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THE IMPORTANCE OF ORIGIN AND DESTINATION COUNTRY SKILLS FOR LABOUR MARKET ATTACHMENT OF IMMIGRANTS FROM PAKISTAN, IRAN AND TURKEY

Abstract

This study explores how qualifications acquired prior to migration affect employment of adult immigrants in the destination country. It explores the direct effect as well as indirect effects arising through destination country investments. The study combines survey information on destination country language proficiency and education level from the country of origin with administrative records on employment and education acquired in the destination country. The results neither show evidence of direct transferability nor of indirect employment gains from foreign skills when complemented by domestic language proficiency. Yet, foreign educated do acquire more education in the destination country, that raises their employment.

Keywords

Immigrants • labour market attachment • educational attainment • skill transferability • skill complementarity

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1 Introduction

The limited labour market participation of most non-western immigrants in western countries, is both a political, economic and social challenge. The aim of this study is to achieve a better understanding of how qualifications from the country of origin affect employment status in the destination country. The study produces two main contributions to the literature: 1) The study unites various strands of literature by examining three different hypothesis on how qualifications from the country of origin affect labour market attachment in the destination-country labour market, and 2) The study tests whether a differential labour market advantage of immigrants who have acquired education in the destination country can be interpreted causally. A threat to this interpretation can arise if it, e.g., is the more able that acquire education, and who would have gained high employment even in the absence of destination country education.

The three hypothesis that are examined are 1) The *transferability hypothesis* (e.g. Friedberg 2000; Chiswick & Miller 2009), i.e. the hypothesis that qualifications acquired in the country of origin are transferable to the labour market in the destination country, 2) The *skill complementarity hypothesis* (Chiswick & Miller 2003), and in particular, how language proficiency *complement* the usefulness of qualifications from the country of origin and 3) The *educational re-investment hypothesis:* that qualifications from the country of origin matters indirectly for labour market attachment in the destination country, because it makes investment in education in the destination country more feasible (e.g. Tubergen & Werfhorst 2007; Banerjee & Verma 2009), and the latter increases employment chances. It is important to stress that the three hypotheses are neither mutually exclusive nor exhaustive for explanations of how immigrant qualifications affect labour market status in the destination country, and potential other explanations are discussed.

The study is based on a unique combination of survey and register data on immigrants that have migrated from Iran, Pakistan and Turkey to Denmark. The results therefore cannot necessarily be generalized to other groups of immigrants. The register data are collected by public authorities for administrative purposes, and hence of a high quality. The survey questions allow for measurement of a flexible range of qualifications, while the register data contain reliable information on labour market history and educational attainment from the year of arrival in Denmark.

The results of this study confirm previous research by finding that qualifications from the country of origin are not directly transferable to the Danish labour market (e.g. Friedberg 2000; Chiswick & Miller 2009). As opposed to the findings in Chiswick & Miller (2003), it is found that good language skills are not complementary to origin country education level. Thus, neither the transferability nor the skill-complementarity hypotheses are supported. The results support the re-investment hypothesis though: Origin country education matters for labour market attachment by affecting educational attainment in the destination country (as e.g. in Chiswick & Miller 1994; Cobb-Clark, Connolly & Worswick 2005). The indirect effect is driven by a causal impact from education acquired in the destination country on labour market attachment. Therefore, in spite of the non-

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transferability and non-complementarity, immigrant skill-levels can be an informative signals for labour market assimilation, provided it is followed by re-investments in education. We stress that these results might be context specific, and in particular, employment status is only examined in an economic upturn of the destination country.

The next section briefly reviews immigration history in Denmark, before we turn to a description of previous evidence and underlying theory, followed by the empirical analyses.

