



The Economic Return to Labour Market Experience of Immigrants in Sweden

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Abstract

This study focuses on the value that employers assign to immigrants' labour market experience, from both before and after immigration, using a surveyed representative sample of the Swedish immigrant and native populations. A novel feature of the survey is that it contains a measure of immigrants' actual years of labour market experience, including about work before immigration. Previous research has, in contrast, relied on so-called potential measures, risking bias in the analyses. For immigrants, results show that only pre-immigration labour market experience from the Nordic countries has a positive return. Results also show that return to labour market experience after immigration does not depend on whether the individual acquired Sweden-specific human capital before or with the entry into the labour market. Natives and immigrants, as well as immigrants with and without schooling or upbringing in Sweden, have parallel wage trajectories across labour market experience years, with immigrants being at a stable disadvantage. This is interpreted to be caused by immigrants being sorted into jobs with worse opportunities to acquire new human capital compared with natives.

Keywords International migration · Immigrants · Labour market · human capital · Sweden

1 Introduction

Immigrants are disadvantaged across European labour markets, with worse outcomes relative natives with a comparable amount of knowledge and skills, i.e., human capital (Midtbøen, 2015). For the individual migrant, an underutilization of human capital implies that they don't get to reach their full potential on the labour market. It is also detrimental for society at large since underutilization leads to external economic costs (Tani, 2019).

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Research has highlighted that human capital is differently valued on the domestic labour market depending on where it was acquired (Chiswick, 1978; Duleep & Regets, 1999; Friedberg, 2000). The key insight is that the foreign human capital that immigrants bring with them is not perfectly transferable across national contexts, yielding lower returns. Human capital acquired in the destination country has on the other hand the potential of being fully used and appreciated. In addition, it contains new, destination-specific, knowledge conceivably resulting in even higher returns. However, a shortcoming in previous research is that it has uses so-called potential measures of labour market experience – approximations based on migration age and duration of stay in the destination country – when estimating the economic return to the human capital of immigrants. Using potential measures creates a risk of bias in the analyses as the estimations of return to experience are diluted over inactive years. The bias is especially critical when comparing populations with different labour market attachment (Mincer & Polachek, 1974), e.g., immigrants and natives.

With representative surveys of both immigrants (defined as foreign-born individuals) and natives in Sweden containing information on actual labour market experience, this study tests some of the most central predictions of the country-specific human capital approach. The study is guided by two research questions. First, what is the return to immigrants' labour market experience from before immigration, and does it vary with origin? Second, what is the return to immigrants' labour market experience in Sweden, how does it compare to natives' return, and does it vary depending on whether immigrants acquired destination-specific human capital before or after labour market entry? This study is the first to measure the return to immigrants' actual labour market experience from both before and after migration. Doing this, the analyses contribute to the research field of labour market integration because the use of actual measures makes it possible to estimate the return to labour market experience without conflating active and inactive years, and to compare the earnings trajectories between immigrants and natives over their work lives.

The Swedish case is relevant to a broader international audience because of the country's large and diverse migrant population, allowing for group comparisons, as well as its integration policy. Swedish reception of immigrants has a clear focus on improving immigrants' human capital to facilitate labour market participation (Borevi, 2014; Wiesbrock, 2011). Comparatively, the country has an open labour market that immigrants can access upon arrival (Huddleston et al., 2015), and provides important support systems such as comprehensive language training (Kennerberg & Åslund, 2010) and adult education (Nygård, 2021). Immigrants should, based on this, have ample opportunities to both use their previous knowledge and skills, as well as gain new ones, in the Swedish setting.

The results in this study largely confirm the expectations based on the country-specific human capital approach. However, they also indicate that although the unequal return to labour market experience is an important determiner of immigrants' labour market outcomes, the gap between immigrants and natives in the Swedish labour market is caused by factors other than mere human capital valuation.

2 Theory and Previous Research

2.1 Country-Specific Human Capital

Human capital theory explains differentials in the labour market by referencing different levels of knowledge and productive skills among individuals (Becker, 1962; Mincer, 1974). Individuals invest in their human capital by education and on-the-job training, increasing their productivity and getting higher labour markets rewards. Some human capital is specific to the occupation or the employer, and some is general for the entire labour market. To this, the country-specific human capital approach adds that human capital is less than perfect at transcending national borders and is as a result valued lower in other countries than where it was acquired (Chiswick, 1978; Friedberg, 2000).

From this key insight stems the two central predictions for the process of labour market integration. First, that immigrants with comparable overall level of human capital as natives will have an initial worse labour market position, and second, that with time spent in the new country, their situation will improve and the gap to natives will be reduced. This has been shown to hold for labour market outcomes such as employment (Bevelander, 1999; Zwysen, 2019) and earnings (Constant & Massey, 2003; le Grand & Szulkin, 2002; Lubotsky, 2007).

