Linnæus University
Sweden

Bachelor Thesis

The double disadvantage effect for immigrant women

Is there an earnings differential between native women and immigrant women with similar education and human capital in the Swedish labour market?

Author: Ellen Fridsén and Victoria Sjölander
Supervisor: Lina Aldén
Examiner: Dominique Anxo
Term: VT18
Subject: National economics
Level: Bachelor
Course code: 2NA11E

Abstract

The migration has increased substantially during the last years and most countries struggle to integrate immigrants into the labour market. Since we also know from previous research that women are discriminated against due to their gender we want to investigate if immigrant women are facing an additional earnings differential because of their ethnicity. We study women with similar human capital and occupation in order to see if the initial earnings differential can be explained by these variables. Results indicate that there is no earnings differential remaining after controlling for human capital and occupation. However, there are differences in the results from the different fields of education and occupations. In some fields part of the earnings gap remain even after controlling for the explanatory variables.

Key words

Acknowledgments

Table of content

1. Introduction

In the last decade migration has been a frequently discussed topic. The migration has increased substantially during the last years and in many countries we have seen a shift from labour migration to more and more refugees. In today's Europe we see that most countries struggle to integrate immigrants into the labour market. In surveys from OECD recent data shows that immigrants are twice as likely to live in a household that falls within the poorest income decile and below the national poverty threshold compared with natives. This indicates that immigrants are struggling either to find employment in the new country or when they do find employment they receive lower earnings. The median income of immigrant households is 13% lower than that of native-born households in the European Union and 17% lower in the OECD countries (OECD, 2015).

Thus, we see that there are large inequalities between immigrants and natives in most of the Western countries. Apart from this inequality however we have also seen that women have not always been given the same opportunities as men around the world and even if this has improved drastically during the last century, there is still clear evidence of gender discrimination in today's society. In most of the Western countries women and men with the same educational level and labour market experience have lower earnings (Blau and Kahn, 2017).

The inequalities can be seen in both employment rates and earnings when comparing the genders. If women who are foreign born have lower earnings than native women, all else equal, this would indicate that they are at a disadvantage due to their ethnicity. This would mean that foreign-born women could face two sorts of disadvantages, one because of their gender and the other because of their ethnicity. This is the meaning of a double disadvantage (Kats, 1982).

We therefore want to explore if there is an earnings differential between women born in Sweden and foreign-born women in the Swedish labour market. We also want to study whether there is a difference when comparing earnings of European born women and women born outside Europe with native women. From previous literature we know that one possible explanation for earnings differentials between these groups are education (Shoeni, 1998; Nekby et al., 2008).

We will therefore study women with positive earnings who have immigrated as 15 years old or younger and thus have obtained at least secondary schooling in Sweden. We will also compare women with the same educational field and occupation in order to assure that they have somewhat similar experience. This implies that the women will have similar human capital and host country specific knowledge and experience. Apart from this we will also study if there is a difference in the earnings differential by field of education. If there are differences remaining after controlling for individual characteristics, education and occupation one could interpret this as potential results of discrimination. However, to state with certainty that there is discrimination is not possible since there are other factors that can affect the result such as omitted variables for example.

Our aim with this essay is therefore to study if there is an earnings differential between native women and immigrant women with similar education and human capital in the Swedish labour market and if there are differences by field of education. Previous research regarding the earnings differentials between immigrants and natives have shown differing results however a large part of these show that there is a difference in earnings between the two groups. The study that lies closest to ours is the one by Nekby et al. (2008). However this paper has focused on the population as a whole when studying the effect of education on earnings gap. We contribute to previous research by focusing our study on only women with similar education and occupation as well as studying if there are any differences within different fields of education.

To answer our research question we will first present the historical background of migration in Sweden in Section 2. Then we will introduce the Theory of this subject in Section 3. In Section 4 we present the previous research that has been published regarding the earnings gap between immigrants and natives in the Literature review. Later, the data that is used in this essay is described in Section 5 and the methodology that is used is presented in Section 6. Finally we will describe our results in Section 7 and discuss these in Section 8. Lastly we present the main conclusions in Section 9.

2. Historical review of migration in Sweden

Information about immigrant women is difficult to find which is why we have chosen to use information about migration into Sweden for both genders. Recent data shows that large shares of immigrants are women and we therefore assume that the history of migration is representative for women as well as for men (Migrationsinfo, 2016).

The Swedish migration has changed drastically over the last century, with increasing migration since the Second World War. In the mid 1800's only two per thousand of the Swedish population was foreign born and Germany was the most common home country for these immigrants. Today however about 18, 5 % of the Swedish population is foreign born and the largest part of these come from Syria. (SCB, 2018).

During the 19th century a large part of the population migrated out of Sweden and there was no migration into Sweden. This changed in the last quarter of the century when migration into the country increased. The migration out of Sweden was still much larger than the migration into Sweden. This was true up until 1930. The migration into Sweden increased quite a lot during the Second World War when refugees came to Sweden to flee the consequences of the war (SCB, 2018).

After the war a large number of people migrated to Sweden since the labour supply was low and the demand for workers high. Most of the immigrants came from the other Nordic countries but also from other European countries. This migration continued up to the early 1970s (SCB, 2018; Byström and Frohnert, 2017).

Since the early 1980s the migration has shifted from labour migration to refugees. A large part of the immigrants now migrate to flee war and conflicts and for the first time migrants from countries outside Europe came to Sweden. This migration has increased up until today and as mentioned before the largest share of immigrants originate today from Syria, Afghanistan and Iraq (SCB, 2018; Byström and Frohnert, 2017).

Population changes in Sweden (immigration/emigration), 1850–2017
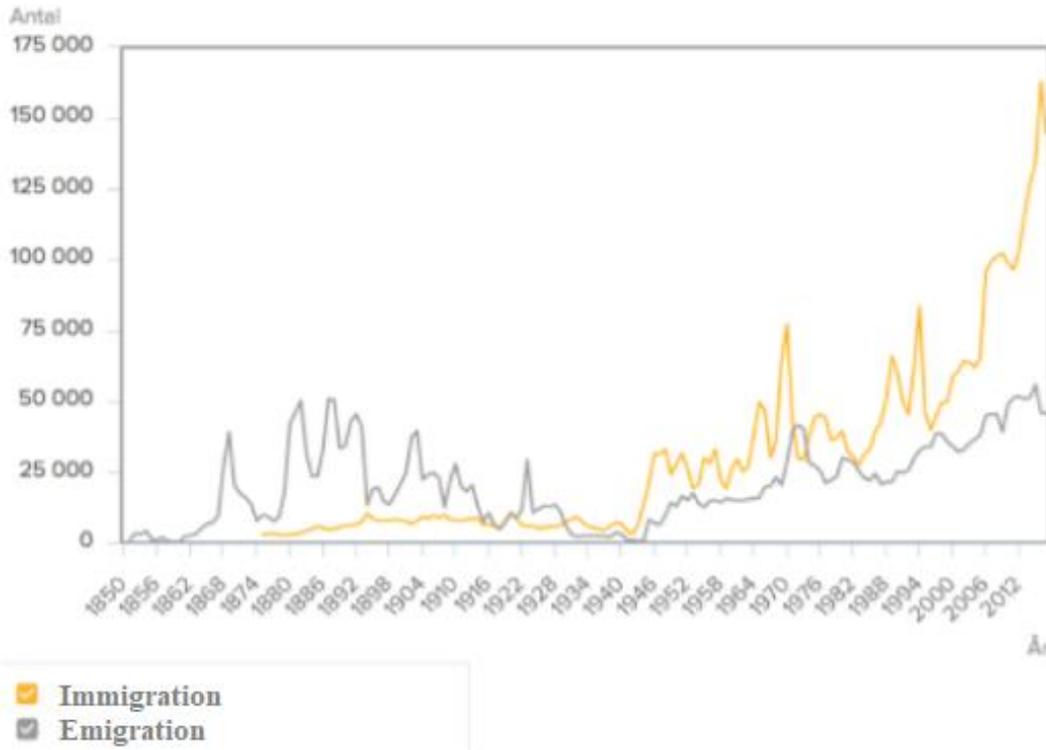
Source: SCB, 2018

3. Theory

There are many theories that try to explain why there is an earnings gap between immigrants and natives. In this section we will present these theories and the factors that can explain differences in earnings.

