cent of all immigrants arriving in Sweden. The increase in migration from Europe was primarily driven by the war in the former Yugoslavia, while the non-Europeans were mostly driven by the Gulf War in Iraq and the war in Somalia. During the 1990s, 37 per cent of the residence permits granted were to refugees and another 49 per cent to family-reunion migrants.

During the 2000s, migration continued on its upward trend; the yearly average net migration increased to 38,945 individuals and residence permits granted during this period exceeded 700,000. Migration from European countries made up 35 per cent of migration to Sweden and was determined by migration from the new EU countries which became members in 2004 (i.e. Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia). Migration from Poland was especially high and grew from around 500 individuals yearly before 2004 to between 5,000 and 7,000 yearly after 2004.

Refugee and family reunion migration continued and made up around 53 per cent of the total residence permits granted. Almost half of the migrants during this period came from outside Europe. The war in Iraq drove the out-migration from the country; from 2006 to 2008 it was especially pronounced, with over 10,000 individuals yearly (15,000 at its peak in 2007). Migration from Somalia increased from around 600 individuals in 2000 to 7,000 in 2009.

In the most recent period, from 2010 to 2015, the migration continued to grow and the yearly net-migration average was close to 61,000 individuals, 55 per cent of whom came from non-European countries. Somali migration continued to increase and peaked in 2013 with just over 10,000 individuals in that year. Migration from Afghanistan, Iran and Iraq continued. Due to the war in Syria, migration from there rose from around 1,200 individuals in 2010 to 26,000 in 2014 and 30,000 in 2015. These latter two years are the only ones where immigration from another country was greater than that of Swedish citizens returning to Sweden.

The three empirical articles in this thesis are based on an analysis of two years – Articles I and II on the year 2003 and Article III on 2007. In the first two articles, the immigrant groups studied are people from the former Yugoslavia, Poland, Romania, Bosnia-Herzegovina, Chile, Germany, Iraq, Iran and Lebanon – all among the largest groups in Sweden today. In Article III, groups from Chile, Denmark, Estonia, Finland, Greece, India, Italy, Poland, Turkey, Germany, UK and Yugoslavia were studied, on the basis that these groups cover both first-generation immigrants and their children. In Table 5, the immigrant stock for the years 2000, 2003, 2007 and 2015 is divided by country of birth. The table shows the 20 largest groups of foreign-born immigrants in 2015 as well as those from Estonia, Greece, India and Italy, since they are also part of the analysis in Article III.

Table 4. Immigrant groups in Sweden by year of arrival, 2007–2015				
	2000	2003	2007	2015
Finland	195,447	189,341	178,179	156,045
Iraq	49,372	67,645	97,513	131,888
Syria	14,162	15,692	18,229	98,216
Poland	40,123	41,608	58,180	85,517
Iran	51,101	53,241	56,516	69,067
Yugoslavia	71,972	75,099	72,939	67,190
Somalia	13,082	14,809	21,597	60 623
Bosnia & Herzegovina	51,526	53,949	55,713	57,705
Germany	38,155	40,217	45,034	49,586
Turkey	31,894	34,083	38,158	46,373
Norway	42,464	45,087	44,590	42,074
Denmark	38,190	40,921	45,941	41 870
Thailand	10,353	14,294	22,926	38,792
Afghanistan	4,287	7,017	10,605	31,267
Eritrea	3,054	4,353	6,769	28,616
China	8,150	10,852	16,013	28,410
Chile	26,842	27,528	28,019	28 072
Romania	11,776	12,343	15,214	26,358
Lebanon	20,038	20,811	22,967	26,159
Great Britain/N. Ireland	14,602	16,428	18,486	25,266
Estonia	10,253	9,964	9,800	10,303
Greece	10,851	10,853	10,833	16,025
India	11,110	12,349	14,415	23,237
Italy	6,337	6,584	6,845	10,769
Total foreign-born	1,003,798	1,078,075	1,227,770	1,676,264
<i>Source: Statistics Sweden.</i>				

Overall, the foreign-born population in Sweden increased from just over one million individuals in 2000 to almost 1.7 million in 2015. The largest immigrant group in Sweden is still that from Finland, with 156,045 individuals in 2015; however, group decreased during the 2000s. The other Nordic groups had either no or only a small increase during the period. As can also be seen in the table, the large Iraqi migration during the 1990s and 2000s grew by over 82,000

individuals from 2000 to 2015. The same can be said for the Syrian group, whose rapid growth was even quicker than that of the Iraqi group – a growth of about 84,000 individuals during the 2000s. The Somali group also showed a large increase during this period, as did people from Eritrea, Thailand and Afghanistan.

Since the focus of the third article in this thesis is the labour market integration of the children of immigrants, their share of the Swedish population is traced in Figure 4. Here it is visible that both the foreign born population as well as their children are increasing over time and together they make up more than one fifth of the total Swedish population. In absolute numbers the children comprise from just over 300,000 in 2002 and 510,000 in 2015.

Integration policy

At the beginning of the 1970s the government initiated the first actions to facilitate immigrants' adaption to life and settlement in Sweden. The prevailing opinion during the 1950s and 1960s was that those immigrants who stayed in the country should assimilate into Swedish society, although Sweden never formulated an official assimilation policy (SOU 1996: 55). In 1968, the government initiated an investigation⁵ with the aim of formulating a policy that would facilitate immigrants' adaption to Swedish society. This investigation was the starting point for a policy towards immigrants which treated them in the same way as it did Swedish natives (Öberg 1994). In the final report of the investigation (SOU 1974: 69)⁶ – Bill 1975: 26 – three important aims for this policy were adopted: equality, freedom of choice and partnership. All policies that facilitate immigrants' adaption to Swedish society should be governed by these three aims.

The aim to ensure *equality* included not only the standard material, but also that immigrants should be included in society through being taught the Swedish language and knowledge about the Swedish society at the same time as being given the opportunity to keep their native language and cultural identity. This included things like language courses for adults, interpreter assistance, information about Swedish society, and mother-tongue education for children (Borevi 2012). 'Apart from this, the reform work aimed at ensuring that immigrants – as far as possible – came to enjoy the general services and benefits of the welfare state' (Borevi 2012: 43). The goal of *freedom of choice* meant that immigrants were given the choice about the extent to which they wanted to keep their native language and culture. *Partnership* meant that the policies should include close cooperation between majority and minority populations.

In 1986 the first anti-discrimination law was adopted – Bill 1985/86: 98 – which was designed to prevent (ethnic) discrimination and an ombudsman for ethnic discrimination was created. In 1994, this law was replaced by a new anti-discrimination law focusing on the labor market (Emilsson 2016).

The policy that was drawn up by the *Invandrarutredningen* or IU was the governing policy until 1997 when the government

⁵ Invandrarutredningen (IU).

⁶ Adopted 1975.

Bill 1997/98: 16 – *Sverige, framtiden och mångfalden: från invandrarpolitik till integrationspolitik*⁷ – was adopted by parliament. The proposition laid down an integration policy that was both much wider and more general than previous policies. It was not only aimed at the immigrant population but also included the native population; in this way, questions regarding integration became a general societal issue relating to the whole Swedish population. Efforts aiming specifically at immigrants should, according to the proposition, only include the first period of stay in Sweden. The new approach of the integration policy emphasized individual rights and equality and ‘aimed at streamlining immigrant integration measures in all policy areas. Both immigrants and the majority population would have to change and adapt to a society characterized by diversity and shared democratic values’ (Emilsson 2016: 23). This bill also meant that a new authority, the Integration Board, was created.⁸ In 2010 an introduction policy reform was introduced. As Borevi (2012) argues ‘The design of the new introduction benefit is intended to encourage new arrivals to both work and take part in introduction activities, emphasizing the idea that economic incentives will promote and speed up the integration’ (Borevi 2012: 85).

The common thread in the immigrant/integration policies discussed above is the importance of work – or the so-called ‘workline’ (Borevi 2012) – so these policies included a number of measures to make it easier for immigrants (and new arrivals) to gain a foothold on the labor market.

The above description concerns the general development of the integration policy. In order to make it more specific, we need to focus on the development of policies related to the labor market. Six basic efforts were made to bridge the gap with the labor market, four of which built on the individual’s human or social capital: validation of education, complementary education, networks, wage subsidies and anti-discrimination (see, for example, Joyce 2015).

When an individual enters Sweden his/her skills, competences and education need to be recognized, either through validation or valuation. Sweden has, by tradition, only a few regulated occupations and professions, most of which are found in the areas of medicine,

⁷ *Sweden, the Future and Diversity: From Immigrant Policy to Integration Policy.*

⁸ The Integration Board was closed down in 2007.

healthcare, shipping, aviation and education. In order to obtain employment in these occupations and professions, a person needs to have his or her qualifications recognized by the relevant authorities – for example, in medicine the Swedish National Board of Health and Welfare is responsible. In other sectors an individual needs some kind of certificate or diploma (e.g. as a social worker) in order to obtain work in that particular occupation. Most occupations are unregulated, however. When a vocation is unregulated the relevant trade organizations instead set some kind of standard in terms of what an individual needs to know in order to obtain work in that particular trade or occupation (Tema Nord 2004: 560).

The National Agency for Service to Universities and University Colleges (VHS) recognizes and evaluates a general or unregulated vocational foreign university education. Secondary education is recognized by the decision-making board of the local secondary school or nearest adult education centre – KOMVUX (Tema Nord 2004: 560). In order to speed up and make the evaluation and validation process more effective, the Swedish government created the National Commission on Validation – *Valideringsdelegationen* – active from 2004 to 2007. The Commission defined validation as the precise assessment, valuing, documentation and recognition of knowledge and competences that an individual has gained, irrespective of how and where they have been acquired. Here competence in the form of practical knowledge and ‘formal’ competence in terms of educational documentation are the focus of validation (Andersson *et al.* 2005; for a more in-depth discussion of validation, see Andersson and Fejes 2005).

Although validation is a fairly new concept in the Swedish context, projects aiming to highlight an individual’s skills did exist before the National Commission on Validation introduced the concept. One example of such a project is YPI (Vocational Assessment for Immigrants), arranged by the Swedish Employment Service from 1988 to 1996.

The Swedish labour market

The Swedish welfare state developed after World War II and has been depicted as a social democratic welfare state (Esping-Andersen 1990). The welfare state is linked to a highly centralized organization

of working life which include a regulation of the labour market via collective agreements between the state, the labor unions and the employer associations. This regulation has created strong job security and a compressed wage structure. This, in turn, has created a strong insider/outsider dynamic on the labor market, which has led to a situation where immigrants are over-represented in unemployment rather than in low-paid jobs (as in the US). On the other hand, when employed, there are small wage differences between the foreign-born and the Swedish-born population (Bengtsson *et al.* 2005; Lundh *et al.* 2002).

Both the structural change over time, from a Fordist industrial economy to a flexible service economy, as well as the change in immigration by source country, have created pressure on this welfare model in the last 30 years. The further aim of this chapter is to discuss the current state of research on the labor market integration of immigrants with a special focus on the Swedish labor market. Research on the labor market inclusion of immigrants is vast, both with regards to that of both Sweden and of other countries. To bring some order to the presentation of the research, my discussion is ordered around the different factors that affect the labor market position of the individual. One factor has already been touched upon – structural change on the labor market and within the industries. The second factor that is discussed in the research around the labor market is the different types of discrimination. To what extent is the gap in the employment rate between natives and immigrants due to discrimination and is ethnic discrimination common on the Swedish labor market? Since the literature on discrimination is vast, ranging from discussions around structural and institutional discrimination to preference and statistical discrimination, this chapter will focus on those studies that try to provide empirical proof of discrimination through experimental methods.

If structural change sets the scene for the current labor market and the employment integration of immigrants in Sweden, it also put the emphasis on a higher demand for communicative and country-specific skills and on the level of education. The focus of the first part of this thesis, the type of education, educational level, and the place of obtainment are in line with earlier observations and the human-capital theoretical assumptions that dominate the research

on immigrant labour market integration – an important factor that can explain the gap in employment rate between the native- and the foreign-born population in recent decades. Moreover, in the literature, human capital and discrimination are not the only explanations that are discussed. In contemporary research on migration from both a sociological and an economic perspective, the developments of signaling theory and, in connection to this, an individual's social capital, are argued to also be important explanations for immigrants facing difficulties in obtaining a job at a matching skill level and earning equivalent wages to natives given the same type of occupation. All these explanations are also valid in the discussion of the labor market integration of the children of immigrants.

Discrimination

Discrimination on the labor market can be an elusive subject to study due to the very nature of the concept. Discrimination can occur in many phases and under many circumstances in the labor market: when choosing who to call to an interview, when deciding who will get a job, when deciding the wages, when deciding the work tasks, and in the social interaction in the workplace and within a working team. There are also many different definitions of discrimination (see, for example, Roth 2008). In this section I am mainly interested in preference (whether employers, employees or customers have a negative attitude towards the foreign-born population) and statistical discrimination (whether employers exclude groups that they think have a lower average productive ability) in the recruiting process, both of which affect the employment level of a group.

It is difficult to study discrimination in the recruitment process directly since the decisions on who to hire are made by the employer in situations which are difficult for the researcher to access. Moreover, even if the researcher does get access, it is still difficult to 'prove' discrimination. An indication of discrimination that has been suggested is to measure how much of the gap in the employment rate can be attributed to observable characteristics (i.e., human capital, social capital and so forth) and unobserved characteristics. An example of this is Bevelander and Skyt Nielsen's (2001) study. They found that 'The dominating part of the huge increase in

employment gap between Swedish males and immigrant males is due to unobserved factors' (2001: 467; see also le Grand and Szulkin, 2002). One way to interpret the unobserved part of the gap in the employment rate is to interpret it as discrimination. The strength of these studies are that the material for the analysis is quite easy and cheap to obtain – for example, register data or data from labor force surveys. The drawback with these types of study is that the material limits the analysis in that the researcher can only use the variables included in the registers or surveys. This means that there is always a possibility that the results are affected by unobserved characteristics other than discrimination.

Rooth (2002) makes use of register data in another way than that discussed above. In an attempt to capture discrimination due to skin color, he compares the probability of employment between native-born Swedes and foreign-born individuals adopted as children and raised in Sweden. The assumption behind the study is that being born outside of Europe is highly correlated with a different phenotype or skin color compared to native Swedes. The results in the study indicate that adoptees who look foreign have a lower probability of being employed compared to native Swedes. This difference cannot be explained by the observed characteristics in the study, which means that the difference is caused by unobserved characteristics and/or by discrimination. The study gives some evidence of the existence of discrimination based on physical appearance but none on the extent to which the discrimination occurs.

Another way of studying discrimination is through different field experiments. This type of research has been around since 1968, when the first study using this method was conducted in the English housing and labor market (Riach and Rich 2002). Nowadays this method is in use in several countries, including Belgium (Smeesters and Nayer 1998), Germany (Goldberg *et al.* 1996), the Netherlands (Bovenkerk *et al.* 1995), Spain (de Prada *et al.* 1996), the US (Cross *et al.* 1990; Turner *et al.* 1991) and, of course, Sweden (Carlsson and Rooth 2007).

One of the most common field experiments is *situation testing*. The idea here is that, by creating two or more applications to job positions with identical (and, for the position, relevant) human capital characteristics but with, for example, different names,

country of birth or religion, indicating ‘ethnicity’ as the only item that differs between the applications, different reactions to these applications by employers would imply discriminatory behavior. ‘Hence, this methodology ensures that productive characteristics on the supply side are held constant. Ethnic discrimination is quantified by the difference in the number of callbacks for interview between the two ethnic groups’ (Carlsson and Rooth 2007: 717).

In the study conducted by Carlsson and Rooth (2007), the applicants had either a ‘Swedish-sounding’ name or a ‘Middle-Eastern-sounding’ name. Applications were sent out to several job positions in 12 different occupations. The researchers found that applicants with a Middle-Eastern name had between a 6 and a 14 per cent lower probability of being called for interview compared to applicants with a Swedish name. The results of the study demonstrated that an individual with a Middle-Eastern name had to apply for up to 15 jobs in order to be called for three interviews, compared to those with a Swedish name, who only needed to apply for 10 jobs to achieve the same number of callbacks (Carlsson and Rooth 2007: 726). Moreover, the authors suggest that the differential treatment varies with the skill level of the job (more discrimination at lower skill levels), the number of employees at the workplace (more discrimination in smaller workplaces) and the gender of the recruiter (more discrimination if the recruiter is a man).

There are, however, a couple of drawbacks to this type of field experiment. The first is ethical problems since the employers involved in the experiment are unaware of them being tested, which means they cannot consent. The other drawback is that the method only measures the occurrence of discrimination, not why the discrimination occurs or whether it is preferential or statistical discrimination. In order to provide answers, other methods must be employed in connection with situation-testing experiments.

Agerström and Rooth (2009) try to determine why discrimination occurs by employing an implicit association test, which measures whether or not employers have a ‘stereotype bias’ against certain groups on the labor market – they found evidence of such bias against Arab-Muslims. In their article, the authors try to measure both employers’ implicit and explicit association with Arab-Muslims, and found that they implicitly associate Arab-Muslim males with lower

productive capabilities relative to Swedish males: ‘It was found that recruiters who automatically associate Arab-Muslims with low-performing attributes are less likely to choose to invite Arab-Muslims and more likely to invite Swedes for job interviews’ (2009: 52). This result is strengthened in Rooth’s (2010) study, which combines situation testing and the implicit association test. The article also shows that the discriminatory behavior of the employer is implicit, which means that the employer is unaware of his or her tendency and does not explicitly discriminate. This shows that discriminatory behavior is a complex and difficult thing to capture and to fight against with policies and legislation (for more international and Swedish examples, see Agerström and Rooth 2011; Agerström *et al.* 2012; Blommaert *et al.* 2012; Bursell 2007; Carlsson and Rooth 2012, 2016).

Another strand of research that provides empirical indications of discrimination is the ‘name-changing’ literature. By studying the income differences between people from Africa, Asia and Slavic countries who changed their surname to a Swedish-sounding name and people from the same countries who maintained their original name, Arai and Skogman Thoursie (2009) found that the name-changing group increased their annual earnings by between 10,000 and 15,000 SEK (see also Arai *et al.* 2006: 36).

There is, in the research reviewed above, substantial evidence of discrimination on the labor market. Whether it be preferential or statistical is more difficult to say, but the results from the implicit association test studies suggest that a large part of the discrimination is, in fact, statistical (employers do not chose from groups that they think have a lower average productive ability).

Networks and social capital

One strand of labor market research stresses the importance of networks and social capital in gaining access to the labor market. There are few people today who would deny the influence of family, friends and acquaintances – i.e. their networks – to their economic life. Networks and social capital allow information about a potential job position to reach the applicant and, *vice versa*, they allow information about a potential employee to reach the employer

and enables contact to be made between the two people (see, for example, Granovetter 2005).

To secure a position on the labor market there are two basic ways through which job-seekers can gain information on vacancies – formal and informal channels. The formal channels include state- and private-owned employment services, newspaper adverts and union hiring halls. Informal networks, on the other hand, include referrals from employers and employees and inquiries through social connections – i.e. inquiries through the network and social capital (Ioannides and Loury 2004). Although the use of informal channels is not a new thing, but their relative importance has increased (Håkansson and Tovatt 2016).⁹

There is quite a lot of evidence on the importance of the informal channels. According to Okeke (2001), only 20–26 per cent of all ‘newly employed persons’ had found employment through formal methods. Conversely, Ekström (2001) found that 65 per cent of employers use informal channels in their recruitment process.

The question that arises here is whether or not immigrants have the same access to networks and social capital as natives, use informal channels in the same way as natives and get the same return as natives.

There are some studies that focus on immigrants’ access to networks and social capital (Behtoui 2004, 2008, 2013, 2016; Behtoui and Neergaard 2012). Behtoui (2007) finds that higher education and greater work experience induce increased access to social capital and that being an immigrant entails less access to social capital, especially for those from outside Europe or Western countries. This means that the access to social capital is mediated by other forms of capital, such as human and ethnic capital. Behtoui and Neergaard (2012) support these findings (see also Behtoui 2013; Behtoui and Neergaard 2010; Borjas 1992, 1993). These studies indicate that, unlike natives, immigrants are deprived of similar access to networks and are less likely to find jobs through their social contacts (capital) (Behtoui 2008). In addition, the outcomes of their social capital are dependent on their educational level – those with the highest and lowest levels of education tend to find jobs more often through social networks (Behtoui 2016).

⁹ Between 1976 and 2007, all job positions had to be reported and advertised with the national employment services. This requirement was, however, abandoned long before 2007.

The next question that arises is whether or not immigrants use networks in their job-searching in the same way as natives? Olli Segendorf (2005) studied the job-search behavior (methods used and intensity) of immigrants and natives. Her results indicate that immigrants who obtained a job used informal methods more than did the natives. She also found that, among those who secured a job, immigrants ‘submitted more applications and spent more time in job search, while those who didn’t get jobs had searched as much as the natives had done’ (2005: 9). Furthermore, those immigrants who were successful in finding a job had also been more selective in their search methods and that, therefore, those who used most methods did not get any job, indicating that those who were more selective were more successful Olli Segendorf (2005).

Åslund *et al.* (2009) studied the recruiting problem from the other end – from the managerial perspective. They found that employers often hired people who shared the same background as the manager, which they claim is due to background bias in the hiring process, with immigrant managers hiring immigrants and native managers hiring natives. They conclude their study by stating: ‘Overall, our results indicate that lack of access to “key players” at the labor market can explain some of the difficulties faced by workers of non-Western descent. Increasing the representation of immigrants in managerial positions could therefore improve other immigrants’ employment prospects’ (2009: 31).

As argued above, both discrimination and social capital are viable and important explanations for the employment gap between immigrants and natives. As shown in the above description of theories, the extent of social capital is dependent on the educational level – more education equals more social capital. This means that there is a high correlation between social capital and human capital. As Erickson (2001) put it: ‘Individuals with better social capital get better jobs, but the effect is spurious, because people with better education and work experience get both better jobs and have greater social capital’ (2001: 128), quoted in Behtoui 2007: 384).

The human capital framework

The basic theoretical assumptions that underlie most economic studies explaining differences in group outcomes are rooted in

human capital theory. This theory starts from the assumption that people invest in themselves; the investments could be in health, in knowledge, in migration or in any other way that increases their productivity and thereby increases both their chances of obtaining employment – adequate according to their skill level – as well as their earnings on the labor market (Becker 1964, 1992; Shultz 1961). Their educational level, from this perspective, is one important investment in the self among a number of others.

Two assumptions form the foundation of human capital theory: i) what is learned in school has a bearing on what is needed in work, meaning that real knowledge which is useful in the labor market is learnt in schools and ii) the higher the educational investment (educational level) the higher the productive capability becomes and this should result in a higher salary (Bills 2004). In the human capital literature, the focus is primarily on monetary benefits that come from investments in human capital but, as Becker (1992: 89) states, ‘Nothing in the concept of human capital implies that monetary incentives need be more important than cultural and non-monetary ones’.

However, from a migration perspective, human capital theory needs to be more specific. In relation to this, the work of Barry Chiswick is of special interest. As with human capital, for immigrants it is also expected that a higher educational level will lead to easier access to jobs and higher wages (Chiswick 1978). For immigrants, we have to distinguish between schooling that took place both before and after migration (Chiswick and Miller 2007). From a human capital perspective, it is assumed that pre-migration schooling incurs a penalty – in other words, there is a devaluation of human capital in the migration process which means that pre-migration schooling is worth less on the labor market compared to post-migration schooling (i.e. schooling in the host country). Chiswick and Miller (2007) support the hypothesis that post-migration education, in this case education received in Sweden, carries a premium in the labor market compared to that in migrants’ countries of origin. At an empirical level, this means that immigrants with pre-migration schooling face greater difficulties in acquiring a job than those with post-migration schooling.

Chiswick and DebBurman (2003) discuss this devaluation of human capital by creating a distinction between international transferable skills and country-specific skills in education. 'The more general the skills acquired through schooling in the origin, the greater the transferability to the destination and hence the smaller the decline in value of skills upon migration' (2003: 6). Another way to put it is to say that all education consists of an internationally transferable component and one component that is country-specific or non-transferable. The amount of each component decides the value of the education on the post-migration labor market.¹⁰

The articles in this thesis are in line with the above studies and the human capital literature. The investment in human capital by immigrants and natives will affect their chances of obtaining (paid) work (Article 1) and especially the likelihood of obtaining work which correlates with the level of education achieved (Articles 2 and 3).

Closely connected to human capital theory is the signaling theory launched by Spence (1973). The basic assumption behind labor market signaling is that there is a situation of asymmetric information in the hiring process. This means that one party (the better-informed potential employee) has to signal information about his or her productivity to the other party (the poorly informed potential employer). Since high education signals high productivity, one way for the potential employee to signal that he or she is a good employee with high productivity is to invest in education (Spence 1973). So investing in education in the signaling perspective does not necessarily mean that the individual increase his or hers productive capability; instead education is 'just' a way of signaling the potential productive capability. Spence (1973) argues that there are basically two types of signal – *indices* and *signals*. Indices are observable characteristics of the individual that are more or less unchangeable – gender, age, ethnicity, skin color and name. Signals, on the other hand, are changeable observable characteristics and, when an individual invests in signals, he or she changes these characteristics. Examples of signals are education, work experience and other types of training.

10 Chiswick and DebBurman do not directly try to measure the amount of each of the two components in different educations. Indirectly they capture it by saying that those who have a high wage in the labor market of the host country but a pre-migration education probably had an education with a high internationally transferable component.

Human capital, signaling and migration

Since human capital and signaling are the main theoretical perspectives used in the three articles in this thesis, the following section is a discussion of these theories with a focus on the labor market situation for immigrants in Sweden.

Chiswick and debBurman (2003) argue that the more general the skills and knowledge acquired through education, the greater the transferability. This is true from a human capital perspective but can be questionable from a signaling perspective. It is easy to see that general skills obtained are easier to transfer than skills that are more specific for the country of origin. It is also argued that education in itself is a form of human capital that is more general and which contains a greater international transferable component than other forms of human capital such as work experience.

However, signaling theory argues that certain types of education functions as signals that are easier for the employer to recognize. Vocational education such as carpenters, electricians, nurses or medical doctors could, from a signaling perspective, be more recognizable than a more general education. The more recognizable educations should, with this line of reasoning, have a higher amount of the international transferable component compared to the less recognizable educations (such as general education). This is also why it is important to distinguish between pre- and post-migration education from the perspective of signaling theory. In post-migration education, signaling the potential productivity of the individual causes few problems, since employers are expected to be knowledgeable about the education system and its output.

On the other hand, and in the same way as in human capital theory, those with pre-migration education could face difficulties in that employers may have difficulty translating the migrants' signals. This can lead to at least two empirical outcomes: firstly, greater difficulty in obtaining a job for those with pre-migration schooling only. A second outcome, in a next stage, is de-skilling, in which individuals accept jobs that are below their educational level. Since the labour market is asymmetric, when employers do not fully comprehend the signals sent by the applicant they will try to minimize the risks and make sure that they hire individuals with a level of education that is higher than the skills level of the job.

From both a human capital perspective and a signaling perspective it is assumed that, after an individual moves to another country, he or she will invest in human capital and signals to counterbalance the loss in employment level and earnings from migration. Investment in host-country human capital and signals can be an investment in education, language and knowledge of the local labor market etc. In a way, migrants with pre-migration education will need to exchange their foreign human capital with local capital in order for it to be recognized by employers. In terms of signaling, the individual must translate their signals into a language that can be understood by employers in the host country.

METHOD

The three studies included in this thesis are all based on Swedish register data supplied by Statistics Sweden. Although similar methodological approaches are used, there are differences in how the population is defined and how the variables are operationalized. All three studies make use of cross-sectional statistical information and analyze the labor market situation in Sweden in a particular year (Articles 1 and 2 for 2003 and Article 3 for 2007). The following section consists of a description of the data and study populations and of how the variables are defined and employed.

Data and populations

In Article 1 the sample population is drawn from Statistics Sweden's database LOUISE (Longitudinal Database on Education Income and Employment) for the year 2003. All individuals between the ages of 25 and 64, from nine selected immigrant groups together with the Swedish-born population, were selected for the analysis – a total of 3,818,989 individuals. The sample groups are those born in Sweden (reference group) and nine selected foreign-born groups from Yugoslavia, Bosnia-Herzegovina, Poland, Romania, Chile, Germany, Iraq, Iran and Lebanon.

Article 2 also makes use of data from 2003. The sample consists of all employed individuals aged between 25 and 64 years for whom information is available on education, job level, marital status, country of birth, years of residence in Sweden and age. The total sample is 3,244,775 individuals, divided into the following groups: the Swedish-born (reference) and those born in Yugoslavia, Bosnia-

Herzegovina, Poland, Romania, Chile, Germany, Iraq, Iran and Lebanon. All remaining immigrant groups are put into one category.

Table 5. Sample description by gender				
Article	Database	Age	Men	Women
1	LOUISE (register)	25–64	1,957,874	1,861,115
2	LOUISE (register)	25–64	1,646,198	1,598,577
3	STATIV (register)	25–64	1,833,423	1,761,869
<i>Source:</i> Statistics Sweden				

Article 3 uses individual register information from STATIV (A longitudinal database for studies of integration). The sample in this study consists of all individuals between 25 and 64 years who are employed and for whom the database has information on education and job skill level. The sample totals 3,595,292 individuals. In this study, the population is first divided into the foreign-born and the Swedish-born. The former category is then divided into 12 groups of interest, based on the country of birth (all other foreign-born are put into one group). The Swedish-born population is divided into those who have two Swedish-born parents (reference) and those who have either two parents born in any of the 12 countries of interest or who have one parent born in the country of interest and the other in Sweden. Those with parents born in two different countries are put into the other group together with all those who have parents born in a country that is not the focus of the article. The foreign-born groups in Article 3 are from Chile, Denmark, Estonia, Finland, Greece, India, Italy, Poland, Turkey, Germany, the UK and Yugoslavia.