The theoretical explanations around these predictions either emphasise the country-specific part of human capital that cannot be easily transferred across national context, creating a discrepancy between foreign human capital and domestic labour market demand, or that the quality of human capital, specifically the human capital that is attained in the national education system, can vary across countries (Chiswick, 1978; Chiswick & Miller, 2009b; Friedberg, 2000). The convergence between immigrants and natives relies on individuals engaging in different activities to acquire destination-specific human capital after immigration. It is by participating in the receiving society – learning the new language, attending education, getting information about labour institutions, receiving relevant on-the-job learning etc. – that the relevant knowledge and skills are developed (Duleep & Regets, 1999; Helgertz, 2013; Kanas et al., 2012; Piracha et al., 2022; Zeng & Xie, 2004).

The aim of this study is to test the central predictions of the country-specific human capital by studying immigrants' return to labour market experience. Previous research that estimated separate returns to experience from before and after immigration exist for Australia (Chiswick et al., 2005), Canada (Buzdugan & Halli, 2009; Chiswick & Miller, 2003; Schaafsma & Sweetman, 2001; Skuterud & Su, 2012), Germany (Basilio et al., 2017), Israel (Friedberg, 2000), Italy (Dell'Aringa et al., 2015), Norway (Hardoy & Schöne, 2011), Portugal (Cabral & Duarte, 2016), Spain (Sanromá et al., 2015), and the USA (Chiswick & Miller, 2009a; Stewart & Hyclak, 1984). The overall conclusion of this research is that, first, return to pre-immigration labour market experience is zero or close to zero. And second, that the return to labour market experience in the destination country is, for immigrants, either on par with or slightly below that of natives. Studies that explicitly compare non-linear patterns have also shown that the return is higher for the earlier years of domestic labour market experience.

A problem in previous studies is a tendency to use so-called potential labour market experience as an approximation for actual experience, by assuming continuous employment before and after immigration. Almost all above referenced studies use potential measures of labour market experience in the destination country, and all use potential measures of pre-

immigration experience. In practice, as individuals do have inactive years, using potential measures dilutes the effects of human capital investment in years of employment over the years of unemployment.

This creates the risk of two important biases. First, because of the dilution, estimates of the return to experience risk becoming downward biased, or even negative (e.g. Basilio et al., 2017; Friedberg, 2000). Of course, a negative return is not possible within human capital theory as it implies that individuals either become less productive with experience or that employers perceive experience as a negative productivity signal. Second, and as already noted by Mincer and Polachek (1974), when comparing populations with different levels of labour market attachment, if one population, e.g. immigrants compared with natives, has more inactive years, the dilution will yield unequal results, biasing the comparison. The use of potential measures additionally ignores the heterogeneity in experience of immigrants by assuming that all have had the same labour market trajectory. To avoid the bias of potential measures and to more directly focus on the individual, the forthcoming analyses use a measure of actual work experience.

Using actual measures of work experience, and avoiding the biases described above, makes it possible to answer research questions on human capital returns more accurately. Specifically, by not conflating time spent in a country with work experience in that country, it becomes possible to better apprehend differential returns to work experience across different populations, and to compare earnings trajectories without including unemployed years.

2.2 Experience Before Immigration

The less than perfect transferability of human capital across national context implies that the return to labour market experience acquired before immigration will vary depending on where it was acquired. Based on this argument, there will be a variation due to institutional distance between the destination and origin societies' educational systems and labour markets. Labour markets that are embedded in similar institutional arrangements as the destination country, have a similar education system, and the same language, will all have less human capital transferability issues (Duvander, 2001; Kanas & van Tubergen, 2009; Kanas & Tubergen, 2014; Sanromá et al., 2015). This importance of institutional closeness has likely increased with time and the changes of the labour market that put greater emphasis on destination-specific, as well as informal/softer, skills (Reitz, 2001; Rosholm et al., 2006; Siebers & van Gastel, 2015).

Based on the quality argument, variation is conceived to be connected to economic development or educational spending in the countries of origin (Bratsberg & Terrell, 2002; Hanushek & Kimko, 2000), or the overall skill level of the origin population (Aleksynska & Tritah, 2013). Immigrants from more economically advanced or skilled countries would, according to this argument, have gone through higher quality education and worked in more technically advanced jobs that are in closer resemblance to the Swedish labour market. Employers will appreciate this discrepancy in actual skills given the same quantity of experience and reward the labour market experience accordingly.

It should be pointed out that the countries of the world are not geographically laid out at random, but rather have their economic development, institutional variation, as well as migration patterns embedded in the same historical economic and social processes (Castles, 2010; Czaika & De Haas, 2015). Because of this, explanations that promote either institu-

tional distance or quality differences are often entangled and not unique in their predictions of which origins will have higher or lower returns to human capital, with the same institutionally closer and richer countries predicted to be on top regardless of explanation (e.g. Buzdugan & Halli, 2009; Hardoy & Schöne, 2011; Sanromá et al., 2015).

For Sweden, the institutional, and linguistic, closeness to its geographic neighbours compared with the rest of the Western countries will offer some insights into which explanation is the strongest in this case. The expectations are thus that immigrants will have a return to their labour market experience from before immigration somewhere between zero and their return to domestic labour market experience, and that there will be variation across origins, with either Nordic but not Western, or Nordic and Western countries, yielding the highest returns.