3.1 Human capital model

Factors such as education level and work experience are positively related to labour force participation and income level for immigrant women according to the human capital theory. The prediction of this theory is that individuals with higher education will earn more and be better positioned in the labour market than individuals with lower education levels. However, there are recent empirical evidence suggesting that education and labour market experience attained in a foreign country is often significantly less valued than human capital attained in the domestic country (Lee et al., 2013). These findings are in line with Chiswick's (1978) assimilation theory. Chiswick argues that immigrant's assimilation into the host country's

labour market is hindered by the lack of host country specific knowledge. The lack of information about the host country's customs and practices and the relative shorter time on the host country's labour market makes them less attractive as workers. Immigrants also lack relevant human capital such as the right quality or amount of education or language skills, which lowers their initial productivity as employees. In this study, we look at immigrants who immigrated at the age of 15 or earlier and have completed at least secondary school level education in Sweden. This implies that immigrants and natives have similar education and that immigrants have attained host country language skills during these school years. As mentioned earlier we will also compare individuals with the same educational field and occupation. Natives and immigrants will thereby have similar human capital and experience. When comparing individuals with similar education, language skills, human capital and experience we expect the earnings gap to be small since education has been argued to be an important explanation to lower earnings.

Furthermore Chiswick (1978) argues that the more similar the source and host country are, the lower initial earnings gap between immigrants and natives. He also states that as the time spent in the host country increases, the productivity of the immigrants will increase due to the gain of host country specific knowledge and therefore the earning gap will decrease. Dustmann and Fabbri (2003) strengthen this theory and argues that better host country language skills and a longer time spent in the host country are associated with higher employment possibilities and that the lack of host country language skills leads to lower earnings.

As mentioned above, the degree of similarity between the source and host country affects the initial disadvantages for the immigrants. Since the European countries and Sweden have more similarities in their cultures and social norms we expect the immigrant women born outside Europe to have lower earnings compared to the European immigrant women and the native women.

3.2 Roy model

The Roy model about selection in migration is based on the key implication that the skill composition of the immigrant flow is determined by the relative payoff for skills across countries. Positive selection means that it is the most skilled individuals from the source

country that decides to participate in the labour market because the returns to skills is higher for these individuals and therefore they gain from working (Borjas, 1994).

A woman's decision to participate in the labour market can be based on the perception of gender roles. The beliefs that describe the man as the family breadwinner and the woman as the family caregiver can hinder women from participating in the labour force (Lee et al., 2013). Immigrants from countries outside Europe often have stronger traditional gender roles compared to the immigrants from European countries. This could then be reflected in lower labour market participation because most women from these countries are expected to stay out of the labour market in order to take care of the home and children while their husband's work. Therefore the immigrant women from the non-European countries that are included in the total share of individuals who participate in the labour market will probably be positively selected. This means that of all the women that have immigrated to Sweden only a fraction will be participating in the labour market and these will then be positively selected. Since we are looking at individuals with positive earnings, we will exclude a large part of the immigrant women and our sample will consist of positively selected individuals. Because of this positive selection we expect the earnings gap in our study to be small.

3.3 Discrimination

Another possible explanation to the earning differentials is discrimination. Discrimination is defined as a situation when a member of an ethnic group is treated less favourable than a similarly situated member of another ethnic group and suffers from negative consequences due to the unequal treatment (Altonji and Blank, 1999). If we after controlling for the explanatory variables in our regressions still find earnings differential, discrimination can be one possible explanation to this remaining gap.

There are different types of discrimination. Becker's theory (1971) of labour market discrimination is based on the concept of taste based discrimination where the discrimination is due to the prejudice against a certain ethnic group. Another type of discrimination is the statistical discrimination that is not due to preferences or a prejudiced behaviour but due to the perception of the average behaviour or performance level within a certain ethnic group.

3.3.1 Taste based discrimination

Suppose that there are two types of workers in the labour market, immigrant women and native women. According to Becker's theory (1971) discrimination occurs when a worker is prejudiced against because of her belonging to a certain ethnic group. This means that the minority group, the immigrant women in this case, are discriminated against if the employers, co-workers or customers act with a prejudiced behaviour towards them. For example a competitive employer will compare the cost of hiring an immigrant woman worker to the cost of hiring a native woman worker. If the employer is prejudiced against immigrant women, he or she will act as if there were an additional cost of hiring the immigrant instead of the native. The cost of hiring an immigrant woman is then the wage for this worker plus the additional cost that is due to the disutility of hiring an immigrant, "the coefficient of discrimination" d. The employers perceived cost for the immigrant employee will then be equal to $W_{im}(1+d)$. The cost of hiring a native is just the wage for this worker, which is equal to W_{na}. The employer will make the hiring decision based on these wages and he will hire the worker with the lowest perceived cost, which implies that the immigrant women will only be hired if $W_{im}(1+d)$ is lower than W_{na} (Becker, 1971; Altonji and Blank, 1999).

From this theory, one can expect that an employer who is prejudiced against immigrant women will have a disutility from working with them and therefore the employer will hire only native women or hire immigrants but at lower wages. The employer can also choose to hire a native rather than an immigrant on the basis of the employee's preferences. The discriminating firm will in both cases receive lower profits than the profit maximizing level (Becker, 1971; Altonji and Blank, 1999).

3.3.2 Statistical discrimination

Statistical discrimination occurs because the information that is gathered about the individual is not complete enough to describe the individual's true productivity. Because of this underlying uncertainty the employer will use statistics about the average performance of the group to which the individual belong (Phelps, 1972). It has for example been shown in a study by Aldén and Hammarstedt (2015) that immigrant women from Africa and Asia have significantly lower participation rates on the Swedish labour market compared to natives. This study also found that the unemployment rates for this group is significantly higher than that of the natives. An employer can perceive this as an indication of lower productivity

among immigrants from Africa and Asia and for this reason chose to hire the native instead of an immigrant from this group. The immigrant could have the same skills and productivity as the native but will not be hired due to statistical discrimination. This is because of the employers' uncertainty and the fact that he or she relies on not only the individual's information but also on the information about the group's average performance (Phelps, 1972; Altonji and Blank, 1999).

3.3.3 Signaling model

In order to avoid statistical discrimination the workers can use their education level as a signal of productivity for the employer. When it is difficult for the employers to observe the worker's ability or productivity directly, the education level can be used as a signal and help the employer to find suitable workers. It is not the education itself that increases the workers productivity but a worker with an academic degree sends a signal that she is a high-productive person. This gives the employers a tool to separate low-productive workers from high-productive workers by setting a minimum level of years of education that the individual should have attained to be sorted into the high-productivity group. In our study the immigrants and natives have similar education, which implies that they can use their education as a signal to sort themselves into the high-productivity group. We therefore expect that this additional information about the individuals will decrease the uncertainty and therefore also decrease the occurrence of statistical discrimination. Because of this we expect the earnings gap to be smaller (Altonji and Blank, 1999).

4. Literature review

Previous literature on earnings differentials between immigrants and natives has primarily focused on men. The research done with women is much more limited. Because of this we will use some of the studies made about labour market differentials that has used both men and women in their studies as well as studies regarding only women.

Several studies conducted around the world have shown that immigrant women earn less than native women in the labour market. The earnings differential has been found among others in United States, Spain, Denmark and Sweden. The explanation behind the earnings gap varies among the different studies. One explanation for example is education and another is ethnic

discrimination (Chiswick, 1978; Schoeni, 1998; Hustedt et al., 2000; Hammarstedt and Shukur, 2007; Nekby et al., 2008; Le and Miller, 2008; Nicodemo and Ramos, 2012).

There are studies that points in a different direction than the ones previously mentioned. One study by Long (1980) showed that immigrant women had about 13% higher earnings compared to native women when they arrived in the United States. While another study by Shamsuddin (1998) conducted in Canada showed that there were no difference in earnings between the two groups.

Most of the studies mentioned above have shown that immigrants from countries that are similar to the host country have lower earnings differentials compared to immigrants from countries that are more distinguished from the host country. In the American study by Le and Miller (2008) it has been shown that immigrants from English speaking countries have lower earnings differentials than immigrants from non-English speaking countries. The other American study by Schoeni (1998) showed that immigrants from United Kingdom, Canada and Europe had a lower earnings differential than others. Both the Swedish study by Hammarstedt and Shukur (2007) as well as the one by Nekby et al. (2008) showed that European immigrants had lower earnings differentials than non-European immigrants. The Spanish study by Nicodemo and Ramos (2012) showed that immigrants from developed countries had lower earnings differentials than immigrants from developing countries. These results shows that the human capital is an important factor in explaining the earnings gap between immigrants and natives because it is not always fully transferrable between the countries.