Table 6. Groups studied in the three articles			
	Article 1	Article 2	Article 3
Sweden	X	X	X
Yugoslavia	X	X	X
Poland	X	X	X
Chile	X	X	X
Germany	X	X	X
Bosnia-Herzegovina	X	X	
Iraq	X	X	
Iran	X	X	
Lebanon	X	X	
Romania	X	X	
Denmark			X
Estonia			X
Finland			X
Greece			X
India			X
Italy			X
Turkey			X
UK			X
<i>Source:</i> Dahlstedt and Bevelander (2010), Dahlstedt (2011) and (2015)			

In Articles 1 and 2, the selected groups include more non-European groups than Article 3. The different selection of groups in Article 3 is due to the age composition in the descendant generation.

As discussed above, the three studies in this thesis are based on data from the official registers in Sweden. The advantage of these data is that they are fairly accessible and well suited for studies of labor market integration and the comparison between groups, even smaller ones, since they cover the entire population. In general, the data in the registers are considered to be of high quality and reliability (the foundation is the tax records), but there are some problems related to this type of data.

Firstly, all register data are connected to the personal number attributed to every individual resident in Sweden. In order to acquire a personal number, the individual must have the intention

to stay more than one year and to have the legal right to do so. This means that those individuals who go to Sweden, for example, as asylum-seekers, will not be included in the registers until they have received a positive response to their asylum request and subsequently obtained a resident permit. This means that asylum-seekers who are still awaiting the outcome of their claim are not included in the studies in this thesis.

There is also the problem of over-coverage in the registers, which mainly applies to the foreign-born population, because there are few incentives to report emigration to the responsible authorities (i.e. the tax authorities). Statistics Sweden (SCB 2015: 1) have estimated the over-coverage to be between 4 and 8 per cent of the total foreign-born population. This means that the size of the studied groups in the first article of this thesis could be an overestimation; this, in turn, leads to an underestimation of the employment levels among the foreign-born population the figures may include those who have moved abroad but are still registered as residing in Sweden (Wadensjö 2013).

Description of variables

The three studies in this thesis use more or less the same strategically analytical approach. The outcome variable in the first study is *having obtained employment*, whereas *occupational match* is used in the second study and *mismatch* in the in the third study. Key explanatory variables are *country of birth* (Articles 1, 2, 3), *educational level*, (1), *educational type*, (1, 2, 3) and *parent country of birth* (3). Other explanatory variables used are demographics like *gender*, *age*, *age*² (1, 2, 3), *marital status*, (1, 2, 3) and migration-specific variables such as *years since migration*, *years-since-migration*² (1, 2, 3) and *age at migration* (1). In the following section the variables and their definitions are described.

Outcome variables – measurements of labour market integration

Employment

The main outcome variable in Article 1 is obtaining employment and a binary indicator of integration in the labor market. The

variable used to measure the employment status of an individual is SyssStat, which is designed to resemble the ILO (International Labor Organisation) definition of employment. SyssStat uses the month of November as the measurement and, on the basis of the number of hours worked during one week in November, the population is divided into:

Employed = working one hour or more during the week of measurement (a week in November) and having earnings equal to one base value.

The employment rate is used as measurement of having a job in the regular labor market and as a key variable on labor market integration. In studies of labor market integration in Sweden this is the most common key indicator. The employment rate is used to indicate that, when foreign-born groups achieve the same employment rate as the Swedish-born population, they are considered to be integrated in the labor market. This means that the gap in employment rate can be or is used as a measurement of the level of integration in the labor market. In short, the employment rate is used as a common indicator on labor market integration. As discussed above, the over-coverage of the foreign-born population probably implies that we underestimate the employment rate among the integrated foreign-born population (Wadensjö 2013).

Occupational match/mismatch

Occupational match is a constructed variable whereby the SUN 2000, the Swedish educational classification, and the SSYK 96, the Swedish classification of occupations, have been used in order to determine who is working at a matching skill level or not. There are three basic categories in the occupational match variable:

1. matched individuals: those individuals whose education and occupational levels are matched;
2. under-educated individuals: those individuals who are working at an occupational level that is higher than their educational level (mismatched); and

- over-educated individuals: those individuals who are working at an occupational level that is lower than their educational level (mismatched).

Table 7 shows the connection between SUN 2000 and SSYK 96 and how the occupational match variable is constructed.

Table 7. Occupational match definition				
	Occupational level (SSYK 96)			
Education (SUN 2000)	Elementary occupations	Low-level workers	Technicians, associate professionals and lower managerial positions	Professionals and managerial positions
Compulsory	Match	Under-educated	Under-educated	Under-educated
Secondary	Over-educated	Match	Under-educated	Under-educated
Post-secondary education < 3 years	Over-educated	Over-educated	Match	Under-educated
Post-secondary education ≥3 years	Over-educated	Over-educated	Over-educated	Match
Note: The three- digit level is used in both classifications. SUN 2000 codes (1): 100–206; (2): 310–337; (3): 410–520; (4): 530–640. SSYK 96 codes (1): 911–933; (2): 131, 411–834; (3): 121–123, 311–348; (4): 111–112, 211–249.				
Source: Statistics Sweden.				

There are basically three strategies that can be used in order to determine the occupational match. The first is *Job Analysis* (JA), which is the strategy used here, where classifications of occupations and education are used to determine which educational level is needed to manage the skill level of the particular job. The second strategy is the *Workers' Self-assessment* (WA). This strategy is based on workers' estimates of the level of education needed to manage a particular job. The third strategy is *Realized Match* (RM) in which

the mean or modal education is measured for each occupation in order to determine the matching education.

The strength of the JA strategy is that it ‘really starts from the technology of the job, the type of activities to be performed’ (Hartog 2000: 132). Its weakness, however, is that it is an expensive task to ensure that the classification is continuously updated. This means that the classification used, in this case SSYK 96 (Standard för svensk yrkesklassificering), could be underestimating the qualifications needed for the jobs due to technological advancements.¹¹

In order to get up-to-date information about the occupational match the WA strategy could be used instead, though it has its drawbacks. As Hartog (2000: 132) puts it ‘Individuals may easily overstate the requirements of the job, to inflate the status of their position. Or they may simply reproduce actual hiring standards’. In addition, the WA strategy demands that survey questions be sent out to the case-study populations, an expensive and time-consuming task, and ill-suited to register-based data.

The RM strategy, on the other hand, just like the JA strategy, is well-suited to register data. Its strength is that it measures the labour market conditions and the hiring standards in the labour market under study. The drawback of it is that it does not measure the technological requirements of a job (Hartog 2000: 133). The RM strategy can be applied to register data by calculating the mean and modal education (in years) together with the standard deviation in every category in SSYK 96. In the RM strategy, all individuals that have an education that is within one standard deviation from the mean – considered to be a match.

The WA strategy is ill-suited for register data, therefore is not chosen. The drawback with the RM strategy is that it does not capture the technological requirements of the job, capturing instead the hiring standards on a particular labour market. The JA strategy used the one I use in this thesis as it is a adequate method to use with register data. It is also the method of choice for capturing the technological requirements of a particular job in an objective way. Moreover, the two classifications, SUN 2000 and SSYK 96, are connected in a way that makes it really easy to create the occupational match variable.

11 SSYK 96 has now been updated to a newer version, SSYK 2012, which is based on the International Standard Classification of Occupations 2008 (ISCO) – an updated version of ISCO 1988.

The occupational match is used in the same way as the employment rate, i.e. as an indicator of labor market integration. In studies of labor market integration in Sweden the occupational match is rarely used (see Article 2 for a discussion), but is still an interesting measurement since it is an indicator of the ‘quality’ of the obtained employment. Just as with the employment rate, the native-born population is used as a reference population and the gap in the occupational match between the groups studied and the native population serves as a measurement of the ‘quality’ of labor market integration.

Key explanatory variables

Education

Education is based on the Swedish educational register, and SUN 2000 is also used as one of the main explanatory variables in this thesis. The register information obtained from SUN 2000 is divided into two categories: vocational/occupational education and general education and used consistently in this thesis.

General education is education that does not prepare the student for a specific occupation or occupational degree. Vocational/occupational education leads to specific degrees connected to particular occupations. General education exists on all levels – compulsory, secondary and tertiary. The compulsory level is defined as general education in its entirety. Vocational education is education at the secondary and tertiary levels. The educational type plays an important part in Articles 1 and 2 but is also a part of the analysis in Article 3.

My reason for including the type of education as a main explanatory variable in the articles is based on the argument given by Chiswick and DebBurman (2003), who make a distinction between international transferable skills and country-specific skills in education. ‘The more general the skills acquired through schooling in the origin, the greater transferability to the destination and hence the smaller the decline in value of skills upon migration’ (2003: 6). So, in line with their argument, the expectation is that general education should lead to a higher employment rate and a higher occupational match due to the greater transferability of skills in the education compared to vocational education that includes more specific skills.

Country of birth

Country of birth (*FodelseLandNamn*) is used to distinguish between different immigrant groups and indicates the country where the individual was born. Since, for a number of reasons, new countries evolve, a number of individuals are sometimes categorized according to obsolete states. Statistics Sweden gives individuals the opportunity to change the information in the registers.

One exception from the general principle of country of birth is those cases when a mother who is registered as living in Sweden (*folkbokförd*) gives birth to a child while in a country other than Sweden. The child will be registered as born in Sweden (this exception have been applied since 1947).

In Article 3, the country of birth is used, together with that of the parents, in order to categorize the descendant generation. In a first step, the population is divided into the foreign-born and the Swedish-born. The former is then divided again into the immigrant groups in my study while the Swedish-born population is divided, according to the parents' country of birth, into the studied descendant groups. Figure 5 visually shows this categorization.

The country of birth of the individual, together with that of his or her parents, is used to construct the descendant variable needed to measure the labor market position of the children of immigrants (see the model and the discussion above). The variable is used in the same way as country of birth and therefore the same caution should be applied when discussing differences between the groups.

Figure 5. Definition of foreign-born/Swedish-born population and their children for Article 3

Source: Statistics Sweden.

Country of birth denotes the country of origin of the individual and is, in this sense, an indicator that an individual was raised and socialized in that particular country or state. When moving to another country, various differences between the origin and the settlement country or environment occur and can involve ‘re-socialization’ or the learning of several key and necessary tools for adaption or integration into the new country. One of these tools, for example, is learning the new language, which enables the individual to communicate with the native population as well as following what is happening both politically and socially. Whereas learning the language is also important for inclusion in the labour market, other country-specific skills like how to search for work and the general workings of the labour market are important factors that enhance the labour market integration of the individual.

In the migration literature, differences in the probability of being employed between different countries of birth have been interpreted as differences in ‘discriminatory behaviour’ or ‘hurdles’ at work in the country of settlement. Some research has also used country of birth to denote ‘cultural distance’ between the origin country and the Swedish labor market (Broomé *et al.* 1996).

These differences have also been used to measure the value that employers assign to education from a particular country (assuming that the individuals have obtained their education in the country of birth). This is the main use of country of birth in the articles in this thesis.

Explanatory variables

Age and age²

Age is a variable constructed from that of the year of birth. It is used as a measurement of possible labour market experience in a broad sense, i.e. the older a person, the more possible labour market experience he or she will have. Earlier studies indicate that the employment rate increases with age up to around 55–60 years, after which it starts to decline. A similar relationship can be noted when it comes to the occupational match.

When using age as an explanatory variable, the assumption is that there is a linear relationship between age and, for example, employment. However, we know that the employment rate starts to drop around 55–60 years of age (see employment rate by age graph, Statistics Sweden for any year). This means that the relationship between age and employment rate could be seen as non-linear. In order to control for this, the variable age² (age multiplied by itself) is added to the equation. By adding age² we control for the non-linear relationship between the independent variables.

Age at migration

In Article 1, the variable ‘age at migration’ is used and is constructed by the variables ‘years since migration’ and ‘age’. Age at migration is used to indicate whether an immigrant has obtained his or her education in the home or host country or in both. This conversion is made by assuming that individuals who were 10 years of age or below on arrival obtained all their education in Sweden, those who arrived between the ages of 11 and 19 obtained both secondary and tertiary education in Sweden, those who were between 20 and 25 years of age on arrival attained the highest educational level in Sweden, while those who were 26 years and over on migration are assumed to have only foreign education. The expectation is that those who migrated before the age of 10 and who therefore received

all their education in Sweden, should thus have similar language and country-specific skills to native Swedes and, in turn, should have a higher employment rate than those who arrived at an older age, especially those who were 26+ years on arrival.

Years since migration and years since migration squared

‘Years since migration’ is constructed from the variable *latest year of arrival* and is used to calculate the number of years in Sweden. In migration studies, it is used as an indicator of the acquisition of ‘country-specific’ human capital. It denotes, for example, the time available to validate qualifications obtained prior to migration, time to learn the host-country language, time to learn how the labor market functions and time to build a country-specific social network. The assumption is that the longer a person has lived in the host country, the longer the person has had to acquire these necessary skills. This means that the chances of obtaining employment can be expected to increase with the length of stay in the country. The same can be said for the occupational match – the chances of working on a matching job will increase with the length of stay in the host country. In the same way as age, years since migration may have a non-linear relationship with the dependent variables and years since migration squared is therefore included in the analysis.

Gender

Gender is a variable that is indirectly used in the analysis. The regressions made in the three articles are divided by gender which means that they are run separately for men and women. This division is done because men and women, to a high degree, work in different segments of the labor market (Stanfors 2003).

Logistic regressions

In all three studies in this thesis, the statistical method used is logistic regression because the dependent variables used – employment and occupational match – are binary.

The employment variable is coded as employed (1) or not employed (0). The occupational match variable is coded as matched (1) mismatched (0) in Article 2. In Article 3, the occupational match

variable is coded as over-educated (1) and matched and under-educated (0).

This enables an analysis in which the odds of, for example, being employed, can be calculated. In this way, it is possible to determine the effect of the main explanatory variables on the outcome variable at the same time as we control for other explanatory variables.

SUMMARY OF ARTICLES

Article 1

Dahlstedt, Inge and Bevelander, Pieter (2010) 'General versus vocational education and employment integration of immigrants in Sweden', *Journal of Immigrant and Refugee Studies*, 8(2): 158–192, DOI: 10.1080/15562948.2010.480879.

Aim of Article 1

Is foreign education as valuable as native education in the Swedish labor market? Do foreign-born individuals who received their education in the origin country lead to lower or higher employment levels compared to the native-born (those who received their education in Sweden)? Moreover, does type of education – general versus occupational – affect the ease of obtaining employment? In other words, does specific human capital have an impact on immigrants' accession to the Swedish labour market?

This article investigates the effects of education on the probability of natives and nine selected immigrant groups being employed. Controlling for human capital characteristics, it determines whether there is a difference in employment acquisition between immigrant and natives, and whether this difference can be explained by level of education, the kind of education – vocational or general – and the country in which the education was received.

The article takes human capital theory as a point of departure (Becker 1964 Schultz 1961) and focuses specifically on education. The problem with studies that employ education in the analysis is

that they often focus only on the level of qualification obtained. Sometimes the educational field is also taken into consideration, as in Berggren and Omarsson (2001) and Rooth and Åslund (2006), but the kind of education is seldom employed in analyses of employment acquisition. Chiswick and Miller (2007) and Chiswick and DebBurman (2003) argue that education entails two different components – one that is internationally transferable and one that is country-specific – and that the proportion of these components differs between educational levels and kinds of education. Tertiary-level education and more-general education have a higher share of the international transferable component. In this article, we distinguish between general and vocational education, general education being one which does not lead to a profession and vocational education one which leads to a specific profession, such as carpentry or medicine.

Using data from Statistics Sweden and the LOUISE database, a sample consisting of males and females between 25 and 60 years of age, born in Sweden, Poland, Romania, Yugoslavia, Bosnia Herzegovina, Chile, Germany, Iran, Iraq and Lebanon was drawn up for the year 2003. The analysis starts with a presentation of some descriptive statistics. A logistic regression model is created in which the chances of obtaining employment are measured, controlling for standard independent variables such as country of birth, age, marital status, education – both level and kind – and years since migration. Three different regressions are carried out for males and females respectively: the first is the base regression, the second includes interaction effects between country of birth and education and the third includes interaction effects between age at migration and education.

Results

From the analysis, we can conclude that, first and foremost, there are major differences in education between the groups, with regards to both the level and the kind of education. Second, there is a significant difference in the employment rates between natives and the selected immigrant groups, even when controlling for human capital (education) and demographic characteristics. This is true for both the male and the female population. Third, we can see, as in many other studies, that the educational level is of the utmost

importance for employment acquisition. Generally speaking, the higher the education, the higher the employment rate. This is not the whole truth, however. By distinguishing between general and vocational education, it is possible to give a more detailed picture of the relationship between education and employment acquisition. This leads us to the fourth important conclusion, which is that it is not only the educational level which is of importance for employment acquisition, but also the kind of education, especially at university level, where professional (vocational) education gives a high premium relative to general university education. For both natives and immigrants, general university education gives only a small premium in employment acquisition, only slightly higher than compulsory education.

The general conclusion from the article is that, irrespective of place of birth, individuals with a professional university and vocational education have less trouble finding work in a relatively strong regulated labor market like that of Sweden. Formal degrees signal an easier validation both formally for labor market institutions and informally for employers. This facilitates the labor market inclusion of all individuals with this kind of education. Where this vocational and professional education was obtained does not seem to be particularly important. Individuals with a more general education at all levels seem to have a disadvantage in this respect. Given this type of labor market, immigration policies that focus on the type of education could be more successful.

Article 2

Dahlstedt, Inge (2011) 'Occupational match: over- and under-education among immigrants in the Swedish labor market', *Journal of International Migration and Integration*, 12(3): 349–367, DOI: 10.1007/s12134-010-0172-2.

Aim of Article 2

The question of an adequate correspondence between job level and educational level forms the main focus of this article. More precisely, is the occupational skill level of the employed individual – irrespective of background – matched with that individual's educational level? In other words, I am seeking to determine whether the immigrant population is relatively over- or under-educated compared to the native population in their occupational level. The specific questions raised in the article are:

- * Are there differences in the occupational match/mismatch between native Swedes and the nine selected immigrant groups in Sweden?
- * Does the type of education obtained – general and vocational – affect the level of occupational match/mismatch?
- * Can occupational match/mismatch be explained by country of birth and type of education – general and vocational – when controlling for age, gender, marital status and years since migration?

A sample consisting of the employed population between 25 and 60 years of age, born in Sweden, Yugoslavia, Bosnia-Herzegovina, Poland, Romania, Chile, Germany, Iran, Iraq and Lebanon. In the analysis, a distinction is made not only between the different *levels* of education but also between the various *kinds* of education, such as general or vocational education.

The dependent variable is the occupational match. In order to measure this in the article, the *job analysis* method is employed – a method that relies on a systematic evaluation of the educational requirements for each job. In this article, I have done this by connecting the Swedish Standard of Classification of Occupations 1996 (SSYK-96) with the Swedish Standard Classification of Educations (SUN 2000). In this way, an employed individual can

be slotted into one of three different categories: matched individuals – those who hold a job with a skills level in accordance with their education – over-educated individuals, or those who hold a job with skills level that is below their educational level – and under-educated individuals, who hold a job with a skills level that is above their educational level.

The analysis begins with a set of descriptive tables in which the occupational match and mismatch are shown for each of the groups as well as for men and women respectively. This analysis is followed by a set of logistic regressions that control for standard demographic characteristics such as age, country of birth, marital status, years since immigration and type of education.

Results

The conclusions drawn from this article are, first and foremost, that there are considerable differences between the vocationally and the generally educated populations, in that the population with a vocational education to a higher degree are working in jobs with matching skills levels. The vocationally educated population are also less likely to be working in a job with a higher skills level than their education warrants – in other words, they are less likely to be under-educated.

Secondly, there are considerable differences in the occupational match and mismatch between the studied immigrant groups, differences that are there even when controlling for the demographic variables included in the regression models.

Thirdly, even though there are differences between the native population and the immigrant population in both match and mismatch, the greatest differences can be seen in the mismatch, where the immigrant population is more likely to be over-educated and the native population under-educated.

Article 3

Dahlstedt, Inge (2015) 'Over-education amongst the children of immigrants in Sweden', *Nordic Journal of Migration Research*, 5(1): 36–46, DOI: 10.2478/njmr-2015-0003.

Aim of Article 3

The objective is to investigate the difference in the skills/educational matching of the descendants of immigrants compared to their parents and to natives. Do the children of immigrants, raised by either one or two foreign-born parents and educated in Sweden, show similar over-education patterns as their parents or are they adjusting to the native population? In other words, are the children of immigrants more integrated into the labour market than their parents?

The aim of the article is to investigate the probability of the descendants of immigrants being employed at a lower skills level than their education warrants. In doing this, the descendant generation will be compared both to the population with two Swedish-born parents and the immigrant population. The article tries to answer the following questions:

- * Do the descendants of immigrants have a lower occupational mismatch than their immigrant parents?
- * Are there differences in occupational mismatch between the reference population and the descendants of immigrants?
- * Is there a difference in the occupational mismatch between those descendants who have one parent and those who have two born outside Sweden.
- * Does the country of origin of the parent affect the occupational match of his or her descendants?

The article makes use of register data for the year 2007 provided by Statistics Sweden (SCB). The study group is the employed population between 25 and 64 years of age. The selection of the specific groups studied has been governed by the number of employed descendants with information on educational and occupational level. This means that the selection is dependent on the age distribution and

employment rate in the specific groups. These groups comprise individuals with one or two parents born in the following countries: Chile, Denmark, Estonia, Finland, Greece, India, Italy, Poland, Turkey, Germany and the UK.

The analysis is done by calculating the effect of belonging to a certain group and generation on the probability of their being over-educated. In doing this, a set of logistic regressions are carried out while controlling for standard demographic variables.

Results

The first conclusion in the article is that the descendant generation does much better than the immigrant generation when it comes to occupational mismatch. Both when the former is studied as a whole and when split into the 12 case-study groups, there is substantial evidence to support the conclusion that the descendants of immigrants have a much better position in terms of mismatch than the immigrant generation. The second conclusion is that it is only the male descendants who show statistically significant higher levels of mismatch compared to the reference population. The female population shows no such difference when studied as a whole and only three out of the 12 studied groups show higher levels of mismatch compared to the female reference group. The third conclusion is that, just as there are large differences in mismatch between the different immigrant groups, there are also big differences between the different descendant groups.

MAIN EMPIRICAL FINDINGS

Let us return to the focus of the thesis – the relationship between education, employment and occupation. In the introduction, five questions were posed and it is time to return to and discuss them.

Does type of education matter for labor market access? The short answer to this is ‘Yes’. In general, higher education leads to better chances of securing a job, both for the native population and for the studied immigrant population. However, even more important is the type of education – general or vocational – where those having a vocational education do have a higher likelihood of having a job compared to those who have a general education. This is especially true for those with a vocational education at university level (Dahlstedt and Bevelander 2010). The results would seem to indicate that, in a fairly strong regulated labor market like the Swedish labor market, individuals with a vocational education have easier access to the labor market – an effect that is visible among both the native and the immigrant population.

Does the educational level of the individual match the skill level of the job? The short answer is that, on average, about half of the population is working on a matching skill level (Dahlstedt 2011). The longer answer is that it depends on two things in particular. First, the type of education is crucial in the analysis of occupational match. The vocationally educated population shows a higher match between educational level and the skill level of the job compared to the population with a general education, independent of country of birth. On the other hand, the vocationally educated population has fewer under-educated individuals, which means that this population is unlikely to advance past their educational level. The generally

educated population has a higher proportion of under-educated individuals, which means that they can advance beyond their obtained level of education.

Second, the country of birth is important in the analysis of the occupational match. The results point in the same direction as previous research (see, for example, Berggren and Omarsson 2001; Bevelander and Lundh 2007; Oscarsson and Grannås 2001, 2002) in the way that the immigrant population shows a lower occupational match and a higher proportion of over-educated individuals. However, the differences within the immigrant population are considerable, which make it important to study the individual groups of immigrants. The study shows large differences between the various groups studied, as well as between their educational levels (Dahlstedt 2011), hence this is the answer to the third question: *Is the occupational match dissimilar for different country-of-birth groups?*

Do the children of immigrants have a higher occupational match than their parents? Again, the short answer to this is ‘Yes’. The descendant generation as a whole shows lower levels of occupational mismatch (over-education) compared to the parental generation, but still a somewhat higher proportion than the Swedish-born population with two Swedish-born parents (Dahlstedt 2015). This result is also visible when the population is split into the 12 study groups, meaning that there is substantial evidence to suggest that, in terms of occupational mismatch, the descendant generation has a better labor market integration, as measured by occupational match, than the parental immigrant generation (Dahlstedt 2015).

Although these are interesting findings and point in a positive direction for the descendant generation, it is important to bear in mind that these results are based on cross-sectional analysis. In order to obtain more-stable results, a longitudinal analysis needs to be employed – this can answer whether individuals get ‘stuck’ in a position where they are over-educated or whether they make a career in which they start in a low position and then climb to one that is more in line with their education.

What does the relationship between education and work look like when a share of the population has received their education in another country? This is a difficult question to give a short answer to.

In the first article, an attempt was made to measure how many people received their education in a country other than Sweden through estimates of age at arrival. However, this measurement showed inconclusive results, probably due to the measurement problems attached to it (Dahlstedt and Bevelander 2010). Nevertheless, it is probably safe to say that a large share of the immigrant population received their education before migrating to Sweden – either most of or their entire education. So, what kinds of answer have the studies in this thesis given to this question?

To make it easy I have divided the answers into two parts: i) the relationship between education and obtaining employment and ii) the relationship between education and the skills level of the job.

The answer to the first part is that higher education leads to higher employment rates for both the native and the foreign-born population, as stated above. The immigrant population has, in general, a lower employment rate compared to the native population when controlling for demographic and educational differences. This means that there are differences and, for some groups, big differences, in employment rates compared to the native population. However, how much of these differences can be attributed to human capital devaluation (Chiswick and DebBurman 2003; Chiswick and Miller 2007), signaling problems (Spence 1973) or statistical (or other types of) discrimination (Bursell 2007; Carlsson and Rooth 2012, 2016) is difficult to estimate in this type of cross-sectional analysis. Nevertheless, the higher employment rates among the vocationally educated population could indicate that signaling problems are fewer for them and more prominent among the generally educated population. For these latter (including the native population) there could be quite a large signaling problem, whereby employers have difficulty in adjudging the productive capacities of the individual and thereby make it more difficult for the generally educated immigrant – and, to a certain extent, the generally educated native – population to acquire a job given the general labour demand.

The second part of the question relating to the relationship between the educational level and the skill level of the job can be summarized as follows. The country of birth and the educational type have a great influence on this relationship. As above, it can also be difficult to estimate how much of the difference is due to

human capital devaluation, signaling problems or discrimination. Again, it could be argued that the vocationally educated population is less affected by signaling problems compared to the generally educated population. The foreign-born population is affected by signaling problems more than the natives, and probably also by discrimination (as previous studies in the field have shown, among others see Carlsson and Rooth 2012, 2016).

The immigrant population is probably also affected by human capital devaluation when moving to Sweden. How much of the difference in both the employment rates and occupational match and mismatch can be attributed to this is not possible to judge here. How much of the devaluation of human capital can be attributed to things like the loss of the origin-country language and of the country-specific component in education is also not possible to estimate from the study (language proficiency has an impact on the labour market position – see, for example, Rooth and Åslund 2006).

However, by studying the descendant generation, as I have done in the third article, it is clear that the children of immigrants have a better position on the labor market compared to their parents – the immigrant generation, as both the theoretical discussions and earlier research lead us to expect. The majority of the descendants were probably educated in Sweden and this, together with their better knowledge of the language, can explain their stronger – relative to the immigrant generation – position on the labor market. However, there is still a difference between the descendants of immigrants and the native population, at least for males, which could indicate that there is some kind of discrimination going on against the groups studied. It could also point towards inequality in access to good social networks (see, for example, Behtoui 2006).

In order to fully understand the relationship between education and work when a large part of the population has been educated in another country, more research is needed. In the light of the results in this thesis, at least two areas need to be covered.

First, research that covers human capital loss in the migration process. How much of the human capital loss is an ‘actual loss’ (for example, no longer using the origin language or losing the country-specific component within the education)? In order to measure this, it is necessary to compare not only the educational systems of

different countries but also the specific education offered between them in order to see and measure the differences. Second, and the next step in this research, are studies that attempt to measure how employers value specific education from particular countries. These two fields are opposite sides of the same coin and both need to be studied in greater depth if we are to understand the relationship between education and work in an age of migration.

REFERENCES

- Agerström, J. and Rooth, D.-O. (2009) 'Implicit prejudice and ethnic minorities: Arab-Muslims in Sweden', *International Journal of Manpower*, 30(1): 43–55.
- Agerström, J. and Rooth, D.-O. (2011) 'The role of automatic obesity stereotypes in real hiring discrimination', *Journal of Applied Psychology*, 96(4): 790–805.
- Agerström, J., Björklund, F., Carlsson, R. and Rooth, D.-O. (2012) 'Warm and competent Hassan = cold and incompetent Eric: a harsh equation of real-life hiring discrimination', *Basic and Applied Social Psychology*, 34(3): 359–366.
- Andersson, P. and Fejes, A. (2005) *Kunskapers värde–validering i teori och praktik*. Lund: Studentlitteratur.
- Andersson, P., Hult, Å. and Osman, A. (2005) *Validering som sortering Hur värderas utländsk yrkeskompetens*. Norrköping: Integrationsverket, Underlagsrapport.
- Arai, M. and Skogman Thoursie, P. (2009) 'Renouncing personal names: an empirical examination of surname change and earnings', *Journal of Labor Economics*, 27(1): 127–147.
- Arai, M., Schröder, L., Skogman Thoursie, P. and Thoursie, A. (2006) *Måste alla beta som Svensson? En empirisk studie av namnbyten och inkomster*. Stockholm: Landsorganisationen Sverige.
- Åslund, O., Hensvik, L. and Nordström Skans, O. (2009) *Seeking Similarity: How Immigrants and Natives Manage at the Labor Market*. Uppsala IFAU Working Paper No. 29.
- Becker, G. S. (1964) *Human Capital: A Theoretical and Empirical Analysis, With Special Reference to Education*. New York: Columbia University Press.
- Becker, G. S. (1992) 'Human capital and the economy', *Proceedings of the American Philosophical Society*, 136(1): 85–92.