2 Immigrants in Denmark

The present study considers a selected group of immigrants in Denmark: Immigrants from Turkey, Pakistan and Iran. The narrow focus is taken to increase response rates in a survey elicited to collect information on language skills and origin country skills (see further details below) and the three immigrant groups were among the largest at the time of the survey. The migration histories of these three immigrant groups are quite different. Immigration from Turkey and Pakistan started in the late 1960s and the early 1970s, where men came to work as unskilled workers ('guest workers') in the Danish manufacturing industry. In 1973, Denmark tightened its foreign labour recruitment policy and introduced measures to reduce the influx of foreigners. This left two major channels of legal entry to Denmark for several years: family reunification and asylum (Bauer et al. 2004). Other migration channels have been possible from time to time, such as the influx of workers from EU-member states from 2004, the Green Card from 2008 and other specialized work permit schemes. These are not very relevant, however, for the immigrant groups considered in this paper. Many of the male guest workers stayed in Denmark and brought their families to the country. Moreover, many of the children of Turkish and Pakistani guest workers have continued to find their spouses in their home countries (Schmidt and Jakobsen 2000). Since 2002 the immigration rules for family reunification have become even more restrictive and marriage migration from Turkey and Pakistan to Denmark has decreased (Schmidt et al. 2009).

Immigration from Iran began in the mid-1980s, when a large number of asylum seekers obtained residence permits in Denmark. Immigration flows from Iran were part of a more general increase in the number of refugees arriving in Denmark. In the latter half of the 1980s refugees generally came from Iran, Iraq, Lebanon and Sri Lanka, while the 1990s saw immigrants arriving from two new sources, namely from Bosnia-Herzegovina and Somalia (Pedersen and Smith 2002). Therefore, the Iranian immigrants differ from the Turks and the Pakistanis, something that might affect their employment prospects. To the extent that Iranians have suffered more during, and even taking part in, the Iran-Iraq war, they are more likely to have suffered in the destination country e.g. from post-traumatic stress syndrome. On the other hand, the Iranians are more likely to be better educated than the Turks and the Pakistanis (cf. e.g. the Worldbank databank), which is confirmed in our study as documented below. Therefore, it is difficult a priori to assess how migration background affects the employment prospects in Denmark. Unfortunately, the sample size does not allow for separate analysis by country, but we do control for country of origin in the analysis in the regression analysis[1].

3 Theory and previous evidence

The outset for the study is the empirical observation that non-western immigrants have lower labour market participation rates when compared to natives with a similar level of education (e.g. Borjas 1985; Aydemir & Sweetman 2007; see Hummelgaard et al. 1995 and Støren & Wiers-Jenssen 2009 for Danish and Norwegian results). Even when employed, immigrants experience a higher degree of overeducation than natives do, i.e. the formal education of immigrants more often than for natives exceeds that required in the job (e.g. Battu & Sloane 2002, 2004; Green, Kler & Leeves 2007; Kler 2007; Lindley 2009; and see Jacobsen 2004 and Nielsen 2011 for Danish evidence).

Another prevalent observation is that immigrant-native gaps in labour market performance tend to diminish with time spent in the destination country (e.g., Chiswick 1978; Borjas 1991; 2004; Aydemir and Sweetman 2007; Ferrer, Green and Riddel 2006; see Husted et al. 2001; Blume 2003 and Edin, Lalonde & Åslund 2000 for Danish and Swedish results). This might suggest that immigrants are accumulating human capital that is specific to the destination country and rewarded in the labour market. Yet, there is only rudimentary evidence on why the gaps arise on the first place, and in particular, the extent to which they are driven by under-utilization of skills from the country of origin.

The hypothesis of under-utilization of skills is at the heart of the overeducation literature referenced above (e.g Reitz 2007; Reitz, Curtis & Elrick 2014). An alternative explanation of the low level of utilization of skills acquired in the country of origin is that the foreign skills are not directly transferable to the labour market in the destination country (Friedberg 2000; Chiswick & Miller 2009), in the sense that the skills are not relevant in the adopted labour market. This is referred to as *the transferability hypothesis*. Limited transferability could arise when foreign skills are of a lower quality or with different relevance in the labour markets in the destination country. This may be obvious in the case of language skills, but appears to be the case as well for skills acquired on-the-job or through formal education (e.g., Chiswick 1978; Chiswick and Miller 2009; Duleep and Regets 1999; Friedberg 2000; Ferrer and Riddell 2008; Ferrer, Green and Riddel 2006; Hartog 2000).

Chiswick and Miller were the first to conjecture that utilization of skills acquired prior to migration should not be viewed independently of skill attainment in the destination country (Chiswick and Miller 1994; 2003): to utilize skills from the country of origin, skill investments in the destination country are first needed, the most dominant one being language investments. With better language proficiency, qualifications from the country of origin can be adapted in the local labour market. In this sense, qualifications acquired before and after migration are complements. Chiswick and Miller found evidence of a complementarity between language proficiency in the destination country and both education and labour market experience from the country of origin in Canada. We refer to this hypothesis as the *complementarity hypothesis*.