2.3 Experience in the Destination Country

In the destination country, natives and immigrants may have different returns to labour market experience. An average native will with labour market experience acquire job-specific, firm-specific, and general human capital. But, being born, raised, and educated in the country, a native will not acquire any new country-specific human capital. An average immigrant will, on the other hand, also learn new country-specific knowledge and skills on the job, e.g. the language, national standards, and customs. Because of this additional human capital acquisition, an immigrant will increase his or her human capital more than a comparable native in the destination country, and the return to a unit of labour market experience should be higher for immigrants compared with natives (Duleep & Regets, 1999). This should especially happen for the early years of labour market experience when this accumulation occurs.

Differences in return to experience should occur within the immigrant population, depending on whether they acquired destination-specific human capital before or after entry into the domestic labour market (Clark & Lindley, 2009). Immigrants who had their upbringing or schooling in the destination country will already be familiar with the e.g. the language, learning less new things on the job.

These differences rely on immigrants not being sorted into jobs where there is an overall lower rate of on-the-job training, i.e. human capital accumulation. However, the structure of the labour market is not only unequal in rewards but also by how much employers are interested in investing in their employees depending on the levels of human capital, job-specific requirements, and industry (Becker, 1962; Doeringer & Piore, 1971; Goldthorpe, 2000). In Sweden, empirical evidence points towards a strong correlation between the educational requirements of the job and investment in additional training (Korpi & Tählin, 2021). If immigrants, especially newly arrived, are sorted into jobs with few opportunities to gain new human capital – and it appears that they generally are in Western labour markets (Fullin & Reyneri, 2011; Hudson, 2007; Kogan, 2004) – then they can on the contrary have lower returns to labour market experience compared with natives, becoming stuck in employments with both lower wages and a lower probability for future upward mobility.

There may also be individual strategies among immigrants who neither got their schooling nor upbringing in Sweden – that they make sure to invest in Sweden-specific human capital before entry into the labour market, knowing that they would otherwise start at an even lower position (Emilsson & Mozetič, 2019). Individuals, aware of the job market they

are facing, appreciate the low opportunity costs to first spend some time acquiring new relevant knowledge and skills, and act accordingly (Damelang & Kosyakova, 2021; Van Tubergen & van De Werfhorst, 2007). This would result in immigrants learning more than natives during their first time in a new country, but that a cross-sectional analysis of years of labour market experience will have a hard time capturing the underlying process of this.

For return to labour market experience in Sweden, the first expectation is that there should not on average be any difference between natives and immigrants. However, immigrants, and especially individuals who did not acquire Swedish-specific human capital before labour market entry through either education or upbringing, will in total gain more human capital during the early years of labour market experience and thus have higher returns. But this is contingent on them not simultaneously being sorted into low-learning jobs, and that the learning to a substantial degree happens on the job.

3 Analytical Strategy

3.1 Data

Data comes from a combination of two related surveys: the Level-of-Living Survey 2010 (LNU2010) and the Level-of-Living Survey for Foreign-Born and their Children (Migrant-LNU). LNU2010 samples 1/1000 of the Swedish population between ages 18–75 in Sweden, and contains, among other things, high quality data on the respondents' labour market situations. Migrant-LNU is a separate but complementary study to LNU2010 that was conducted on the adult (18+) immigrant population at about the same time (most interviews were in 2011). The overall response rates were 61.5% for LNU2010 and 49.9% for Migrant-LNU (more information and documentation can be found at the Swedish Institute for Social Research, 2017).

A difference between the surveys is that Migrant-LNU used a stratified sampling strategy (twenty-one strata of seven regions of origin times and three age categories) to better facilitate group comparisons. To accommodate the difference in sampling, as well as differing non-response rates both between surveys and across individuals with different attributes within surveys, all analyses are weighted with a post-stratification weight that accounts for differing non-response rates across demographic variables in the samples. For Migrant-LNU, the weight also accounts for the stratified sample technique. All values with the exception of number of respondents are therefore weighted in the coming analyses.

Migrant-LNU's definition of a foreign-born, and therefore the definition of an immigrant in this study, is an individual who is not born in Sweden, with parents not born in Sweden. Conversely, a native is defined as a person living in Sweden and who is born in Sweden, or born abroad with at least one parent born in Sweden. The used analytical sample consists of employed individuals aged 20–64 who were employed at the time of the surveys. After exclusion of immigrants from the LNU2010-sample to not double-count, and minor case-wise deletion on missing variables, the total analytical sample size is 3871 individuals, consisting of 2175 natives and 1696 immigrants for each survey.

Notably, Migrant-LNU only sampled immigrants who in official registers been living in Sweden for at least five years, making it not possible to generalise this study's findings to newly arrived immigrants. This exclusion also means that the data and analyses miss

individuals who emigrated during their first five years in Sweden, perhaps due to bad labour market outcomes. The study will continue to use the term immigrants to save space, but the results are only valid for those immigrants who currently live in Sweden and have been in country for more than five years.