There are many possible explanations to the earnings gap between the immigrants and native women, one that is argued to explain a large part of the gap is the number of years of education. In the study by Schoeni (1998) it was shown that most of the earnings gap could be explained by the number of years of schooling. Nekby et al. (2008) found similar results where the earnings gap disappeared among immigrants and natives with university education when the immigrant arrived in Sweden before the age of six. Both of these studies showed that the number of years of schooling is an important factor in explaining the earnings differentials.

However it is not only the number of years of schooling that affects the earnings gap, the quality of schooling and working experience can also affect a person's earnings. The quality of schooling and work experience acquired by immigrants in their country of birth can differ from the quality of schooling and work experience that natives acquire in the host country, which can explain one part of the earnings gap between immigrants and natives (Chiswick, 1978; Coulombe et al., 2014). In the study by Beach and Worswick (1993) they found that the return to education and experience is lower for immigrant women compared to native women in Canada. This could indicate that there is a difference in quality as Chiswick (1978) and Coulombe et al. (2014) states.

Beach and Worswick (1993) found a wage gap between immigrant and native women and that the wage gap among the highly educated women seems to be greater than among the ones with lower education in the Canadian labour market. Nekby et al. (2008) and Hammarstedt and Shukur (2007) however found contradicting results. They found that the earnings gap between immigrants and natives was larger at the bottom of the earnings distribution and among the lower educated in Sweden.

Another explanation to the wage gap between immigrants and natives is the culture since there are differences in social norms, values, attitudes and beliefs about the gender roles across different cultural groups. It has been shown that gender gaps in the labour force participation rate are affected by the cultural differences in norms and attitudes about the gender roles and that these gender roles are transferable across countries. This means that groups with high gender gap in labour force participation rates in their source country will bring this norm to Sweden and the women from these countries will be less active in the labour market than women from countries with lower gender gap in the labour force participation rates (Neuman, 2014). Studies have shown that in countries with more inequality between the genders the traditional views of gender roles are much stronger than in countries with higher gender equality (Dotti and Quaranta, 2017). It has also been shown that immigrant women from countries with higher gender equality often have higher wages in the host county (Huh, 2011). One explanation to this could be that immigrant women from countries with higher gender inequalities have fewer years of education and work experience from the home country if the norms states that women should take care of the children and the household while the men works to make money.

In the literature review we have seen that the previous studies conducted in this subject field have shown results pointing in many different directions. However, a large part of the studies shows that there is an earnings gap between immigrant women and native women in the labour market. The study by Nekby et al. from 2008 is conducted on the Swedish labour market and this is the study that lies closest to ours since they are investigating if the education can level out the earnings gap. In our study we have chosen to use only women in our data sample rather than both genders, as is done in the study by Nekby et al. (2008). This is important since we are interested to see if immigrant women are facing earnings differentials in the Swedish labour market. In this way we contribute to previous research because earlier studies have focused on the population as a whole when studying the Swedish labour market. We further contribute to previous research by looking at individuals with similar occupation and education in order to compare individuals with similar experience, education and human capital. Moreover, we look deeper into different education fields to see if the earnings gaps differ within each education field.

5. Data

In this section we will describe the data that we have used in our study. We use data from the LINDA database, Longitudinal Individual Data for Sweden, from Statistics Sweden. LINDA contains two samples: a population sample, which is representative for the whole population and covers 3.35 per cent of the population annually, and an immigrant sample, which covers almost 20 per cent of immigrants to Sweden. We use both of these samples in our study and together they consist of 1 236 649 observations.

We restrict the sample to women who immigrated to Sweden when they were 15 years old or younger and has at least secondary school level education since we are interested in looking at individuals with Swedish schooling. In this way we try to control for the quality and type of schooling since individuals with Swedish schooling should have approximately the same quality of their education. However, we cannot control for the fact that the quality may differ between different schools within Sweden. We further restrict our sample to individuals who are between 25 and 55 years old. These individuals are all of working age and we have assured that all have graduated from secondary school level. We focus our study on individuals who have positive labour earnings since we are interested in the earnings differential. The earnings in the data are annual earnings based on the individual wages

reported for the calendar year. Our study only include women who are wage employed since the data does not include any information on self-employed. After restricting the data sample our final sample includes 67 629 observations.

We define individuals who are born in the Nordic countries, EU15 (except Denmark and Finland), European countries, North-America, Soviet-union and Oceania as European immigrants. Individuals who are born in Africa, South-America and Asia are defined as Non-European immigrants. Individuals who are born in Sweden are defined as Natives. The European and Non-European countries are divided into the two groups in accordance with previous studies.

We look at the individual's educational path by controlling for the level of education and education field. The level of education is divided into two levels where individuals with only secondary school level are sorted into one group and these individuals are included in the lowest level of education. The other education level consists of individuals who have completed some university education. The group includes individuals who have attended university for less than two years, individuals who have attended university for two years or more and individuals who have doctoral studies. The education fields that we focus on in this study are divided into nine different fields: General education; Teaching methods and teacher education; Humanities and arts; Social science, law, commerce and administration; Natural science, mathematics and computing; Engineering and manufacturing, Agriculture, forestry and animal health care, Healthcare, nursing and social care; Service. We have chosen to exclude the individuals that do not have information about their field or level of education.

The occupation variable is based on Statistics Sweden's Standard for Swedish Occupational classification (SSYK, Standard för Svensk Yrkesklassificering) and is restricted to two digits level. We include 27 different occupations in our sample. We have chosen to look deeper into education field and occupation since we want to analyse individuals with similar work experience.

Our data sample also contains information of the individual's marital status, how long they have lived in Sweden and which municipality the individuals live in. Individuals who are registered as either married or in a registered partnership we count as married, all others we count as not married. The information about the main residence have been used to determine

if the individual live in a metropolitan area or not. Municipalities in Stockholm, Gothenburg and Malmö count as metropolitan areas while the rest does not.

Table 1: Descriptive Statistics, Mean Values and Standard Deviation in Parenthesis, wage employed women aged 25-55 years old

	(1) Natives	(2) Immigrants Born In Europe	(3) Immigrants Born Outside Europe
Annual Earnings	229690	232850	199830
	(116794.8)	(120015.8)	(108103.0)
Log Annual Earnings	12.21	12.23	12.01
	(0.604)	(0.577)	(0.734)
Age	41.21	41.30	31.99
	(7.710)	(7.800)	(5.551)
Years Since Migration	0	33.33	25.17
	(0)	(11.21)	(7.545)
Married	0.593	0.513	0.428
	(0.491)	(0.500)	(0.495)
Number of Children	1.710	1.405	1.282
	(1.069)	(1.128)	(1.232)
Metropolitan Area	0.381	0.466	0.634
	(0.486)	(0.499)	(0.482)
Secondary School	0.524	0.616	0.541
	(0.499)	(0.486)	(0.498)
University	0.476	0.384	0.459
	(0.499)	(0.486)	(0.498)
Education Fields:			
General Education	0.113	0.139	0.151
	(0.316)	(0.346)	(0.358)
Teaching Methods and Teacher Education	0.198	0.133	0.116
	(0.398)	(0.339)	(0.321)
Humanities and Arts	0.0303	0.0319	0.0571
	(0.171)	(0.176)	(0.232)
Social Science, Law, Commerce and Administration	0.231	0.266	0.258
	(0.422)	(0.442)	(0.438)
Natural Science, Mathematics and Computing	0.0239	0.0249	0.0314
	(0.153)	(0.156)	(0.174)
Engineering and Manufacturing	0.0573	0.0597	0.0668
	(0.232)	(0.237)	(0.250)
Agriculture, Forestry and Animal Health Care	0.00969	0.00527	0.00354
	(0.0980)	(0.0724)	(0.0594)
Healthcare, Nursing and Social Care	0.254	0.252	0.265
	(0.435)	(0.434)	(0.442)
Service	0.0829	0.0880	0.0500
	(0.276)	(0.283)	(0.218)
Observations	61197	4171	2261

Source: LINDA data and own calculations

Table 1 displays the mean annual earnings in SEK for native women, immigrant women born in Europe and for immigrant women born outside Europe. As shown by the table immigrant women born in Europe have 232 850 SEK which is the highest mean annual earnings of the three groups. Native women have mean annual earnings of 229 690 SEK and immigrant women born outside Europe have the lowest annual earnings with a value of 199 830 SEK. This means that the European immigrant women have on average about 1.4 per cent higher annual earnings than native women and native women have on average 13 per cent higher annual earnings than non-European immigrants. We can see that Native women and European immigrant women are on average around 41 years old while non-European immigrant women are younger, with an average age of around 32 years old. We can also see that European immigrant women have on average been in the country for around 33 years meanwhile the non-European immigrant women have on average only been in the country for around 25 years. Furthermore, about 59 per cent of the native women, 51 per cent of the European immigrant women and 43 per cent of the non-European immigrant women are married. Native women have on average about 1.7 children, European immigrant women have on average 1.4 children and non-European immigrant women have on average about 1.3 children. We can also see that around 38 per cent of the native women, 47 per cent of the European immigrant women and 63 per cent of the non-European immigrant women are living in a metropolitan area. It is worth noticing that the share of individuals living in a metropolitan area is almost twice as large for the non-European immigrant group than for the natives. Lastly, we see that native women have the highest share of University level education with 48 per cent, European immigrant women have a share of 38 per cent and non-European immigrant women have a share of about 46 per cent. The rest of the individuals have only secondary school level education.