A related literature examines the relation between education from the country of origin and educational attainment in the destination country. From a theoretical viewpoint, the relationship could be both positive and negative, depending upon whether education obtained before and after migration are complements or substitutes in the labour market. The various hypotheses are therefore inter-related, since complementarity is more likely to arise when education from the country of origin are non-transferable (Banerjee & Verma 2009). Most empirical studies supports a positive relationship between foreign education and education acquired in the destination country (Chiswick & Miller 1994; Cobb-Clark, Connolly & Worswick 2005; Tubergen & Werfhorst 2007; Banerjee & Verma 2009), although there are examples of the opposite (Borjas 1982; Hashmi-Khan 1997).

The current study adds to the potential interdependency of pre- and post-migration skills by conjecturing that pre-migration qualifications may not be useful in local labour markets per se, but may be relevant for other investments, notably additional educational investments. Therefore, pre-migration qualifications may matter indirectly for labour market attachment in the destination country, because it boosts educational re-investments in the destination country. This hypothesis is referred to as the *re-investment* hypothesis. Because the hypothesis is closely related to the hypothesis of complementarity, it is useful to stress the difference: The hypothesis of complementarity states that post-migration skills enhance the labour market effect of pre-migration skills, i.e. beyond the effect of the two alone. In contrast, the hypothesis of re-investment states that it is only post-migration education that matters for labour market outcomes, but pre-migration education affects post-migration education. Pre-migration skills therefore might matter for labour market attachment in the destination country in three different ways: 1) *Directly*, if transferable, 2) Only when *moderated* by post-migration skill investments, in the case of complementarity, and 3) Indirectly, when *mediated* by post-migration skill investment. These hypotheses therefore provide three standard but different causal mechanisms on how pre-migration skills matter for labour market outcomes, as illustrated in a causal model in figure 1.

There are other potential explanations for the lower participation rates and higher overeducation rates for immigrants, than those just examined. Poor job search behaviour and job search channels may be candidate alternative explanations (Hartog 2000, pp. 139-140). This includes the role of immigrant's social capital, as measured e.g. by concentration of co-ethnic groups and other network (e.g. Stone, Gray & Hughes 2003; Borjas 1995). Alternative demand-drive explanations are non-recognition of foreign credentials by local labour market agencies, licensing bodies or employers (Reitz 2001, pp. 349-351), or employer discrimination or limited information about foreign credentials (Reitz 2007, p. 17).

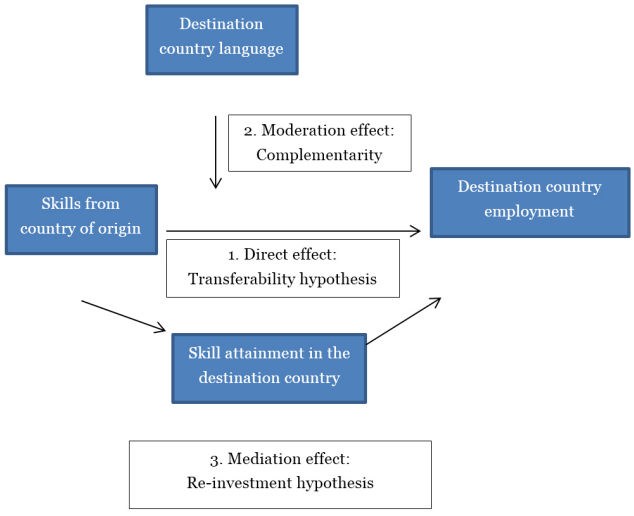

Figure 1. The causal models and underlying hypothesis

4 Data

We use survey data collected in 2006 combined with administrative data. The 2006 survey includes 18-45-year-old immigrants from Turkey, Iran and Pakistan and native Danes. A limited number of immigrant groups were selected to be able to offer the survey and interview in their native language. The particular groups were selected due to their size. Statistics Denmark defines immigrants as foreign-born individuals whose parents are also foreign-born or have foreign citizenship (Poulsen and Lange 1998). All the immigrants in this survey have arrived in Denmark before 2006. The immigrants included in the survey have come to Denmark as refugees or to join their families.