3.2 Regression Models and Variables

Models are derived from the Mincer earnings function (Mincer, 1974) and extended with country-specific components (Friedberg, 2000) and additional controls to analyse the returns to labour market experience for natives and immigrants with ordinary least square (OLS) regressions. The Mincer earnings function operationalises the total amount of accumulated human capital for an individual as a function of years in education and labour market experience, the latter squared to account for the fact that on-the-job training happens predominantly in the beginning of the work-life. Friedberg (2000) in turn, divided the place of acquisition of the education and experience based on the notion that foreign and domestic human capital will be unequally valued in the domestic labour market. The basic models are as follows.

Natives:

$$\text{Log wage} = \alpha + \beta_1 \text{Work in Sweden} + \beta_2 \text{Age} + \beta_3 \text{Education years} + \beta_k [\text{Controls}] + \varepsilon \quad (1)$$

Immigrants:

$$\begin{aligned} \text{Log wage} = & \alpha + \beta_4 \text{Work before immigration} * \text{Region of origin} \\ & + \beta_5 \text{Work in Sweden} + \beta_6 \text{Immigration age} + \beta_7 \text{YSM} + \beta_8 \text{Education years} \quad (2) \\ & + \beta_9 \text{Place of highest education} + \beta_k [\text{Controls}] + \varepsilon \end{aligned}$$

Log wage is the natural logarithm of hourly wage. Wage is measured in the Level-of-Living surveys as all reported forms of compensation during a specific time period, e.g. an hour or a month, and divided with average working hours for that time period.

The labour market experience variables work in Sweden and work before immigration are measured using the employment biographies of LNU2010 and Migrant-LNU, respectively. In the biographies, respondents provided information on start and end dates for each employment. The variables work in Sweden and work before immigration are sums of the durations of all the employments for each respondent. By definition in this study, all work experience for natives is in Sweden, likewise for all the experience after immigration for immigrants, even if it is in another country.¹

For natives, the model includes age. For immigrants, this is divided into immigration age and years since immigration (YSM).² These variables will capture the number of years each individual has had without being in either education or employment. It should be noted that age for natives and YSM for immigrants have a common definition in that it is time spent living in Sweden (after birth or immigration). Because of this, it is possible to have

¹ For immigrants in the sample, 2%, or an average of 0.307 years, of work experience after immigration is abroad.

² Because Age=Immigration age+YSM, a cross-sectional regression model cannot contain all three variables at the same time for immigrants.

a common variable for age/YSM called years in Sweden in regression analyses containing both samples.

Education years is continuous variable of the total number of years spent in education. The advantage of using a continuous, rather than a categorical, measure of education as is done in the Mincer earnings function, is that it completes the biography of the respondents in the sample, so that the variables immigration age and YSM truly capture years spent without being in either education or employment. A categorial variable, measuring highest level of attained education, is on the other hand likely better to measure the amount of human capital gained through education. As a robustness check, there will be an additional regression model with categorical education.

For immigrants, there would ideally have been a variable that measured the education level at the point of immigration, but unfortunately Migrant-LNU does not contain such information. Instead, a variable that measures whether the highest education level was achieved in Sweden or abroad (i.e. before immigration) is included and will work as an approximation of the country-specific part of educational attainment.

As control variables, the purpose of age/YSM, immigration age, years of education is to have a full coverage of all possible states over the life-course of an individual in the data (unemployed, in education, and employed) and to make sure that any collinearities between the variables do not affect the estimation of return to work experience (as would happen without controls or with potential measures). It is possible to argue that a proper estimation of the effect of age/YSM, immigration age, and years of education on wage should include quadratic terms or even be categorical. However, since the topic at hand is labour market experience, the proper choice of variable specification must be related to their purpose as controls. All three variables have been tested in quadratic polynomial expressions without it affecting the estimation of the return to work experience. For parsimoniousness, control variables have therefore been kept as simple as possible.

Gender is included as a control variable for both natives and immigrants. For immigrants, two additional control variables are included to handle selection mechanisms and differing entry conditions connected to their migratory status (Luthra et al., 2018; van Tubergen et al., 2004; Zwysen, 2019). First, region of origin, divided into seven categories: Nordic, Western countries (Western Europe, North America and Oceania), Central and Eastern Europe, Middle East and North Africa, Sub-Saharan Africa, Rest of Asia, and Latin America. Second, immigration reason as stated by the respondents themselves in Migrant-LNU, divided by three categories: work/studies/other, family, and refuge.

The basic model for immigrants is sufficient to test whether β_4 (the return to work experience for immigrants before immigration interacted with region of origin) is between the values of 0 and β_5 (the return to work experience for immigrants in Sweden). The expected variation in return to work experience across different origins is contingent on that the region of origin, i.e., where the individual migrated from, is the same as where they got their foreign work experience. If not, there is a risk of measurement error in the interaction. Table S1 in the Supplementary materials displays that 95.2% of all respondents with foreign work experience had their first job in the same region of origin as where they came from. This is sufficient for the analysis to correctly apprehend the variation across regions. As a robustness check, there will be an additional regression model excluding the respondents having different regions for migration and foreign work.