The second part of Table 1, named Education Fields contains the distribution of the three groups among the different fields of education. We observe here that the largest difference between the three groups occur in Teaching Methods and Teacher Education where native women are overrepresented at 19.8 per cent. We can also see that a larger share of Non-European immigrant women have a general education, 15.1 per cent, compared with the European immigrant women and native women. In Humanities and Arts there is also a difference between the groups where a larger share of Non-European immigrant women has chosen this as their field of education, 5.7 per cent. Lastly we can also see that Non-European

immigrant women are somewhat underrepresented in the Service field, 5 per cent. Within all three groups, the agriculture, forestry and animal health care education field has the lowest share of individuals with less than one per cent of each group. Apart from these differences the three groups have only small differences in their choice of education.

Table 2: Mean Annual Earnings & Log Annual Earnings

	Field of Education*			
Natives	1	2	3	4
Annual Earnings	225800	255340	281190	212870
	(88655.2)	(152159.9)	(153975.7)	(95151.7)
Log Annual Earnings	12.22	12.29	12.38	12.15
	(0.550)	(0.662)	(0.675)	(0.556)
Observations	13964	14144	4971	15543
Europe				
Annual Earnings	232740	254060	262970	221430
	(84541.7)	(143975.0)	(136198.8)	(126833.1)
Log Annual Earnings	12.25	12.30	12.32	12.19
	(0.573)	(0.602)	(0.620)	(0.534)
Observations	687	1111	353	1052
Outside Europe				
Annual Earnings	191760	216240	234820	191490
	(92308.9)	(130541.6)	(132033.9)	(92440.8)
Log Annual Earnings	11.99	12.07	12.14	12.00
	(0.710)	(0.786)	(0.804)	(0.681)
Observations	392	584	222	600

*1: Teaching Methods and Teacher Education & Humanities and Arts

2: Social Science, Law, Commerce and Administration

3: Natural Science, Mathematics and Computing & Engineering and Manufacturing

4: Healthcare, Nursing and Social Care

Source: LINDA data and own calculations

In Table 2 the mean annual earnings and mean log annual earnings are presented within our four chosen fields of education for the three groups; Native women, European immigrant women and Non-European immigrant women. We can see that there are differences in earnings between the different fields of education. Education field 4; Healthcare, Nursing and Social Care, is the one with lowest annual earnings within all three groups and education field 3; Natural Science, Mathematics and Computing & Engineering and Manufacturing, is the one with highest annual earnings within all three groups. Furthermore we can also see that the Non-European immigrant women have the lowest earnings regardless of which education field.

6. Methodological framework

In this section, the methodology that is applied in this study is described.

We will investigate if there is an earnings gap between immigrant women workers and native women workers by estimating a Mincer equation, using OLS (Ordinary Least Square). The ordinary least square method is one of the most powerful and popular methods when it comes to regression analysis and it is commonly used in the literature (Gujarati and Porter, 2009). The OLS enables us to identify how different variables affect the earnings gap between immigrant and native women workers.

To begin with, we will use the equation for the unadjusted earnings gap and regress the earnings depending on the immigrant dummy variables and exclude the explanatory variables. This first step will allow us to get an overall estimation of the unadjusted earnings gap between the immigrant and native women workers. When adding explanatory variables to the model, the earnings gap could either increase or decrease and we therefore want to see how these variables will affect the gap. In order to do so we will use the equation for the adjusted earnings gap where we include all explanatory variables that control for individual characteristics. First we will exclude the occupation and education field fixed effects and thereafter include all variables. The unadjusted regression and the two adjusted regressions, with and without the fixed effects, are first made for the whole population including all education fields and levels. Then we run the same regression for the individuals with university education. These six regressions are then also made for four of the different education fields separately in order to highlight the effect that the field of education has on earnings. The education fields we have chosen to estimate separately are: Teaching methods, teacher education, Humanities and arts; Social science, law, commerce and administration; Natural science, mathematics, computing, Engineering and manufacturing; Healthcare, nursing and social care.

Equation for unadjusted earnings gap:

$$Y_i = \alpha_1 + \alpha_2 Europe_i + \alpha_3 Non - Europe_i + \varepsilon_i$$

Equation for adjusted earnings gap:

$$Y_{ijk} = \alpha_1 + \alpha_2 Europe_{ijk} + \alpha_3 Non - Europe_{ijk} + \beta X_{ijk} + \sum_{j}^{9} \gamma_j \, EducField$$

$$+ \sum_{k}^{27} \theta_k \, Occupation + \varepsilon_{ijk}$$

The variable Y_{ijk} is the logarithmic form of annual earnings for individual *i* with education field *j* and occupation area *k*. The variable $Europe_{ijk}$ is equal to 1 if the individual is born in a European country and 0 otherwise. The variable $Non\text{-}Europe_{ijk}$ is equal to 1 if the individual is born in a country outside Europe and 0 otherwise. The variable X_{ijk} consists of several different variables. The individual's age and age squared are included as well as the years since migration and years since migration squared. The married dummy variable that is equal to 1 if the individual is married and equal to 0 otherwise is also included, as is the number of children and the dummy variable for living in a metropolitan area. The metropolitan area dummy variable is equal to 1 if the individual lives in a metropolitan area and 0 otherwise. Finally the education level dummy variable is included in the variable X and this is equal to 1 if the individual has completed some university education and 0 if not.

EducField and Occupation are fixed effect variables that show the field of education and choice of occupation and allows us to control for earnings differentials for a given education field and occupation. The EducField variable includes 9 different education fields and the Occupation variable 27 different occupations. The last variable, ε_{ijk}, is the error term for the residuals.

The dependent variable, Y, will be logged annual earnings in this study, which enables us to interpret our results in percentage terms. Since logged values are normally distributed variables we will reduce the problems of having heteroscedasticity present (Gujarati and Porter, 2009). We will also use robust standard errors in our analysis, which will also solve

the problem of heteroscedasticity. The robust standard errors are usually larger than the OLS standard errors and decrease the risk of incorrect interpretations of the results (Gujarati and Porter, 2009).

We will control for family status, which includes being married or not and the number of children in the household, since being married and having children affect the worker's earnings according to the allocation of time theory. The allocation of time theory can explain the earnings gap between the immigrant and native women and help us understand women's labour force participation. Labour is demanded both within the household and in the traditional labour market, especially for married women with children. These women have to divide their time between the household and their work. Situations at home that demand labour inside the household such as the presence of children can affect the women's labour supply negatively. This also affects their earnings negatively (Lee et al., 2013). Immigrant women are on average more likely to be married and on average have more children than native women (Capps et al., 2003). This implies that the earnings gap should decrease when controlling for these factors.

Where the individuals choose to live and work will also affect the earnings. Individuals working in metropolitan areas such as Stockholm, Gothenburg and Malmö are expected to earn more than individuals working in smaller cities (Regeringen, 2003). If there is a difference in immigrant share between smaller and larger cities, this can explain some of the earnings gap between the immigrant and native women.

The two variables of interest in this study are the immigrant dummy variables Europe and Non-Europe. The native women workers are the reference group (benchmark category) in this study. The estimated coefficients, α_2 and α_3, will show how the mean value of the dependent variable, log annual earnings, in the immigrant women category differs in per cent from the native women category, the benchmark category. If α_2 is positive this means that immigrant women from European countries earn more than native women, if it is negative this means that these immigrants earn less than the natives. If α_3 is positive this indicates that immigrant women from outside of Europe earn more than the native women, if it is negative it means that these immigrants earn less than the natives. The only times the coefficient estimates are equal to zero is when the earnings is equalized between the two groups and when the differences in earnings are too small for the model to recognize. The estimated

immigrant dummy variables coefficient in the adjusted earnings regression with fixed effects shows to which extent the earnings gap between the immigrant women and the native women remains unexplained after controlling for the differences in the explanatory variables that we are concerned about.