Roughly 1,000 from each of the immigrant groups were selected for interviews. The sample was drawn as a random sample from the Danish Civil Registration System (CPR) of individuals living in private households in Denmark. The CPR is intended to cover everyone who expects to stay in Denmark for at least three months, and has a very high coverage rate of individuals living in Denmark, although it is probable that it is a bit lower for the particular group of interest. The data collection process consisted of telephone interviews supplemented by face-to-face interviews. The immigrants received two letters: one in Danish and one in their most likely mother language; Turkish, Farsi or Urdu. Interviewers speaking the relevant language were available to conduct the interview if necessary. The response rate for immigrants was approximately 52%. More specifically, the response rate was 40% for the Pakistanis, 55% for the Turks and highest for the Iranians (60%), (Deding, Fridberg and Jakobsen 2008, p. 115). Education obtained abroad was measured in two ways in the survey: by number of years and by category. The latter was divided into five major groups: none, primary school, high school, vocational and advanced studies. The survey data are supplemented by data from high quality administrative registers collected by Statistics Denmark. The registers are used to obtain information on two key outcomes of interest: educational attainment and labour market outcomes in Denmark. The levels of education in the survey were constructed to be comparable with the level and fields of Danish educations as recorded in the registers. Danish language proficiency was assessed by the interviewer.

Educational attainment in the registers is recorded as the highest degree obtained in Denmark in 2005. If educational information is not available in 2005 (i.e. the year before the survey was conducted), for example because the immigrant was abroad at the time the register data were recorded, information from the previous year is used. Years of Danish labour market experience is registered in the administrative data from 1964 and onwards through compulsory payments to supplementary labour market pension funds. It is therefore much more accurate than most data used to measure labour market experience. Labour market status is recorded as the longest held socio-economic position in 2006, based on administrative income and tax information. We define the employed as those with labour market status recorded as wage-earners and self-employed. The alternative consists of both unemployed and immigrants who are out of the labour force, i.e. on public assistance but not actively seeking employment, e.g. on disability or pre-retirement pension.

Immigrants arriving after the year 2000 or before the age of 18 are excluded in order to allow some time for possible enrolment into an education both in the country of origin and in Denmark. Observations with missing or invalid data are also not included. Also, immigrants who have arrived in Denmark for other reasons than for family reunification or as refugees are deleted to rule out selection arising from economic migration. After these adjustments, the final sample consists of 761 immigrants.

5 Empirical strategies

We estimate three different models with different sets of covariates. Model I is a base model with only pre-migration characteristics. This model serves as a benchmark, and as sample selection arising from deliberate (employment-related) migration is only a minor issue, pre-migration characteristics can likely be taken as exogenous to destination country labour market status. A similar model has been used to test the transferability hypothesis but we would argue that it is inadequate for the purpose, as it provides estimates of the total effect of pre-migration qualifications, including the indirect effects from qualifications acquired in the country of origin. Model II therefore adds language proficiency and language proficiency interacted with foreign education to model I in order to be able to explore the complementarity hypothesis. The hypothesis is tested by testing significant interaction effects. Model III adds destination-country qualifications to model I. Model III is estimated accounting for non-random selection into education in the destination country. Model III sheds light on both the transferability hypothesis, by examining the impact of qualifications acquired in the country of origin, controlling for qualifications acquired in the destination country, and the re-investment hypothesis, by examining the direct impact of qualifications acquired in the destination country.

6 Empirical results

Descriptive statistics

Table 1 contains the means for the main variables used in the analyses. The variables are divided into four groups: immigration characteristics, background demographic characteristics, qualifications from the country of origin and from destination country, respectively, and finally employment status in 2006.

The table confirms that Turks have a longer history of migration to Denmark, while Iranians to a large degree have migrated following the Iran-Iraq conflict in the mid-1980s, and Pakistanis have migrated more recently. There are other notable differences between immigrants from Iran and from the two other nationalities. Turks and Pakistanis have typically migrated to Denmark to achieve family reunification, as opposed to Iranians, who are primarily refugees. The Iranians also have better English language skills and though they have stayed in Denmark for a shorter time than for example many of the Turks, they are more affluent in the Danish language (reported by the interviewer) at the time of the survey.