The two samples can be combined into a joint model – with a binary indicator for immigrants, setting the value of zero to natives for variables that are intrinsically unique to immigrants, and an interaction term for all common variables. Doing this, it is possible to test the expectation of $\beta_1 = \beta_5$, i.e. if natives and immigrants get the same average return to labour market experience in Sweden.

Finally, to test the expectations of differing non-linear return to labour market experience in Sweden between natives and immigrants, as well as different categories of immigrants, the basic models are augmented with quadratic expressions of work experience in Sweden. For immigrants, these will also be interacted with either place of highest education or migration age (as a binary variable with the age of 20 as the cut-off). The results will be presented with predicted wage and average marginal effects (AME) for each category and across years of experience, as advised by Mize (2019).

A critique against the Mincer earnings function is that it doesn't explicitly model the sector or content of schooling and work. For immigrants, the transferability of human capital will not only rely on where it comes from, but also in the interaction between sectors and specialisations across different origins, e.g., because of how occupational closure hits differently across both occupations and origins (Alecu & Drange, 2019). Yet, the function “provides a parsimonious specification that fits the data remarkably well in most contexts” (Lemieux, 2003, p. 2), making it a very attractive choice. Especially as the aim of this the highlight is differences in return to country-specific labour market experience, and as evident by previous research, the extended Mincer earnings function fits well with the intention of this study.

Some analyses of returns to labour market experience include an interaction term between labour market before and after immigration to test if the two components of an immigrant's work life are complementary (positive interaction) or substitutionary (negative interaction). The problem of doing so is that returns to labour market experience have a general non-linear form with falling marginal utility (Mincer, 1974). Interacting any two parts of labour market experience in a cross-sectional analysis will therefore tend to produce a negative interaction coefficient because of this overall functional form. This will erroneously lead to a conclusion of a substitutionary relationship, even though human capital theory (Duleep & Regets, 1999) and empirical evidence (Chiswick & Miller, 2003; Hirsch et al., 2014) suggest complementarity.

Since wage is transformed to logarithmic form, return to labour market experience is measured in log points. However, a reader can interpret the results as percent without any substantial error.

4 Analysis

4.1 Overview of the Included Samples

Table 1 shows descriptive statistics for the included variables. Immigrants have on average worked three years before arriving in Sweden, but there is a great deal of variation, mostly dependent on immigration age. Natives have an average of nineteen and a half years of work experience in Sweden, compared with immigrants, who have almost sixteen. The difference stems from mainly two sources: time spent in the country, and that immigrants have more,

Table 1 Descriptive statistics

	Range	Natives		Immigrants	
		Mean	Sd	Mean	Sd
Hourly wage (SEK)	21–1443	168.089	75.357	156.554	76.848
Work before immigration	0–37			3.226	5.444
Work in Sweden	0–51	19.469	12.855	15.957	10.255
Immigration age	0–53			21.565	10.758
Years in Sweden (age/YSM)	1–65	42.999	12.302	23.351	11.01
Education years	0–31	13.597	2.882	14.222	4.016
Place of highest education					
Sweden	0/1	1		0.628	
Abroad	0/1	0		0.372	
Region of origin					
Nordic	0/1	0		0.188	
Western countries	0/1	0		0.084	
Central & Eastern Europe	0/1	0		0.291	
Middle East & North Africa	0/1	0		0.215	
Sub-Saharan Africa	0/1	0		0.066	
Rest of Asia	0/1	0		0.088	
Latin America	0/1	0		0.068	
Migration reason					
Work/studies/other	0/1	0		0.177	
Family	0/1	0		0.488	
Refuge	0/1	0		0.335	
Gender					
Male	0/1	0.510		0.469	
Female	0/1	0.490		0.531	

Note: N Native=2,175; N Immigrants=1,696. All values are weighted. Categorical variables are coded 0/1

or longer, spells of unemployment. The average immigration age is 21.6, but the distribution is bimodal, with one peak around the age of 5 and another around the age of 25. Average age of natives in the sample is 43 years, for immigrants, it is 45 years (migration age plus YSM). Hourly wage (10 SEK \approx 1 Euro) has, as expected, a great range, and with natives having a higher average wage than immigrants.

Natives and immigrants have about the same average years of education, but with immigrants having a larger standard deviation (and with proportionally more individuals who are either very low or very high educated). Almost two thirds of all immigrants have gotten their education in Sweden, either because they immigrated as children or because they went back to schooling after immigration.

The rest of the variables, i.e. the controls, approximates the usual distributions for a representative sample of the relevant populations of natives and immigrants in Sweden. As is evident by the distribution in Table 1, immigrants in Sweden are a diverse population coming from different origins and for different reasons. The heterogeneity of immigrants in Sweden—in both experiences and migration histories—highlight the importance of including these control variables.