- Behrenz, L., Hammarstedt, M. and Månsson, J. (2007) 'Second-generation immigrants in the Swedish labour market', *International Review of Applied Economics*, 21(1): 157–174.
- Bengtsson, T., Lundh, C. and Scott, K. (2005) 'From boom to bust: the economic integration of immigrants in post-war Sweden', in Zimmerman, K. (ed.) *European Migration – What Do We Know?* Oxford: Oxford University Press, 15–58.
- Behtoui, A. (2004) 'Unequal opportunities for young people with immigrant backgrounds in the Swedish Labour Market', *Labour*, 18(4): 633–660.
- Behtoui, A. (2006) *Unequal Opportunities. The Impact of Social Capital and Recruitment Methods on Immigrants and Their Children in the Swedish Labour Market*. Linköping: Linköping Studies in Arts and Science, No. 369.
- Behtoui, A. (2007) 'The distribution and return of social capital: evidence from Sweden', *European Societies*, 9(3): 283–407.
- Behtoui, A. (2008) 'Informal recruitment methods and disadvantages of immigrants in the Swedish labour market', *Journal of Ethnic and Migration Studies*, 34(3): 411–430.
- Behtoui, A. (2013) 'Social capital and stratification of young people', *Social Inclusion*, 1(1): 46–58.
- Behtoui, A. (2016) 'Beyond social ties: the impact of social capital on labour market outcomes for young Swedish people', *Journal of Sociology*, 52(4): 711–724.
- Behtoui, A. and Neergaard, A. (2010) 'Social capital and wage disadvantages among immigrant workers', *Work, employment and society*, 24(4): 761–779.
- Behtoui, A. and Neergaard, A. (2012) 'Social capital, status and income attainment in the workplace', *International Journal of Sociology and Social Policy*, 32(1/2): 42–55.
- Berggren, K. and Omarsson, A. (2001) *Rätt man på fel plats: en studie av arbetsmarknaden för utlandsfödda akademiker som invandrat under 1990-talet*. Stockholm: Arbetsmarknadsstyrelsen, Ura: 4.
- Bevelander, P. (2000) *Immigrant Employment Integration and Structural Change in Sweden, 1970–1995*. Lund: Lund Studies in Economic History.
- Bevelander, P. and Lundh, C. (2007) 'Utbildning, yrke och inkomst bland iranska män i Sverige', *Ekonomisk Debatt*, 35(3): 32–40.
- Bevelander, P., Rojas, M. and Carlson, B. (1997) *I Krusbärslandets Storstäder. Om invandrare i Stockholm, Göteborg och Malmö*. Stockholm: SNS Förlag.

- Bevelander, P. and Pendakur, R. (2014) 'The labour market integration of refugee and family reunion immigrants: a comparison of outcomes in Canada and Sweden', *Journal of Ethnic and Migration Studies*, 40(5): 689–709.
- Bevelander, P. and Skyt Nielsen, H. (2001) 'Declining employment success of immigrant males in Sweden: observed or unobserved characteristics?', *Journal of Population Economics*, 14(3): 455–471.
- Bill 1975:26 Regeringens proposition om riktlinjer för invandrar- och minoritetspolitiken m.m.
- Bill 1985/86:98 Om Invandrapolitiken.
- Bills, D. B. (2004) *The Sociology of Education and Work*. Oxford: Blackwell.
- Blommaert, L., van Tubergen, F. and Coenders, M. (2012) 'Implicit and explicit interethnic attitudes and ethnic discrimination in hiring', *Social Science Research*, 41(1): 61–73.
- Borevi, K. (2012) 'Sweden: 'the flagship of multiculturalism'', in Brochmann, G. (ed.) *Immigration Policy and the Scandinavian Welfare State: 1945–2010*. Basingstoke: Palgrave Macmillan, 25–96.
- Borjas, G. J. (1985) 'Assimilation, changes in cohort quality, and earnings of immigrants', *Journal of Labor Economics*, 3(4): 463–489.
- Borjas, G. J. (1987) 'Self selection and the earnings of immigrants', *American Economic Review*, 77(4): 531–553.
- Borjas, G. J. (1989) 'Immigrant and emigrant earnings: a longitudinal study', *Economic Inquiry*, 27(1): 21–37.
- Borjas, G. J. (1992) 'Ethnic capital and intergenerational mobility', *The Quarterly Journal of Economics*, 107(1): 123–150.
- Borjas, G. J. (1993) 'The intergenerational mobility of immigrants', *Journal of Labour Economics*, 11(1): 113–135.
- Bovenkerk, F., Gras, M. and Ramsoedh, D. (1995) *Discrimination against Migrant Workers and Ethnic Minorities in Access to Employment in the Netherlands*. Geneva: International Labour Organization, Working Paper No. 4.
- Broomé, P., Bäcklund, A.-K. and Ohlsson, R. (1996) *Varför Sitter 'Brassen' På Bänken? Eller Varför Har Invandrarna Så Svårt Att Få Jobb?* Stockholm: SNS Förlag.
- Bursell, M. (2007) *What's In a Name? A Field Experiment Test for the Existence of Ethnic Discrimination in the Hiring Process*. Stockholm: SULCIS Working Paper No. 7.
- Carlsson, M. and Rooth, D.-O. (2007) 'Evidence of ethnic discrimination in the Swedish labor market using experimental data', *Labour Economics*, 14(4): 716–729.

- Carlsson, M. and Rooth, D.-O. (2012) 'Revealing taste-based discrimination in hiring: a correspondence testing experiment with geographic variation', *Applied Economic Letters*, 19(18): 1861–1864.
- Carlsson, M. and Rooth, D.-O. (2016) 'Employer attitudes, the marginal employer, and the ethnic wage gap', *ILR Review*, 69(1): 227–252.
- Castles, S., de Haas, H. and Miller, M. J. (2014) *The Age of Migration: International Population Movements in the Modern World*. Basingstoke: Palgrave Macmillan (5th edition).
- Chiswick, B. (1978) 'The effect of Americanization on the earnings of foreign-born men', *Journal of Political Economy*, 86(5): 897–921.
- Chiswick, B. and DebBurman, N. (2003) *Educational Attainment: Analysis by Immigrant Generation*. Bonn: IZA Conference Paper No. 731.
- Chiswick, B. and Miller, P. (2007) *The International Transferability of Immigrants' Human Capital Skills*. Bonn: IZA Conference Paper No. 2670.
- Cross, H., Kenney, J. and Zimmermann, W. (1990) *Employer Hiring Practices: Differential Treatment of Hispanic and Anglo Job Seekers*. Washington DC: The Urban Institute Press.
- Crul, M., Schneider, J. and Lelie, F. (eds) (2012) *The European Second Generation Compared. Does the Integration Context Matter?* Amsterdam: Amsterdam University Press.
- Dahlstedt, I. (2011) 'Occupational match: over- and under-education among immigrants in the Swedish labor market', *International Migration and Integration*, 12(3): 349–367.
- Dahlstedt, I. (2015) 'Over-education among the children of immigrants in Sweden', *Nordic Journal of Migration Research*, 5(1): 36–46.
- Dahlstedt, I. and Bevelander, P. (2010) 'General versus vocational education and employment integration of immigrants in Sweden', *Journal of Immigrant and Refugee Studies*, 8(2): 158–192.
- de Prada, M., Actis, W., Pereda, C. and Perez Molina, R. (1996) *Labour Market Discrimination against Migrant Workers in Spain*. Geneva: International Labour Organization, Working Paper No. 9.
- Ekström, E. (2001) *Arbetsgivarnas rekryteringsbeteende*. Uppsala IFAU – Institutet för Arbetsmarknadspolitisk Utvärdering, Forskningsrapport No. 1.
- Emilsson, H. (2016) *Paper planes: Labour Migration, Integration Policy and the State*. Malmö: Malmö högskola, Fakulteten för kultur och samhälle.
- Erickson, B. H. (2001) 'Good networks and good jobs: the value of social capital to employers and employees' In Lin, N. Cook, K. and Burt R. S. (eds) *Social capital, theory and research*, New York: Walter de Gruyter, 127–158.

- Esping-Andersen, G. (1990) *The Three Worlds of Welfare Capitalism*. Oxford: Polity Press.
- Fischer, P. A. and Straubhaar, T. (1996) *Migration and Economic Integration in the Nordic Common Labour Market: Anniversary Issue: 40 Years of the Nordic Common Labour Market*. Copenhagen: Nordic Council of Ministers.
- Goldberg, A., Mourinho, D. and Kulke, U. (1996) *Labour Market Discrimination against Foreign Workers in Germany*. Geneva: International Labour Organization, Working Paper No. 7.
- Granovetter, M. (2005) 'The impact of social structure on economic outcomes', *The Journal of Economic Perspectives*, 19(1): 33–50.
- Håkansson, P. and Tovatt, C. (2016) 'Networks and labor market entry: a historical perspective', *Labor History*, 58(1): 1–24.
- Hammarstedt, M. (2001) *Making a Living in a New Country*, Växjö: Växjö University Press.
- Hammarstedt, M. (2002) 'Hur försörjer sig andra generationens invandrare?', *Ekonomisk Debatt*, 30(5): 417–426.
- Hammarstedt, M. (2009) 'Intergenerational mobility and the earnings position of first-, second-, and third-generation immigrants', *KYKLOS*, 62(2): 275–292.
- Hammarstedt, M. and Ekberg, J. (2004) 'Unemployment compensation and the use of social assistance among second-generation immigrants in Sweden', *International Journal of Social Welfare*, 13(3): 254–265.
- Hammarstedt, M. and Palme, M. (2012) 'Human capital transmission and the earnings of second-generation immigrants in Sweden', *IZA Journal of Migration*, 1(4): 1–23.
- Hartog, J. (2000) 'Over-education and earnings: where are we, where should we go?', *Economics of Education Review*, 19(2): 131–147.
- Hatton, T. J. and Williamson, J. G. (2005) *Global Migration and the World Economy: Two Centuries of Policy and Performance*. Cambridge: The MIT Press.
- Ioannides, Y. M. and Loury, L. D. (2004) 'Job information networks, neighborhood effects, and inequality', *Journal of Economic Literature*, 42(4): 1056–1093.
- Joyce, P. (2015) *Integrationspolitik och arbetsmarknad, en översikt av integrationsåtgärder i Sverige 1998–2014*. Stockholm DELMI Kunskapsöversikt No. 3.
- Keeley, B. (2009) *International Migration: The Human Face of Globalization*. Paris: Organisation for Economic Cooperation and Development.
- Ki-Moon, B. (2007) 'We should welcome the dawn of the migration age', *The Guardian*, 10 July.

- Korpi, T. and Tählin, M. (2011) 'Changing work-life inequality in Sweden: globalization and other causes', in Blossfeld, H. (ed.) *Globalized Labour Markets and Social Inequality in Europe*. Basingstoke: Palgrave Macmillan, pp. 177–208.
- le Grand, C. and Szulkin, R. (2002) 'Permanent disadvantage or gradual integration: explaining the immigrant-native earnings gap in Sweden', *Labour*, 16(1): 37–64.
- Lundh, C. (1994) 'Invandrarna i den svenska modellen: hot eller reserv? Fackligt program på 1960-talet', *Arbetshistoria*, 70(2): 23–35.
- Lundh, C. and Ohlsson, R. (1999) *Från arbetskraftsimport till flyktinginvandring*. Stockholm: SNS Förlag (2nd edition).
- Lundh, C., Ohlsson, R., Rooth, D.-O., Bennich-Björkman, L. and Pedersen, P. J. (2002) *Arbete? Var god dröj! invandrare i välfärdssambället*. Stockholm: SNS förlag,
- Öberg, N. (1994) *Gränslös rättvisa eller rättvisa inom gränser? Om moraliska dilemman i välfärdsstaters invandrings- och invandrarpolitik*. Uppsala: Uppsala universitet.
- OECD (2006) *OECD Economic Outlook Preliminary Edition: Making the Most of Globalisation*. Paris: Organization for Economic Cooperation and Development.
- OECD (2010) *OECD Economic Globalization Indicators 2010*. Paris: Organization for Economic Cooperation and Development.
- Okeke, S. (2001) *Arbetsförmedlingens marknadsandelar*. Stockholm: Arbetsmarknadsstyrelsen.
- Olli Segendorf, Å. (2005) *Job Search Strategies and Wage Effects for Immigrants*. Stockholm: Swedish Institute for Social Research.
- Oscarsson, E. and Grannäs, D. (2001) *Under- och överutbildning på 2000-talets arbetsmarknad: en förstudie av matchningen mellan utbildning och kvalifikationskrav*. Östersund: Institutiet för tillväxtstudier, A2001:006.
- Oscarsson, E. and Grannäs, D. (2002) 'Under och överutbildning på 2000-talets arbetsmarknad', in Abrahamsson, K., Abrahamsson, L., Johansson, J., Björkman, T. and Ellström, P.-E. (eds) *Utbildning, Kompetens och Arbete*. Lund: Studentlitteratur, 63–92.
- Riach, P. A. and Rich, J. (2002) 'Field experiments of discrimination in the market place', *The Economic Journal*, 112(483): F480–F518.
- Rooth, D.-O. (2002) 'Adopted children in the labour market: discrimination or unobserved characteristics', *International Migration*, 40(1): 71–98.
- Rooth, D.-O. (2010) 'Automatic associations and discrimination in hiring: real world evidence', *Labour Economics*, 17(3): 523–534.

- Rooth, D.-O. and Åslund, O. (2006) *Utbildning och kunskaper i svenska: framgångsfaktorer för invandrare?* Stockholm: SNS Förlag.
- Rooth, D.-O. and Ekberg, J. (2003) 'Unemployment and earnings for second generation immigrants in Sweden: ethnic background and parent composition', *Journal of Population Economics*, 16(4): 787–814.
- Roth, H. I. (2008) *Diskriminering*. Stockholm: SNS Förlag.
- SCB (2014) *Educational Background among Foreign-Born Persons*. Stockholm: Statistiska Centralbyrån.
- SCB (2015) *Overcoverage in the total Population Register: A Register Study*. Stockholm: Statistics Sweden, Population and Welfare Department.
- SCB (2017) *Statistics Sweden*. Online at: <http://www.sverigeisiffror.scb.se/hitta-statistik/sverige-i-siffror/samhällets-ekonomi/export-och-import-av-varor-och-tjanster/> (accessed 29 June 2017).
- Schröder, L. and Wilhelmsson, R. (1998) 'Sverigespecifikt' humankapital och ungdomars etablering på arbetsmarknaden', *Ekonomisk Debatt*, 26(8): 595–601.
- Schultz, T. W. (1961) 'Investment in human capital', *The American Economic Review*, 51(1): 1–17.
- Schön, L. (2014) *En modern svensk ekonomisk historia. Tillväxt och omvandling under två sekel*. Lund: Studentlitteratur (4th edition).
- Smeesters, B. and Nayer, A. (1998) *La discrimination à l'accès à l'emploi en raison de l'origine étrangère: le cas de la Belgique*. Geneva: International Labour Organization, Working Paper No. 23.
- SOU 1974:69 Invandrarutredningen, 3.
- SOU 1996:55 *Sverige, Framtiden och Mångfalden, Slutbetänkande från Invandrarpolitiska Kommittén*.
- Spence, M. (1973) 'Job market signaling', *The Quarterly Journal of Economics*, 87(3): 355–374.
- Stanfors, M. (2003) *Education, Labor Force Participation and Changing Fertility Patterns. A Study of Socioeconomic Change in Twentieth Century Sweden*. Lund: University of Lund.
- Tema Nord (2004) *Integrering av invandrare – Rollen av bedömning av tidigare utbildning och arbetslivserfarenheter i Norden*. Copenhagen: Nordisk Ministerråd.
- Turner, M., Fix, M. and Struyk, R. (1991) *Opportunities Denied, Opportunities Diminished: Racial Discrimination in Hiring*. Washington DC: The Urban Institute Press, UI Report 91–1.
- UN DESA (2016) *International Migration Report 2015: Highlights*. New York: United Nations.
- Wadensjö, E. (1973) *Immigration och samhällsekonomi*. Lund: Studentlitteratur.

- Wadensjö, E. (2013) Överteckning och Bortfall. Stockholm: SULCIS, Report and Working Paper No. 3.
- Winai Ström, G. (1992) *Flykt och konfliktlösning*. Stockholm: Regeringskansliet.
- Wright, R. E. and Maxim, P. S. (1993) 'Immigration policy and immigrant quality', *Journal of Population Economics*, 6(4): 337–352.

ARTICLES I TO III

I

General Versus Vocational Education and Employment Integration of Immigrants in Sweden

INGE DAHLSTEDT and PIETER BEVELANDER

*Department of International Migration and Ethnic Relations,
Malmö University, Malmö, Sweden*

This article investigates the effect of human capital on the employment acquisition of foreign-born men and women in Sweden. Besides categorizing different levels of education, a distinction is made between type of education, general and vocational, and where education is obtained, home or host country. The data used is based on register data for the year 2003 held by Statistics Sweden. The population under consideration is the total population subdivided by the following countries of birth: Sweden, Former Yugoslavia, Bosnia and Herzegovina, Poland, Romania, Chile, Germany, Iraq, Iran, and Lebanon. The analysis shows that foreign-born individuals have a higher probability of employment with a vocational and host country education as opposed to a general and home country education.

KEYWORDS *immigrants, employment acquisition, human capital, vocational education, professional education*

INTRODUCTION

In the new millennium, international migration and the integration of immigrants have become important issues for countries throughout the world, including Sweden. Since the World War II, Sweden has experienced a large immigration of labor migrants, refugees, and family migrants. In 2003, over a

Inge Dahlstedt is a PhD candidate at Malmö University. Pieter Bevelander, PhD, is Associate Professor, and Researcher at Malmö Institute for Studies of Migration, Diversity and Welfare, Malmö University.

Address correspondence to Pieter Bevelander, PhD, Department of International Migration and Ethnic Relations (IMER), Malmö University, S-205 06 Malmö, Sweden. E-mail: pieter.bevelander@mah.se

million individuals, or about 12% of Sweden's population, were foreign-born. This influx of foreign-born individuals has impacted many different areas of Swedish society, not least the labor market. Changes in the demographic composition of the population and the deteriorating labor market integration of immigrants—a 20% lower employment rate for immigrants relative to natives—have meant that migration and integration policies have been placed higher up on the political agenda.

Employment is important for the individual, in that it increases their possibility of supporting themselves and their families and provides access to the social security system. A high general employment rate is also important for society at large because it increases the national product, which in turn forms the basis of material welfare. Moreover, in the Swedish case, the process of obtaining an employment is of greater interest than income assimilation because of the high unionization and collective bargaining that have created a rather compressed wage structure that prevent immigrants from competing on the labor market with lower wages. Bengtsson, Lundh, & Scott (2005). Employment acquisition is, in other words, a key indicator of the attachment to the host country labor market and a measure of labor market integration. Taken together, this makes the employment acquisition of various groups of foreign-born men and women in Sweden an important field of study.

Different disciplines have put forward explanations as to why the employment rate among immigrants in Sweden is lower than that for natives. In addition to educational level differences, language barriers and economic restructuring, a larger influx of refugees than in earlier decades together with various types of discrimination are found to be partially responsible for the gap in employment rates between various groups of immigrants relative to natives.

In line with established human capital theory, education is of the outmost importance and affects an individual's chances on the labor market (Rooth & Åslund, 2006). Further, in order to use this education the individual needs to have his or her education acknowledged. While this is not a problem when it comes to education obtained in Sweden, the acknowledgment of education obtained abroad is affected by an employer's uncertainty about both the level and type of an individual's education. Hence, education obtained in different countries sends different signals to potential employers. We address this particular issue in this article and ask the following question: Is foreign education as valuable as native education in the Swedish labor market?

In elaborating on this issue, we also analyze the effect of where the education was obtained and the kind of education obtained on the employment probability of foreign-born men and women in Sweden. More specifically, and given that a number of explanations are possible, we focus on the following questions:

- Controlling for human capital characteristics, can a difference in the employment acquisition between immigrant and native men and women in Sweden in 2003 be determined?
- Can the difference in the employment acquisition of immigrants in Sweden be explained by differences in the kind of education—general or vocational—obtained?
- Can the difference in the employment acquisition of immigrants in Sweden be explained by where the education—in the home or host country—is obtained?

This article is divided into a number of sections. The following section provides a historical background to the employment acquisition of immigrants in Sweden. The third section deals with theoretical considerations and earlier research into the employment acquisition of immigrants. This is followed by a description of the data, methods and variables used in the analysis. The results of the analysis are then discussed in the fifth section, and followed by a concluding discussion.

THE CONTEXT: IMMIGRATION AND EMPLOYMENT

Postwar migration to Sweden has undergone profound changes. One is that immigrants coming to Sweden after the 1970s are mainly refugees and family migrants—in comparison with the period before the 1970s when the majority of immigrants came as labor migrants. Another change is that immigrants coming to Sweden in recent decades originate from different countries than those arriving before the 1970s. During the labor migration period, immigrants came primarily from the Nordic, North and South European countries. Since the 1970s, non-European immigration to Sweden has increased and migration from the Nordic countries has decreased. This immigration shift roughly corresponds with the decreasing immigrant employment rate observed in the 1970s, and is seen as one of the explanations for the change in the labor market integration of immigrants in Sweden (see also Figure 1) (Bevelander, 2000; Lundh & Ohlsson, 1999).

In the 1960s and 1970s, the foreign-born population of men and women in Sweden registered a higher employment rate than natives (see Figure 1). This situation changed in the middle of the 1970s. For foreign-born men in the period 1960 to 1990, the decline in the employment rate was 15 percentage points, from 86% to 71%. In contrast, during this time the employment rate for native-born men barely changed. The employment rate for women has undergone a different change, however. While both native-born and foreign-born women experienced an increase in the employment rate up to the census of 1990, the increase for foreign-born women was only half as much as that for native women (Bevelander, 2000, 2004).

The first part of the 1990s is marked by a deep economic recession in the Swedish economy, which results in a dramatic decrease in the employment

FIGURE 1 Age of standardized employment rates (%) for foreign-born and native-born men and women aged 16–64 *Source.* Authors' calculations from census and register data, Statistics Sweden.

rate for both native- and foreign-born men and women. The employment rate for native-born men drops to 70% and the employment rate for foreign-born men to 45%. This dramatic decrease in the employment rate is also visible among foreign-born women, whose employment rate drops to below 45%. The employment rate for native-born women also drops, but not as drastically. By the middle of the 1990s the employment rates for both native-born and foreign-born men and women have increased. In 2003 the employment rates for native-born men and women are almost 80% for both men and women—the levels measured before the economic recession of the early 1990s, while the employment rates for foreign-born men and women are around 55% for both men and women. To summarize the development of the employment situation for immigrants in recent decades, the employment rate between natives and foreign-born has changed from a situation in which little difference could be determined to one in which the employment rate of foreign-born is substantially lower in comparison to natives.

EARLIER RESEARCH

From the above description of migration and employment acquisition it is clear that, in Sweden, a change has occurred in the country of origin

migration at the same time as the situation for immigrants on the labor market has deteriorated. International research has indicated that the decline in economic status of later cohorts is highly correlated with changes in the "quality" of the immigrants (Borjas, 1985, 1987, 1989). More immigrants come from developing countries than industrialized countries and are generally less skilled and less successful in the host countries. The increase in the proportion of family and refugee immigration and decrease in the proportion of independent immigrants has changed the average level of positive self-selection of the total and newly arrived immigrant population. The new immigrant groups are no longer supposed to be selected on human capital/employability criteria, and might be expected to do less well on average in the labor market compared to independent immigrants (Wright & Maxim, 1993).

In that the Swedish labor market has experienced structural changes in recent decades, the service sector has grown in importance while the industry sector has declined (Bevelander, 2000; Lundh, 2002). At the same time the industrial sector has undergone a rationalization process, which has led to a reduction in the usual low skilled "first job opportunities" in this sector for both immigrants and youth (Scott, 1999). These changes, the rationalization process and a growing service sector have together resulted in an increased demand for workers with higher general competence, higher education, higher communicative competence and better language skills (Bevelander, 2000; Broomé, Bäcklund, Lundh, & Ohlsson, 1996).

In human capital theory, education is one of the key determinants of the labor force activity, earnings and occupational status of individuals. In line with this theory, also for immigrants it is expected that a higher educational level will lead to easier inclusion in the labor market (Chiswick, 1978). The increased importance of a relatively higher level of education for inclusion in the labor market is assumed to affect potential employers' uncertainties about education obtained abroad and can be seen as signaling immigrants as a problem. The basic assumption behind labor market signaling is that asymmetric information is included in the hiring process. This means that one party (the better informed potential employee) has to signal information about his or her productivity to the other party (the poorly informed potential employer). Since high education signals high productivity, one way for the potential employee to signal that he or she is a good employee with high productivity is to invest in education (Spence, 1973).

Home Country Versus Host Country Education

In human capital theory, formal education, labor market experience, and on-the-job-training are regarded as investments that increase the human capital of the individual (Becker, 1964; Schultz, 1961). For immigrants we

have to distinguish between schooling that took place before migration and schooling that took place after migration (Chiswick & Miller, 2007). In post migration schooling, i.e. in the host country, signaling the potential productivity of the individual causes few problems, since it is expected that employers are knowledgeable about the schooling system and its output. As indicated earlier, if information about pre-migration education is less easily available to the employer, immigrants can experience difficulties in obtaining employment.

Immigrants' moves occur at various stages of their life cycle; some move to other countries as children following parents, while many move during the age of employment. Those who move in childhood or youth obtain some or all of their formal education in the host country. In other words, the younger the age of arrival the more host country specific formal and informal skills will be obtained, thus increasing their chances of integration in the host country's economy. Those who move at a posteducational age, on the other hand, and obtained all their education in the home country, have to rely on the share of international transferable component in their education. Over time, however, immigrants either directly or indirectly invest in host-country-specific human capital, and it is expected that this "capital exchange process" will reduce the initial gap in employment acquisition between immigrants and natives.

Bevelander (2000) gives support to the hypothesis that host country specific education, in this case Swedish obtained education, gives a premium in the labor market. One way of determining how far a person has come in the upgrading process is to look at the time spent in Sweden. Here, too, Bevelander (2000) shows that the length of time spent in Sweden affects the probability of being employed. Another way of looking at the capital exchange process is to look at work experience in Sweden. Rooth (2000), for example, finds that Swedish work experience increases the probability of immigrants being employed and that differences in the amount of Swedish work experience help to explain differences in employment rates between different immigrant groups. One way of interpreting this is that Swedish work experience is an indicator of how far a person has come in his or her exchange process of human capital upgrading (Rooth, 2000; see also Rooth & Åslund, 2006 & Åslund, Nordström Skans, & Sjögren, 2006).

General Versus Vocational Education

When an individual enters Sweden their skills, competences and education need to be recognized, either through validation or valuation. Sweden has, by tradition, few regulated occupations and professions. Most of the regulated professions are found in the areas of medicine, healthcare, shipping, aviation and education. In order to obtain employment in these occupations and

professions, a person needs to have his or her qualifications recognized by the relevant authorities. For example, in medicine the Swedish National Board of Health and Welfare is responsible for this. In other sectors an individual needs some kind of certificate or diploma (e.g. social worker) in order to obtain work in that particular occupation. Most occupations are unregulated, however. When a vocation is unregulated the relevant trade¹ organizations instead set some kind of standard in terms of what an individual needs to know in order to obtain work in that particular trade or occupation (Tema Nord, 2004, p. 560).

The National Agency for Service to Universities and University Colleges (VHS) recognizes and evaluates a general or unregulated vocational foreign university education. Secondary education is recognized by the decision-making board of the local secondary school or nearest adult education centre (KOMVUX) (Tema Nord, 2004, p. 560).

In order to speed up and make the evaluation and validation process more effective the Swedish government created the National Commission on Validation (*Valideringsdelegationen* active from 2004 to 2007). The Commission defines validation as the precise assessment, valuing, documentation and recognition of knowledge and competences that an individual has gained, irrespective of how and where they have been acquired. Here competence in the form of practical knowledge and “formal” competence in terms of educational documentation are the focus of validation (Andersson, Hult, & Osman, 2005; for a more in-depth discussion of validation see Andersson & Fejes, 2005).

Although validation is a fairly new concept in the Swedish context, projects aiming to highlight an individual’s competence did exist before the National Commission on Validation introduced the concept. An example of such a project is YPI (Vocational Assessment for Immigrants), arranged by The Swedish Employment Service from 1988 to 1996.

Vocational education or training—in Swedish *Yrkesutbildning*—is often conceived as “education aiming to give the students knowledge that is wanted in the labor market” (Olofsson, 2000, p. 17, our translation). If we accept this rather broad definition, there are three main ways of obtaining vocational education in Sweden: through the public school system, through courses in schools arranged by companies or other interested parties, and by obtaining an apprenticeship with a particular company. Vocational education also includes adult vocational education and vocational courses administrated by the Labor Market Board as labor market policy measures.