The next set of variables describes human capital acquisition in the country of origin and in the destination country, respectively. It is observed that 43% of the immigrant groups considered arrived in Denmark with at most primary schooling, while 19% has further education, i.e. either a vocational or an advanced degree from their country of origin. The distribution of educational attainment obtained in the destination country is more dispersed with two thirds who have not completed any schooling nor education and 25% who have completed further education. Immigrants generally have a very limited amount of labour market experience from their home country at the time of arrival. This is partly explained by their relatively young age-at-arrival.

Table 2 shows that employment rates are highly correlated with foreign education level: 46% of the immigrants without any education are employed in 2006, whereas the corresponding figure is 64% for those with an advanced degree as the highest completed level in

Table 1. Mean sample characteristics by country of origin

	All	Pakistan	Iran	Turkey
Immigration characteristics:				
Arrived before 1990	0.427	0.279	0.553	0.360
Arrived 1990-2000	0.572	0.721	0.447	0.639
Refugee	0.360	0.043	0.748	0.042
Family reunification, spouse	0.503	0.765	0.230	0.694
Family reunification, parent	0.132	0.191	0.020	0.250
Age at immigration	23.959	24.137	25.289	21.894
Years since immigration	14.766	13.322	16.003	14.093
Unemployment in the year of arrival	8.477	8.366	8.501	8.527
Background characteristics:				
Woman	0.477	0.557	0.403	0.521
Iran	0.449	0.000	1 000	0.000
Pakistan	0.240	1 000	0.000	0.000
Turkey	0.311	0.000	0.000	1 000
From rural area	0.277	0.377	0.064	0.508
From a larger city	0.440	0.344	0.687	0.156
From a minor city	0.282	0.278	0.248	0.334
Speaks English well	0.173	0.191	0.248	0.050
Speaks Danish well	0.542	0.431	0.736	0.347
Qualifications from country of origin:				
No education	0.045	0.054	0.017	0.080
Primary education	0.389	0.426	0.175	0.669
High school degree	0.370	0.295	0.543	0.177
Vocational degree	0.061	0.049	0.091	0.029
Advanced degree	0.132	0.174	0.172	0.042
Experience (years)	1 833	1 393	2 442	1 292
Destination-country qualifications:				
No education	0.670	0.857	0.508	0.758
Primary education	0.052	0.060	0.008	0.110
High school degree	0.018	0.005	0.026	0.016
Vocational degree	0.095	0.032	0.157	0.055
Advanced degree	0.162	0.043	0.298	0.059
Experience (years)	4.306	3.373	4.095	5.330
Employed in 2006	0.615	0.541	0.650	0.621

Notes: 756 observations.

Table 2. Employment rates for given level of pre- and post-migration qualifications

Foreign education		Destination country education		Destination country language	
None	0.457	None	0.524	Not good Danish	0.448
Primary	0.554**	Primary	0.641	Good Danish	0.757**
High School degree	0.689	High School degree	0.571		
Vocational degree	0.617*	Vocational degree	0.754**		
Advanced degree	0.640**	Advanced degree	0.910**		
Foreign labour market experience		Destination country labour market experience			
0-2	0.603	0-2	0.378		
3-5	0.658	3-5	0.667**		
6+	0.632	6+	0.910**		

*Notes: 756 observations. Tests for significant difference to lowest group: * p < 0.1, ** p < 0.05*

their country of origin. A similar picture of differentials is observed with respect to the level of education completed in the destination country, yet at an overall higher level of employment. Large and significant differences in employment rates are also present between immigrants with and without good Danish language skills and between immigrants with no or some Danish labour market experience. Those with foreign labour market experience have slightly higher employment rates, but the differences are not statistically significant.

The baseline model: The impact of foreign qualifications

In line with many previous findings, table 3 shows that country of origin matters for employment status, as do age at immigration, gender and originating from rural areas in their country of origin. Immigration status is not significant, and although the likelihood of being employed increases with years since immigration, which in previous studies has been interpreted as a sign of assimilation, the effect is small and insignificant. It is worth mentioning though that without controlling for age at immigration, the effect of years since immigration is large, positive and significant.