4.2 Return to Labour Market Experience

Figure 1 displays the main results for the basic models. Full results are displayed in Table S2 in the Supplementary materials, and the discussion here will focus on the variables relevant to the topic and above expectations.

Starting with work experience before immigration, the result in Fig. 1 shows that immigrants from the Nordic countries have a positive return to their pre-immigration labour market experience of about 1.2 log points per year of experience, while it is not statistically significantly different from a zero return for immigrants from all the other regions of origin. Since there is a positive return for immigrants coming from the Nordic, but not the rest of the Western countries, the results point to an explanation that emphasises institutional and linguistic distance between societies and labour markets as a reason for why human capital does not easily travel across national borders, rather than the quality argument.

For work experience in Sweden, natives have a return of 0.6 log points on wage, and immigrants of 0.7 log points, with one additional year of work experience in Sweden. The difference between immigrants and natives of 0.1 log points per year is small and statistically non-significant at any conventional level. Though descriptive, the analysis at hand suggests that natives and immigrants increase their wage income on average at the same rate, in line with expectations.

The expectation in the theory section was that the return to immigrants' pre-immigration work experience should vary between zero and the return for domestic work experience—as human capital should not be valued negatively and at the same time, foreign human capital should not be valued higher than domestic. According to Fig. 1, this expectation held. No region of origin had a statistically significant negative return, and the one region of origin with positive return to foreign work experience, the Nordic, has a return to work experience that is not statistically different from return to domestic experience ($p=0.380$ for difference between coefficients).

A note can also be made on the coefficients for migration age and YSM for immigrants (Table S2 in the Supplementary materials). These are the returns to time spent in the country of origin, and Sweden, respectively, that is neither in education nor employment, and are more or less zero. This means that inactive years do not increase wage income, as is assumed by human capital theory, and that a coefficient for a measure of potential work experience in Sweden would have been downward biased because the positive effect of labour market active years would be diluted over the inactive years.

As mentioned in the section on regression models and variables, there are possible alternative specifications of the regression model. Specifically, using highest attained education level instead of education years, and excluding the 42 respondents who have a different region of origin and region of first employment. Table S3 in the Supplementary materials displays the return to work experience for work before migration in regions and origin and work in Sweden with these two alternative specifications. In short, there are no substantial differences between the models and the main results presented here.

4.3 Destination-Country Human Capital and Wage Trajectories

The main results in Fig. 1 above showed that natives and immigrants have the same average return to destination-country labour market experience. But this return can have different

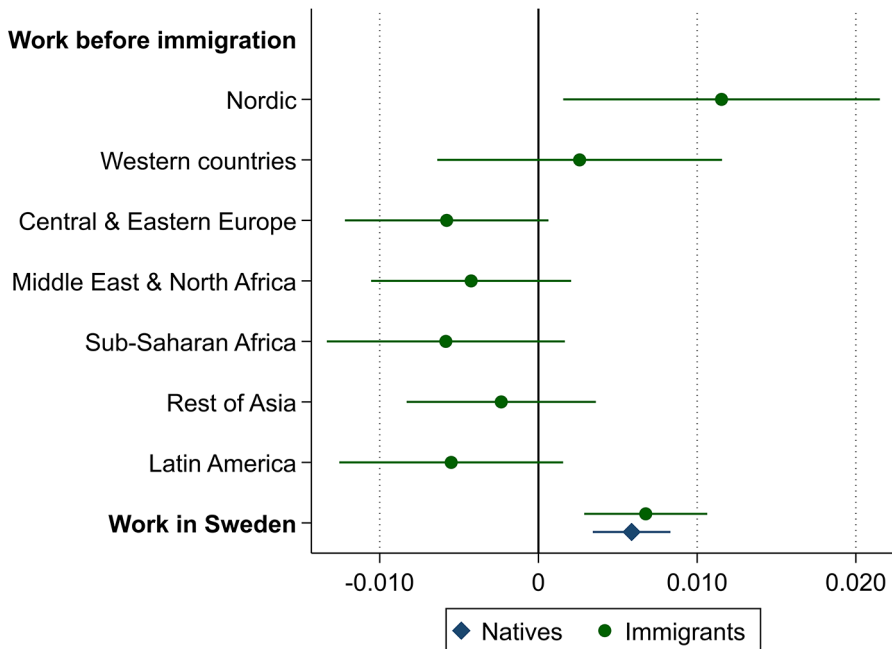


Fig. 1 Return to work experience. AME and associated 95% confidence intervals for work before immigration interacted with region of origin, and work in Sweden. Full results in Table S2 in the Supplementary materials

profiles, with (certain categories of) immigrants getting higher returns early in their careers. This is tested by expanding the basic model with a quadratic expression of work experience in Sweden and interacting it with the categories at hand. As mentioned in the section on analytical strategy, the operationalisation of whether an immigrant acquires human capital specific to the destination country before or with entry into the Swedish labour market is operationalised by dividing the immigrant sample by place of highest education and immigration age, respectively.³ Since these categorisations are based on where the respondents spent the first part of their life, they all have the same time spent in work in Sweden, roughly fifteen to sixteen years, with no statistically significant different between the categories.