Given that we control for all explanatory variables mentioned above and still find some earnings gap between immigrant and native women, how can this earnings gap then be explained? As mentioned earlier one of the possible explanations to this unexplained earnings gap is discrimination and the unexplained earnings gap will therefore be interpreted as potential discrimination. However one other possible explanation to the unexplained earnings gap is that there are omitted variables. This means that there could be variables that can explain some part of or the entire earnings gap that we do not have access to or that we have not considered in our analysis. For example we do not have access to information about the individuals working hours, which can affect the results. Because of the potential omitted variable problem we need to be careful in our interpretation of the unexplained earnings gap and we cannot say for sure that it can be explained by discrimination only.

7. Results

In this section we will present the results from our regressions. We will start by presenting the results from the regression made for all education fields together and thereafter present the results from the four chosen fields of education.

Table 3: Regression for All Education Fields

VARIABLES	Population			University		
	(1) Log Annual Earnings	(2) Log Annual Earnings	(3) Log Annual Earnings	(4) Log Annual Earnings	(5) Log Annual Earnings	(6) Log Annual Earnings
Immigrants Born In Europe	0.022**	0.011	0.043	0.009	-0.120**	-0.044
	(0.009)	(0.036)	(0.034)	(0.016)	(0.057)	(0.056)
Immigrants Born Outside Europe	-0.195***	-0.012	0.028	-0.224***	-0.113*	-0.028
	(0.016)	(0.038)	(0.036)	(0.023)	(0.061)	(0.060)
Age		0.128***	0.105***		0.139***	0.102***
		(0.004)	(0.003)		(0.005)	(0.005)
Age Squared		-0.001***	-0.001***		-0.001***	-0.001***
		(0.000)	(0.000)		(0.000)	(0.000)
Years Since Migration		0.001	0.000		0.008**	0.006
		(0.002)	(0.002)		(0.004)	(0.004)
Years Since Migration Squared		-0.003	-0.002		-0.013*	-0.010
		(0.004)	(0.004)		(0.007)	(0.006)
University		0.209***	0.020***			
		(0.004)	(0.008)			
Married		0.011**	-0.009**		0.026***	-0.013**
		(0.005)	(0.004)		(0.007)	(0.007)
Number of Children		-0.066***	-0.053***		-0.077***	-0.059***
		(0.002)	(0.002)		(0.004)	(0.003)
Metropolitan Area		0.125***	0.076***		0.154***	0.099***
		(0.005)	(0.004)		(0.007)	(0.006)
Constant	12.208***	9.233***	10.411***	12.323***	9.103***	10.428***
	(0.002)	(0.070)	(0.089)	(0.004)	(0.102)	(0.174)
Observations	67,629	67,629	67,629	31,762	31,762	31,762
R-squared	0.003	0.129	0.223	0.004	0.140	0.286
Field of Education FE		No	Yes		No	Yes
Profession FE		No	Yes		No	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: LINDA data and own calculations

7.1 General OLS regressions

In Table 3 the unadjusted earnings gap for the whole population is presented and we can see that the European immigrant women have about 2.2[1] per cent higher earnings compared to the native women. We can also see that being a non-European immigrant woman has a negative impact on the earnings with 17.7 per cent compared with the native woman. When looking at the adjusted earnings gap without fixed effects for the whole population we can see that most of the initial earnings gap has disappeared and is now 1.1 and negative 1.19 per cent for the European and Non-European immigrant women respectively. However, these values are no longer statistically significant. Lastly, when looking at the adjusted earnings gap with fixed effects for the whole population we can see that the earnings gap for the European immigrant women has increased to 4.4 per cent but is still not statistically significant. The adjusted earnings gap for non-European immigrant women has decreased dramatically and is now showing a positive value of 2.8 per cent, however this value is still not statistically significant.

The table also shows the three different regressions for the university students. In the unadjusted regression we can see that the European immigrant women have about 0.9 per cent higher earnings compared with native women, this value is however not statistically significant. The Non-European immigrant women have about 20 percent lower earnings compared with native women. When looking at the adjusted earnings gap without fixed effects we can see that the European immigrant women now have about 11.3 per cent lower earnings than the natives and the Non-European immigrant women have now about 10.7 per cent lower earnings compared with the native women. Lastly, when looking at the adjusted earnings gap with fixed effects we can see that the European immigrant women now have about 4.3 per cent lower earnings than native women and the Non-European immigrant women have about 2.8 per cent lower earnings compared with the native women. However, these values are not statistically significant.

---

[1] $e^{\beta} - 1$, the values referred to in the text is calculated with this equation. Where β is the value from the tables. This in order to interpret the logarithmic results as differences in earnings in percentage form.

When looking at the explanatory variables overall, we can see that the individual's age has a positive effect on the earnings and the earnings increases with each additional year. Furthermore, we can see that Age Squared has a negative value, which indicates that age increases earnings at a decreasing rate. The variable Years Since Migration is not statistically significant and has a value of 0 or close to zero, this means that the years since migration has no or a very small effect on earnings. University shows the effect of higher education on earnings compared to individuals with only secondary school level. We can see that higher education increases the earnings with about 2 per cent. Being married has a negative effect on earnings when looking at the adjusted earnings gap with fixed effects, however when excluding the fixed effects, the married variable has a positive effect. Overall, having children has a negative effect on earnings and living in a metropolitan area has a positive effect. The results for all of our explanatory variables are in line with theory.

When comparing the three different regressions for the whole population we can see that most of the earnings gap for Non-European immigrant women can be explained by the individual characteristics while the fixed effects only explain a smaller part. Among the university student however we can see that the individual characteristics explain only around half of the earnings gap for Non-European immigrant women while the other half is explained by the fixed effects.

7.2 Field of education specific OLS regressions

In this study we want to see if the earnings gap differs in the fields of education. Therefore we will look more closely on four education field groups and analyse if and how the gap changes. We will first compare the results from the different education fields with the results from the general OLS regression, which shows the average difference for the entire population. Thereafter we will compare the results from the different education fields with one another. All the tables mentioned in this section can be found in the Appendix at the end of this essay.

In Table 4 the results for the education fields teaching methods and teacher education as well as humanities and arts are presented. One difference we can see here is that being born in a non-European country has now an even larger negative impact on earnings for the population within this field of education when looking at the unadjusted earnings gap. The negative effect on earnings has increased from 17.7 per cent to 20.7 per cent. In the adjusted earnings

regression, with fixed effects, for the population the effect on earnings has increased from 2.8 per cent to 4.3 per cent.

In Table 5 the results for the education field social science, law, commerce and administration is presented. In this table we can see that the negative impact of being a non-European immigrant woman has increased for both the population and for the university students to 19.8 and 24.7 per cent respectively when looking at the unadjusted earnings gap. We can also see that the overall impact of being an immigrant woman has a negative effect on earnings for university students in this field of education, however, these values are not statistically significant.

In Table 6 the results for the education fields natural science, mathematics and computing as well as engineering and manufacturing is presented. One change in this table is that the unadjusted earnings gap has become even more negative for both the population and for the university students. When looking at university students in this table we see that some part of the initial gap remains even after controlling for the explanatory variables, however most of these values are not statistically significant.

In Table 7 the results for the education field healthcare, nursing and social care is presented. Here one of changes is that being a European immigrant woman has an even larger positive effect on earnings with 4.1 per cent, when looking at the unadjusted earnings gap and the whole population. Being a non-European immigrant woman has a smaller negative effect on earnings of 14.1 per cent when looking at the population and the unadjusted earnings gap. We see also in this table that some of the negative effect of being an immigrant woman remains for university students after controlling for the explanatory variables.

When comparing the results from the regressions made within the four different education fields we can see that the smallest earnings gap for non-European immigrant women in the unadjusted regression can be found in healthcare, nursing and social care. The results from the four education fields are however quite similar and no large differences can be observed.

8. Discussion

In this section the results obtained from the regressions will be discussed and analysed. In Table 3 we saw that the earnings of immigrant women born outside Europe was significantly lower than those of the native women and the European immigrant women. The unadjusted earnings gap was as expected and thereby also in line with theory.

In Table 3 we also saw that the variable Age had a positive impact on earnings, this result is in line with theory which states that a higher age also means that the individual has acquired more experience and thereby the earnings increases. The age can also explain why non-European immigrant women have lower annual earnings on average in the unadjusted regression than the native women and European immigrant women. Since the non-European immigrant women are younger on average, they have not the same experience as the two other groups and therefore they have lower earnings. We can also see that the variable Years Since Migration has in general a quite small impact on earnings. We suggest that the explanation for this can be that all individuals in the sample have a Swedish secondary school level education at least. This implies that they have received host country specific knowledge and therefore the time spent in the host country does not affect the earnings as it would if the individuals had gone to school in their home country.