We see that even though the impact of labour market experience from abroad is of the expected sign, the effect is both of a limited magnitude and insignificant. However, both immigrants with a high school degree and immigrants with an advanced degree from their country of origin are more likely to be employed, raising the probability by 11 and 13 percentage points, respectively. These are very large employment effects, especially when compared to a baseline probability of around 60%. Therefore, foreign education level matters, and the next set of models explore reasons why.

The complementarity hypothesis

Columns four and five in table 3 show the results from the model where Danish language proficiency is included both separately and interacted with foreign education level. It shows that most coefficients are of the expected sign, i.e. that language proficiency generally improves the chances of being employed *and* that the effect of foreign education increases with good destination-country language proficiency. The latter are, however, not significant. As stated previously, this is not to say that language per se does not matter, on the contrary: The independent effect of good Danish language proficiency on the probability of employment versus non-employment is large and significant as expected. But there is no significant sign of complementarity with their foreign education level, i.e. better language proficiency does not seem to help immigrants in job based on their home-country qualifications. It is worth mentioning that a similar exercise has been conducted with English language proficiency as potentially being complementary to foreign education level. As many Danes speak English reasonably well, good English language proficiency may also open doors to the Danish labour market. However, both the independent effects of English language proficiency as well as the interactions with foreign education are insignificant in the employment model.

The transferability and the re-investment hypotheses

To explore the transferability and the re-investment hypotheses, we need to add educational attainment obtained in Denmark to the employment model. However, this creates an evaluation problem, because it is likely that immigrants that acquire education in Denmark differ from immigrants that do not, in ways that are important for their future employment prospects: factors that are hard to measure like

Table 3. Model I & II: Logit models for being employed. Marginal effects

	Baseline model (I)		Language complementarity model (II)	
	Estimate	**Std.err.**	**Estimate**	**Std.err.**
Foreign labour market experience	0.002	(0.005)	0.002	(0.005)
Foreign high school degree (HS)	0.109**	(0.042)	0.045	(0.056)
Foreign vocational degree (Voc)	0.057	(0.072)	0.014	(0.108)
Foreign advanced degree (Adv)	0.125**	(0.050)	-0.018	(0.091)
Woman	-0.212**	(0.038)	-0.190**	(0.037)
Iran	-0.096	(0.060)	-0.149**	(0.056)
Pakistan	-0.091*	(0.048)	-0.010**	(0.047)
From rural area	0.086**	(0.042)	0.059	(0.042)
From a larger city	-0.018	(0.046)	0.004	(0.044)
Age at immigration	-0.012**	(0.004)	-0.005	(0.004)
Years since immigration	0.006	(0.003)	0.003	(0.003)
Refugee	-0.030	(0.071)	-0.010	(0.070)
Family reunification, spouse	-0.074	(0.054)	-0.042	(0.053)
Speaks Danish well (SDW)			0.192**	(0.052)
SDW * HS			0.057	(0.078)
SDW * Voc			0.019	(0.141)
SDW* Adv			0.122	(0.112)

Note: 756 observations. Robust standard errors in parenthesis.
** p<0.1; ** p<0.05.*

health, motivation and perseverance may affect both the decisions to take a Danish education and the chances of employment. This would bias the results in terms of a more positive coefficient on education acquired in Denmark. For simplicity, we model education as a binary variable: having attained any education at the tertiary level in Denmark or not, and refers to it as further education. To model the two binary outcomes, employment and further education, jointly, we use a bivariate probit model (e.g. Wilde 2000), as a bivariate logit model is not as flexible[2]. The bivariate probit model allows for the selection problem just described: there are factors which affect employment, that we do not observe, that are also correlated with unobservable factors affecting educational attainment.

The results from the bivariate probit model are presented in table 4. We do not want to emphasize the magnitude of the estimated effects too much, as the method in general is data-requiring and we have a relatively small sample size. Yet, we can readily interpret the sign of the effect, as the sign on a coefficient reflects the sign of the impact of that variable on the outcome. To enhance statistical identification of the model, we use a natural experiment (see e.g. Angrist & Krueger 2001): that the incentive to undertake education is related to the business cycle upon arrival in the destination country. If it is hard to find a job, more are induced to obtain education. We describe the business cycle by the national unemployment rate in the year of arrival. This is useful, if unemployment at arrival does not affect immigrant's later employment outcomes, something that is confirmed in several studies (e.g., Chiswick, Cohen and Zach 1997; Clark and Lindley 2006), and we find similar results. In table 4 it is seen from the last row that the unemployment rate at arrival has a positive and significant effect on attainment of further education as expected.