As referred to earlier, the question of how to evaluate different kinds of education from different countries is becoming increasingly important, especially when it comes to different university education. The background to this is that foreign-born individuals with a foreign (academic) education have more difficulty in getting a job that matches their education than the native academic population. In 2000, the employment rates for people with

an academic education were 93%² for natives, but only 64% for foreign-born (Berggren & Omarsson, 2001). Another issue, although not analyzed in this article, is whether academically educated people are employed at a level that accords with their education. Berggren and Omarsson (2001), for example, found that 90% of native academics have a job that is in accordance with their education, but only 40% of the foreign-born equivalent. Ekberg and Rooth (2004) supported these findings using data from 2001, and found that native-born men³ with an academic education of two years or more in duration have an employment rate of 90%. What is more, of these 90%, 90% have a job that accords with their educational level. In comparison, the employment rate of foreign-born was 75%; 77% of whom had a job in accordance with their educational level. Native-born women in turn have an employment rate of 90%; 89% of whom have jobs that accord with their educational level. For foreign-born women the employment rate is 79%, and of these, 79% have a job in line with their education (Ekberg & Rooth, 2004). With regard to the number of years in the country, substantial differences between different immigrant groups as well as between different immigrant cohorts are recognized in this study.

The differences in native-immigrant employment acquisition that emerge in most of the studies could be due to the underlying idea that employers find it difficult to validate and evaluate foreign educational credentials and the potential increase in costs in comparison with Swedish education. In terms of cost reduction, other factors, like ethnic background, could instead be used as a screening device. Another explanation could be that in many respects immigrants' educational levels are outdated. Long waiting periods for residence permits affects the up-to-date nature of education too. It is also possible that immigrants have educational degrees that are less useful in the Swedish labor market (i.e. foreign education with a limited international transferable component). In an attempt to solve this problem the government initiated different projects. An example of such a project is "*Aspirantutbildningen*," a special education for immigrants with a foreign academic education consisting of theoretical courses and internship that is designed to increase their chances of obtaining employment and address the evaluation, valuation and validation problem of foreign education.

Other explanations could be that there are differences between immigrants and natives in the kind of education obtained, or the extent to which the employment gap is due to immigrants having educational levels (and types) that are difficult to translate to Swedish labor market circumstances. In other words, do immigrants and natives with vocational and professional degrees have higher probabilities of employment than those with general educational degrees? Very few studies, have examined different types of human capital in this way, i.e. focusing on different types of education and their impact on the employment acquisition of natives and immigrants in the Swedish labor market.

Chiswick and DebBurman (2003) make a distinction between international transferable skills and origin specific skills in education: "The more general the skills acquired through schooling in the origin, the greater transferability to the destination and hence the smaller the decline in value of skills upon migration" (Chiswick & DebBurman, 2003, p. 6). When it comes to immigrants this means that their skills and knowledge about the labor market are not perfectly transferable to a new country and suggests that, on arrival, they are expected to be less productive. In this respect they experience a higher labor market turnover and a lower employment rate relative to natives, depending on the amount of international transferable skills they have acquired before the actual migration. If we follow Chiswick and DeBurman's arguments, we could expect that general education is easier to transfer to a Swedish labor market than vocational education. Since no studies are available on this topic in Sweden, we have to test this hypothesis in our study in order to determine what type of education is easier to translate.

To summarize the previous discussion, we expect that, in general, people with higher educational qualifications have higher employment rates. From earlier studies we retain that foreign-born individuals have lower employment rates compared to natives. From this, the first question we investigate is whether the gap between natives and foreign-born is due to a general lower level of human capital among the latter. The second question we deal with is the "transferability" of education. This is done by establishing whether different types of education, vocational versus general education, lead to a higher probability of obtaining employment by immigrants. Finally, the third question we look at is whether the age of the immigrant at the time of migration, as a proxy of where the education was obtained, has an impact on the person's employment acquisition. Whereas the first question is descriptive, the second and third are more analytical in nature. When it comes to the second question, we test Chiswick and DeBurman's argument to see whether general education gives a premium in the labor market. Moreover, for the third question, we expect that if the education has been obtained in Sweden it will lead to a higher probability of obtaining employment for immigrants relative to having obtained education in the home country. In other words, does where the education is obtained and the kind of education obtained affect the chances of immigrants being employed in Sweden?

DATA, METHOD, AND VARIABLES

In this article we studied the employment acquisition of individuals living in Sweden in the year 2003, from nine different immigrant countries, representing and selected according to admission status and period of immigration. Our selected countries are Poland, Romania, Former Yugoslavia, Bosnia and Herzegovina, Chile, Germany, Iran, Iraq, and Lebanon.

TABLE 1 Our Selected Sample by Country of Birth (Men, Women), Number, and Percent. Age 25–60^a

	Men	Women
Sweden	1,834,280	1,747,034
Yugoslavia	23,317	21,548
Bosnia-Herzegovina	16,563	15,399
Poland	9,255	19,073
Romania	3,533	4,414
Chile	10,046	9,542
Germany	8,629	7,598
Iraq	22,795	14,361
Iran	20,927	16,128
Lebanon	8,529	6,018
Total	1,957,874	1,861,115

^aSecond generation immigrants are counted as natives.

Of these nine selected countries, the immigrants from Germany are accounted as one of the “older” immigrant groups in Sweden. This immigrant group consists of both labor and family reunion migrants. Yugoslavian immigrants came to Sweden during the middle of the 1960s as labor migrants—a migration that peaked in the second half of the 1960s when about 5,000 Yugoslavs migrated to Sweden each year. Due to the civil war in Yugoslavia, a second immigration wave of (primarily) refugees came to Sweden in the first half of the 1990s and consisted mostly of individuals from Bosnia and Herzegovina. Immigration from Poland culminated in the 1970s, whereas immigrants from Romania came mainly in the 1980s. In the main, both groups consisted of refugees escaping dictatorial regimes. The Chilean migration to Sweden reached its first peak in the middle of the 1970s and mostly consisted of refugees fleeing as a result of the military coup in 1973. A second peak is observed in the 1980s, consisting mainly of labor and family reunion migrants. Although Iranian students came during the 1960s, migration from Iran reached its peak in the second half of the 1980s. Like the Iranian migration, Iraqi migration was a result of the war between Iran and Iraq and continued during the Gulf Wars, starting in the 1980s and continuing during the 1990s. The final group in this analysis is Lebanese immigrants, who largely came during the civil war in the 1980s.

The data used is a subsample from a database consisting of all individuals aged 20 years and older in Sweden in 2003⁴. Our analysis is constrained to individuals in the age category 25–60 years, the core labor market ages, and to natives and individuals from nine selected immigrant groups (see Table 1).

In our study we examine the employment acquisition of various immigrant groups relative to natives. Logistic regressions have been used in order to analyze the effects of different independent variables on the odds of having obtained employment.

In the study the dependent variable is having employment or not, and is based on the definition used by Statistics Sweden. This means that individuals are classified as employed when they worked one hour or more in November 2003 and had one “base value”⁵ income of work during 2003.

Standard independent variables like age, age squared, marital status, and years since migration are used as control variables and are included in the regression models. The variable years since migration and age are important for the variable age at migration, which in this article indicate whether an immigrant has obtained their education in the home or host country or in both. This conversion is made by assuming that individuals who were 10 years of age or below on arrival have obtained all education in Sweden, those who arrived between 11 and 19 years of age obtained both secondary and highest educational levels in Sweden, those who arrived between 20 and 25 years of age obtained the highest educational level in Sweden, while those who were 26 years and above on migration are assumed to have only foreign education.

The education variable is the main variable, consists of six different categories—compulsory education, secondary vocational education, secondary general education, post secondary education, general university education, and professional university education—and is measured as highest obtained education. This classification gives us an indication of whether general or vocational education is of more or less importance for employment acquisition and educational level.

Explaining the basics of the Swedish school system helps to make some sense of the education variable. Compulsory education in Sweden consists of a nine year long obligatory education that starts at the age of seven. Secondary education is either three years of vocational⁶ studies, e.g. to become a carpenter or electrician, or three to four years of theoretical studies that prepare the students for university. Postsecondary education consists of a higher level of education than secondary education, such that obtained at Sixth Form College or through preuniversity studies. This category is also used when the authorities are unable to decide whether an immigrant's education is at university level or not, and particularly so if documents are missing. This is why almost all of the immigrant groups have higher numbers of post secondary educated people than natives (Statistics Sweden). Finally, we distinguish between general university education and professional education. General education is, for example, a bachelor or master degree in sociology or other subjects, and does not lead to a specific profession. Professional education leads to a degree in a regulated profession, like law, teaching or the medical profession. If we combine both types of education and where they were obtained we distinguish between 24 different kind of educational categories (see Table 2).

TABLE 2 Educational Classifications

University level	
General education	
Professional education	
Post secondary level ^a	
Secondary level	
General education	Vocational Education ^b
Compulsory school	
Country of education	
1–10 years = All educational levels in Sweden	
11–19 years = Secondary and highest educational levels in Sweden	
20–25 years = Highest educational level in Sweden	
26–60 years = All educational levels in a foreign country	

^aClassification for immigrants when the authorities can not decide if the education is at the Secondary or University level.

^bFor a better understanding of the educational system of Sweden, vocational education at the secondary level leading to a profession is classified as vocational education and vocational education leading to a profession at the university level is classified as professional education.

RESULTS

Descriptive Statistics

Before turning our attention to the regressions, we present some descriptive statistics (see Tables A1 to A3 in the Appendix). Our sample consists of natives and nine selected immigrant groups. Moreover, of the immigrant groups, the Yugoslavian, Iranian, and Iraqi groups are the largest. The mean age in the sample is 43 years for both men and women. In 6 of the 10 groups, men have a higher mean age than women. Among both men and women, the Iraqi and Lebanese groups have a mean age of less than 40 years, which is lower than that of the other groups. Fifty-six percent of the men are married and 64% of the women.

In our sample, 55% of the men have a secondary level education and 22% have a university education. Among males, the groups with the highest educational level are Iranians, Romanians, and Poles. Immigrants from Lebanon have the lowest educational level, with 40% having compulsory school as the highest level of education. The groups with the highest proportion of vocational education at any level are those born in Sweden, Romania, and Poland.

Among women, 50% have a secondary level education and 33.4% a university level education. The groups with the highest educational level among women are from Romania, Sweden, Iran and Germany. Also, just like Lebanese males, women from Lebanon have the lowest educational level, with 44% having compulsory education as their highest educational

level. The groups with the highest proportion of vocational education at any level are individuals from Sweden, Poland, and Chile.

Among the immigrant men, 51.3% migrated to Sweden when they were 26 years or older, while among women the proportion is 57.2%. This means that, in our sample, more than half of the immigrant population is assumed to have obtained their highest educational levels before migrating to Sweden.

Individuals born in Sweden have by far the highest employment rate (85.2% for men and 81.9% for women). Among immigrant males, Bosnians and Germans have the highest employment rate (73.5 and 72.5%). Among immigrant females, Germans and Romanians have the highest employment rate (67.1 and 64.7%). Both among men and women, the Iraqi and Lebanese immigrants have the lowest employment rate (41.1 and 53.2% for men and 28.5 and 36.4 for women).

So far the analysis indicates that the gap in employment rates cannot only be explained by lower educational levels among the immigrant groups. In order to gain a better understanding of the employment level in each group, we have to study the employment rate by country of birth, educational level, and type. Both among men and women it is apparent that the lowest educated individuals have the lowest employment rate—with one exception, which is that German males with post secondary education have the lowest employment rate. As might be expected, the highest employment rate is found among those with professional university education. The exception here is that Bosnian males with secondary vocational education have the highest employment rate.

Furthermore, it is expected that people with university education should have higher employment rates than those with education at a lower level. This expectation is not observed for all groups, however. For males in the Swedish and Bosnian groups, individuals with a general university education have lower employment rates than individuals with education other than compulsory education. Individuals from Chile with a general university education show a lower employment rate than those with secondary education, but a higher rate than those with post secondary education. Among native and Bosnian women, only those with compulsory education have a lower employment rate than those with general university education. In four immigrant groups, namely women from Romania, Germany, Iraq, and Iran, those with general university education have lower employment rates than those with secondary vocational education.

When comparing general and vocational education at the same level, the observation is that for native and Romanian men the employment rate for general secondary education is higher than for vocational secondary education. For all the other groups vocational education shows the highest employment rate. For women, all the groups except natives indicate a higher employment rate for secondary vocational education compared to general secondary education. At university level, professional education yields a

higher employment rate compared to general education for all groups and for both men and women.

It is expected that education obtained in the host country should give a premium in the labor market, and this is also the case when looking at the variable age at migration. Both men and women have the highest employment rates among those who migrated when they were 10 years old or younger (measuring all education obtained in Sweden). The lowest employment rates are observed for individuals who were 26 years or older at the time of migration and obtained their education in the home country.

To summarize the analysis thus far, we understand that immigrants in general have a lower to much lower employment rate compared with the native population after control for educational levels. However, both the educational level and type seems to give different premiums in the labor market. Moreover, higher education, vocational education, and education obtained in Sweden seem to lead to a better position in the labor market.

Regressions

For a more in-depth analysis of our initial results we carried out three different regressions, for both males and females⁷, in order to determine whether different variables affected the odds of having employment. In the first regression (Regression A, presented in the Appendix as Tables A5 and A6) we did not control for any interaction between the variables. In Regression B, we controlled for interaction effects between country of birth and education, and in Regression C we controlled for interaction effects between age at migration and education.

The results from Regression A (without interaction effects) show that increased educational level increases the odds of having employment (see Tables A5 and A6 in the Appendix). The type of education is also important, since having a professional education at university level yields the highest odds of having employment. After that, post secondary, secondary general, and secondary vocational education yield the highest odds of having employment. Having a general university education shows a slight increase in the odds compared to compulsory education. Differences in the results by country of birth show that natives have the highest odds of employment, followed by Germany, and Bosnia and Herzegovina. The groups with the lowest employment odds are individuals from Iran, Iraq, and Lebanon. No differences were observed between males and females.

In the second regression model (Regression B) we included the interaction effect for both country of birth and educational level (these regression results can be found in the Appendix). Controlling for demographic and human capital factors, the odds of having employment for males dependent on the educational type and level are about the same as in Regression A. The

native population has the highest odds of obtaining employment. Among the immigrant groups, German and Chilean males show the highest odds. Among females the highest odds are shown by German and Bosnian immigrants. Iraqi, Iranian, and Lebanese immigrants have the lowest odds of having employment for both men and women.

The combined effects of educational level and type by country of birth are presented in Table 3. Among men, the results in Regression B are different to those of Regression A. In Regression A, professional university education yields the highest odds of obtaining employment for all groups, whereas in Regression B, professional university education gives the highest odds for five groups, namely natives, Romanian, Iraqi, Iranian, and Lebanese immigrants. For the other five groups, other types and levels of education yield the highest odds of obtaining employment. For the Yugoslavian, Bosnian, and Polish groups, secondary general education yields the highest odds of obtaining employment. For the Chilean group secondary vocational education provides the highest odds, and among the German group post secondary education shows the highest odds ratio of obtaining employment. In all groups except the Chilean group compulsory education generates the lowest odds of having employment. For the Chileans, general university education gives the lowest odds of obtaining employment.

Comparing the immigrant groups with each other at the different educational levels, we can see that the Iranian group is one of the groups with the lowest odds at almost every educational level. When it comes to professional university education, however, they are among the immigrant groups with the highest odds. Only the German group has higher odds of obtaining employment at the professional university level.

For women the picture is somewhat different. All groups show that professional university education yields the highest odds of obtaining employment. Lebanese women are the exception here. Compulsory education gives the lowest odds of obtaining employment for all the groups. When comparing the immigrant groups by the different educational levels, German women show the highest odds of obtaining employment. When it comes to the secondary general educational level, Bosnian women have the highest odds of obtaining employment. The lowest odds of obtaining employment are found among the Iraqi and Lebanese women.

In Regression C only immigrants are included in the analysis. Here the results of the model with the interaction effects between age at migration and education are presented (results for all variables are presented in Tables A5 and A6 in the Appendix). In this model, age at migration is used as a proxy of where the individual obtained his/her education; in the home country or/and in the host country. Again, the results of this model differ to some extent from the two earlier ones. The results for males show that post secondary education yields the highest odds of having employment, followed by secondary vocational and professional university education. The

TABLE 3 Regression B, Combined Effects of Education Level and Type by Country of Birth (Men and Women)

Education level	Sweden	Yugoslavia	Bosnia and Herzegovina	Poland	Romania	Chile	Germany	Iraq	Iran	Lebanon
Men										
Compulsory	1.000	0.067	0.110	0.053	0.097	0.115	0.182	0.035	0.051	0.050
Secondary vocational	1.579	0.116	0.160	0.106	0.147	0.254	0.230	0.058	0.106	0.087
Secondary general	1.741	0.236	0.284	0.130	0.155	0.200	0.218	0.049	0.181	0.175
Post secondary	2.061	0.198	0.254	0.100	0.170	0.161	0.516	0.097	0.122	0.191
University	2.152	0.109	0.192	0.088	0.214	0.176	0.461	0.104	0.306	0.198
professional										
University general	1.222	0.081	0.159	0.053	0.124	0.105	0.371	0.059	0.093	0.116
Women										
Compulsory	1.000	0.081	0.176	0.106	0.158	0.132	0.225	0.046	0.070	0.045
Secondary vocational	2.197	0.173	0.377	0.190	0.291	0.283	0.467	0.050	0.175	0.127
Secondary general	2.225	0.231	0.502	0.216	0.300	0.272	0.351	0.093	0.224	0.090
Post secondary	3.177	0.240	0.352	0.228	0.261	0.280	0.371	0.081	0.124	0.092
University	4.158	0.486	0.784	0.396	0.463	0.488	0.851	0.213	0.325	0.192
professional										
University general	1.917	0.294	0.326	0.312	0.328	0.212	0.491	0.074	0.188	0.197

lowest odds are obtained by compulsory education and general university education. For women, post secondary and professional university education have the highest odds of obtaining employment. General university and compulsory education show the lowest odds. When comparing the different groups, German and Bosnian immigrants have the highest odds and Lebanese and Iraqi immigrants the lowest odds of obtaining employment. Among the women, Bosnian and German immigrants have the highest odds ratio and Lebanese and Iraqi immigrants the lowest odds ratio of obtaining employment.

As discussed earlier, the variable age at migration is expected to follow the pattern that the younger individual is at the time of arrival, the higher the odds of having employment. This expectation also includes the idea that the lower the age at migration, the more education will be obtained in the host country, which in turn will enhance the individual's labor market integration. However, the results for males show that individuals with the highest odds of obtaining employment are those who migrated when they were between 11 and 19 years, followed by those who migrated at the ages of 20 to 25.⁸ However, for females the results show the expected pattern.

In Table 4 we present the combined effects of country of birth and age at migration by educational level for males. Comparing the different groups with each other, we can see that the Germans and the Bosnians are the immigrant groups with the highest odds ratios regardless of educational level or age at migration. The lowest odds ratios are again observed for Iranian, Iraqi and Lebanese immigrants.

For the secondary and post secondary levels, the odds of having employment increase with age at migration. A more scattered picture can be seen for the other educational levels. Those who migrated between the ages of 11–19 and having compulsory education have the highest odds of obtaining employment. Further, for this group, migration at these ages together with a university level education shows the lowest odds of having employment.

Table 5 indicates the results of Regression C for women. The highest odds of having employment are measured for the Bosnian and German group, whereas the lowest odds of having employment are measured for Iranian, Lebanese, and Iraqi immigrants. At the compulsory and secondary levels, the results show the expected pattern; the younger the person the higher the odds of having employment. At the post secondary educational level, those who migrated between 20 and 25 years of age have the lowest odds ratio of obtaining employment. At the general university level, those who migrated between 11 and 19 years show the lowest odds ratios. Of the immigrants with a professional university education, those who migrated between 1 and 10 years yield the highest odds ratio of having employment, followed by those who migrated at the age of 20 to 25.

TABLE 4 Regression C, Combined Effects of Education × Age at Migration × Country of Birth, Men

	Yugoslavia	Bosnia and Herzegovina	Poland	Romania	Chile	Germany	Iraq	Iran	Lebanon
Compulsory									
1–10 years	1.000	1.710	1.076	1.208	1.427	1.818	0.441	0.783	0.657
11–19 years	1.122	1.919	1.207	1.355	1.601	2.040	0.495	0.879	0.737
20–25 years	0.995	1.701	1.071	1.202	1.420	1.809	0.439	0.779	0.654
26–60 years	0.582	0.995	0.626	0.703	0.831	1.058	0.257	0.456	0.382
Secondary vocational									
1–10 years	2.391	4.089	2.573	2.888	3.412	4.347	1.054	1.872	1.571
11–19 years	2.068	3.537	2.226	2.499	2.952	3.760	0.912	1.620	1.359
20–25 years	1.454	2.486	1.564	1.756	2.074	2.643	0.641	1.138	0.955
26–60 years	1.269	2.170	1.366	1.533	1.811	2.307	0.560	0.994	0.834
Secondary general									
1–10 years	2.323	3.972	2.500	2.806	3.315	4.223	1.024	1.819	1.526
11–19 years	1.705	2.915	1.834	2.059	2.432	3.099	0.752	1.335	1.120
20–25 years	1.484	2.537	1.597	1.793	2.118	2.698	0.654	1.162	0.975
26–60 years	1.026	1.755	1.104	1.240	1.464	1.866	0.453	0.803	0.674
Post secondary									
1–10 years	3.832	6.553	4.123	4.629	5.468	6.967	1.690	3.000	2.518
11–19 years	1.939	3.316	2.086	2.342	2.767	3.525	0.855	1.518	1.274
20–25 years	1.739	2.973	1.871	2.100	2.481	3.161	0.767	1.361	1.142
26–60 years	0.937	1.602	1.008	1.132	1.337	1.703	0.413	0.733	0.615
University professional									
1–10 years	2.342	4.005	2.520	2.829	3.342	4.258	1.033	1.834	1.539
11–19 years	1.923	3.289	2.070	2.324	2.745	3.497	0.848	1.506	1.264
20–25 years	2.316	3.961	2.492	2.798	3.305	4.211	1.021	1.814	1.522
26–60 years	2.245	3.839	2.416	2.712	3.204	4.081	0.990	1.758	1.475
University general									
1–10 years	1.796	3.071	1.932	2.170	2.563	3.265	0.792	1.406	1.180
11–19 years	1.517	2.595	1.633	1.833	2.165	2.759	0.669	1.188	0.997
20–25 years	1.794	3.068	1.931	2.167	2.560	3.262	0.791	1.405	1.179
26–60 years	1.569	2.683	1.688	1.895	2.239	2.852	0.692	1.228	1.031

TABLE 5 Regression C, Combined Effects of Education × Age at Migration × Country of Birth, Women

	Yugoslavia	Bosnia and Herzegovina	Poland	Romania	Chile	Germany	Iraq	Iran	Lebanon
Compulsory									
1–10 years	1.000	1.890	1.333	1.518	1.548	1.620	0.422	0.798	0.522
11–19 years	0.897	1.695	1.196	1.362	1.389	1.453	0.379	0.716	0.468
20–25 years	0.739	1.397	0.985	1.122	1.144	1.197	0.312	0.590	0.386
26–60 years	0.465	0.879	0.620	0.706	0.720	0.753	0.196	0.371	0.243
Secondary vocational									
1–10 years	2.649	5.007	3.531	4.021	4.101	4.291	1.118	2.114	1.383
11–19 years	2.217	4.190	2.955	3.365	3.432	3.591	0.936	1.769	1.157
20–25 years	1.648	3.115	2.197	2.502	2.552	2.670	0.696	1.315	0.860
26–60 years	0.456	0.861	0.608	0.692	0.706	0.738	0.192	0.364	0.238
Secondary general									
1–10 years	2.515	4.753	3.352	3.818	3.893	4.074	1.061	2.007	1.313
11–19 years	2.206	4.170	2.941	3.349	3.415	3.574	0.931	1.761	1.152
20–25 years	1.530	2.891	2.039	2.322	2.368	2.478	0.645	1.221	0.798
26–60 years	0.871	1.647	1.161	1.323	1.349	1.411	0.368	0.695	0.455
Post secondary									
1–10 years	6.876	12.996	9.166	10.438	10.644	11.139	2.902	5.487	3.589
11–19 years	5.033	9.512	6.709	7.640	7.791	8.153	2.124	4.016	2.627
20–25 years	1.397	2.641	1.863	2.121	2.163	2.264	0.590	1.115	0.729
26–60 years	2.954	5.584	3.938	4.485	4.573	4.786	1.247	2.358	1.542
University professional									
1–10 years	4.142	7.828	5.521	6.288	6.412	6.710	1.748	3.305	2.162
11–19 years	3.188	6.025	4.249	4.839	4.935	5.164	1.345	2.544	1.664
20–25 years	3.272	6.184	4.362	4.967	5.065	5.301	1.381	2.611	1.708
26–60 years	1.473	2.785	1.964	2.237	2.281	2.387	0.622	1.176	0.769
University general									
1–10 years	2.487	4.700	3.315	3.775	3.850	4.029	1.050	1.985	1.298
11–19 years	0.493	0.932	0.657	0.748	0.763	0.799	0.208	0.393	0.257
20–25 years	2.465	4.658	3.285	3.741	3.815	3.993	1.040	1.967	1.287
26–60 years	1.375	2.599	1.833	2.087	2.129	2.228	0.580	1.097	0.718

SUMMARY AND DISCUSSION

In line with earlier research, this study has its basis in the gradually (i.e. over a period of time) increasing employment gap between immigrants and natives, for both males and females in Sweden. Various explanations have been put forward to explain the employment difference between natives and immigrants. One of the most important explanatory propositions is based on economic theory and focuses on the importance of the human capital of the individual for successful labor market inclusion. Individuals with high levels of human capital have an advantage in the labor market and less problem in finding a job (Chiswick, 1978). Elaborating on this, establishing whether where this education was obtained and the type of education obtained is important for immigrants' labor market acquisition is the specific remit of this study.

Returning to the aims and actual results, the first aim of this study was to analyze whether there was a difference in the employment rate between natives and selected immigrant groups in Sweden. The results show that there was a difference. Indeed, after controlling for demographic and human capital characteristics, there is quite a significant difference in the employment rates between the native and the immigrant population and between the different immigrant groups studied. This was the case for both for men and women.

The second aim of the study was to determine whether the differences in the employment acquisition of immigrants in Sweden could be explained by differences in the kind of education individuals obtained. The different groups in the study have different characteristics in terms of different educational levels and types of education. The results show that both educational level and educational type give different premiums in the labor market. In general, higher education leads to higher odds of having employment. Looking at the educational level alone is not enough, however. The educational type must also be taken into consideration, and at university level the educational type is especially important. Professional education from a university gives a premium in higher employment odds relative to general university education. For most of the immigrant groups, a general university education gives a small employment premium relative to compulsory education.

The final aim of the study was to determine whether the differences in the employment acquisition of immigrants in Sweden could be explained by where the education was obtained. Since we do not have a variable that measures whether education was obtained in the home or host country, we used a proxy and estimated where the education was obtained through the variable age at migration. The results of the analyses point in different directions. The descriptive statistics show that the younger an individual was at the time of migration, the higher the employment rate. However, in the regression models, controlling for various characteristics, a more scattered

result emerged. This accounts for both men and women. Moreover, the results for many of the coefficients are not significant and the pattern for men does not completely support the expectation that the younger an individual was at the time of migration the higher the odds of having employment. Women, on the other hand, follow the expected pattern, although here the coefficients from the regression are in many cases not significant. When looking at the combined effects of age at migration, country of birth and education, the expected pattern is only observed for some of the educational levels and types. Here, migrating at a younger age should be correlated with higher odds of having employment. This pattern is only observed when it comes to secondary and postsecondary educational levels for men, and compulsory and secondary levels for women. All the other educational levels and types show a more scattered pattern.

We find that it matters a great deal what kind of education an individual has obtained when it comes to employment acquisition in the Swedish labor market. The type of education—vocational or general—seems to play an important role. Vocational education, especially at university level, seems to facilitate employment acquisition relative to general education. However, these results are not congruent with those obtained by Chiswick and DebBurman (2003). The argument that a general education should have a higher proportion of internationally transferable components, and therefore facilitate labor market integration, does not seem to count for the Swedish labor market.

Previous studies have shown that Swedish obtained education gives a premium in the labor market (Bevelander, 2000). The results from this study point in the same direction, although are not as strong as expected. The expected pattern was only followed for some of the educational levels and types of education. Interestingly, professional university education was not one of them.

Our understanding of the results is that, irrespective of where they are born, individuals with a professional university education and vocational education have less trouble finding work in a relatively strong regulated labor market like that in Sweden. Formal degrees signal an easier validation both formally to labor market institutions and informally to employers. This facilitates labor market inclusion for all individuals with these kinds of education. Where this vocational and professional education was obtained does not seem to be particularly important. Individuals with a more general education at all levels seem to have a disadvantage in this respect.

Where earlier research points to the importance of human capital “quality” of the individual in a broad sense, and measures this by years enrolled in education or levels of education, our study indicates that certain types of education have an effect on the labor market integration of individuals. Given the type of labor market, more focused immigration policies that take the type of education into account could be more successful.