Our results also showed that when we study the population as a whole the individual characteristics such as age, marital status etc. explains the largest part of the earnings differential and the fixed effects only explain a small part for the Non-European immigrant women. When looking at university students however we saw that the fixed effects explained a much larger part. In this regression we saw that individual characteristics and fixed effects explained almost equal parts of the gap. This implies that university students are more affected by their choice of education field and occupation since the earnings gap between the different fields of education and occupation is large and thereby this explains a larger part of the earnings differences. Since we can see a difference in the fixed effects meaning of the gap between the population as a whole and the individuals who have attended university, we can conclude that the individuals with only secondary schooling are not affected by their field of education and occupation to the same extent as the university students. This implies that individuals with only secondary schooling do not have significantly large earnings gaps

between the different fields but rather that other factors have a larger impact on their earnings gap. This is also in line with the values presented in table 2 where we see that there are differences in earnings between different fields of education.

When comparing the different education fields with one another we can see that most of the gaps are explained in the adjusted regressions with fixed effects when looking at the population and there are no huge differences between the four fields. However when comparing the university students we see that some part of the gaps remain in most of the fields and that a quite large part remain in education fields; Natural Science, Mathematics and Computing & Engineering and Manufacturing as well as Healthcare, Nursing and Social Care. However, these values are not statistically significant. One possible explanation to the remaining gap is that immigrants are more discriminated against among university educated within these fields of education.

In Table 3 we saw that immigrant women from outside Europe seemed to be facing a double disadvantage effect. The unadjusted negative effect of 17.7 per cent is in line with most previous studies. However, when controlling for individual characteristics in particular the fact that the individuals have similar human capital and occupation the earnings gap did decrease and the double disadvantage effect disappeared. These results are in line with the theory of human capital. According to this theory the earnings gap can be explained by the differences in human capital and when controlling for these the gap should disappear. We see that this is true in our study. This result suggest that immigrant women do not receive lower earnings due to their ethnicity since the individual characteristics and education seems to explain the earnings gap. This result is true both for the female population as a whole and for the University students. In the adjusted regression with fixed effect for the University students we saw that a small part of the gap remained however since the values are quite small and not statistically significant we interpret this as no remaining gap. This implies that education plays an important role for all individuals and that education is an important explanation to the earnings gap.

9. Conclusion

In this essay we wanted to test whether there is an earnings difference between immigrant women and native women with similar education and occupation in the Swedish labour market. This we have done by running an unadjusted and an adjusted regression with and without fixed effects. These regressions have been used first on all of the education fields and thereafter on four separate education fields.

The results from the regression for all education fields show that there is an unadjusted negative earnings differential for immigrant women born outside Europe compared to native women. The immigrant women born in Europe on the other hand did have a positive earnings differential compared to native women. However, when controlling for the individual characteristics as well as education and occupation fixed effects, the difference decreases substantially and no significant earnings gap remains. A similar pattern can be seen when looking at only university students as for the whole population. The results indicate that immigrant women are not discriminated against in the Swedish labour market, which also implies that they are not facing a double disadvantage. Since the individuals have similar education, occupation, language skills, work experience and human capital we can conclude that these factors are important when we try to explain why immigrant women have lower earnings than native women since the gap is explained when these variables are controlled for.

We also studied if there are differences in the earnings gap within four different fields of education since the mean values in Table 3 can conceal differences within the fields. The results show that Non-European immigrant women have lower earnings even after controlling for the individual characteristics and fixed effects among university students within the fields of education; Natural Science, Mathematics and Computing & Engineering and Manufacturing as well as Healthcare, Nursing and Social Care. These results are however not statistically significant so we cannot with certainty draw any conclusion that there is discrimination against higher educated immigrant women within these fields of education even if the results indicate this. This result is in line with the results from the study by Beach and Worswick (1993) who also found a wage gap among the higher educated women.

However, Nekby et al. (2008) found that the earnings gap was greater among the lowest educated individuals, which is not in line with our results.

One possible explanation for the differences in our results compared to Nekby et al. (2008) could be that they include both individuals with only compulsory school level completed in Sweden as well as individuals with secondary school level completed in Sweden in their low educated sample. In comparison we have excluded all individuals that does not have secondary schooling in Sweden and only include the individuals with secondary school level in our low educated sample. This difference in the definition of high and low educated individuals can be one explanation for the different results. Another possible explanation is that Nekby et al. (2008) study both genders, which could provide differing results than those for only women if there is a difference between the two genders. Moreover, we look deeper into the differences between the fields of education in comparison to Nekby et al. (2008) who only look at the overall earnings gap for the groups. As mentioned before, the overall earnings gap is a mean value and this can hide the discrimination within certain education fields. This difference between our studies can also explain why we find different results.

One possible weakness in our study is that we have used annual earnings based on the individuals wage instead of hourly wages. Since we do not have access to the number of hours worked for the individuals using hourly wage could generate results that are more correct than the results in our study. When using annual earnings without controlling for the number of hours worked the differences in earnings can be due to the difference in hours worked rather than the difference in the wage of the individuals. If one instead could use hourly wage this problem would probably be solved, we however did not have access to this data in our study. Another possible weakness is that there might be omitted variables that we have not been able to control for in our study. This could be either because we do not have access to certain variables or that we have not considered using some variable that could be important.

We have seen that Swedish secondary education is important when explaining the earnings gap. Individuals with similar secondary schooling have similar earnings and therefore it is important for the society to integrate immigrants into the Swedish educational system and make sure that they have the same opportunities as natives in school. Since our result also

show that the Swedish schooling even out the earnings differences it is important to offer Swedish schooling to all immigrants, adults as well, in this way the human capital will not differ as much between immigrant women and native women. Other studies conducted on the Swedish labour market have found similar results and show that integrating immigrants into the Swedish schooling system is important in order to decrease the differences in earnings (Nordin, 2011; Åslund and Rooth, 2007).

For future research it is important to conduct similar studies with more recent data and also divide the immigrants into more groups, not just European and Non-European. This in order to get more detailed information about which immigrants are facing the highest earnings gap. Further research should also be conducted with time series data to get information about how the differences in earnings change for immigrants over time.

References

Scientific articles

Aldén, L. and Hammarstedt, M. 2015. Utrikes Födda på 2000-Talets Arbetsmarknad – en Översikt och Förklaringar till Situationen. *Ekonomisk Debatt* 43 (3): 77-89. (accessed 2018-04-23)

Beach, C.M. and Worswick, C. 1993. Is There a Double-Negative Effect on the Earnings of Immigrant Women?. *Canadian Public Policy/Analyse de Politiques* 19 (1): 36-53. DOI: 10.2307/3551789 (accessed 2018-04-04)

Blau, F and Kahn, L. 2017. The Gender Wage Gap: Extent, Trends, and Explanations. *Journal of Economic Literature* 55 (3): 789–865. (accessed 2018-04-23)

Borjas, G.J. 1994. The Economics of Immigration. *Journal of Economic Literature* 32 (4): 1667-1717. (accessed 2018-04-23)

Byström, M and Frohnert, P. 2017. Invandringens Historia – Från "Folkhemmet" Till Dagens Sverige. *Delmi Kunskapsöversikt 2017:5*. Stockholm: Elanders Sverige AB (accessed 2018-03-26)

Chiswick, B. 1978. The Effect of Americanization on the Earnings of Foreign-born Men. *Journal of Political Economy* 86 (5): 897-921. (accessed 2018-03-23)

Coulombe, S., Grenier, G. and Nadeau, S. 2014. Human Capital Quality and the Immigrant Wage Gap. *IZA Journal of Migration* 3(1): 1-22. DOI:10.1186/2193-9039-3-14 (accessed 2018-03-22)

Dotti, G. and Quaranta, M. 2017. The Best Is Yet to Come? Attitudes Toward Gender Roles Among Adolescents in 36 Countries. *Springer Link* 77 (1-2): 30-45. DOI: 10.1007/s11199-016-0698-7 (accessed 2018-03-23)

Dustmann, C. and Fabbri, F. 2003. Language Proficiency and Labour Market Performance of Immigrants in the UK*. *The Economic Journal* 113 (489): 695-717 DOI: 10.1111/1468-0297.t01-1-00151 (accessed 2018-04-12)

Hammarstedt, M. and Shukur, G. 2007. Immigrant's Relative Earnings in Sweden - a Quantile Regression Approach. *International Journal of Manpower* 28 (6): 456-473. DOI: 10.1108/01437720710819992 (accessed 2018-04-12)