Column five in table 4 shows that further education obtained in the destination country has a large, positive and significant effect on employment, when accounting for selection into education. To assess whether it matters to control for selection into education on unobservable variables, we also present results from a univariate model for comparison. The univariate probit model is presented, as opposed to a logit model used above, because the parameters of the univariate probit are comparable to the parameters in the bivariate probit. The simple probit model also reveals a positive association between education and employment, yet on a smaller magnitude than in the bivariate model, and notably without accounting for selection into education (see column 1).

The examination of the re-investment pathway is completed by looking at the equation with further education as *outcome* in column three: It is seen that education from the country of origin matters for acquisition of education in the destination country: Immigrants with a high school degree or an advanced degree from their home country are more likely to complete further education in the destination country than are immigrants without education in their home country.

In contrast, there is no evidence of the transferability hypothesis: The direct impact of education from the country of origin on labour market attachment is small and insignificant, once education from the destination country has been controlled for.

Robustness analyses

A source of bias might arise from the fact that some immigrants may have severe health problems which would limit both potential destination-country educational attainment and worsen their labour market situation. As a robustness check, we have repeated the estimations reported in table 3 and 4 when individuals who have some kind of health problem are excluded. 184 immigrants with various indications of poor health are deleted, which is a substantial fraction of the sample[3]. In this model, there are obviously fewer significant differences, but the main message goes through: Foreign education matters for employment status in Denmark, but the relation seems to be driven by well-educated immigrants acquiring more education in Denmark. These results are available upon request from the authors.

7 Discussion

Our results suggest that immigrants from non-western countries arriving with foreign education have better employment outcomes. However, their employment outcomes are better not because of

Table 4. Model III: Probit models for being employed and educated.

	Probit		Bivariate probit (model III)			
	Employment		Further education		Employment	
	Estimate	Std.err.	Estimate	Std.err.	Estimate	Std.err.
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign experience	0.007	(0.017)	-0.008	(0.020)	0.010	(0.016)
Foreign high school degree	0.217*	(0.129)	0.539**	(0.145)	-0.014	(0.117)
Foreign vocational degree	0.107	(0.225)	0.307	(0.275)	0.020	(0.208)
Foreign advanced degree	0.194	(0.172)	1.047**	(0.179)	-0.174	(0.150)
Woman	-0.635**	(0.109)	0.339**	(0.122)	-0.578**	(0.010)
Iran	-0.373**	(0.186)	0.559**	(0.218)	-0.463**	(0.171)
Pakistan	-0.202	(0.137)	-0.321*	(0.182)	-0.051	(0.128)
From rural area	0.219*	(0.128)	-0.276	(0.168)	0.109	(0.114)
From a larger city	-0.018	(0.135)	0.072	(0.134)	0.048	(0.125)
Age at immigration	-0.028**	(0.014)	-0.030*	(0.016)	-0.015	(0.012)
Years since immigration	0.003	(0.011)	0.068**	(0.013)	-0.024**	(0.010)
Refugee	-0.166	(0.213)	-0.073	(0.231)	-0.270	(0.191)
Family reunification, spouse	-0.130	(0.157)	-0.619**	(0.178)	0.075	(0.141)
Further education	0.882**	(0.141)			2.168**	(0.095)
Unemployment in the year of arrival			0.049**	(0.023)		

*Note: 756 observations. * p<0.1; ** p<0.05.*

their foreign qualifications per se, but because they acquire more education in the destination country. For the case of Pakistani, Iranian and Turkish immigrants in Denmark, our results therefore do not support neither the transferability hypothesis (Friedberg 2000, Chiswick & Miller 2009), stating that qualifications from the country of origin are transferable to destination country labour markets, nor the complementarity hypothesis (Chiswick and Miller 1994; 2003), stating that a high level of language proficiency acts as a mediator of home-country education.

We examined whether the results were subject to specific biases by taking a potential non-random selection of the group of immigrants that acquire education in the destination-country into account, and by excluding immigrants with health problems. None of these analyses suggested that the main results are invalid.