Figure 2 displays the result in three columns. The first column to the left compares natives and immigrants. The other two columns contain immigrants only, divided by place of education and immigration age, respectively. The top graphs display predicted log wages for each included category at mean values for all other variables and transformed back to SEK for readability, and the bottom graphs are AME for an additional year of work experience in Sweden on log wage.

The expectation is that the returns for immigrants, as well as immigrants with the highest education abroad and those who immigrated from the age of 20, should be higher than for their respective counterparts, because the former also learn Sweden-specific knowledge and skills on the job. In the same way, while there is expected to be a gap between the

³ The correlation between place of highest education and dichotomous immigration age is 0.53, i.e. they are related but separate concepts.

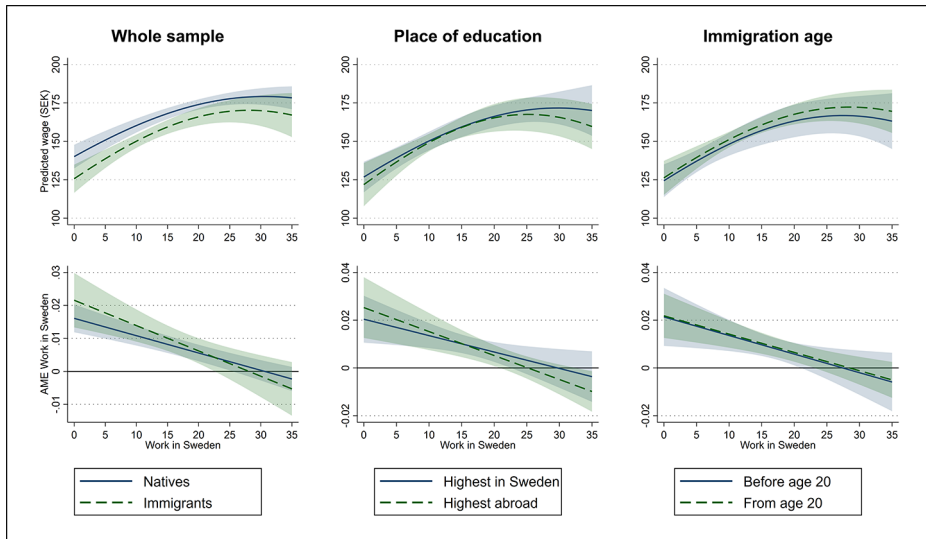


Fig. 2 Wage trajectories for different categories. Predicted outcomes associated with 95% confidence intervals (top row) and AME associated with 95% confidence intervals (bottom row) for a quadratic polynomial of work in Sweden interacted with each category. See Table S4 in the Supplementary materials for full results from OLS regressions

different categories in the beginning, the higher return to work experience, i.e. the higher AME, should with time reduce the gap. But as seen in the results in Fig. 2, this is not the case. Displayed in the left bottom graph, there is virtually no difference between natives and immigrants in their return to labour market experience. Consequently, immigrants have a stable wage disadvantage relative to natives for almost their entire work life.⁴

The results for the different categories of immigrants display that there is no difference in neither wage trajectory nor return to labour market experience across experience years. Contrary to the expectation, immigrants who either acquired Sweden-specific human capital before or after their entry into the labour market are in this analysis indistinguishable regarding their wage outcomes.

4.4 Analyses with Potential Measures

A methodological argument in this study is that the common use in previous studies of potential measures of labour market experience risks biasing the results. As a test of this argument, all the analyses were re-run but with potential experience of work before and after immigration. The results, in short, are as follows (full tables and figures available on request from corresponding author).

For pre-immigration labour market experience, immigrants from Latin America had a negative return of -0.08 log points (SE=0.004, $p=0.018$) which should be impossible according to human capital theory and is in contrast to the result in Fig. 1. There was a large and statistically significant difference between natives and immigrants in the return to

⁴ The difference is approximately 10 SEK, with statistical significance at $p < 0.05$ for 0–24 work experience years.

potential work experience in Sweden – natives had an almost twice as high return of 0.008 log points per year, compared with the 0.005 log points for immigrants (difference of 0.003, $SE=0,001$, $p=0.024$). This is, following the argument of potential measures capturing both active and inactive years, a result of immigrants having more inactive years, diluting actual returns. Finally, comparing wage trajectories over potential work experience in Sweden, i.e. the same type of analyses as in Fig. 2, natives had a slightly higher AME to work experience than immigrants over all the years, leading to diverging wage trajectories, with natives pulling away. Thus, almost all results got biased in some way when using potential measures.