NOTES

1. In Swedish also referred to as a guild, business or industry.
2. This figure is based on responses to a survey sent to people between 26 and 45 years of age who had migrated to Sweden during the period 1991–1997 and had an academic education of three years or more. The survey was also sent to a control group consisting of native-born people. The total sample of the survey was about 8,000 respondents.
3. Native-born men aged between 25 and 55 years.
4. The database is called LOUISE and consists of a number of register databases held by Statistics Sweden.
5. The “base value” or “basic amount” is geared to the price index and is decided annually by the government. It is constructed through the collective costs of a basket of selected goods and services. It can be seen as a representation of the “poverty level,” net of housing costs and the lowest sign of an individual’s labor market attachment.
6. As stated earlier in the text, the definition of vocational education in the literature is rather broad. In order to narrow it down we use Statistics Sweden’s definition of vocational education in our models and analysis. This definition states that vocational education at the secondary level includes educational programs where the students receive vocational and practical training. Secondary level general education is defined as theoretical education that prepare for university studies. At university level all educational programs that lead to a specific vocation are counted as vocational education, i.e. education where the students obtain a specific qualification or certificate. In this context general education is regarded as education leading to a general degree, such as a bachelor or masters degree (SUN 2000, Statistics Sweden).
7. Classification for immigrants when the authorities can not decide if the education is at the secondary or university level.
8. The results for men are barely significant. The results for the 11–19 years category are significant at the 0.1 level. The results for the 20–25 years category are insignificant. The results for the 26 years and older category are significant at the 0.01 level. For women, the results for the 11–19 years category are insignificant, while the other categories are significant at the 0.01 level.

REFERENCES

- Andersson, P., Hult, Å., & Osman, A. (2005). *Validering som sortering Hur värderas utländsk yrkeskompetens?* [Validation as classification. How is vocational competence valued?]. Norrköping, Sweden: Integrationsverket, Underlagsrapport.
- Andersson, P., & Fejes, A. (2005). *Kunskapens värde—validering i teori och praktik* [The value of knowledge—validation in theory and practice]. Lund, Sweden: Studentlitteratur.
- Åslund, O., Erikson, R., Nordström Skans, O., & Sjögren, A. (2006). *Fritt inträde? Ungdomars och invandrades väg till det första arbetet* [Free passage? Youths’ and immigrants’ routes to the first job]. Stockholm, Sweden: SNS Förlag.
- Becker, G. S. (1964). *Human capital a theoretical and empirical analysis, with special reference to education*. Chicago, IL: Chicago University Press.
- Bengtsson, T., Lundh, C., & Scott, K. (2005). From boom to bust: Economic integration of immigrants in postwar Sweden. In K. F. Zimmerman (Ed.), *European migration: What do we know* (pp. 15–58). Oxford, England: Oxford University Press.
- Berggren, K., & Omarsson, A. (2001). *Rätt man på fel plats—En studie av arbetsmarknaden för utlandsfödda akademiker som invandrat under 1990-talet* [Right man in the wrong place—A study of the labor market for foreign born academics who migrated during the 1990s]. *Arbetsmarknadsstyrelsen, Ura*, 4, 1–34.

- Bevelander, P. (2000). *Immigrant employment integration and structural change in Sweden, 1970–1995*. Lund, Sweden: Lund Studies in Economic History.
- Bevelander, P. (2004). Immigrant patterns, economic integration and residential segregation: Sweden in the late 20th century. In *Current themes in IMER research* (No. 2, pp. 1–33). Malmö, Sweden: Malmö University.
- Borjas, G. J. (1985). Assimilation, changes in cohort quality, and earnings of immigrants. *Journal of Labor Economics*, 3, 463–489.
- Borjas, G. J. (1987). Self selection and the earnings of immigrants. *American Economic Review*, 77, 531–553.
- Borjas, G. J. (1989). Immigrant and emigrant earnings: A longitudinal study. *Economic Inquiry*, 27(1), 21–37.
- Broomé, P., Bäcklund, A.-K., Lundh, C., & Ohlsson, R. (1996). *Varför sitter "brassen på bänken"? Eller varför har invandrarna så svårt att få jobb?* [Why do immigrants find it so difficult to get a job?]. Stockholm, Sweden: SNS Förlag.
- Chiswick, B. (1978). The effect of Americanization on the earnings of foreign-born men. *Journal of Political Economy*, 86, 897–921.
- Chiswick, B., & DebBurman, D. (2003). *Educational attainment: Analysis by immigrant generation* (IZA Conference Paper No. 731). Bonn: Institute for the Study of Labor.
- Chiswick, B., & Miller P. (2007). *The international transferability of immigrants' human capital skills* (IZA Conference Paper No. 2670).). Bonn: Institute for the Study of Labor.
- Ekberg, J., & Rooth D.-O. (2004). *Yrke och utbildning på 2000-talets arbetsmarknad—Skillnader och likheter mellan inrikes och utrikes födda personer, Bilaga till Rapport Integration 2003* [Vocation and education in the labor market of the 21st century]. Norrköping, Sweden: Integrationsverket.
- Lundh, C. (2002). *Spelets regler, Institutioner och lönebildning på den svenska arbetsmarknaden 1850–2000* [The rules of the game, institutions and wage formation on the Swedish labor market 1850–2000]. Stockholm, Sweden: SNS Förlag.
- Lundh, C., & Ohlsson, R. (1999). *Från arbetskraftsimport till flyktinginvandring* (2nd ed.) [From the import of labor to refugee immigration]. Stockholm, Sweden: SNS Förlag.
- Olofsson, J. (2000). Yrkesutbildning och utbildningspolitik—en inledande översikt [Vocational education and educational policy—an introductory overview]. In J. Olofsson & I. Schånberg (Eds.), *Yrkesutbildningen i går och i dag [Vocational education—Yesterday and today]* (pp. 1–35). Lund, Sweden: Studentlitteratur.
- Rooth, D.-O. (2000). Flyktingar på arbetsmarknaden: är utbildning eller arbetserfarenhet det bästa 'valet'? [Refugees on the labor market: Is education or work experiences the best 'choice?']. *Ekonomisk Debatt*, 28, 441–449.
- Rooth, D.-O., & Åslund, O. (2006). *Utbildning och kunskaper i svenska—Framgångsfaktorer och invandrare?* [Education and language skills—Success factors for immigrants?]. Stockholm, Sweden: SNS Förlag.
- Schultz, T. W. (1961). Investment in human capital. *The American Economic Review*, 51(1), 1–17.
- Scott, K. (1999). *Changing employment and income patterns in Sweden, 1970–1993*. Lund, Sweden: Lund Studies in Economic History, No. 9.
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87, 355–374.

- Tema Nord. (2004). *Integrering av invandrare—Rollen av bedömning av tidigare utbildning och arbetslivserfarenheter i Norden* [Integrating immigrants—The role of validating education and work experience in the Nordic countries]. Copenhagen, Denmark: Nordisk Ministerråd.
- Wright, R. E., & Maxim, P. S. (1993). Immigration policy and immigrant quality. *Journal of Population Economics*, 6, 337–352.

APPENDIX

A1. Descriptive Statistics					
Variable	Men %	Women %	Variable	Men %	Women %
Country of birth			Age at Migration		
Sweden	93.7	93.9	1–10 Years	13.6	8.6
Yugoslavia	1.2	1.2	10–19 Years	12.3	11.7
Bosnia & Herzegovina	0.8	0.8	20–25 Years	22.8	22.5
Poland	0.5	1.0	26 years & older	51.3	57.2
Romania	0.2	0.2	Marital status		
Chile	0.5	0.5	Unmarried	44.3	36
Germany	0.4	0.4	Married	55.7	64
Iraq	1.2	0.8	Employment Rate By Country of Birth		
Iran	1.1	0.9	Sweden	85.2	81.9
Lebanon	0.4	0.3	Yugoslavia	62.6	52
Total	100	100	Bosnia & Herzegovina	72.5	64.7
Age	Mean	Mean	Poland	66.1	63.8
Sweden	42.78	42.95	Romania	68.8	65.6
Yugoslavia	42.79	42.8	Chile	69.3	64.4
Bosnia & Herzegovina	40.52	40.31	Germany	73.5	67.1
Poland	43.05	44.72	Iraq	41.4	28.5
Romania	41.76	41.22	Iran	60	52.1
Chile	40.79	41.06	Lebanon	53.2	36.4
Germany	44.28	43.8	All	83.5	80.2
Iraq	39.55	37.56	Employment Rate By Age at Migration		
Iran	41.94	40.17	1–10 Years	75.9	68.4
Lebanon	38.69	37.04	10–19 Years	67.6	58.1
All groups	42.7	42.85	20–25 Years	65	56.2
			26 years & older	60.9	51.1

A2. Educational Level in Each Group, In Percent						
	Compulsory	Secondary Vocational	Secondary General	Post Secondary	University Profes- sional	University General
Men						
Sweden	18.5	34.4	21.1	3.4	13.4	9.1
Yugoslavia	23.7	25.4	31.2	11.9	5.1	2.8
Bosnia & Herzegovina	11.5	12.3	49.1	17.9	5.5	3.7
Poland	11.6	26.6	23.8	8.0	19.8	10.3
Romania	8.9	27.7	24.0	9.4	20.2	9.9
Chile	22.5	34.6	21.6	7.1	9.0	5.2
Germany	12.6	22.2	22.1	16.8	13.1	13.2
Iraq	27.0	9.2	22.2	24.5	10.5	6.6
Iran	11.4	16.7	29.7	8.9	21.1	12.2
Lebanon	40.1	23.7	18.7	7.5	6.3	3.6
All	18.5	33.6	21.6	4.0	13.3	9.0
Women						
Sweden	13.0	31.2	19.5	1.9	24.7	9.5
Yugoslavia	38.8	17.0	26.6	7.8	6.6	3.2
Bosnia & Herzegovina	22.3	7.5	46.0	12.3	6.7	5.2
Poland	10.8	22.3	26.9	10.3	20.2	9.4
Romania	9.0	16.0	27.0	13.0	22.2	12.8
Chile	24.1	29.4	22.7	6.6	12.2	4.8
Germany	11.8	19.5	19.7	17.9	19.3	11.8
Iraq	32.7	5.5	23.3	26.2	5.6	6.6
Iran	13.0	12.2	31.8	11.1	20.3	11.5
Lebanon	44.3	15.4	22.4	9.0	4.9	4.1
All	13.7	30.3	20.1	2.6	24.0	9.4

A3. Employment Rates by Education and Country of Birth										
	Sweden	Yugoslavia	Bosnia & Herzegovina	Poland	Romania	Chile	Germany	Iraq	Iran	Lebanon
	MEN									
Compulsory Secondary vocational general Postsecondary University professional University general	78.4	50.7	55	46.4	59	62.7	67	29.2	42.9	47.2
	86.4	67.2	78.1	68	66.5	74	76.8	59.3	61.5	56.8
	87.2	65	75.1	65.8	68.9	68.6	71.1	41.8	56.9	54.2
	89.3	63.4	74.2	61.4	68.2	62.8	64	36.7	52.7	51.2
	89.8	74.9	75.4	75	76.9	75.8	84.1	61.4	72.7	71.2
University general	81.8	68.9	61.5	70.3	68.3	67.8	79.8	51.2	64.5	63.5
Total	85.2	62.6	72.5	66.1	68.8	69.3	73.5	41.4	60	53.2
	WOMEN									
Compulsory Secondary vocational general Postsecondary University professional University general	67.3	37.5	49.2	46.7	51	51.4	53.2	18.6	31.6	26.8
	82.3	60.7	73.1	65.3	70.6	70	73.9	55.2	59.5	51.8
	82.5	58.6	68.6	61.8	64.6	65.9	64	31.1	47.7	37.7
	87	54.1	65.8	52.5	51.7	57.7	54.8	23.2	38.7	33.5
	89.8	79.2	80.6	77.5	77.6	79.3	82.1	60.8	72.6	59.5
University general	77.8	64.6	61.3	69.2	65.3	59.3	69.5	40.5	56.3	55.3
Total	81.9	52	64.7	63.8	65.6	64.4	67.1	28.5	52.1	36.4

A5. Regressions						
Men						
	Regression A		Regression B		Regression C	
	Wald	Exp(B)	Wald	Exp(B)	Wald	Exp(B)
Age	17918.69	1.267	17837.42	1.267	1151.34	1.257
Age squared	21415.82	0.997	21370.27	0.997	1342.26	0.997
Marital status	30772.28	2.351	30794.87	2.355	918.468	1.678
Education						
Compulsory	15447.37	1	14032.95	1	203.095	1
Secondary vocational	6845.787	1.595	6064.655	1.579	157.973	2.391
Secondary general	8036.404	1.736	7192.863	1.741	121.131	2.323
Postsecondary	3183.445	1.899	2703.081	2.061	41.707	3.832
University professional	10594.05	2.206	9055.55	2.152	83.171	2.342
University general	987.749	1.275	631.045	1.222	38.188	1.796
Country of birth						
Sweden	28810.75	1	15865.95	1	-	-
Yugoslavia	13747.46	0.071	5963.705	0.067	4667.5	1
Bosnia & Herzegovina	7228.637	0.132	1890.219	0.11	505.362	1.71
Poland	6899.755	0.074	1792.737	0.053	6.899	1.076
Romania	3245.589	0.086	361.612	0.097	20.969	1.208
Chile	5714.146	0.097	1806.814	0.115	168.559	1.427
Germany	2966.848	0.177	514.058	0.182	350.913	1.818
Iraq	26145.16	0.035	10154.86	0.035	1470.59	0.441
Iran	13595.86	0.053	3816.532	0.051	130.29	0.783
Lebanon	10476.49	0.044	5076.743	0.05	231.944	0.657
Year since migration	2634.879	1.119	2036.167	1.109	-	-
Year since migration squared	1395.202	0.998	1065.851	0.998	-	-
Age at migration						
1–10 years	-	-	-	-	379.385	1
11–19 years	-	-	-	-	2.956	1.122
20–25 years	-	-	-	-	0.006	0.995
26 years and older	-	-	-	-	83.975	0.582
Country of birth by education						
Sweden by compulsory	-	-	1043.289	1	-	-
Yugoslavia by secondary vocational	-	-	5.037	1.096	-	-
Yugoslavia by secondary general	-	-	90.817	2.022	-	-
Yugoslavia by postsecondary	-	-	20.624	1.436	-	-
Yugoslavia by university professional	-	-	3.958	0.757	-	-
Yugoslavia by university general	-	-	0.018	0.992	-	-

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A5. Regressions (<i>Continued</i>)						
	Men					
	Regression A		Regression B		Regression C	
	Wald	Exp(B)	Wald	Exp(B)	Wald	Exp(B)
Bosnia & Herzegovina by secondary vocational	-	-	0.737	0.924	-	-
Bosnia & Herzegovina by secondary general	-	-	47.897	1.484	-	-
Bosnia & Herzegovina by postsecondary	-	-	4.016	1.121	-	-
Bosnia & Herzegovina by University Professional	-	-	12.293	0.811	-	-
Bosnia & Herzegovina by university general	-	-	18.017	1.181	-	-
Poland by secondary vocational	-	-	18.432	1.269	-	-
Poland by secondary general	-	-	18.158	1.412	-	-
Poland by postsecondary	-	-	0.368	0.916	-	-
Poland by university professional	-	-	15.036	0.772	-	-
Poland by university general	-	-	4.509	0.825	-	-
Romania by secondary vocational	-	-	0.968	0.958	-	-
Romania by secondary general	-	-	2.589	0.92	-	-
Romania by postsecondary	-	-	6.243	0.851	-	-
Romania by university professional	-	-	0.178	1.023	-	-
Romania by university general	-	-	0.534	1.05	-	-
Chile by secondary vocational	-	-	10.224	1.401	-	-
Chile by secondary general	-	-	0	0.997	-	-
Chile by postsecondary	-	-	16.272	0.681	-	-

A5. Regressions (Continued)						
Men						
	Regression A		Regression B		Regression C	
	Wald	Exp(B)	Wald	Exp(B)	Wald	Exp(B)
Chile by university professional	-	-	12.392	0.713	-	-
Chile by university general	-	-	42.838	0.748	-	-
Germany by secondary vocational	-	-	10.768	0.802	-	-
Germany by secondary general	-	-	16.317	0.689	-	-
Germany by postsecondary	-	-	17.518	1.375	-	-
Germany by university professional	-	-	3.015	<u>1.178</u>	-	-
Germany by university general	-	-	34.852	1.669	-	-
Iraq by secondary vocational	-	-	0.114	1.053	-	-
Iraq by secondary general	-	-	5.265	0.808	-	-
Iraq by postsecondary	-	-	6.824	1.348	-	-
Iraq by university professional	-	-	34.866	1.381	-	-
Iraq by university general	-	-	30.553	1.368	-	-
Iran by secondary vocational	-	-	6.625	1.32	-	-
Iran by secondary general	-	-	57.834	2.039	-	-
Iran by postsecondary	-	-	2.245	1.161	-	-
Iran by university professional	-	-	105.597	2.784	-	-
Iran by university general	-	-	5.48	1.491	-	-
Lebanon by secondary vocational	-	-	0.817	1.102	-	-
Lebanon by secondary general	-	-	41.66	2.012	-	-
Lebanon by postsecondary	-	-	94.224	1.852	-	-
Lebanon by university professional	-	-	96.013	1.838	-	-

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A5. Regressions (<i>Continued</i>)						
	Men					
	Regression A		Regression B		Regression C	
	Wald	Exp(B)	Wald	Exp(B)	Wald	Exp(B)
Lebanon by university general	-	-	23.723	1.893	-	-
Education by age at migration						
Compulsory education * 1–10 years	-	-	-	-	367.136	1
Secondary vocational*11–19 years	-	-	-	-	9.027	0.771
Secondary vocational*20–25 years	-	-	-	-	38.106	0.611
Secondary vocational*26 years & older	-	-	-	-	1.501	0.912
Secondary general*11–19 years	-	-	-	-	20.571	0.654
Secondary general*20–25 years	-	-	-	-	27.089	0.642
Secondary general*26 years & older	-	-	-	-	11.832	0.759
Postsecondary*11–19 years	-	-	-	-	9.672	0.451
Postsecondary*20–25 years	-	-	-	-	13.322	0.456
Postsecondary*26 years & older	-	-	-	-	17.097	0.42
University professional*11–19 years	-	-	-	-	7.226	0.732
University professional*20–25 years	-	-	-	-	0.003	0.994
University professional*26 years & older	-	-	-	-	25.534	1.647
University general* 11–19 years	-	-	-	-	5.796	0.753
University general* 20–25 years	-	-	-	-	0.002	1.004
University general* 26 years & older	-	-	-	-	15.769	1.501
Constant	8407.85	0.036	8281.206	0.037	900.61	0.012

Bold = significance on 0.01; Bold + italic = 0.05, Bold + italic + underlined = 0.1.

A6. Regressions						
Women						
	Regression A		Regression B		Regression C	
	Wald	Exp(B)	Wald	Exp(B)	Wald	Exp(B)
Age	18275.75	1.259	18252.36	1.259	2794.5	1.434
Age squared	18570.77	0.997	18551.03	0.997	2838.19	0.996
Marital status	4174.663	1.35	4183.76	1.35	78.59	1.205
Education						
Compulsory	48800.89	1	45149.92	1	297.655	1
Secondary vocational	19552.03	2.201	18020.41	2.197	166.568	2.649
Secondary general	17003.24	2.225	15127.9	2.225	134.382	2.515
Postsecondary	5640.177	2.646	4683.801	3.177	52.18	6.876
University professional	46721.48	4.178	43111.75	4.158	240.03	4.142
University general	7956.624	1.961	6943.69	1.917	92.288	2.487
Country of birth						
Sweden	21959.64	1	11415.85	1	-	-
Yugoslavia	10815.48	0.083	6248.266	0.081	4895.01	1
Bosnia & Herzegovina	5911.316	0.164	2033.547	0.176	739.179	1.89
Poland	8173.368	0.09	1907.181	0.106	167.564	1.333
Romania	3068.767	0.121	304.969	0.158	129.04	1.518
Chile	4885.912	0.113	1726.291	0.132	256.171	1.548
Germany	3124.906	0.177	401.943	0.225	246.38	1.62
Iraq	17360.48	0.04	5546.891	0.046	1193.08	0.422
Iran	11581.48	0.062	2601.697	0.07	96.425	0.798
Lebanon	8118.341	0.043	3836.098	0.045	419.987	0.522
Year since migration	3091.988	1.134	2434.058	1.124	-	-
Year since migration squared	1970.108	0.998	1590.703	0.998	-	-
Age at migration						
1–10 Years	-	-	-	-	434.305	1
11–19 Years	-	-	-	-	2.442	0.897
20–25 Years	-	-	-	-	20.966	0.739
26 years & older	-	-	-	-	145.793	0.465
Country of birth by education						
Sweden by compulsory	-	-	977.555	1	-	-
Yugoslavia by secondary vocational	-	-	0.386	0.974	-	-
Yugoslavia by secondary general	-	-	45.698	1.283	-	-
Yugoslavia by postsecondary	-	-	1.388	0.933	-	-
Yugoslavia by university professional	-	-	26.863	1.443	-	-
Yugoslavia by university general	-	-	55.572	1.894	-	-

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A6. Regressions (<i>Continued</i>)						
Women						
	Regression A		Regression B		Regression C	
	Wald	Exp(B)	Wald	Exp(B)	Wald	Exp(B)
Bosnia & Herzegovina by secondary vocational	-	-	16.208	1.359	-	-
Bosnia & Herzegovina by secondary general	-	-	0.004	1.003	-	-
Bosnia & Herzegovina by postsecondary	-	-	54.63	0.629	-	-
Bosnia & Herzegovina by university professional	-	-	0.616	1.071	-	-
Bosnia & Herzegovina by university general	-	-	0.166	0.967	-	-
Poland by secondary vocational	-	-	12.839	0.818	-	-
Poland by secondary general	-	-	2.5	0.917	-	-
Poland by postsecondary	-	-	32.83	0.676	-	-
Poland by university professional	-	-	3.196	<u>0.898</u>	-	-
Poland by university general	-	-	37.807	1.537	-	-
Romania by secondary vocational	-	-	1.756	0.838	-	-
Romania by secondary general	-	-	1.722	0.853	-	-
Romania by postsecondary	-	-	23.088	0.519	-	-
Romania by university professional	-	-	7.264	0.705	-	-
Romania by university general	-	-	0.344	1.084	-	-
Chile by secondary vocational	-	-	0.166	0.976	-	-
Chile by secondary general	-	-	1.427	0.927	-	-
Chile by postsecondary	-	-	17.737	0.668	-	-

A6. Regressions (Continued)						
Women						
	Regression A		Regression B		Regression C	
	Wald	Exp(B)	Wald	Exp(B)	Wald	Exp(B)
Chile by university professional	-	-	1.866	0.89	-	-
Chile by university general	-	-	2.717	<u>0.839</u>	-	-
Germany by secondary vocational	-	-	0.368	0.945	-	-
Germany by secondary general	-	-	15.381	0.701	-	-
Germany by postsecondary	-	-	48.654	0.519	-	-
Germany by university professional	-	-	0.892	0.91	-	-
Germany by university general	-	-	1.537	1.139	-	-
Iraq by secondary vocational	-	-	40.886	1.703	-	-
Iraq by secondary General	-	-	2.942	<u>0.911</u>	-	-
Iraq by postsecondary	-	-	153.801	0.49	-	-
Iraq by university professional	-	-	7.086	1.249	-	-
Iraq by university general	-	-	21.716	1.441	-	-
Iran by secondary vocational	-	-	3.524	<u>1.135</u>	-	-
Iran by secondary general	-	-	9.105	0.844	-	-
Iran by postsecondary	-	-	66.915	0.557	-	-
Iran by university professional	-	-	3.03	<u>1.116</u>	-	-
Iran by university general	-	-	24.359	1.401	-	-
Lebanon by secondary vocational	-	-	9.632	1.285	-	-
Lebanon by secondary general	-	-	1.944	0.903	-	-
Lebanon by postsecondary	-	-	17.803	0.642	-	-
Lebanon by university professional	-	-	0.043	1.027	-	-

(Continued on next page)

A6. Regressions (<i>Continued</i>)						
Women						
	Regression A		Regression B		Regression C	
	Wald	Exp(B)	Wald	Exp(B)	Wald	Exp(B)
Lebanon by university general	-	-	35.294	2.287	-	-
Education by age at migration						
Compulsory education*1–10 years	-	-	-	-	265.733	1
Secondary vocational*11–19 years	-	-	-	-	0.584	0.933
Secondary vocational*20–25 years	-	-	-	-	3.34	<u>0.842</u>
Secondary vocational*26 years & older	-	-	-	-	10.656	0.37
Secondary general*11–19 years	-	-	-	-	0.04	0.978
Secondary general*20–25 years	-	-	-	-	2.849	<u>0.823</u>
Secondary general*26 years & older	-	-	-	-	11.422	0.745
Postsecondary*11–19 years	-	-	-	-	5.403	0.816
Postsecondary*20–25 years	-	-	-	-	22.573	0.275
Postsecondary*26 years & older	-	-	-	-	0.578	0.924
University professional*11–19 years	-	-	-	-	1.937	0.858
University professional*20–25 years	-	-	-	-	0.667	1.069
University professional*26 years & older	-	-	-	-	10.414	0.765
University general*11–19 years	-	-	-	-	31.73	0.221
University general*20–25 years	-	-	-	-	9.033	1.341
University general*26 years & older	-	-	-	-	2.89	<u>1.189</u>
Constant	13728.41	0.017	13697.99	0.017	2467.17	0.001

Bold = significance on 0.01; Bold + italic = 0.05; Bold + italic + underlined = 0.1.

II

Occupational Match

Over- and Undereducation Among Immigrants in the Swedish Labor Market

Inge Dahlstedt

Published online: 29 December 2010
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Abstract The aim of this article is to study the differences in the match/mismatch of education and job level as well as the differences between the native and immigrant population in the occupational match. A distinction is made between educational levels and general and vocational education. A sample consisting of native Swedes and nine immigrant groups, based on register data, was selected for analysis. Descriptive statistics are presented and analyzed as well as logistic regression analysis controlling for basic human capital and immigrant specific variables. The main conclusions of the article are that there are considerable differences between vocational and general education in the match/mismatch, as well as differences between natives and immigrants. The vocationally educated population shows a higher match compared to the generally educated, but the generally educated population shows a higher proportion of undereducated individuals compared to the vocationally educated population. Although there are considerable differences between the studied immigrant groups, the general conclusion is that the immigrated population shows a lower match between educational level and skills level of the job as well as a higher level of overeducation compared to the native population.

Résumé Le but de cet article est d'étudier les différences dans les équivalences et les non équivalences d'études au niveau des études et du travail ainsi que les différences parmi les gens du pays et la population immigrée. On fait une distinction entre les niveaux d'étude et les connaissances générales et professionnelles. Un échantillon composé de Suédois d'origine et neuf groupes d'immigrés, basé sur des données indiquées, a été sélectionné pour analyse. Les statistiques décrites sont présentées et analysées ainsi que l'analyse de la régression logistique, contrôlant le capital humain basique et les variations spécifiques des immigrés. Les principales conclusions de cet article sont les différences considérables entre la formation professionnelle et générale dans les équivalences et les non équivalences ainsi que les différences entre les gens du pays et les immigrés. La population ayant reçu une

I. Dahlstedt (✉)

Department of International migration and Ethnic Relations, Malmö Institute for Studies of Migration
Diversity and Welfare, Malmö University, Malmö, Sweden
e-mail: inge.dahlstedt@mah.se
URL: www.mah.se/mim

formation professionnelle montre une plus grande équivalence comparé à la formation générale. Mais la population ayant reçu une formation générale montre une plus grande proportion d'individus qui ont fait peu d'études comparé à la population avec une formation professionnelle. Malgré les différences considérables entre les groupes d'immigrés étudiés, la conclusion générale est qu'une population immigrée montre une équivalence plus faible entre le niveau d'études et le niveau d'aptitudes professionnelles ainsi qu'un plus grand niveau des personnes surqualifiées comparées aux gens du pays.

Keywords Immigrants · Overeducation · Undereducation · Labor market integration · Job analysis

Mots clés Immigrés · surqualification · sous-qualification · intégration au marché du travail · analyse des emplois

Introduction

Migration and labor market integration are widely discussed topics, both in the public debate and within the academic community. In Sweden, the main discussion on labor market integration focuses on the employment rate of immigrated groups as compared to natives and how different factors affects this (see, for example, Bengtsson et al. 2005; Bevelander 2000; Dahlstedt and Bevelander 2010).

However, not only the employment rate is of interest in the labor market context; a number of questions need to be addressed. One question is whether the immigrated population has wage equality in relation to the native population (Nordin et al. 2008; Rooth and Åslund 2007). Another is whether immigrants are more likely to be steered into specific sectors and employed in low-status jobs than the native population (Schierup and Paulson 1994). In addition to these important issues, public (see, for example, Skogskär 2007; Zaremba 2009; Orrenius 2001; Björnsson 2000) and scientific debates have devoted time to the question of immigrants' overeducation and whether they are employed at a lower level than their educational level stipulates (see, for example, Schröder 2008, 2009; Bevelander and Lundh 2007; Berggren and Omarsson 2001; Nordin et al. 2008).

The question of the correspondence between job levels and educational levels forms the main focus of this article. A more precise question is whether the immigrant population is relatively over- or undereducated compared to the native population. In other words, is the skill level of the employed individual—irrespective of background—matched with that individual's educational level? If someone has a job that is at a lower skill level than their education stipulates, the individual is overeducated, and conversely if an individual is employed at a higher skills level, he or she is undereducated.

The specific question to be addressed in this article is:

- Are there differences in the occupational match/mismatch between native Swedes and the nine selected immigrant groups in Sweden? (see Table 1 for the full list of countries)

Table 1 Number of persons in the analysis by country of birth

	Men	Women	Total
Sweden	1,477,198	1,420,381	2,897,579
Yugoslavia	12,589	10,491	23,080
Bosnia–Herzegovina	10,906	9,489	20,395
Poland	5,187	11,338	16,525
Romania	2,147	2,705	4,852
Chile	6,441	5,935	12,376
Germany	5,186	4,920	10,106
Iraq	6,869	3,556	10,425
Iran	9,923	7,510	17,433
Lebanon	3,030	1,768	4,798
Other immigrants	106,722	120,484	227,206
Total	1,646,198	1,598,577	3,244,775

In addition to a person's educational level, the type of education—vocational or general—also governs their position in the labor market (Dahlstedt and Bevelander 2010). In view of this, the following questions are posed:

- Does the type of education obtained—general and vocational—affect the level of occupational match/mismatch?
- Can occupational match/mismatch be explained by country of birth and type of education—general and vocational when controlling for age, gender, marital status, and years since migration?