There are other potential selection issues in this study, as in most immigration studies. For one thing, there is the problem of selective migration and re-migration. Selective migration describes the situation that it is a non-random population that succeeds in migrating to a given country. Re-migration might not be random either, and it has been postulated that mainly the most successful immigrants will re-migrate to their home country or another country (e.g., Edin, LaLonde and Åslund 2000). A related problem is that the immigrants arriving in different years might have different characteristics (Borjas 1985). As our sample is a cross-sectional sample, thereby conditioning on immigrants being observed in Denmark in 2006, we cannot account for neither the selective migration nor the re-migration problem and we cannot distinguish cohort effects from the effect of years since immigration. We argue that selective migration is likely to be of limited concern when considering refugees and family reunifications, as opposed to economic migrants. In addition, recent Swedish evidence suggests that re-migration rates are very low for non-OECD immigrants and that it does not bias assimilation results for this group of immigrants (Edin, LaLonde and Åslund 2000). As the nationality of immigrant groups arriving in Sweden broadly resembles the Danish experience for a large part of the period in consideration, we do not consider this to be a major problem in our study. Finally, previous studies tend to find that the effect of years since immigration is upwardly biased in cross-sectional studies (Borjas 1985, 1991). As the effect of years since immigration is negative in our study when accounting for destination-country qualifications, it is a conservative estimate of the *lack* of assimilation occurring when not accumulating specific skills such as destination-country language proficiency and formal education.

Another potential source of bias may arise from non-random non-response. The response rate used in the survey is relatively high by international standards (51%). Yet, a previous study has documented that the response rate is particularly high for the well-educated and the employed (Deding, Fridberg and Jakobsen 2008). This implies that the relationship between destination-country education and employment is biased upwards. Even though non-response has not

been addressed directly, we believe such a bias to some extent is also accounted for in the estimates that accounted for endogeneity of destination-country education. However, a direct analysis of non-response bias has not been conducted.

Even though the results suggest that interventions helping immigrants through the Danish education system may have positive effects, such interventions are costly, in particular if immigrants already possess useful skills. An alternative would be to explore the reason for the lack of an effect of home country skills. We do not know from the current study whether the missing effects of foreign experience and education arise because immigrant skills are underutilized in the Danish labour market, or whether they are just not very useful in the Danish labour market. Recent studies find that highly-educated immigrants to a large extent are over-educated relative to the requirements of the jobs they hold (Nielsen 2011; Nielsen, Ladenborg, Mateu and Kleif 2012). These results hold for both immigrants with foreign acquired degrees and degrees acquired in Denmark.

8 Conclusion

We have found that foreign qualifications have no direct effect on labour market outcomes once destination-country human capital is accounted for. Therefore, there is no evidence for the transferability hypothesis. Yet foreign qualifications matters indirectly for employment status in the destination country because it affects destination country qualifications. We explored two pathways, which we labelled the language complementarity hypothesis and the re-investment hypothesis. We found evidence for the latter but not the former. This suggests that there is room for improvement in interventions targeting a better utilization of immigrant's education, whether foreign or Danish, but this is left for future research.

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Notes

1. We include an indicator variable for each country of origin in all estimations. It allows for different employment levels for immigrants from the different countries of origin. In contrast, an analysis conducted separately for each country of origin would have allowed all associations in the estimations to differ by country of origin, e.g. the impact of e.g. foreign education on employment.
2. Bivariate probit and logit models are statistical models, where two binary outcomes are modelled simultaneously. Technically the bivariate probit model is constructed using the bivariate normal distribution for the model: One dimension is describing how the probability of employment varies with a given set of covariates and the other how the probability of education varies with a given set of (potentially other) covariates. The key advantage is that the model allows for a correlation between unobserved variables (i.e. variables not included in the covariate sets, e.g. because they are not measured) that we suspect determine both outcomes. In our case we model the incidence of employment and further education, and the unobserved variables could be variables like motivation, health or language proficiency.
3. More specifically, we remove individuals who receive sickness benefits or disability pension as well as individuals with an unidentified socio-economic position, either as registered in the administrative data or self-reported in the survey (147 observations), those who report they are not employed because of sickness (34 additional observations) and those who report that they have not been able to use their qualifications due to sickness (3 additional observations).

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