Huh, Y. 2011. The Effect of Home-country Gender Status on the Labor Market Success of Immigrants, *Journal of Human Development and Capabilities* 12 (3): 367-392. DOI: 10.1080/19452829.2011.590469 (accessed 2018-04-04)

Hustedt, L., Nielsen, H., Rosholm, M. and Smith, N. 2000. Danish Evidence on the Double-Negative Effect on the Wages of Immigrant Women. *Centre for Labour Market and Social Research* (accessed 2018-04-04)

Kats, R. 1982. The Immigrant Woman: Double Cost or Relative Improvement?. *The International Migration Review* 16 (3): 661-677. (accessed 2018-04-23)

Le, A. and Miller, P. 2008. Glass Ceiling and Double Disadvantage Effects: Women in the U.S Labour Market. *Applied Economics* 42 (5): 603-613. DOI: 10.1080/00036840701704501 (accessed 2018-03-22)

Lee, S., Zhou, H. and Kim, Y. 2013. Labor Force Participation Among Asian Immigrant Women: Findings From the 2007 American Community Survey. *International Journal of Social Welfare* 23(3): 296-308. DOI: 10.1111/ijsw.12059 (accessed 2018-04-12)

Long, J.E. 1980. The Effect of Americanization on Earnings: Some Evidence for Women. *Journal of Political Economy* 88(3): 620-629 DOI: 10.1086/260892 (accessed 2018-04-04)

Nekby, L., Vilhelmsson, R. and Özcan, Gülay. 2008. Do Host Country Educations Even Out the Playing Field? Immigrant-Native Labor Market Gaps in Sweden. *Journal of Immigrant & Refugee Studies* 6(2): 168-196. DOI: 10.1080/15362940802198850 (accessed 2018-04-04)

Neuman, E. 2014. Culture, Assimilation and Gender Gaps in Labour Market Outcomes. *Linnaeus University Centre for Labour Market and Discrimination Studies 2014:10.* (accessed 2018-04-23)

Nicodemo, C. and Ramos, R. 2012. Wage Differentials Between Native and Immigrant Women in Spain: Accounting for Differences in the Supports. *International Journal of Manpower* 33 (1): 118-136. DOI: 10.1108/01437721211212556 (accessed 2018-04-04)

Nordin, M. 2011. Immigrants' Returns to Schooling in Sweden. *International Migration* 49 (4): 144-166. DOI: 10.1111/j.1468-2435.2009.00570.x (accessed 2018-06-11)

Phelps, E.S. 1972. The Statistical Theory of Racism and Sexism. *The American Economic Review* 62 (4): 659-66. (accessed 2018-04-23)

Rooth, D.O. and Åslund, O. 2007. Får Utlandsfödda Betalt för sin Utbildning och sina Kunskaper i Svenska?. *Ekonomisk Debatt* 35 (3): 41-54. (accessed 2018-06-11)

Schoeni, R. 1998. Labour Market Outcomes of Immigrant Women in the United States: 1970 to 1990. *International Migration Review* 32(1): 57-77. DOI: 10.2307/2547560 (accessed 2018-04-12)

Shamsuddin, A. 1998. The Double-negative Effect on the Earnings of Foreign-born Females in Canada, *Applied Economics* 30 (9): 1187-1201. DOI: 10.1080/000368498325084 (accessed 2018-04-04)

Books

Altonji J.G. and Blank R.M (1999), 'Race and Gender in the Labor Market', in Ashenfelter O. and Card D., (Eds.), *Handbook of Labor Economics*, (3), Elseivier science, Amsterdam, pp. 3143-3192.

Becker, G. 1971. The Economics of Discrimination, 2nd ed. University of Chicago Press. Chicago, IL.

Gujarati, D.N. and Porter, D.C. 2009. *Basic econometrics*. 5th ed. New York: McGraw-Hill Education.

Internet

Capps, R., Fix, M., Passel, J.S., Ost, J. and Perez-Lopez, D. 2003. A Profile of the Low-wage Immigrant Workforce. *Urban Institute.* http://webarchive.urban.org/UploadedPDF/310880_lowwage_immig_wkfc.pdf (accessed 2018-04-16)

Migrationsinfo. 2016. *Sverige* https://www.migrationsinfo.se/migration/sverige/ (accessed 2018-05-29)

OECD/European Union. 2015. *Indicators of Immigrant Integration 2015: Settling In*, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264234024-en (accessed 2018-03-22)

Regeringen. 2003. *Fördelningspolitisk Redogörelse*. Bilaga 3. http://www.regeringen.se/49bb12/contentassets/26b6e2341f56429aaf32143d35927d9f/bilaga -3-fordelningspolitisk-redogorelse (accessed 2018-04-05)

SCB. *Från Massutvandring Till Rekordinvandring* https://www.scb.se/hitta-statistik/sverige-i-siffror/manniskorna-i-sverige/in-och-utvandring/ (accessed 2018-03-26)

Data

Statistics Sweden. 2005. *Longitudinal Individual Data for Sweden* (LINDA)

Appendices

Table 4: Teaching Methods and Teacher Education & Humanities and Arts

	Population			University		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Log Annual Earnings	Log Annual Earnings	Log Annual Earnings	Log Annual Earnings	Log Annual Earnings	Log Annual Earnings
Immigrants Born In Europe	0.032	-0.064	0.006	0.033	-0.080	-0.007
	(0.022)	(0.060)	(0.062)	(0.023)	(0.059)	(0.063)
Immigrants Born Outside Europe	-0.232***	-0.036	0.042	-0.227***	-0.052	0.035
	(0.036)	(0.068)	(0.069)	(0.037)	(0.067)	(0.072)
Age		0.094***	0.082***		0.098***	0.086***
		(0.007)	(0.007)		(0.007)	(0.007)
Age Squared		-0.001***	-0.001***		-0.001***	-0.001***
		(0.000)	(0.000)		(0.000)	(0.000)
Years Since Migration		0.004	-0.000		0.004	-0.000
		(0.004)	(0.004)		(0.004)	(0.004)
Years Since Migration Squared		-0.004	0.002		-0.004	0.002
		(0.008)	(0.008)		(0.008)	(0.008)
University		0.042	-0.148***			
		(0.031)	(0.034)			
Married		0.008	-0.022**		0.007	-0.025***
		(0.009)	(0.009)		(0.009)	(0.009)
Number of Children		-0.057***	-0.050***		-0.055***	-0.050***
		(0.005)	(0.005)		(0.005)	(0.004)
Metropolitan Area		0.063***	0.060***		0.060***	0.059***
		(0.009)	(0.008)		(0.009)	(0.008)
Constant	12.219***	9.837***	10.825***	12.226***	9.787***	10.598***
	(0.005)	(0.140)	(0.123)	(0.005)	(0.142)	(0.122)
Observations	15,043	15,043	15,043	14,526	14,526	14,526
R-squared	0.005	0.155	0.246	0.004	0.156	0.252
Profession FE		No	Yes		No	Yes

Robust standard errors in parentheses

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

Source: LINDA data and own calculations

Linnæus University
Sweden

Table 5: Social Science, Law, Commerce and Administration

VARIABLES	Population			University		
	(1) Log Annual Earnings	(2) Log Annual Earnings	(3) Log Annual Earnings	(4) Log Annual Earnings	(5) Log Annual Earnings	(6) Log Annual Earnings
Immigrants Born In Europe	0.013	-0.032	0.039	-0.044	-0.150	-0.005
	(0.019)	(0.080)	(0.072)	(0.036)	(0.105)	(0.098)
Immigrants Born Outside Europe	-0.221***	-0.077	0.002	-0.284***	-0.181	-0.020
	(0.033)	(0.083)	(0.074)	(0.044)	(0.113)	(0.101)
Age		0.164***	0.129***		0.163***	0.104***
		(0.008)	(0.008)		(0.012)	(0.011)
Age Squared		-0.002***	-0.001***		-0.002***	-0.001***
		(0.000)	(0.000)		(0.000)	(0.000)
Years Since Migration		0.003	0.001		0.013*	0.009
		(0.005)	(0.005)		(0.008)	(0.007)
Years Since Migration Squared		-0.004	-0.004		-0.025*	-0.021*
		(0.009)	(0.008)		(0.014)	(0.012)
University		0.257***	0.061***			
		(0.011)	(0.012)			
Married		0.032***	0.004		0.051***	0.013
		(0.010)	(0.010)		(0.018)	(0.017)
Number of Children		-0.075***	-0.060***		-0.083***	-0.068***
		(0.005)	(0.005)		(0.009)	(0.008)
Metropolitan Area		0.161***	0.114***		0.217***	0.167***
		(0.010)	(0.010)		(0.017)	(0.016)
Constant	12.289***	8.517***	10.176***	12.432***	8.618***	10.607***
	(0.006)	(0.164)	(0.157)	(0.010)	(0.231)	(0.216)
Observations	15,839	15,839	15,839	6,322	6,322	6,322
R-squared	0.004	0.130	0.232	0.007	0.154	0.286
Profession FE		No	Yes		No	Yes