The main contribution of this article is that most research on occupational match done on the Swedish context has treated the entire foreign-born population as one undifferentiated category, without any distinction between different countries of birth (see, for example, Oscarsson and Grannas 2001, 2002). When reviewing the international research on occupational match, it is clear that such studies on specific immigrant groups are rare. One notable exception is Bevelander and Lundh's (2007) study on Iranian men in Sweden. Since different immigrant groups differ widely in their educational level and in their success on the labor market (Dahlstedt and Bevelander 2010), it is important to distinguish between different immigrant groups in the analysis of occupational match. This article will also make a contribution to the field by distinguishing between general and vocational education, a previously unexplored factor involved in occupational match.

The theoretical framework of the study is discussed in the following section: The data and method are presented in the third section, which is followed by a presentation and discussion of the results. A concluding discussion and brief summary bring the article to a close, but first it will be necessary to note some important points regarding the Swedish context.

The Context: Immigration and the Labor Market

Although Sweden has always experienced immigration, it was not until the 1930s that the rate of immigration exceeded the rate of emigration. From 1930 to the 1970s,

immigration to Sweden was dominated by labor migrants who were needed in Swedish industry, which was largely unaffected by the war. The migration was dominated by migrants from the Nordic countries and from northern and southern Europe. In the late 1960s, the industry's demand for labor decreased and labor union pressure induced the government to discontinue their policy of labor immigration. Labor immigration to Sweden thus came to a halt in 1968 (Lundh and Ohlsson 1999).

From the early 1970s, the nature of migration changed; the labor migration was replaced by refugee and family migration from southern Europe and from non-European countries. The shift from labor migration to refugee and family migration is exemplified by the fact that out of all the residence permits that were granted in the period from 1980 to 2003, only 1% were given on the grounds of labor market criteria (8,897 permits out of a total of 822,549). The large majority of permits, 84%, were granted to either refugees or as tied movers (690,993 persons; Swedish Migration Board: <http://www.migrationsverket.se/download/18.78fcf371269cd4cda980004203/tabs1.pdf>).

The shift in the nature of migration to Sweden has its correlate in the immigrated population's attachment to the labor market. Until the 1970s, the foreign-born population had employment rates as high or higher than the native population, but from the late 1970s to 2003, this gradually changed and in 2003 the employment rate of the foreign-born population was around 20 percentage points lower than that of the native population (Dahlstedt and Bevelander 2010).

The high proportion of refugees and tied movers in the immigrated population makes the Swedish context quite different from situation found in countries like Canada or the USA. Since the main reason to move to Sweden is for most immigrants to find sanctuary or reunite with their families, the foreign-born population can be expected to have a weaker position on the labor market than the foreign-born populations of, for example, Canada or the USA where there is a higher share of labor migrants. This may also mean that the mismatch in the labor market among the foreign-born population in Sweden is higher than in other countries.

Another important question to address is the recognition of non-Swedish education. Briefly, Sweden recognizes foreign education on most levels; on the compulsory and secondary levels, it is the local secondary school or the adult education center who recognizes the education and on the university level merits are validate either by the National Agency for Higher Education or, in the case of regulated professions and occupations, specific authorities (see Dahlstedt and Bevelander 2010 for a more in-depth discussion).

Theory and Earlier Research

How can occupational match or, more interestingly, occupational mismatch be explained in theoretical terms? A number of theoretical perspectives are of interest when it comes to occupational mismatch. Previous research in the field has considered search and match theory, human capital theory, and assignment theory (Hartog 2000). Moreover, Chiswick and Miller (2007, 2009) present a screening hypothesis and discuss over- and undereducation from the perspective of migration and labor market integration and Bills (2004) provides us with a credentialist view on occupational match/mismatch.

From the human capital perspective, formal education, on-the-job training, and work experience (see, for example, Becker 1964; Schultz 1961) are all regarded as important for obtaining a job at a matching level. Occupational mismatch can arise due to a deliberate choice on the part of the worker, i.e., where the worker uses other types of human capital, such as work experience, to compensate for a lack of formal education in order to secure employment. Such cases give rise to undereducation.

Groot and Maassen van den Brink (2000: 150; see also Sicherman 1991) discuss overeducation as an element of career mobility and as an inevitable part of “the transition from school or home production to market work [which] will be concentrated among labor market entrants” (Chiswick and Miller 2007: 5; see Hartog 2000 for a similar discussion). This is important because formal education is easier to transfer than other types of human capital, such as work experience (Chiswick and Miller 2007). Therefore, immigrants, especially the newly arrived, should, as labor market entrants, run a higher risk of being overeducated than the native population. However, this bias should be temporary and diminish over time. Thus, from the human capital perspective, we could expect that younger people and immigrants with few years of stay in the country could display a higher risk of being overeducated.

Another perspective on occupational mismatch is grounded in signaling theory (Spence 1973). Chiswick and Miller (2007) discuss this in terms of a screening hypothesis which means that schooling is used by the employers as an indicator of workers’ productivity. In the context of immigration and labor market integration, employers may find it difficult to interpret the signals sent out by immigrants if their education has been obtained prior to immigration or, in other words, that information about pre-migration schooling is harder to acquire. Thus, this perspective also predicts that overeducation should be widespread among immigrants during the first period of stay in their new country but should gradually diminish with the length of stay (Chiswick and Miller 2007). Hence, it can be expected that overeducation will be more prevalent among newly arrived immigrant individuals and immigrant groups and that this overeducation should diminish with time. Overeducation in this perspective could also be of more permanent character if the employers have difficulties interpreting the immigrants’ productive signals and on this basis require higher educational standard from immigrant jobseekers than from their native counterparts.

So far, the discussion has made use of theoretical perspectives from the human capital school of economics. As Bills (2004) argues, this school often relies on meritocratic ideas of the relationship between education and work. This is challenged by sociologists, who see credentialism as a more fruitful way of describing the relationship between education and work. Instead of regarding the relationship between education and work as unambiguous, where those with higher merits obtain jobs at higher job levels, they focus on educational credentials as excluding mechanisms. According to the “credentialists”, what is learned in school bears little or no relationship to what is needed to perform a particular work task. As Bills (2004) states: “This perspective asserts that educational credentials operate as a means by which the ‘haves’ can restrict access to privileged positions and higher incomes” (Bills 2004: 38).

In the US context, credentialists differentiate primarily between those with a post-secondary level education and those without (Bills 2004). In a Swedish context, this corresponds to secondary and post-secondary levels. Credentials in this perspective serve as sorting mechanisms, and it is the credential per se that is important rather

than the skills learned through education. An elaboration of this is the distinction between “academic” (general) and “vocational” degrees (credentials). Vocational accreditation, certification, and licensing for different occupations are regarded as obstacles that control access to these occupations. Logically, such qualifications should reduce the possibility of being employed at a higher level than the stipulated level of education. Hence, it could be expected that groups with a vocational education have low levels of undereducated individuals.

From the perspective of labor market integration, the credential framework and the distinction between “academic” (general) and “vocational” degrees could mean that levels of mismatch and overeducation among the immigrated population differ depending on the type of education obtained. Occupational accreditation, certification, and licensing could serve as tools to exclude immigrants from certain occupations, thus causing higher levels of mismatch among vocationally educated individuals. On the other hand, Dahlstedt and Bevelander (2010) show that vocational education increases the chances of both the native and immigrant population having employment as compared to general education. For the immigrant population, it means that the internationally transferable component of vocational education seems to be higher than that of general education (Dahlstedt and Bevelander 2010). Following this line of reasoning, it could be expected that the vocationally educated immigrant population would show a higher level of match than the generally educated immigrant population.

Below I summarize a few key studies with which it is necessary to engage at this point. Table 2 summarizes the findings of a number of these, chosen because they indicate what outcomes may be expected in this study.

From the chosen articles, it is clear that we can expect a match of around 55%, at least for the native Swedish population. It is also clear that we can expect a big gap between the native population and the immigrated population when it comes to mismatch;

Table 2 Incidence of match and mismatch in a few selected studies

	Match (%)	Mismatch	
		Over (%)	Under (%)
Hartog (2000)			
USA and Europe	60		
Oscarsson and Grannas (2001, 2002)			
Total Swedish population	56	9	35
Immigrants in Sweden		19	
Bevelander and Lundh (2007)			
Swedish males	54	13	33
Iranian males	54	33	14
Berggren and Omarsson (2001)			
University educated immigrants in Sweden	40	24	
Groot and Maassen van den Brink (2000)			
Males in USA and Europe		26	16
Females in USA and Europe			11

immigrants tend to be more overeducated than natives and the opposite is true of undereducation. It is also possible that gender has an effect on level of match/mismatch.

Method and Data

The data used in this article is drawn from LISA, Statistics Sweden's database, which contains data pertaining to all individuals between 16 and 64 years of age, including information on labor market-related issues. This article makes use of data for the employed population between 25 and 60 years of age for the year 2003. Those cases where information relating to the prime indicators of over- and undereducation, i.e. education and occupation, was not provided were removed from the analysis.

Table 1 shows the total sample population divided by country of birth and gender. The total sample used in the analysis is 3,244,775 individuals, the employed population between 25 and 60 years of age, with information on education, job level, marital status, country of birth, years of residence in Sweden, and age.

The selection of the particular immigrant groups represents both old and new groups and both labor and refugee groups. Of the selected groups, the German group is one of the oldest immigrant groups in Sweden and consists of both labor and family reunion migrants. Yugoslavian immigration began as labor immigration in the middle of the 1960s, peaking in the second half of that decade. A second wave of immigration, consisting mainly of Bosnian refugees, was caused by the Balkan War in the second half of the 1990s.

Immigration from Poland culminated in the 1970s and 1980s and that from Rumania in the 1980s; both were refugee-driven. Chilean migration reached its first peak at the beginning of the 1970s when the group mostly consisted of refugees fleeing the military coup of 1973. A second peak in the 1980s, however, was the result of labor and family reunion migrants. The bulk of the Iranian migration to Sweden occurred during the Iran–Iraq War in the late 1980s. This conflict also initiated Iraqi migration which subsequently continued during the Gulf Wars. The final group in the analysis originates from Lebanon and is comprised mainly of people who migrated during the civil war in the 1980s.

The data used allow for two ways of measuring the occupational match: *realized match* (RM) and *job analysis* (JA). RM assesses over- and undereducation by measuring the actual educational level of those working in each job, either by measuring the mean and standard deviation or the mode of the educational level of the job. When using the mean education (measured in years of schooling), all those who have between minus 1 standard deviation from the mean to plus 1 standard deviation from the mean education is said to have a matching job. RM can also be measured by the modal educational level of each job, i.e., the most common educational level. All those with an education at the modal level are said to be correctly matched. Hartog (2000) argues that RM does not measure the technological requirements of a job but instead measures the hiring standards and labor market conditions of the particular job.

The data used for educational level is the Swedish educational nomenclature (SUN 2000); this data can be converted into years of education. The main problem with this method of measuring occupational match is that years of education is not a truly continuous variable; for example, the step from 11 years of education (2 years

of secondary school) and 12 years of education (3 years of secondary school with a degree) is not equal to the step between 12 and 13 (3 year of post-secondary education without a degree). This means that when using the mean and standard deviation as a way to determine the match, the matched individuals can in fact have different educational degrees. In this sense, job analysis is a better way to determine the match. Another problem connected for RM occurs when using the modal education level to determine match as the modal method significantly underestimate the number of matched individuals in a specific occupation.¹

JA, unlike RM, relies on a systematic evaluation of the educational requirements for each job, undertaken by professional job analysts (Hartog 2000). Examples include the United States Dictionary of Occupational Titles, The International Labor Organization's International Standard Classification of Occupations 1988 (ISCO-88), and Statistics Sweden's The Swedish Standard Classification of Occupations 1996 (SSYK-96). In SSYK-96,² occupations are categorized according to the type of work performed and the skill levels necessary for completing the required tasks and subsequently arranged in a hierarchical framework. Hartog (2000) argues that JA is conceptually superior to RM because its explicit goal is objectivity, clear definitions, and measurement instructions. However, JA is inherently prone to unreliability because necessary data are not always available and technological change can quickly render obsolete the classifications on which the analysis rests.³ Nevertheless, JA has been chosen as the preferred method of this study because it avoids the more serious methodological problems associated with RM, thus providing more accurate results.

The JA was carried out by matching SSYK96 with The Swedish Standard Classification of Educations (SUN 2000).⁴ This was done by dividing SSYK96 into the following four mutually exclusive categories (see the "Appendix"): (1) jobs that do not require any education, (2) jobs that require secondary education, (3) jobs that require shorter post-secondary education (less than 3 years), and (4) jobs that acquire longer post-secondary education (3 years or more).

Previous publications (Dahlstedt and Bevelander 2010) has shown that the type of education obtained by the individual—general and vocational—has a noticeable impact on chances of gaining employment, especially at university level where those with a vocational education had an increased chance of being in employment compared to those with a general education.

Vocational education—*yrkesutbildning* in Swedish—is often understood as "education aiming to give the students knowledge that is wanted in the labor market" (Olofsson 2000: 17). If we accept this rather broad definition, there are three main ways of obtaining vocational education in Sweden: through the ordinary school system, through courses in schools arranged by companies or other interested

¹ Tests were done on the data with RM method using both the mean and modal methods. The results diverged notably, both compared to each other and to JA. These differences are interesting and certainly warrant further investigation in the future.

² SSYK96 builds on The International Labor Organization's International Standard Classification of Occupations 1988 (ISCO-88).

³ ILO has begun to revise ISCO-88 in order to update the classification to reflect new trends and development in the world of work (see the "Resolution Concerning Updating the International Standard Classification of Occupations" available at www.ilo.org).

⁴ The Swedish Standards Classification of Educations (SUN 2000) is the Swedish version of the International Standard Classification of Education (ISCED 1997).

parties, and directly in companies through an apprenticeship system. Vocational education also includes adult vocational education and vocational courses administrated by the Labor Market Board as labor market policy measures.

For the purposes of this article, this definition is too broad and so Statistics Sweden's definition of vocational education has been the preferred alternative. This states that vocational education at the secondary level is provided by educational programs in which students receive vocational and practical training. General education at the secondary level is defined as theoretical education that prepares students for university studies. At university level, all educational programs that lead to a specific vocation are counted as vocational education, i.e., education where students receive some kind of license or certificate, while general education is education that leads to a general degree, such as a bachelor or master's degree (SUN 2000, Statistics Sweden; for a more elaborate discussion of general and vocational education, see Dahlstedt and Bevelander 2010).

The analysis begins with descriptive tables where the differences in the educational levels between the different groups are discussed. This is followed by a discussion of the shares of matched and unmatched individuals in each of the studied groups as revealed by JA. Separate analyses have been conducted on the male and female population.

A more in-depth analysis of the match between education and occupation involves the use of a logistic regression model to control for standard variables such as age, age², marital status, years since migration, years since migration², and type of education. Separate regressions were conducted for men and women. The odds of being employed at a level that matched education were computed using the JA method, as were the chances of being overeducated. When the odds of overeducation were calculated, the matched individuals and the undereducated individuals were put into the same group to function as the reference group.

In order to make sure that the effect of vocational and general education is free of educational level effect, a set of regressions were made on each of the educational levels. Since only two of the educational levels can be divided in vocational and general education (i.e., secondary and university level), the results from these levels are the ones that are shown.

Results

Educational Levels

In Table 3, the educational levels used for job analysis and the share of the vocationally and generally educated population are presented by gender and country of birth. Considering first the male population, it is clear that the second education level (i.e., secondary education) is the most commonly attained in all groups; the big differences between the groups are seen in the first (lowest) and in the fourth (highest) groups. The Bosnian, Polish, Romanian, and Iranian groups all have low shares of individuals with only compulsory school, under 10% in the first level. These groups, with exception of the Bosnian group, all have high shares of individuals with long university education, over 30% in the fourth level. The Lebanese group can be said to be the group with the lowest educational level.

Table 3 Educational level according to job analysis by gender and country of birth in percent and share of vocationally/generally educated

		1	2	3	4	Vocational	General
Men	Sweden	16.2	51.7	14.3	17.9	47.3	52.7
	Yugoslavia	18.8	58.0	12.2	11.0	32.6	67.4
	Bosnia–Herzegovina	8.6	64.2	13.0	14.2	18.7	81.3
	Poland	8.1	47.4	13.9	30.7	47.4	52.6
	Romania	7.3	49.2	13.3	30.2	46.5	53.5
	Chile	20.2	57.1	11.6	11.1	44.1	55.9
	Germany	11.4	42.3	12.3	34.0	36.8	63.2
	Iraq	17.5	35.6	16.2	30.7	28.6	71.4
	Iran	7.4	41.9	18.6	32.1	38.7	61.3
	Lebanon	31.1	44.9	10.4	13.6	34.4	65.6
	Other immigrants	22.2	44.6	12.1	21.1	35.5	64.5
	Total	16.5	51.2	14.2	18.2	46.0	54.0
Women	Sweden	10.3	49.5	17.0	23.2	55.9	44.1
	Yugoslavia	27.6	49.6	11.2	11.6	29.0	71.0
	Bosnia–Herzegovina	16.8	57.1	10.5	15.7	16.3	83.7
	Poland	7.8	47.8	16.7	27.7	44.6	55.4
	Romania	6.7	43.0	14.1	36.2	41.8	58.2
	Chile	19.3	54.9	13.0	12.8	44.5	55.5
	Germany	9.3	40.3	14.6	35.8	43.7	56.3
	Iraq	20.0	36.1	17.6	26.3	22.3	77.7
	Iran	7.3	41.3	18.9	32.6	39.7	60.3
	Lebanon	29.8	46.1	11.9	12.2	29.1	70.9
	Other immigrants	18.8	43.2	14.1	23.9	41.0	59.0
	Total	11.1	49.0	16.7	23.2	54.0	46.0

The same pattern can be seen among the women; the big differences can be seen in the lowest and highest educational levels. Here it is the Polish, Rumanian, German, and Iranian population that have low shares in the lowest educational level and high shares in the highest educational level.

When it comes to the distribution between vocational and general education, the general education is the most common in all groups. The groups with the highest shares of vocational education among males are the Polish, the native, and the Chilean groups. Among the female population, it is the native, the German, the Chilean, and the Polish groups that have the highest shares of vocationally educated population.

The educational levels influence the analysis to some extent since those groups that have a high proportion of individuals educated to a low level—such as the Lebanese population, where 31% and 29% of the population, respectively, have only compulsory education (level 1)—will have lower levels of overeducated individuals. This is intrinsically so because those who have attained only compulsory education cannot be overeducated. The opposite is true for groups with a high proportion of

individuals with post-secondary education of 3 years or more (level 4)—such as the German group with 34% and 36%, respectively—since these groups cannot be undereducated.

Differences in Occupational Match

The first two questions addressed in this article are whether levels of occupational match/mismatch in a population depend on the country of birth of its individuals and the type of education they have obtained. In Table 4, the shares of matched individuals are displayed by gender, country of birth, and general/vocational education.

Interestingly, this table shows that the two types of education display considerable differences in the occupational match. The population with vocational education has a higher match than the generally educated population; this is true for natives, immigrants, males, and females.

Table 4 Shares of matched population by gender, country of birth and general/vocational education

		Match	
		General	Vocational
Men	Sweden	38.1	71.4
	Yugoslavia	46.0	73.9
	Bosnia–Herzegovina	58.4	74.9
	Poland	49.8	69.5
	Romania	49.2	69.2
	Chile	43.9	70.2
	Germany	48.4	67.1
	Iraq	37.5	62.6
	Iran	49.9	66.1
	Lebanon	37.4	70.5
	Other immigrants	38.8	71.2
	Men total	38.6	71.4
Women	Sweden	47.1	74.4
	Yugoslavia	49.9	69.7
	Bosnia–Herzegovina	55.7	64.5
	Poland	48.4	67.4
	Romania	51.4	64.7
	Chile	51.8	68.1
	Germany	51.6	68.6
	Iraq	40.6	65.1
	Iran	51.5	62.2
	Lebanon	46.5	69.1
	Other immigrants	46.3	71.0
	Women total	47.2	74.0
Total		42.5	72.8

Moreover, the difference in match between natives and immigrants also reveals the significance of the type of education obtained. Among the generally educated population, it is only Iraqi men and Lebanese women who display a lower match than natives. At the same time, it is only Yugoslavian and Bosnian men that display a higher match than natives among the vocationally educated population.

Finally, consideration of the gender differences presented reveals that the total female population shows a higher match both among the generally and vocationally educated population. Similarly, within each group, the generally educated women typically show a higher match than their countrymen. However, this situation is reversed for the vocationally educated population where the men tend to show a higher match than their female counterparts.

It is clear then that differences in match exist on many levels, between natives and immigrants, between men and women, and between vocationally and generally educated individuals. The next question is how these differences are reflected in the mismatched population.

In Table 5, the mismatched population is shown by gender, country of birth, and type of education. Obviously the share of mismatch is much smaller among those with vocational education than among the ones with general education, which is why the generally educated population shows higher shares of overeducated people in all groups (with the exception of Bosnian females) while also showing higher shares of undereducated people than the vocationally educated population.

It is also clear that the native population, both the generally and the vocationally educated, show lower shares of overeducated individuals than the immigrant groups. Contrastingly, the Swedish population shows a significantly higher share of undereducated individuals than any of the immigrant groups. The single exception is the vocationally educated German group, which has a higher share of undereducated individuals than the vocationally educated native group.

Rather than simply comparing the mismatched shares, however, it could be useful to subtract the undereducated population from the overeducated population to reveal how many of the groups are typically undereducated, i.e., whose population shows higher levels of undereducation than overeducation. This is done in Table 5.

This table reveals that there are some differences between the generally and vocationally educated populations. Among the vocationally educated population, it is only native and German males that have higher shares of undereducated individuals than of overeducated ones. On the other hand, among the generally educated population, several groups, both male and female, are undereducated. The difference for natives, particularly for the male group, is especially great which means that the low occupational matching of natives is caused by a strong tendency among the native population to work on a level higher than their education stipulates.

We can conclude that mismatch in the vocationally educated population typically stems from overeducation whereas the mismatch in the generally educated population is more likely to be the result of undereducation. Furthermore, the mismatched individuals in the native group are more likely to be undereducated and the immigrant population is more likely to be overeducated, a result supported by previous research (Bevelander and Lundh 2007; Oscarsson and Grannas 2001, 2002).

Table 5 Shares of mismatched individuals by gender, country of birth, and general/vocational education

		Over		Under		Difference ^a	
		General	Vocational	General	Vocational	General	Vocational
Men	Sweden	13.6	11.8	48.4	16.7	-34.8	-4.9
	Yugoslavia	26.8	17.1	27.2	9.0	0.4	8.1
	Bosnia–Herzegovina	30.4	22.4	11.2	2.6	19.3	19.8
	Poland	25.3	20.3	24.9	10.2	0.4	10.1
	Romania	30.7	22.3	20.1	8.4	10.6	13.9
	Chile	25.8	20.4	30.3	9.4	-4.5	11.0
	Germany	19.8	12.8	31.8	20.1	-12.1	-7.4
	Iraq	42.1	32.3	20.4	5.1	21.7	27.2
	Iran	31.5	26.6	18.6	7.3	12.8	19.3
	Lebanon	20.1	18.3	42.5	11.1	-22.4	7.2
	Other immigrants	22.4	15.3	38.8	13.5	-16.4	1.7
	Men total	15.0	12.3	46.4	16.3	-31.4	-4.1
Women	Sweden	17.4	14.6	35.5	11.1	-18.1	3.5
	Yugoslavia	22.9	22.1	27.2	8.2	-4.4	13.9
	Bosnia–Herzegovina	30.4	32.5	13.9	3.0	16.5	29.5
	Poland	34.4	23.3	17.2	9.3	17.2	14.1
	Romania	35.3	27.4	13.4	8.0	21.9	19.4
	Chile	23.3	23.8	24.9	8.1	-1.6	15.7
	Germany	22.1	18.3	26.2	13.1	-4.1	5.2
	Iraq	38.4	26.1	21.0	8.8	17.4	17.3
	Iran	32.3	32.0	16.2	5.8	16.1	26.2
	Lebanon	20.8	18.7	32.7	12.3	-11.9	6.4
	Other immigrants	24.5	18.4	29.2	10.6	-4.7	7.8
	Women total	18.7	15.0	34.1	11.0	-15.4	4.1
Total		16.7	13.7	40.8	13.5	-24.2	0.3

^a Overeducated shares minus undereducated shares. A negative number indicates that the group is undereducated

Match and Mismatch Regressions

In order to verify our results and investigate whether the match and mismatch revealed by the data can be explained by educational type and country of birth when controlling for a number of variables, a set of regressions were conducted. The results are shown below in Table 6.

Turning first to the regressions calculating the odds of having a job on a matched level, we can see that for the male population, the odds increase for individuals born abroad. This is a direct result of the low levels of occupational match within the native population, in turn caused by this group's high share of undereducated individuals. Within the female population, the situation is reversed; here all the studied immigrant groups show lower odds of occupational match compared to the native population. Not surprisingly, a vocational education improves the odds of having a job on a matching level. Additionally, the odds of being employed on a matched level seem to increase

Table 6 Match and over regression sorted by gender

	Match		Over	
	Men	Women	Men	Women
	Exp(B)	Exp(B)	Exp(B)	Exp(B)
Age	1.004 ^a	1.059 ^b	0.953 ^b	0.862 ^b
Age ²	1.000 ^b	0.999 ^b	1.000 ^b	1.001 ^b
Years since migration	0.996 ^b	1.002 ^b	0.967 ^b	0.967 ^b
Years since migration ²	1.000 ^b	1.000 ^b	1.000 ^b	1.000 ^b
Not married	Ref	Ref	Ref	Ref
Married	0.959 ^b	1.058 ^b	0.950 ^b	0.899 ^b
Sweden	Ref	Ref	Ref	Ref
Yugoslavia	1.375 ^b	0.943 ^a	3.510 ^b	3.559 ^b
Bosnia–Herzegovina	2.054 ^b	1.166 ^b	2.904 ^b	3.111 ^b
Poland	1.389 ^b	0.849 ^b	3.416 ^b	4.216 ^b
Romania	1.314 ^b	0.882 ^a	3.567 ^b	3.607 ^b
Chile	1.173 ^b	0.940	4.119 ^b	3.245 ^b
Germany	1.446 ^b	0.947	2.403 ^b	2.551 ^b
Iraq	0.855 ^b	0.686 ^b	6.653 ^b	4.488 ^b
Iran	1.313 ^b	0.843 ^b	4.180 ^b	3.825 ^b
Lebanon	0.943	0.847 ^b	3.505 ^b	2.602 ^b
Other immigrants	1.114 ^b	0.862 ^b	3.490 ^b	3.404 ^b
General education	Ref	Ref	Ref	Ref
Vocational education	3.847 ^b	3.149 ^b	0.540 ^b	0.617 ^b
Constant	0.905 ^a	0.292 ^b	0.785 ^b	9.638 ^b
N	1,646,198	1,598,577	1,375,170	1,420,718

^a Significance 0.01^b Significance 0.001^c Significance 0.05

with age for men as well as women, and the length of stay in Sweden has the same effect within the female immigrant population.

With regards to the odds of being overeducated, the initial impressions from the descriptive statistics are confirmed. Compared to natives, all immigrant groups (both among the male and female population) show higher odds of being overeducated; the difference is particularly noticeable for the Iraqi population. We can also see that vocational education prevents overeducation. Both age and length of stay seem to decrease the odds of being overeducated for men and for women.

Vocational education can be obtained on two different educational levels, the secondary and the tertiary level (higher education), so it is possible that an educational level effect has been built into the vocational category. In order to control for this, a set of regressions sorted by educational level were conducted. The results from these regressions are only displayed for the secondary and tertiary level in Table 7, since these are the levels where the vocational education can be obtained.