5 Concluding Discussion

This study has focused on the value on immigrants' labour market experience, from both before and after immigration to Sweden. Country-specific human capital theory predicts that the foreign labour market experience that immigrants bring with them will be less valued on the domestic labour market than labour market experience acquired after migration, and that it should be a variation based on either economic development or institutional distance. The theory also predicts that immigrants, starting at a lower position in the new country relative to comparable natives, should converge in labour market outcomes and that the main reason for this is the accumulation of destination-country-specific human capital. Thus, immigrants should have a higher initial return to their labour market experience, and this should be especially true for immigrants who didn't get their schooling or upbringing in the destination country.

Thanks to the use of actual measures of labour market experience in LNU2010 and Migrant-LNU, all these expectations could be tested with more accuracy than the previously common potential measures of experience. The results of the analyses were in accordance with some, but not all, of the expectations. Return to pre-immigration labour market experience was not statistically different from zero for all but immigrants coming from the neighbouring Nordic region, with countries that are similar to Sweden regarding institutions and language all facilitating the transferability of human capital across national contexts.

Comparing natives and immigrants, the analyses showed, as expected, no difference in return to labour market experience in Sweden. Contrary to expectation, however, the analyses did not show any difference in returns across labour market experience years, resulting in a stable disadvantage for immigrants compared with natives. There was additionally no difference between immigrants depending on if they got their schooling or upbringing in Sweden.

A cross-sectional survey such as this is susceptible to measurement error, with systematic selection connected to human capital in both immigration (Haberfeld & Lundh, 2014; Tibajev, 2019) and emigration of those in Sweden (Edin et al., 2000; Monti, 2019) as the two most important causes. In essence, if the immigrants that come to Sweden have higher levels of human capital than those who stayed, and if emigration is in part dependent on labour market success, then the studied population captured by a cross-sectional survey will be of individuals twice positively selected. This would imply an even more detrimental interpretation of the empirical results, as the immigrant population should – because of their positive selection – have better wage trajectories.

The human capital theory has its limits. Focusing on the individual level, it tends to ignore the social conditions under which the knowledge and skills are both acquired and used (e.g., Sorensen, 1977; Tomaskovic-Devey et al., 2005). While the country-specific approach remedies it to some degree by emphasising the need to understand national contexts and how they affect human capital valuation, the standard way of setting up the analysis in both much previous research as well as this study excludes labour market organisations. Doing so, it omits some important intermediary steps between on the one hand human capital and origin (or ethnicity) and on the other hand labour market rewards, e.g., (miss)matches between human capital and job requirements (Aleksynska & Tritah, 2013), sorting across employers (Åslund & Skans, 2010), or intra-organisational bargaining power (Tomaskovic-Devey et al., 2015). Still, studies using the Mincer earnings function and the country-specific human capital approach have clearly and consistently accentuated one of the major reasons for why immigrants fare worse in the labour market: the devaluation of foreign human capital.

Clearly, the human capital that immigrants acquire after immigration is important in determining labour market rewards, and in this, Sweden's policy focus on aiding this accumulation is reasonable. But the results here echo previous studies in the discrepancy between integration policy and labour market outcomes in Sweden (e.g. Wiesbrock, 2011). A possible positive interpretation of the results at hand is that rational individuals will see the low opportunity cost of first spending some time acquiring new relevant knowledge and skills before entering the labour market of the destination country. If this is the case, the lack of difference of AME for natives and immigrants, as well as different categories of immigrants, is because everyone perceives the expected differences and acted accordingly in a pre-emptive matter. However, the stable wage disadvantage of immigrants compared with natives supports the other, more negative, interpretation: that immigrants are sorted into jobs with fewer possibilities to acquire new human capital. Since the wage trajectories only differed between natives and immigrants, not categories of immigrants based on when and where they acquired Sweden-specific human capital, the results also point to that it is the trait of being an immigrant that is the reason for this sorting.

Previous research has shown that the so-called ethnic gap in labour market outcomes in Sweden has considerable variation across immigrant origins (Irastorza & Bevelander, 2021; le Grand & Szulkin, 2002). The analysis in this study (Fig. 1) has shown that differences in valuation of labour market experience based on origin, outside of the Nordic countries, is not the reason for this variation in ethnic penalty. Instead, the answer must be outside the value of labour market experience, e.g., differences in attachment to the labour market resulting in an unequal distribution of labour market experience years in Sweden and a sorting into less beneficial jobs. Coupled with the result of the stable disadvantage in earnings trajectories between immigrants and natives (Fig. 2), the results point to a clear ethnic penalty beyond individuals' human capital that is indicative of labour market discrimination (Rydgren, 2004; Zschirnt & Ruedin, 2016). This is in stark contrast to both Sweden's intended integration policy (Borevi, 2014) and the optimism of immigrants' own perceived employability (Wallinder, 2021).

To properly test the interplay between immigrants' human capital, learning, and job sorting through time, there needs to be data that combines both direct measures of immigrants' experiences in the origin country and rich longitudinal information on labour market activities in the destination country. This would also make analyses using a life-course perspective and sequence analysis techniques possible, studying not only the amount of time spent

in work but also the ordering of important life and labour market states. The collection of such data is an important task for future research.

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Declarations

Conflict of Interest The author declare that they have no conflict of interest.

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