Robust standard errors in parentheses

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

Source: LINDA data and own calculations

Linnæus University
Sweden

Table 6: Natural Science, Mathematics and Computing & Engineering and Manufacturing

VARIABLES	Population			University		
	(1) Log Annual Earnings	(2) Log Annual Earnings	(3) Log Annual Earnings	(4) Log Annual Earnings	(5) Log Annual Earnings	(6) Log Annual Earnings
Immigrants Born In Europe	-0.054	-0.184	-0.112	-0.078*	-0.363	-0.224
	(0.034)	(0.153)	(0.136)	(0.047)	(0.252)	(0.219)
Immigrants Born Outside Europe	-0.235***	-0.150	-0.068	-0.288***	-0.289	-0.146
	(0.055)	(0.158)	(0.143)	(0.062)	(0.260)	(0.232)
Age		0.183***	0.144***		0.199***	0.153***
		(0.014)	(0.013)		(0.017)	(0.015)
Age Squared		-0.002***	-0.002***		-0.002***	-0.002***
		(0.000)	(0.000)		(0.000)	(0.000)
Years Since Migration		0.010	0.009		0.021	0.017
		(0.010)	(0.009)		(0.017)	(0.014)
Years Since Migration Squared		-0.017	-0.018		-0.036	-0.033
		(0.017)	(0.015)		(0.027)	(0.023)
University		0.415***	0.150***			
		(0.018)	(0.026)			
Married		0.039**	0.008		0.081***	0.020
		(0.018)	(0.017)		(0.022)	(0.020)
Number of Children		-0.095***	-0.083***		-0.120***	-0.103***
		(0.010)	(0.009)		(0.011)	(0.010)
Metropolitan Area		0.135***	0.089***		0.141***	0.102***
		(0.017)	(0.016)		(0.020)	(0.018)
Constant	12.377***	8.108***	9.510***	12.509***	8.110***	9.453***
	(0.010)	(0.279)	(0.375)	(0.011)	(0.338)	(0.412)
Observations	5,546	5,546	5,546	3,679	3,679	3,679
R-squared	0.005	0.195	0.297	0.008	0.196	0.327
Profession FE		No	Yes		No	Yes

Robust standard errors in parentheses

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

Source: LINDA data and own calculations

Table 7: Healthcare, Nursing and Social Care

VARIABLES	Population			University		
	(1) Log Annual Earnings	(2) Log Annual Earnings	(3) Log Annual Earnings	(4) Log Annual Earnings	(5) Log Annual Earnings	(6) Log Annual Earnings
Immigrants Born In Europe	0.040**	0.072	0.084	0.021	-0.182	-0.130
	(0.017)	(0.073)	(0.071)	(0.034)	(0.151)	(0.149)
Immigrants Born Outside Europe	-0.152***	0.071	0.084	-0.237***	-0.185	-0.142
	(0.028)	(0.079)	(0.077)	(0.057)	(0.161)	(0.157)
Age		0.103***	0.095***		0.111***	0.087***
		(0.006)	(0.006)		(0.012)	(0.010)
Age Squared		-0.001***	-0.001***		-0.001***	-0.001***
		(0.000)	(0.000)		(0.000)	(0.000)
Years Since Migration		-0.003	-0.003		0.014	0.011
		(0.005)	(0.005)		(0.010)	(0.010)
Years Since Migration Squared		0.004	0.004		-0.021	-0.017
		(0.009)	(0.008)		(0.017)	(0.016)
University		0.226***	-0.078***			
		(0.009)	(0.018)			
Married		-0.015*	-0.030***		0.007	-0.043***
		(0.008)	(0.008)		(0.015)	(0.014)
Number of Children		-0.042***	-0.041***		-0.056***	-0.047***
		(0.004)	(0.004)		(0.007)	(0.007)
Metropolitan Area		0.077***	0.059***		0.125***	0.100***
		(0.009)	(0.008)		(0.014)	(0.013)
Constant	12.152***	9.705***	10.719***	12.323***	9.546***	10.739***
	(0.004)	(0.130)	(0.123)	(0.008)	(0.239)	(0.205)
Observations	17,195	17,195	17,195	6,360	6,360	6,360
R-squared	0.003	0.144	0.209	0.005	0.152	0.284
Profession FE		No	Yes		No	Yes

Robust standard errors in parentheses

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

Source: LINDA data and own calculations

Linnæus University
Sweden

Table 1a: Descriptive Statistics for Natives

	(1)	(2)	(3)	(4)
	Mean	Standard Deviation	Min	Max
Annual Earnings	229690	116794.8	4	4971912
Log Annual Earnings	12.20824	.6035013	1.386294	15.41932
Age	41.2091	7.710131	25	55
Years Since Migration	0	0	0	0
Married	.5930193	.4912752	0	1
Number of Children	1.709741	1.068669	0	12
Metropolitan Area	.3810644	.4856523	0	1
Secondary School	.524127	.4994216	0	1
University	.475873	.4994216	0	1
Education Fields:				
General Education	.1128487	.3164103	0	1
Teaching Methods and Teacher Education	.1978528	.3983838	0	1
Humanities and Arts	.0303283	.1714904	0	1
Social Science, Law, Commerce and Administration	.2311224	.421554	0	1
Natural Science, Mathematics and Computing	.0239391	.1528607	0	1
Engineering and Manufacturing	.0572904	.2323985	0	1
Agriculture, Forestry and Animal Health Care	.00969	.0979606	0	1
Healthcare, Nursing and Social Care	.253983	.4352916	0	1
Service	.0829452	.2758017	0	1

Source: LINDA data and own calculations

Linnæus University
Sweden

Table 1b: Descriptive Statistics for European Immigrants

	(1)	(2)	(3)	(4)
	Mean	Standard Deviation	Min	Max
Annual Earnings	232850	120015.8	1037	2626237
Log Annual Earnings	12.23	.57682	6.944087	14.78106
Age	41.29993	7.800138	25	55
Years Since Migration	33.33421	11.20766	0	55
Married	.5128267	.4998954	0	1
Number of Children	1.405179	1.127937	0	9
Metropolitan Area	.4655958	.4988748	0	1
Secondary School	.6156797	.4864925	0	1
University	.3843203	.4864925	0	1
Education Fields:				
General Education	.1388156	.3457955	0	1
Teaching Methods and Teacher Education	.1328219	.3394228	0	1
Humanities and Arts	.0318868	.1757199	0	1
Social Science, Law, Commerce and Administration	.266363	.4421093	0	1
Natural Science, Mathematics and Computing	.0249341	.1559429	0	1
Engineering and Manufacturing	.0596979	.2369547	0	1
Agriculture, Forestry and Animal Health Care	.0052745	.0724428	0	1
Healthcare, Nursing and Social Care	.2522177	.4343376	0	1
Service	.0879885	.2833121	0	1

Source: LINDA data and own calculations

Linnæus University
Sweden

Table 1c: Descriptive Statistics for Non-European Immigrants

	(1)	(2)	(3)	(4)
	Mean	Standard Deviation	Min	Max
Annual Earnings	199830	108103	254	1257558
Log Annual Earnings	12.01331	.7339644	5.537334	14.04468
Age	31.98894	5.551079	25	55
Years Since Migration	25.17426	7.544656	0	53
Married	.4281291	.4949171	0	1
Number of Children	1.281734	1.231507	0	8
Metropolitan Area	.6342326	.4817512	0	1
Secondary School	.5413534	.4983972	0	1
University	.4586466	.4983972	0	1
Education Field:				
General Education	.1512605	.3583819	0	1
Teaching Methods and Teacher Education	.1163202	.3206794	0	1
Humanities and Arts	.0570544	.2319978	0	1
Social Science, Law, Commerce and Administration	.2582928	.4377926	0	1
Natural Science, Mathematics and Computing	.031402	.1744403	0	1
Engineering and Manufacturing	.0667846	.2497038	0	1
Agriculture, Forestry and Animal Health Care	.0035383	.0593911	0	1
Healthcare, Nursing and Social Care	.2653693	.4416273	0	1
Service	.0499779	.2179475	0	1

Source: LINDA data and own calculations