Table 7 Match and over regressions sorted by gender and educational level

	Secondary		Tertiary	
	Match Exp(B)	Over Exp(B)	Match Exp(B)	Over Exp(B)
Men				
Age	1.005 ^a	1.087 ^b	1.035 ^b	0.917 ^b
Age ²	1.000 ^b	0.999 ^b	1.000 ^b	1.001 ^b
Years since migration	0.991 ^b	0.976 ^b	0.990 ^b	1.000
Years since migration ²	1.000 ^b	1.000 ^b	1.000 ^b	1.000
Not married	Ref	Ref	Ref	Ref
Married	0.816 ^b	0.688 ^b	1.128 ^b	0.913 ^b
Sweden	Ref	Ref	Ref	Ref
Yugoslavia	2.507 ^b	3.651 ^b	0.736 ^b	1.786 ^b
Bosnia–Herzegovina	4.684 ^b	2.291 ^b	0.548 ^b	2.586 ^b
Poland	1.604 ^b	3.638 ^b	1.327 ^b	0.993
Romania	2.025 ^b	3.211 ^b	0.987	1.338 ^b
Chile	1.249 ^b	5.801 ^b	0.729 ^b	1.495 ^b
Germany	1.339 ^b	2.324 ^b	1.860 ^b	0.633 ^b
Iraq	2.067 ^b	4.069 ^b	0.595 ^b	2.529 ^b
Iran	2.342 ^b	2.705 ^b	0.860 ^b	1.538 ^b
Lebanon	1.647 ^b	3.627 ^b	0.785 ^b	1.650 ^b
Other immigrants	1.511 ^b	3.426 ^b	1.181 ^b	1.108 ^b
General education	Ref	Ref	Ref	Ref
Vocational education	2.634 ^b	0.586 ^b	1.479 ^b	0.720 ^b
Constant	1.556 ^b	0.020 ^b	0.426 ^b	4.576 ^b
<i>N</i>	917,201	917,201	391,576	391,576
Women				
Age	0.963 ^b	0.973 ^b	1.087 ^b	0.839 ^b
Age ²	1.000 ^b	1.000 ^b	0.999 ^b	1.002 ^b
Years since migration	0.998	0.964 ^b	1.000	0.992 ^b
Years since migration ²	1.000 ^a	1.000 ^b	1.000	1.000 ^b
Not married	Ref	Ref	Ref	Ref
Married	1.017 ^b	0.847 ^b	1.184 ^b	0.832 ^b
Sweden	Ref	Ref	Ref	Ref
Yugoslavia	1.052	7.028 ^b	0.649 ^b	1.910 ^b
Bosnia–Herzegovina	1.352 ^a	6.173 ^b	0.544 ^b	2.482 ^b
Poland	1.017	5.688 ^b	0.671 ^b	2.067 ^b
Romania	1.140 ^a	4.773 ^b	0.698 ^b	1.943 ^b
Chile	1.129 ^a	5.273 ^b	0.484 ^b	2.411 ^b
Germany	0.912	3.005 ^b	1.156 ^a	1.094
Iraq	1.155 ^a	4.627 ^b	0.564 ^b	2.489 ^b
Iran	1.848 ^a	2.854 ^b	0.529 ^b	2.519 ^b
Lebanon	1.127	3.926 ^b	0.612 ^b	1.696 ^b

Table 7 (continued)

	Secondary		Tertiary	
	Match Exp(B)	Over Exp(B)	Match Exp(B)	Over Exp(B)
Other Immigrants	1.044 ^a	4.487 ^b	0.817 ^b	1.568 ^b
General education	Ref	Ref	Ref	Ref
Vocational education	2.009 ^b	1.098 ^b	2.305 ^b	0.459 ^b
Constant	4.359 ^b	0.139 ^b	0.099 ^b	52.228 ^b
<i>N</i>	797,144	797,144	577,288	577,288

^a Significance 0.05^b Significance 0.001^c Significance 0.01

For both the male and the female population, the odds of having a job on a matched level increase with vocational education on both the secondary and tertiary level. It would also seem that a vocational education, whether secondary or tertiary, “protects” the male population from being overeducated. For the female population, the results indicate that only university level vocational attainment has the same “protective” effect. We conclude that a level effect is likely to have been built into the vocational category, at least for the female population.

In conclusion, the results show that while there are differences in the occupational match between natives and the studied immigrant groups, the greatest differences are found in the occupational *mismatch* and between the generally and vocationally educated groups. Natives have a low level of mismatch, but this mismatch reflects a significant tendency for natives to be on a higher level than their education stipulates. This is especially true for the generally educated native population. The immigrated population on the other hand shows a high occupational match, occasionally higher than the native population, while high levels of overeducation are also evident within the same groups. This is especially true for the Iraqi, Iranian, and Polish groups.

The differences between the generally and vocationally educated population is also interesting; the population with a vocational education seem more likely to have a job on a matching level than those with a general education. On the other hand, scrutinizing the differences inside each group reveals that generally educated individuals are more likely to be employed at a higher level than their education stipulates, which means the generally educated groups have higher shares of undereducated individuals than of overeducated ones.

Concluding Discussion

The main conclusions that can be drawn from the study are as follows: First, there is a considerable difference between vocational and general education;

vocationally educated groups have a higher proportion of matched individuals both among the native and the studied immigrated populations. Additionally, vocationally educated groups have a low proportion of undereducated individuals. Contrastingly, generally educated groups have lower proportions of matched individuals and higher levels of undereducation. This means that the vocationally educated population are more likely to be occupationally matched, but also that they are unlikely to advance past their educational level. For the generally educated population, the situation is reversed. Generally educated individuals are prone to occupational mismatch but are more likely to advance to employment exceeding their educational level. Although this study does not control for where the education is obtained, it is plausible to assume that some of the immigrated population have obtained their education before migrating to Sweden. This means that this study points in a similar direction to that carried out by Dahlstedt and Bevelander (2010), which indicated that vocational education is more readily transferred than general education; the internationally transferable component is greater in vocational education than in general education.

Second, our results show that it is not sufficient to study the immigrated population as a whole (as previous studies have, cf. Oscarsson and Grannas 2001, 2002) but that it is essential to differentiate between immigrant groups, taking into account factors such as the differing educational levels of different ethnic groups. Thus, while evidence from this study supports the findings of previous research by confirming that the immigrated population has a lower proportion of matched individuals and a higher proportion of overeducated individuals than the native population, it also qualifies these conclusions by revealing that the results differ between the identified immigrant groups. The Iraqi group seems to have a particularly weak position on the labor market with low levels of matched individuals and high levels of overeducation.

The theoretical discussion concluded that overeducation among immigrants should be temporary and diminish over time. While this study was not designed to control for this, the results tentatively suggest that overeducation is indeed a temporary phenomenon, since the odds of being overeducated decrease with the length of stay in the country. A longitudinal analysis would need to be performed in order to confirm these preliminary indications.

The third important conclusion from the study is that in order to identify gender differences in levels of occupational match, it is necessary to distinguish between the native population and different immigrant populations, since different groups show different gender patterns of match and mismatch. The field of match and mismatch in Sweden in relation to immigration and labor market integration has received relatively little attention to date, and the development of these first results could take a number of forms. One possibility would be to conduct a longitudinal analysis of match and mismatch in different immigrant groups thereby controlling for where the relevant education was obtained and for changes in both employment and education. It would also be interesting to refine the analysis used herein to include specific occupations rather than more generalized occupational levels.

Appendix

Table 8 SUN 2000 conversion into years of education for realized match and categories to job analysis

SUN 2000 code	SUN 2000 level	Categories to job analysis
640	Ph.D.	4
620	Licentiate's degree	4
550–600	Unspecified graduate education and post-secondary education 5 years	4
540–547	Post-secondary education 4 years	4
530–537	Post-secondary education 3 years	4
520–527	Post-secondary education 2 years	3
410–417	Post-secondary education less than 2 years	3
330–337	Secondary education 3 years.	2
320–327	Secondary education 2 years	2
310–317	Secondary education less than 2 years	2
200–206	Compulsory	1
100–106	Compulsory education less than 9 years	1
000–002	Preschool class	0

Table 9 Conversion of The Swedish Standard Classification of Occupations 1996 into categories for job analysis

	SSYK 96	Categories to job analysis
1. Managerial positions	111–112	4
	121–123	3
	131	2
2. Professionals	211–249	4
3. Technicians and associate professionals	311–348	3
4. Clerical support workers	411–422	2
5. Service and sales workers	511–522	2
6. Skilled agricultural, forestry and fishery workers	611–615	2
7. Craft and related trades workers	711–744	2
8. Plant and machine operators, and assemblers	811–834	2
9. Elementary occupations	911–933	1

References

- Becker, G. (1964). *Human capital a theoretical and empirical analysis, with special reference to education*. Chicago: Chicago University Press.
- Bengtsson, T., Lundh, C., & Scott, K. (2005). From boom to bust: Economic integration of immigrants in postwar Sweden. In K. F. Zimmerman (Ed.), *European migration: What do we know?* (pp. 15–58). Oxford: Oxford University Press.

- Berggren, K., & Omarsson, A. (2001). *Rätt man på fel plats - En studie av arbetsmarknaden för utlandsfödda akademiker som invandrat under 1990-talet* [Right man on the wrong spot—A study of the labor market for foreign born academics]. Arbetsmarknadsstyrelsen, Ura:2001:4.
- Bevelander, P. (2000). *Immigrant employment integration and structural change in Sweden 1970–1995*. Lund: Lund Studies in Economic History.
- Bevelander, P., & Lundh, C. (2007). Utbildning, yrke och inkomst bland iranska män i Sverige [Education, occupation and income among Iranian men in Sweden]. In *Ekonomisk Debatt* [In Economic Debate] NO:35:3 (pp. 32–40).
- Bills, D. (2004). *The sociology of education and work*. Oxford: Blackwell.
- Björnsson, E. (2000). *Jurist tvingas stå vid bandet* [Lawyer forced to work at the treadmill]. 2000.02.07 Sydsvenska Dagbladet.
- Chiswick, B., & Miller, P. (2007). *The international transferability of immigrants' human capital skills*. IZA conference papers no. 2670.
- Chiswick, B., & Miller, P. (2009). The international transferability of immigrants' human capital. *Economics of Education Review*, 28, 162–169.
- Dahlstedt, I., & Bevelander, P. (2010). The importance of where and what—the effect of home country versus host country and general versus vocational education on the employment integration of immigrants in Sweden. *Journal of Immigrant & Refugee Studies*, 8(2), 158–192.
- Groot, W., & Maassen van den Brink, H. (2000). Overeducation in the labor market: A meta-analysis. *Economics of Education Review*, 19, 149–158.
- Hartog, J. (2000). Over-education and earnings: Where are we, where should we go? *Economics of Education Review*, 19(2), 131–147.
- Lundh, C., & Ohlsson, R. (1999). *Från arbetskraftimport till flyktinginvandring, 2:a reviderade upplagan* [From labor immigration to refugee migration]. Stockholm: SNS.
- Nordin, M., Persson, I., & Rooth, D.-O. (2008). *Education–occupation mismatch: Is there an income penalty?* IZA Discussion paper series no. 3806.
- Orrenius, N. (2001). *Svårt för invandrade akademiker att hitta jobb* [No employment for foreign academics]. 2001.07.06 Sydsvenska Dagbladet.
- Olofsson, J. (2000). Yrkesutbildning och utbildningspolitik - en inledande översikt [Vocational education and educational policy—an introductory overview]. In J. Olofsson & I. Schånberg (Eds.), *Yrkesutbildningen i går och i dag* [Vocational education—yesterday and today]. Lund: Studentlitteratur.
- Oscarsson, E. & Grannas, D. (2001). *Under- och överutbildning på 2000-talets arbetsmarknad - En förstudie av matchningen mellan utbildning och kvalifikationskrav* [Under and overeducation on the 21st century labor market—a pilot study of the match between education and occupational skill level]. Östersund: Institutet för Tillväxtpolitiska studier (ITPS) A2001:006.
- Oscarsson, E., & Grannas, D. (2002). Under- och överutbildning på 2000-talets arbetsmarknad [Over and undereducation on the labor market of the 21st century]. In Abrahamson et al. (Eds.), *Utbildning, kompetens och arbete* [Education, competence and work]. Lund: Studentlitteratur.
- Rooth, D.-O., & Åslund, O. (2007). Får utlandsfödda betalt för sin utbildning och sina kunskaper i svenska? [Do foreign borns get paid according to their education and language skills?] In *Ekonomisk debatt* [Economic debate], No 3.
- Schultz, T. (1961). Investment in human capital. *The American Economic Review*, 51(1), 1–17.
- Schierup, C.-U., & Paulson, S. (Eds.) (1994). *Arbetets etniska delning: Studier från en svensk bilfabrik* [The ethnic division of work: Studies from a Swedish car factory]. Eslöv: Carlssons.
- Schröder, L. (2008). *Akademiker med utländsk bakgrund - en kunskapsöversikt* [Academics with foreign background]. TCO granskar no. 8.
- Schröder, L. (2009). *Samma villkor för alla akademiker* [Same conditions for all academics]. TCO granskar no. 3.
- Sicherman, N. (1991). Overeducation' in the labor market. *Journal of Labor Economics*, 9(2), 101–122.
- Skogskär, M. (2007). *Glädjande dystra siffror* [The joy of gloomy numbers]. 2007.07.30 Sydsvenska Dagbladet.
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374.
- Zaremba M. (2009). *Svensk? Var god dröj!* [Swedish? Please hold!]. 2009.03.01 Dagens Nyheter.

Inge Dahlstedt is a PhD candidate and a teacher at Malmö University and does research on migration, integration and education in the context of the Swedish Labor Market.

III

OVER-EDUCATION AMONGST THE CHILDREN OF IMMIGRANTS IN SWEDEN

Abstract

The main focus of the article is whether immigrants' descendants have the same occupational mismatch as immigrants, or whether their experiences reflect those of the population with Swedish-born parents. Register data for the entire population of Sweden for the year 2007 is used for a multivariate analysis. All employed individuals aged between 25 and 64 have been selected. The main results show that the descendant generation has lower levels of mismatch compared to the immigrant generation: the male descendant population shows higher odds of being over-educated, whereas the female descendant population does not significantly differ in this from Swedish-born individuals with two Swedish-born parents.

Keywords

Labour market • integration • immigration • occupational mismatch • second generation • over-education

Received 8 January 2014; Accepted 6 January; 2015

Inge Dahlstedt*

Department of Global Political Studies and Malmö Institute for Studies on Migration Diversity and Welfare, Malmö University, Sweden

1 Introduction

Since World War II, Swedish society has undergone profound changes in the areas of migration and integration. In this same time period, Sweden experienced positive net immigration to the extent that in 2007, Sweden's foreign-born population and their children constituted around 17% of the total population (Statistics Sweden Database). However, during this time, the labour market integration of immigrants dropped from being higher or at par with the native population to a native-immigrant employment gap of about 20%. A number of explanations for this employment gap have been suggested (e.g. Bevelander 2000; Bevelander 2011; Bevelander & Pendakur 2009; Bethoui 2006; Carlsson & Rooth 2007; Dahlstedt & Bevelander 2010; Nekby *et al.* 2008; Rooth 1999; Aslund & Rooth 2007; Scott 1999).

The question of how the children of immigrants fare in the labour market is becoming an increasingly urgent one in all immigration countries. Classical studies of the area include Chiswick (1978) and Borjas (1992, 1993). Studies of the labour market position of the descendants of immigrants are also emerging in the Swedish context (e.g. Schröder & Wilhelmsson 1998; Rooth & Ekberg 2003; Hammarstedt & Ekberg 2004; Bethoui 2006; Behrenz *et al.* 2007; Hammarstedt 2002, 2009; Andersson & Hammarstedt 2010; Hammarstedt & Palme 2012; Crul *et al.* 2012).

However, the occupational match, that is, the match between the educational level of the individual and the skill requirements of the job position, both of which are important for the individual

and for society as a whole, have rarely been scrutinised in the context of the immigrant population. There are studies of the occupational match of the immigrant population but they are few (these studies will be shown in section 2). What is even more striking is that no studies have been conducted on the occupational match and mismatch of the descendant generation. This article tries to fill this gap in the research by investigating the occupational mismatch of the descendants in the labour market in Sweden. To be more precise, the objective is to investigate the probability of descendants of immigrants being employed at a lower skills level than their education stipulates (over-education). In doing this, it is relevant to compare the parental generation with those who are Swedish-born with two Swedish-born parents (referred to as the reference population). Moreover, most of the research on the descendant generations' labour market position is made by categorising descendants after the birth region of their parents (i.e. descendants of parents born in the Middle East, Asia and so forth, with Hammarstedt & Palme (2012) as an exception) instead of the specific country of birth of the parents (e.g. Iran or Poland). This article will therefore conduct an analysis on 12 specific country groups, that is, categorise the descendant generation after the parents' specific country of birth.

The article sets out to answer the following questions:

- Do descendants of immigrants have a lower occupational mismatch than their immigrant parents?

* E-mail: inge.dahlstedt@mah.se

- Are there differences in occupational mismatch between the reference population and descendants?
- Is there a difference in the occupational mismatch between those descendants who have one parent born outside of Sweden and those who have two parents born outside of Sweden?
- Does the country of origin of the parent affect the occupational match of his or her descendants?

The article makes use of register data for the year 2007 provided by Statistics Sweden in order to analyse the employed population between 25 and 64 years of age. A descriptive analysis is followed by a set of logistic regressions that control for a number of human capital-related variables. The advantages of using the register data include the highly reliable information about the core variables used (i.e. education, employment and skills level of the job) and the fact that the entire population of the studied groups can be analysed (both foreign-born and descendants born in Sweden).

This introduction is followed by a section on previous research, starting with a presentation of international research and concluding with research focusing on the Swedish labour market. The data and method are then presented and are followed by a presentation of the empirical results. The article ends with a concluding discussion of the results and a summary.

2 Theory and earlier research

In line with human capital theory (Becker 1964; Schultz 1961) stressing the importance of education for economic integration, this study analyses the over-education among the children of immigrants in Sweden. The basic idea behind the theory is that a higher skill and/or education level of the individual should in turn lead to better economic integration. However, skills and education are not perfectly transferable between countries, which could delay both labour market entrance and occupational match of immigrants relative to natives (Chiswick & Miller 2009). Since children of immigrants do obtain skills and education of the 'destination' country, they should have similar occupational matching levels as natives.

On the one hand, mismatch could be due to the individual choices of labour market entrants starting to climb the career ladder, or could also be a way of getting a foothold in the labour market in order to start a career (Groot & Maassen van den Brink 2000). From these perspectives, mismatch could be regarded as something temporary and something related to age. However, mismatch as a result of personal choice does not have to be temporary. There may be situations where an individual opts for a job for which he or she is over-educated, for monetary or other reasons (Sicherman 1991).

On the other hand, mismatch could be more or less forced upon the individual due to discriminatory practices and/or a devaluation of the individual's human capital, such as education. (Upon arrival in the new country an individual can still use the education but the education is valued less than in the country of origin. This means the individual need to upgrade the education in order to benefit fully from the education.) As discussed in Dahlstedt (2011), the migrant generation can be mismatched as a result of discriminatory practices or signalling problems (Chiswick & Miller 2009). Signalling theory (Spence 1973) stipulates that employers use the educational level of the workers as an indicator or a signal of the workers' productivity. In the context of labour market participation of immigrants this means that employers may find it difficult to interpret the signals

(educations) of migrant workers and thereby also find it difficult to decide the productive capability. This is something that should affect the immigrated generation but not the descendant generation since the descendant generation is more likely to have Swedish education.

Extensive research has been carried out on the labour market outcomes of immigrants' descendants in international migration research (for an early example see Child 1943; for more recent research see e.g. Borjas 1993; Portes & Rumbaut 1996, 2001; Crul *et al.* 2012). The picture painted in this research includes lower labour market participation, lower employment rates and lower wages compared to 'natives'. Van Ours & Veenman (2002) found that descendants in the Netherlands showed a lower level of labour market participation, and also that those who participated were less likely to have a job. Algan *et al.* (2009) found that in France, Germany and the UK, 'there is a clear indication that – in each country – labour market performance of most immigrant groups as well as their descendants is – on average worse than that of the native population, after controlling for education, potential experience and regional allocation' [Algan *et al.* 2009: 24. For Denmark see Skyt Nielsen *et al.* (2001); for France, Belzil & Poinas (2008); for the US, Chiswick & DebBurman (2003); and for Canada, Tu (2010)].

The labour market position of the descendant generation is weaker than that of the population with native-born parents, which Borjas (1993) suggests is in some respects due to inheritance: 'the wage of second-generation ethnic groups crucially depends on the wage of the first-generation national origin group' (Borjas 1993: 133).

Although a considerable amount of international research is available on occupational match and mismatch (see e.g. Bauer 2002; Brynin & Longhi 2009; Groeneveld & Hartog 2004; Groot & Maassen van den Brink 2000; Hung 2008; Kiker *et al.* 1997; Rubb 2003; Sicherman 1991), very few studies of mismatch are related to immigrants in the labour market, as stated in the introduction. Notable exceptions include Berggren & Omarsson (2001), Oscarsson & Grannas (2001, 2002), Bevelander & Lundh (2007), Green *et al.* (2007), Chiswick & Miller (2009), Dahlstedt (2011), Kalfa & Piracha (2013), Nielsen (2007) and Nordin *et al.* (2008). To my knowledge, no research has been conducted on the descendant generation in Sweden or elsewhere.

However, there is research focusing on other aspects of the labour market position of descendants to immigrants, such as unemployment, employment and wage levels. This points in a similar direction to that of international research. For example, Schröder & Wilhelmsson (1998) showed that the risk of Swedish-born youth being unemployed increased by a third if one of the parents was foreign-born. Hammarstedt (2002) showed that the descendants' wages were dependent on the parents' country of birth, and that the wage level was to some degree inherited from the parental generation. Hammarstedt (2009) also showed that differences in income were likely to occur after several generations.

A similar result can be found in Rooth & Ekberg (2003), who indicate that the labour market outcome depends on the parents' country of birth, where individuals with parents born in European countries (excluding Southern Europe) have a similar position in the labour market to those with Swedish-born parents. Individuals with parents from Southern European and non-European countries are more likely to be unemployed and have lower earnings. An additional finding is that for individuals with one Swedish-born parent, there is less likelihood of being unemployed compared to those with two foreign-born parents. According to Behrenz *et al.* (2007), most of

the differences in income can be explained by lower probabilities of having a job (Behrenz *et al.* 2007: 171).

There seems to be a certain amount of inter-generational transmittance between the parental and the descendant generation. Andersson & Hammarstedt (2011) found this to be the case with regard to self-employment, Hammarstedt & Ekberg (2004) found the same for participation in social assistance and unemployment benefits and Hammarstedt & Palme (2012) found it in earnings mobility. This means that when the parental generation experiences difficulties in the labour market, for example groups from Africa and the Middle East, the descendant experiences similar difficulties.

The findings from the studies that focus on the occupational match and mismatch of immigrants in the Swedish labour market points in a similar direction as the international research. These studies suggest that immigrants who are not working at a matching level are more likely to work at a level that is below their skills level (educational level), while natives are more likely to work at a level above their skills level (see Bevelander & Lundh 2007; Oscarsson & Grannas 2001, 2002; Andersson Joona *et al.* 2014). Dahlstedt (2011) has found that immigrants work at a lower skills level than their education stipulates to a greater extent than natives. At the same time, there are considerable differences between immigrant groups. Dahlstedt also found that the type of education is important: general education (education that does not lead to a vocational certificate) increases the probability of being mismatched compared to vocational education (education that leads to a vocational certificate).

Regardless of the cause of the mismatch, there is evidence of an income penalty for those working at a mismatched level (Kalfa & Piracha 2013; Nordin *et al.* 2008; Andersson Joona *et al.* 2014). This means that the individual does not get the right payback for the educational effort expended (the right payback for investments in the human capital). In this way, they do not have the same opportunities to make use of their educational level as those who are working on a level that is in accordance with their education.

To summarise the discussion, the descendant generation seems to have a weaker position in the labour market, with lower employment rates and wages. To a certain extent this depends on the descendant's parents' position in the labour market. What could be expected in terms of mismatch in the descendant generation is a rather difficult question, mainly due to the lack of research on mismatch among descendants. However, the research that has been done on the mismatch of the immigrant generation could give us some clues as to what to expect. For instance, it could be expected that descendants would have higher levels of mismatch compared to the reference population, but lower levels than the parental generation, due to education received in Sweden. Variations between different groups of descendants could also be expected, as well as differences relating to parental composition. The picture painted in the previous research also supports these expectations. In general, the descendant generation has a weaker labour market position than the Swedish-born population with two Swedish-born parents in terms of employment rates, unemployment rates and wages. On the other hand, the labour market position depends, to a certain degree, on the parent's position in the labour market (Hammarstedt 2002; Andersson & Hammarstedt 2011) and also where the parents come from (Rooth & Ekberg 2003).

3 Data & method

3.1 Population and variables

The statistical information used comes from the STATIV database provided by Statistics Sweden (SCB) for the year 2007. The studied population is the employed population between the ages of 25 and 64. At the age of 25, the majority of the population is likely to have graduated from university, and the official retirement age in Sweden is 65. The sample amounts to 3,595,292 individuals (1,833,423 men and 1,761,869 women).

3.2 Selection of groups

As already indicated, Sweden has had a positive net migration since the Second World War. During the period immediately following the war, and up to the beginning of the 1970s, labour migrants who were needed in Swedish industries dominated the migration. These migrants largely came from the Nordic and European countries. After the oil crisis in the 1970s, the labour unions put pressure on the government to discontinue its labour migration policy. As a consequence, labour migration came to a halt and was replaced by refugees and family reunion migrants [for an extensive discussion on the Swedish migration history see Lundh & Ohlsson (1999) and Svanberg & Tydén (2005)]. After the 1970s, people from Southern Europe and non-European countries dominated the migration.

The selection of groups has been governed by the size of the descendant generation, that is, the number of descendants between 25 and 64 who are employed and where information about the educational and occupational level is available. This means that the selection depends on the age distribution and the employment rate of the specific group.

This also means that most of the studied groups are those that first came to the country during the labour migration period or before, and that the majority of the chosen groups are European, since they have been in Sweden the longest and therefore have a larger descendant generation. More recently arrived groups would have been interesting to include, but due to the age distribution and the employment rate in these groups, this was not possible. Iraqi and Somali descendants can serve as an example. In these groups, only 1–2% are aged between 25 and 64 and employed (see Bevelander & Dahlstedt, 2012 for a discussion on the age distribution and employment rate among descendants). This means that there is a forced selection bias in the choice of groups, meaning that the studied groups have an age distribution and employment rate that is suitable for analysis in this article.

Groups such as the Finns, Germans, Danes and Estonians either pre-date the labour migration period or arrived during the labour migration period. Italians, Greeks and Turks also arrived during the labour migration period, as did the first wave of Yugoslavians. A second wave of Yugoslavians came during the Balkan War in the 1990s. The Polish group came during 1970s and 1980s. The Chilean migration to Sweden reached its first peak in the early 1970s and a second peak in the 1980s. These groups, together with UK migrants, all have a descendant generation that is large enough to facilitate an analysis of the occupational mismatch. The Indian group is also included in the study. Apart from being the most recent group, it is also the smallest (a total of 839 individuals).

In this study, the descendant generation is defined as individuals born in Sweden and having one or two foreign-born parents. There are two reasons for this. The first is to determine whether there is an effect from having one parent born in Sweden, and if there is, whether this is different if the father or mother is born in Sweden. The second is to ensure that there are enough individuals in each of the 12 studied descendant groups.

3.3 Variables

The dependent variable in the analysis is occupational match. This variable is calculated by using the Job Analysis method. The Job Analysis method relies on a systematic evaluation of the educational requirements for each job, undertaken by professional job analysts (Hartog 2000). An example is The International Labour Organization's International Standard of Classification of Occupations 1988 (ISCO 88). In this article, the Job Analysis is employed by using The Swedish Standard Classification of Occupations 1996 (SSYK 96). SSYK 96 classifies occupations in a hierarchical framework according to the type of work performed and the skill levels necessary for completing the work. SSYK 96 is connected to the national educational index (SUN2000) that classifies education according to level and type. These two indexes are divided into four levels, each of which is connected, as can be seen in Table 1. In this way, the proportion of the population working at a level that matches their education, the proportion working at a higher level (under-educated) and the proportion working at a lower level (over-educated) can be calculated.

The educational index SUN2000 is also used to distinguish between different types of education. At the secondary and university levels, it is possible to distinguish between general and vocational education (see Dahlistedt & Bevelander 2010; Dahlistedt 2011 for a discussion).

3.4 Regression models

In order to calculate the effect of belonging to a certain group and generation on the probability of being over-educated, a number of logistic regressions are made separately for the male and female population controlling for standard human capital variables. In the base regression (A), only the control variables age, age squared,¹ marital status, type of education, years since migration and years since migration squared are included. Age and age squared are continuous variables, as are years since migration and years since migration squared. Type of education and marital status are both categorical variables. A dummy variable has been created for both these variables.

The second regression (B) controls for belonging to a certain generation. The reference group is Swedish-born with two Swedish-born parents, with the immigrant generation set to one and the descendant generation set to two. In regression (C), the analysis is more detailed, in that the immigrant and descendant generations are divided into 12 specific country groups, with the same reference group as before.

Regressions (D) and (E) are created in order to see the effects of the parental composition. These regressions only include the descendant population with Swedish-born parents and the reference population. In regression (D), a variable is created that divides the studied country groups into two categories: two parents born in the specific country and one parent born in the specific country. Regression (E) measures the effect of having a mother and/or father born outside Sweden. In all the regressions, the dependent variable is over-educated (1) or not (0).

Table 1. Occupational match definition

Education (SUN2000)	Occupational level (SSYK 96)			
	Elementary occupations	Low level workers	Technicians, associate professionals and lower managerial positions	Professionals and managerial positions
Compulsory (1)	Match	Under-educated	Under-educated	Under-educated
Secondary (2)	Over-educated	Match	Under-educated	Under-educated
Post-secondary education <3 years (3)	Over-educated	Over-educated	Match	Under-educated
Post-secondary education ≥3 years (4)	Over-educated	Over-educated	Over-educated	Match

Note: The three digit level is used in both.
Source: Statistics Sweden

4 Empirical results

4.1 Descriptive statistics

In Tables 2 and 3, the over-education rate for the studied groups is shown divided by generation, gender and parental composition. The pattern visible for the immigrant generation is the same pattern as Dahlstedt (2011) showed, in that almost all immigrant groups have a higher over-education rate than the reference population. Only Finnish men and women and Turkish women have a lower over-education rate than the reference group. Another pattern that is recognisable is that women have higher over-education rates than men (Dahlstedt 2011).

As expected, there are considerable differences between the descendant groups. In the male population, the over-education rate spans from 13% (Denmark) to 25.6% (Chile), whereas in the female population, the span is from 18.2% (Denmark) to 32% (Chile).

Compared to the reference group, almost all descendant groups in the male population have higher over-education rates (except Danish and Finnish males). The same can be seen in the female population (with the exception of Danish, Estonian and Italian females) All other male and female groups have a higher over-education rate, which suggests that the descendent generation has a weaker position in terms of over-education rates compared to the reference group. This weaker position could be due to discrimination, but could also have other causes, such as differences in types of

Table 2. Proportion of over-educated in the employed population (age group: 25–64) by groups, gender and generation

	% Over-educated			
	Men	Men	Women	Women
Reference group	14.6		19.0	
	Immigrants	Descendants	Immigrants	Descendants
Chile	25.2	25.6	25.9	32.0
Denmark	16.3	13.1	20.7	18.2
Estonia	26.7	17.1	49.0	18.5
Finland	12.0	14.7	18.2	21.0
Greece	21.3	22.5	21.5	28.1
India	28.7	23.8	32.6	30.0
Italy	19.9	16.7	22.6	19.4
Poland	26.9	21.3	33.9	24.5
Turkey	18.1	18.4	14.4	20.7
Germany	21.1	16.5	25.8	20.0
UK	28.1	22.2	24.4	26.7
Yugoslavia	24.1	18.1	23.5	23.3
Other	30.1	17.0	32.1	20.6
Total	15.9		20.2	

Source: Statistics Sweden, own calculations

education and differences in the age composition of the groups (a younger population means more labour market entrants, which could mean a higher over-education rate).

In comparison to the parental generation the picture is somewhat different. Chilean, Finnish, Greek and Turkish descendants all have higher over-education rates than their respective parental generation, both among the male and female population, which is contrary to expectations. Among the female population, the UK descendants also have higher over-education rates than the parental generation. The remaining descendant groups all have lower rates compared to their parental generation.

Table 3. Employed Swedish-born generation by parental composition (age group: 25–64 years)

	% Over-educated			
	Men		Women	
	Two parents	One parent	Two parents	One parent
Sweden	14.6	–	19.0	–
Chile	26.1	25.0	32.1	32.0
Denmark	12.4	13.2	16.4	18.5
Estonia	18.7	16.7	17.6	18.7
Finland	13.9	15.1	20.5	21.2
Greece	23.5	21.3	27.3	28.7
India	23.3	23.9	42.3	27.0
Italy	15.0	17.0	13.0	20.2
Poland	26.2	19.7	28.5	23.3
Turkey	18.7	17.2	20.2	22.3
Germany	13.5	16.8	15.9	20.5
UK	18.8	22.3	36.9	26.4
Yugoslavia	19.0	16.6	22.0	25.1
Other countries	19.3	16.6	21.9	20.1
Father Swedish-born, mother foreign-born	15.8		20.2	
Mother Swedish-born, father foreign-born	16.3		21.5	
Both foreign-born	16.3		20.9	
Total	14.8		19.2	

Note: One parent born in the specific group means that the other is Swedish-born.

Source: Statistics Sweden, own calculations

In Table 3, the descendant generation is divided into gender, group and parental composition. As is the case with Table 2, there is no clear-cut pattern among the male population. Six of the studied groups (Chile, Estonia, Greece, Poland, Turkey and Yugoslavia) show the expected pattern of lower levels of over-education for those with one Swedish-born parent compared to those with two foreign-born parents. Among the female population, fewer groups (India, Poland, UK) show the expected pattern.

In the last rows of Table 3, the descendant generation as a whole is divided according to whether the mother or father is foreign-born. What is interesting here is that there is either only a small difference or none at all between those with two foreign-born parents and those with a foreign-born mother or father. The differences in the female population are even smaller.

4.2 Regressions

A set of logistic regressions have been made in order to control the findings from the descriptive analysis. The first set (A–C) is made in order to see whether there is any difference between the descendant groups and the reference group on the one hand and the immigrant generation on the other whilst controlling for a number of variables. The second set of regressions (D and E) is made in order to see whether there are any differences in the mismatch due to parental composition. These regressions are made separately for the male and the female population.

4.2.1 Belonging to a descendant group

In Table 4, regressions (A–C) are displayed for the male population. Regression (A) is a base regression with only control variables. In this regression, we can see that age reduces the risk of being over-educated, which means that the older a person is, the lower the risk. Having a general education also increases the odds of being over-educated.

In regression (B), a dummy variable is included in the regression to control for belonging to either the immigrant generation or the descendant generation. The descendant generation has statistically significant higher odds of being over-educated compared to the reference population, and on the other hand, has lower odds compared to the immigrant generation.

In regression (C), the immigrant and descendant variables have been split into the studied groups. In comparison to the reference population, two descendant groups show lower odds of being over-educated than the reference population, namely the Danish and Finnish groups. This was also visible in the descriptive statistics, where the Danish and Finnish groups had about the same or lower over-education rates than the reference population. In addition, we can also see that two groups do not differ significantly from the reference population, the Italian and Yugoslavian descendants.

Compared to the respective immigrant generation, all descendant groups display lower odds of being over-educated than the immigrant generation; this is according to the expectations.

In Table 5, the regressions (A–C) are displayed for the female population. In regression (A), we can see that age decreases the odds, and having a general education increases the odds. In regression (B), it is interesting to note that the descendant generation as a whole does not statistically differ from the reference population.

Table 4. Odds of being over-educated for male population (age group: 25–64 years)

	(A)	(B)	(C)	
	Exp(B)	Exp(B)	Exp(B)	
Age (1)	0.941***	0.934***	0.936***	
Age (2)	1.000***	1.000***	1.000***	
Married	1.083***	1.025***	1.022***	
General education	1.532***	1.439***	1.437***	
Years since migration (1)		1.018***	1.013***	
Years since migration (2)		0.999***	0.999***	
Reference Group		1.000***		
Immigrants		1.980***		
Descendants		1.046***		
			Immigrants	Descendants
Reference group			1.000***	
Chile			1.890***	1.297*
Denmark			1.444***	0.885***
Estonia			2.025***	1.299***
Finland			1.200***	0.941***
Greece			1.806***	1.275***
India			2.033***	1.480***
Italy			1.555***	1.040
Poland			2.033***	1.374***
Turkey			1.113**	0.868*
Germany			1.745***	1.128***
UK			2.119***	1.413***
Yugoslavia			1.769***	1.006
Other			2.241***	1.130***
Constant	0.929***	0.988***	0.957***	
(N)	1,833,423	1,833,423	1,833,423	

Source: Statistics Sweden, own calculations

When we split the generation variable into the different groups in regression (C), we can see that all descendant groups have lower odds than their respective parental generation, as could be expected from the results in regression (B).

Among the female descendant groups, the Danish, Finnish and Italian groups show statistically significant lower odds of being over-

educated compared to the reference population. In addition to this, four more groups - Chilean, Greek, Polish and German descendants – show no statistically significant difference compared to the reference group. In the descriptive analysis, the Danish and Italian descendants had lower over-education rates than the reference population. So, in the regressions controlling for other variables, it is interesting to see that the differences between the reference population and the descendant groups become less pronounced.

So far, the expectations discussed in the previous research seem to hold in general. In general, descendants have lower odds of being under-employed than the immigrant generation. As expected, there are also large differences between the studied groups. For the male population it also seems as though the expected results hold. Most of the descendant groups in the male population have odds of over-education that are higher than the reference group. In the female population, this does not seem to be the case. Here only four of the descendant groups show significantly higher odds of being under-employed compared to the reference group.

4.2.2 Parental composition

In this step of the analysis, the aim is to determine whether parental composition has any influence on the odds of being over-educated. By analysing the Swedish-born population, and dividing them according to their parents' country of birth, it should be possible to see how parental composition affects over-education while controlling for the standard control variables. In regression (D), the focus is on having one or two foreign-born parents from the studied groups, and in regression (E), the focus is on which of the parents is foreign-born.

In Table 6, the results for the male population are presented. The expected result would be that those with one parent born in another country would have lower odds compared to those with two foreign-born parents, but higher odds than the reference population. The first thing that needs to be noted is that there are a lot of insignificant results, which makes the analysis difficult. Among the descendant groups with significant results for both one and two parents (Denmark, Estonia, Finland and Poland), only Estonian and Polish descendants with two parents born in the respective country have higher odds compared to those with one parent born in the respective country. In the light of these results, and based on these numbers, we are unable to draw any (safe) conclusions from the analysis.

Turning to the last regression (E), the expectations in this regression are the same as in the previous, namely that those with two foreign-born parents would have the highest odds of being over-educated. This is not the case in regression (E), however. Here, those with a foreign-born mother and a Swedish father have the highest odds of being over-educated, closely followed by those with a foreign-born father and a Swedish mother. Those with two foreign born parents have the lowest odds of being over-educated; even lower than the reference population. In this sense, the results are contrary to what was expected.

In Table 7, the results for the female population are presented. Much of what we saw in the analysis of the male population is repeated in the female population. In regression (D), four descendant groups show significant results for both one and two foreign-born parents (Denmark, Estonia, Italy and Turkey), which means that also here, it is difficult to draw any conclusions. Out of these four groups, only Estonians show the expected results with higher odds for those with two foreign-born parents than with one foreign-born parent. Also,

Table 5. Odds of being over-educated for female population (age group: 25–64 years)

	(A)	(B)	(C)
	Exp(B)	Exp(B)	Exp(B)
Age (1)	0.896***	0.891***	0.890***
Age (2)	1.001***	1.001***	1.001***
Married	0.972***	0.942***	0.946***
General education	1.320***	1.439***	1.254***
Years since migration (1)		1.006***	1.006***
Years since migration (2)		1.000***	1.000***
Reference group		1.000***	
Immigrants		1.775***	
Descendants		0.987	
		Immigrants	Descendants
Reference group		1.000***	
Chile		1.447***	0.982
Denmark		1.578***	0.943**
Estonia		3.362***	1.117**
Finland		1.586***	0.974*
Greece		1.374***	1.062
India		1.583***	1.310*
Italy		1.382***	0.847**
Poland		2.517***	1.079
Turkey		0.634***	0.586***
Germany		1.688***	1.036
UK		1.555***	1.200***
Yugoslavia		1.297***	0.849***
Other		1.845***	1.013
Constant	5.337***	5.763***	5.825***
(N)	1,761,869	1,761,869	1,761,869

Source: Statistics Sweden, own calculations

in regression (E), the results are similar to those seen in the male population, with the lowest odds among those having two foreign-born parents, closely followed by those with a foreign-born father and a Swedish-born mother. Both of these groups have lower odds than the reference population. Again, the results are inconclusive for the female population and further studies are required.

Table 6. Regression of (D) on (E) and the odds of being over-educated for male population (age group: 25–64 years)

	(D)		(E)
	Exp(B)		Exp(B)
Age (1)	0.920***		0.919***
Age (2)	1.001***		1.001***
Married	1.035***		1.035***
General education	1.432***		1.435***
Both parents Swedish			1.000***
Father Swedish			1.066***
Mother Swedish			1.022***
No Swedish parent			0.995***
	Two parents	One parent	
Sweden	1.000***	–	
Chile	1.179	1.267	
Denmark	0.862*	0.883***	
Estonia	1.641***	1.241***	
Finland	0.841***	0.968*	
Greece	1.295***	1.153	
India	1.054	1.535***	
Italy	0.983	1.026	
Poland	1.748***	1.221***	
Turkey	0.796***	0.904	
Germany	1.006	1.142***	
UK	0.995	1.385***	
Yugoslavia	1.021	0.899*	
Other	1.200***	1.108***	
Constant	1.463***		1.473***
N	1,627,030		1,627,030

Source: Statistics Sweden, own calculations

Table 7. Regression of (D) on (E) and the odds of being over-educated for female population (age group: 25–64 years)

	(D)		(E)
	Exp(B)		Exp(B)
Age (1)		0.874***	0.875***
Age (2)		1.001***	1.001***
Married		0.954***	0.953***
General education		1.253***	1.255***
Both parents Swedish			1.000***
Father Swedish			1.027**
Mother Swedish			0.976*
No Swedish parent			0.893***
	Two parents	One parent	
Sweden		1.000***	
Chile	0.856	0.998	
Denmark	0.869*	0.946*	
Estonia	1.301***	1.099*	
Finland	0.877***	1.000	
Greece	0.967	1.049	
India	1.460	1.212	
Italy	0.607*	0.856*	
Poland	1.270**	0.989	
Turkey	0.505***	0.736**	
Germany	0.942	1.046*	
UK	1.284	1.156**	
Yugoslavia	0.741***	0.934	
Other	0.955	1.008	
Constant		9.073***	8.913***
	1,548,301		1,548,301

Source: Statistics Sweden, own calculations

5 Discussion and conclusions

The aim of the article is to study the occupational mismatch of the descendants of immigrants. This is done by analysing the mismatch for descendants in 12 different groups among the Swedish employed population between the ages of 25 and 64 years using register-

based data from Statistics Sweden's database STATIV for 2007. The first question asked in this article is, do descendants have a lower occupational mismatch than their immigrant parents? The answer is a strong yes. When looking at the immigrant and descendant generations as a whole, there are significant differences among men and women. This result is also visible when the generations

are split into the 12 studied groups. This means that there is substantial evidence to suggest that, in terms of occupational mismatch, the descendant generation does much better than the parental immigrant generation. One possible explanation for this is that the descendants have obtained most of their education in Sweden and are thereby not affected by the devaluation of human capital (Chiswick & Miller 2009; Dahlstedt 2011) that their parents experienced when migrating. The descendant generation is also less likely to be affected by signalling problems since the education is obtained in Sweden. Descendants are also probably more fluent in the language and have a better knowledge of the labour market in Sweden; two factors that positively influence the mismatch, but this is something that have not been possible to control for in this analysis.

The second question posed in the article is if there are differences in occupational mismatch between the reference population and descendants. The answer is interesting. For the male population, the answer to the question is yes, because although there is only a small difference between the descendants and the reference group, it is nevertheless significant. For the female population, the answer is no. Looking at the descendant generation as a whole, there is no statistically significant difference in the odds of being under-employed between the reference group and the descendants. When controlling for the specific descendant group, the results show that only three of the twelve studied groups have odds that are higher than the reference group. The other groups have lower or non-significant odds. This means that there is no or very little difference between the female descendants and the reference group when it comes to the occupational mismatch. This result is both unexpected and positive, because it also means that female descendants do as well as the reference group. So, in terms of occupational mismatch, descendant females do better than descendant males as well as the reference group. Although this is a positive and unexpected result, it must be said that the female population as a whole has a higher level of mismatch than the male population as a whole, which opens up a less positive interpretation, namely that female descendants are 'integrated' into over-education.

The third question; does it matter whether one or two of the descendants' parents are born outside of Sweden, was a difficult question to answer. The descriptive analysis was inconclusive, which was also the case for the regression analysis. The analysis of the parental composition could be interpreted as parental composition having little influence on the occupational mismatch.

The answer to the fourth question concerning the parental country of origin is yes, there are major differences between the studied descendant groups, just as there are major differences between the immigrant groups. In this sense, it seems that the parents' country of birth affects the mismatch. This is a result that points to the importance of group specific analysis, also for the descendant generation. As noted in the discussion of previous research, most of the research on the labour market position of the descendant generation in Sweden has focused on the analysis of regional groups. The differences found in this particular study would not have been identified if the regional group method had been applied.

As stated in the previous research, both national and international research on the labour market position for the descendant generation shows that, in terms of employment rates and wages, descendants are worse off in the labour market than the native population (Algan *et al.* 2009; Belzil & Poinas 2008; Chiswick & DebBurman 2003; Hammarstedt 2002, 2009; Rooth & Ekberg 2003; Skyt Nielsen *et al.* 2001; Tu 2010). In this perspective, it is interesting to see that with regard to occupational mismatch, there is little (the male population) or no (the female population) difference between the descendant generation and the reference group (Swedish born with two Swedish-born parents). One possible explanation for this is that there is an initial penalty for descendants in terms of finding it more difficult to obtain employment. Such penalties could be due to discriminatory practices (Carlsson & Rooth 2007), a non-Swedish sounding name (Arai & Skogman Thoursie 2009) and signalling problems (Spence 1973). However, once inside the labour market, there is no or very little penalty (although there is a bigger penalty for male descendants than for female descendants). However, it must be remembered that the selection of groups in this study 'suffers' from a positive selection bias, which means that almost all the groups are European and have a long history in Sweden. Whether these results will hold in an analysis of more recent non-European groups has yet to be discovered.

From a policy perspective, it means that resources to improve the descendant generation's position in the labour market should be aimed at the recruitment process, since the results from previous research suggest that there is a penalty for the descendant generation in obtaining employment, that is, in the recruiting process. At the same time, this study suggests that once inside the labour market, fewer problems are encountered in obtaining employment at a level that is in accordance with the educational level of the individual. As seen in this study, and also in other studies of mismatch, the female population as a whole has a higher level of mismatch. This needs to be addressed both from a policy perspective and in research and questions asked as to why this is so and how it could be countered.

Inge Dahlstedt (Ph.Lic) is a doctoral student at the Department of Global Political Studies and Malmö Institute for Studies on Migration Diversity and Welfare, at Malmö University. His main research interest is labour market integration. Previous publications include the article 'Occupational Match – Over- and Under-education among Immigrants in the Swedish Labour Market' (2011) *Journal of International Migration & Integration*, Vol. 12:3, pp. 349–367, and the joint Nordic publication *Scandinavia's Population Groups Originating from Developing Countries: Change and Integration* (Tema Nord 2013:561).

Notes

1. Age squared and years since migration squared is added to the regression model in order to make the model more accurate. Adding the square of age and years since migration allows the model to predict the effect of age and years since migration even if it is a non-linear relationship.

References

- Algan, Y, Dustmann, C, Giltz, A & Manning, A 2009, *The Economic Situation of First- and Second-Generation Immigrants in France, Germany and the UK*, IZA DP, no. 4514.
- Andersson Joona, P, Gupta N & Wadensjö, E 2014, 'Overeducation among immigrants in Sweden: incidence, wage effects and state dependence', *IZA Journal of Migration*, vol. 3, no. 9, pp. 1–23, DOI:10.1186/2193-9039-3-9.
- Andersson, L & Hammarstedt, M 2010, 'Intergenerational transmissions in immigrant self-employment: evidence from three generations', *Small Business Economics*, vol. 34, no. 3, pp. 261–276, DOI:10.1007/s11187-008-9117-y.
- Andersson, L & Hammarstedt, M 2011, 'Transmission of self-employment across immigrant generations: the importance of ethnic background and gender', *Review of Economics of the Household*, vol. 9, no. 4, pp. 555–577, DOI:10.1007/s11150-010-9102-5.
- Arai, M & Skogman Thoursie, P 2009, 'Renouncing personal names: an empirical examination of surname change and earnings', *Journal of Labor Economics*, vol. 27, no. 1, pp. 127–147, DOI:10.1086/593964.
- Åslund, O & Rooth, D-O 2007, 'Initial labour market conditions and immigrant earnings', *The Economic Journal*, vol. 117, no. 518, pp. 422–448, DOI:10.1111/j.1468-0297.2007.02024.x.
- Bauer, TK 2002, 'Educational mismatch and wages: a panel analysis', *Economics of Education Review*, vol. 21, no. 3, pp. 221–229, DOI:10.1016/S0272-7757(01)00004-8.
- Becker, G 1964, *Human capital a theoretical and empirical analysis, with special reference to education*, Chicago University Press, Chicago.
- Behrenz, L, Hammarstedt, M & Månsson, J 2007, 'Second-generation immigrants in the Swedish labour market', *International Review of Applied Economics*, vol. 21, no. 1, pp. 157–174, DOI:10.1080/02692170601035074.
- Belzil, C & Poinas, F 2008, *Education and Early Career Outcomes of Second-Generation Immigrants in France*, IZA DP, no. 3877.
- Berggren, K & Omarsson, A 2001, *Rätt man på fel plats – En studie av arbetsmarknaden för utlandsfödda akademiker som invandrat under 1990-talet*, Arbetsmarknadsstyrelsen, Ura:2001:4.
- Bethoui, A 2006, *Unequal opportunities – the impact of social capital and recruitment methods on immigrants and their children in the Swedish labour market*, Linköping studies in Arts and Science, No. 369, Linköping.
- Bevelander, P & Dahlstedt, I 2012, *Sweden's population groups originating from developing countries: change and integration*, Current Themes in IMER Research No. 12, Holmbergs, Malmö.
- Bevelander, P & Pendakur, R 2009, 'The employment attachment of resettled, refugees, refugees and family reunion migrants in Sweden', in *Resettled and Included? The employment integration of resettled refugees in Sweden*, eds. P Bevelander, M Hagström & S Rönnqvist, Holmbergs, Malmö.
- Bevelander, P 2000, *Immigrant employment integration and structural change in Sweden 1970–1995*, Lund: Studies in Economic History, Lund.
- Bevelander, P 2011, 'The employment integration of resettled refugees, asylum claimants, and family reunion migrants in Sweden', *Refugee Survey Quarterly*, vol. 30, no. 1, pp. 22–43, DOI:10.1093/rsq/hdq041.
- Bevelander, P & Lundh, C 2007, 'Utbildning, yrke och inkomst bland iranska män i Sverige', *Ekonomisk Debatt*, vol. 35, no. 3, pp. 32–40, DOI: http://hdl.handle.net/2043/7492.
- Borjas, G 1993, 'The intergenerational mobility of immigrants', *Journal of Labor Economics*, vol. 11, no. 1, pp. 113–135, DOI:10.1086/298319.
- Borjas, G 1992, 'Ethnic capital and intergenerational mobility', *The Quarterly Journal of Economics*, vol. 107, no. 1, pp. 123–150, DOI:10.2307/2118325.
- Brynin, M & Longhi, S 2009, 'Overqualification: major or minor mismatch?', *Economics of Education Review*, vol. 28, pp. 114–121, DOI:10.1016/j.econedurev.2008.01.003.
- Carlsson, M & Rooth, D-O 2007, 'Evidence of ethnic discrimination in the Swedish labour market using experimental data', *Labour Economics*, vol. 14, no. 4, pp. 716–729, DOI:10.1016/j.labeco.2007.05.001.
- Child, I 1943, *Italian or American? The second generation in conflict*, Yale University Press, New Haven.
- Chiswick, B & DebBurman, N 2003, *Educational Attainment: Analysis by Immigrant Generation*, IZA DP, no. 731.
- Chiswick, B & Miller, P 2009, 'The International transferability of immigrant's human capital', *Economics of Education Review*, vol. 28, no. 2, pp. 162–169, DOI:10.1016/j.econedurev.2008.07.002.
- Chiswick, B 1978, 'The earnings of immigrants and their sons', *Challenge*, vol. 21, no. 2, pp. 55–61, Available from <http://www.jstor.org/stable/40719651>.
- Crul, M, Schneider, J & Lelie, F (eds) 2012, *The European second generation compared – does the integration context matter?*, Amsterdam University Press, Amsterdam.
- Dahlstedt, I & Bevelander, P 2010, 'The importance of where and what – the effect of home country versus host country and general versus vocational education on the employment integration of immigrants in Sweden', *Journal of Immigrant & Refugee Studies*, vol. 8, no. 2, pp. 158–192, DOI:10.1080/15562948.2010.480879.
- Dahlstedt, I 2011, 'Occupational match – over- and under-education among immigrants in the Swedish labour market', *Journal of International Migration and Integration*, vol. 12, no. 3, pp. 349–367, DOI:10.1007/s12134-010-0172-2.
- Green, C, Kler, P & Leeves, G 2007, 'Immigrants overeducation: evidence from recent arrivals to Australia', *Economics of Education Review*, vol. 26, no. 4, pp. 420–432, DOI:10.1016/j.econedurev.2006.02.005.
- Groeneveld, S & Hartog, J 2004, 'Overeducation, wages and promotions within the firm', *Labour Economics*, vol. 11, no. 6, pp. 701–714, DOI:10.1016/j.labeco.2003.11.005.
- Groot, W & Maassen van den Brink, H 2000, 'Overeducation in the labour market: a meta-analysis', *Economics of Education Review*, vol. 19, no. 2, pp. 149–158, DOI:10.1016/S0272-7757(99)00057-6.
- Hammarstedt, M & Ekberg, J 2004, 'Unemployment compensation and the use of social assistance among second-generation immigrants in Sweden', *International Journal of Social Welfare*, vol. 13, no. 3, pp. 254–265, DOI:10.1111/j.1369-6866.2004.00319.x.
- Hammarstedt, M & Palme, M 2012, 'Human capital transmission and the earnings of second-generation immigrants in Sweden', *IZA Journal of Migration*, vol. 1, no. 1, pp. 1–23, DOI:10.1186/2193-9039-1-4.
- Hammarstedt, M 2002, 'Hur försörjer sig andra generationens invandrare?', *Ekonomisk debatt*, vol. 30, no. 5, pp. 417–426.

- Hammarstedt, M 2009, 'Intergenerational mobility and earnings position of first-, second-, and third-generation immigrants', *KYKLOS International Review for Social Sciences*, vol. 62, no. 2, pp. 275–292, DOI:10.1111/j.1467-6435.2009.00436.x.
- Hartog, J. (2000). Over-education and earnings: Where are we, where should we go? *Economics of Education Review*, 19(2), 131–147, DOI: 10.1016/S0272-7757(99)00050-3.
- Hung, C-Y 2008, 'Overeducation and undereducation in Taiwan', *Journal of Asian Economics*, vol. 19, no. 2, pp. 125–137, DOI:10.1016/j.asieco.2008.02.001.
- Kalfa, E & Piracha, M 2013, *Immigrants' Educational Mismatch and the Penalty of Over-Education*, IZA DP, no. 7721.
- Kiker, BF, Santos, MC & Mendes De Oliveira, M 1997, 'Overeducation and undereducation: evidence for Portugal', *Economics of Education Review*, vol. 16, no. 2, pp. 111–125, DOI:10.1016/S0272-7757(96)00040-4.
- Lundh, C & Ohlsson, R 1999, *Från arbetskraftimport till flyktinginvandring*, SNS, Stockholm.
- Nekby, L, Vilhelmsson, R & Özcan, G 2008, 'Do host country educations even out the playing field? Immigrant-native labour market gaps in Sweden', *Journal of Immigrant and Refugee Studies*, vol. 6, no. 2, pp. 168–196, DOI:10.1080/15362940802198850.
- Nielsen, CP 2007, 'Immigrant overeducation: evidence from Denmark', *Policy Research Working Paper Series* 4234, The World Bank.
- Nordin, M, Persson, I & Rooth, D 2008, *Education-Occupation Mismatch: Is There an Income Penalty*, IZA DP, no. 3806.
- Oscarsson, E & Grannas, D 2001, *Under- och överutbildning på 2000-talets arbetsmarknad - En förstudie av matchningen mellan utbildning och kvalifikationskrav*, Institutet för Tillväxtpolitiska studier (ITPS) A2001:006, Östersund.
- Oscarsson, E & Grannas, D 2002, 'Under- och överutbildning på 2000-talets arbetsmarknad', in *Utbildning, kompetens och arbete*, eds. K Abrahamson, L Abrahamsson, T Björkman & P-E Ellström, Studentlitteratur, Lund.
- Portes, A & Rumbaut, RG 1996, *Immigrant America: a portrait*, 2nd edn., University of California Press, London.
- Portes, A & Rumbaut, RG 2001, *Legacies: The story of the immigrant second generation*, University of California Press, Los Angeles.
- Rooth, D-O & Ekberg, J 2003, 'Unemployment and earnings for second generation immigrants in Sweden. Ethnic background and parent composition', *Journal of Population Economics*, vol. 16, no. 4, pp. 787–814, DOI:10.1007/s00148-003-0163-0.
- Rooth, D-O 1999, *Refugee immigrants in Sweden: educational investments and labour market integration*, Lund Studies in Economic History, Lund.
- Rubb, S 2003, 'Overeducation in the labor market: a comment and re-analysis of a meta-analysis', *Economics of Education Review*, vol. 22, pp. 621–629, DOI:10.1016/S0272-7757(02)00077-8.
- Schröder, L & Wilhelmsson, R 1998, 'Sverigespecifikt humankapital och ungdomars etablering på arbetsmarknaden', *Ekonomisk debatt*, vol. 26, no. 8, pp. 595–601.
- Schultz, T 1961, 'Investment in human capital', *The American Economic Review*, vol. 51, no. 1, pp. 1–17, Available from: <http://www.jstor.org/stable/1818907>.
- Scott, K 1999, *Changing employment and income patterns in Sweden, 1970–1993*, Lund Studies in Economic History, No. 9, Lund.
- Sicherman, N 1991, 'Overeducation' in the labour market', *Journal of Labour Economics*, vol. 9, no. 2, pp. 101–122, DOI:10.1086/298261.
- Skyt Nielsen, H, Rosholm, M, Smith, N & Husted, L 2001, *Intergenerational Transmissions and the School-to-Work Transition of 2nd Generation Immigrants*, IZA DP, no. 296.
- Svanberg, I & Tydén, M 2005, *Tusen år av invandring: en svensk kulturhistoria*, Dialogos, Stockholm.
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374, <http://www.jstor.org/stable/1882010>.
- Tu, J 2010, *Explaining the Labour Market Outcomes of First, Second and Third Generation Immigrants in Canada*, IZA DP, no. 5128.
- Van Ours, JC & Veenman, J 2002, *From Parent to Child: Early Labour Market Experiences of Second-Generation Immigrants in the Netherlands*, IZA DP, no. 649.

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The aim of the thesis is to analyze and examine the role of education, for both immigrants and their descendants, in the process of becoming a part of the labor market of the host society. In other words, the relationship between education and work. The questions addressed in the thesis are: Does type of education matter for labor market access? Does the educational level of the individual match the skill level of the job? Is the occupational match dissimilar for different country of birth groups? Do the children of immigrants have a higher occupational match than their parents? What does the relationship between education and work look like when a part of the population has obtained their education in another country?

ISBN 978-91-7104-785-4 (print)

ISBN 978-91-7104-786-1 (pdf)

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