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# Economic assimilation of immigrants arriving from highly developed countries: The case of German immigrants in Sweden and the US [a]

by

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**Abstract**

Migration across well-developed countries has been overlooked in the immigration literature. The present study is designed to evaluate the interplay between the effects of host countries' characteristics and self-selection patterns of immigrants from a highly developed country on their economic assimilation in other developed countries. We focus on immigrants originated from Germany during 1990–2000 who migrated to Sweden and the US. We use the 5 percent 2000 Public Use Microdata files (PUMS) of the US census and a pooled file of the 2005–2007 American Community Survey, and the 2000 and 2006 Swedish Registers. We analyze eight groups of German immigrants – by country of destination (the US/ Sweden), gender, and skill level (with/without an academic degree). The results show that almost all German immigrants reached full earnings assimilation with natives of similar observed attributes, and that the assimilation of highly skilled Germans was better than that of the low skilled. We also found that the skilled immigrants were compensated for their human capital acquired in Germany prior to their migration. Finally, we find that despite higher educational levels of the Germans that headed to Sweden, the better assimilation of German immigrants, especially the highly educated, took place in the US. The better assimilation of Germans in the US was probably the result of an interaction between the Germans' pattern of self-selection (mainly on unobserved attributes) and the US context of reception – mainly higher returns on their observed human capital in the US.

Keywords: Highly-skilled immigrants, immigrants' self-selection, immigrants' economic assimilation, highly-developed source countries
JEL-codes: J15, J16, J18, J24, J31, J44

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# 1 Introduction

Selective migration is a highly relevant issue, both in social science research and for policy makers, as selective patterns of migration influence immigrants' economic performance at their destination countries. Not only that, patterns of immigrants' self-selection interact with the returns to skills and with other institutional features of labor markets of receiving countries that compete in the international migration market because such patterns are often influenced by the market structure and institutions at destinations. Put differently, receiving countries' characteristics serve as signals for prospective immigrants that choose among those destinations, and consequently affect their 'quality'[1]. Most research on the impact of the interaction between these two dimensions on the economic assimilation of immigrants has been centered on migration waves from less developed to highly developed countries. The more developed countries compete among themselves by adjusting their migration policies in order to attract highly skilled immigrants from the less developed regions of the world (Commander et al 2004; Iredale 1999; Mahroum 2001; Quaked 2002). When one country is successful in attracting the most educated, skilled, and productive people from other countries, it is called a "brain drain". This issue, concerns not only migration from developing to developed countries. Migration between two developed countries constitutes about one fifth of all international migration. As of 2000, 28 million migrants moved between developed countries, half of whom were highly skilled (Docquier 2014; Özden et al 2011). Despite the increasing importance assigned by governments to attract highly skilled immigrants and to retain their own highly trained citizens at home, theoretical approaches and empirical research on the topic has been scanty and not systematic (e.g. Iredale 1999; Lofstrom 2000). This paper offers a systematic study of first, the patterns of selectivity in out-migration from a highly developed country (Germany) to two similarly developed destinations – Sweden and the US. Second, it investigates the impacts of the interactions between those patterns and the host countries' characteristics on the immigrants' economic assimilation. Its design builds on situations studied before by the authors: looking at immigrants originated from one country (Germany), during the same period (1990 – 2000) to two different destination countries (Sweden and the US). Such a design allows us to examine the

[1]The term 'Quality' refers to immigrants observed and unobserved characteristics and it will be discussed in the next section.

consequences of that interaction (i.e., between immigrants' self-selection patterns on the one hand and immigration policies and economic opportunities at destinations on the other) on the economic assimilation among relatively highly skilled immigrants (Birgier, Habefeld, Lundh and Elldér, 2016; Cohen and Haberfeld, 2007; Cohen, Haberfeld and Kogan, 2011; Haberfeld and Lundh, 2014; Lewin-Epstein et al. 2003), and to better assess the contribution of the highly developed Western countries' attributes to the integration of well-trained and highly skilled immigrants. We study four groups of German immigrants – as derived from the interaction between immigrants' gender (men/ women) and immigrants' skills (i.e., with /without an academic degree). For the US we use individual-level data from the 5 percent sample of the 2000 US census and a 3 percent sample of the 2005/7 American Community Survey, and for Sweden we use register data for the entire population from 2000 and 2006 registers.

# 2 Theoretical framework

## 2.1 Self-selection and assimilation

The international literature lists a number of factors that affect the economic assimilation of immigrants: the individual's educational level, work experience and the time since immigration, language skills, access to ethnic or native networks, or the degree of discrimination. We chose to study two main interrelated determinants of immigrant's economic assimilation – immigrants' patterns of self-selection (Chiswick, 1978; Borjas, 1985), and the host country's context (Borjas, 1990; Portes and Rumbaut, 1990). Understanding the joint contribution of these two factors on the economic assimilation of immigrants has important implications for policy-making (Borjas 1990; Card, 2005).

Immigrants' patterns of self-selection are one of the main determinants of their economic assimilation. The concept of 'self-selection' was originated by Roy (1951) in the context of occupational choice, and since then it has been applied to many types of rational choice-making. It is designed to explain how rational actors make maximizing decisions about what markets to participate in – jobs, marriage, education and more. At its basis is the notion that observed correlations should, many times, be viewed as endogenous outcomes of various rational decisions, rather than as exogenous causal paths. Borjas (1987) was the first one to apply it to the decisions of potential immigrants at source countries whether, and where to migrate. He, and other scholars, argued that

immigrants are not a random sample drawn from the source country population, but rather represent a self-selected group from the population at risk in terms of its labor market characteristics because migration entails risks and costs that immigrants decide to take in order to improve their economic conditions at the destination country (Borjas, 1987; Chiswick, 1979; Chiswick and Miller, 2007). Furthermore, there are "higher-level" patterns of self-selection *within* groups of immigrants – as manifested by their destination choices. When immigrants have several destinations to choose from, then additional sets of within-immigrants such patterns play a role in determining the destinations distribution of those who decide to migrate. Immigrants' self-selection patterns comprise of both observed (mainly measured by their education level) and unobserved characteristics (such as motivation and risk taking). A positive self-selection pattern on both observed and unobserved attributes enhances migrants' ability to economically assimilate in the host country (e.g., Borjas, 1990; Cohen and Haberfeld, 2007; Haberfeld, 2013; Smith and Edmonston, 1997). It should be noted however that self-selective patterns in return migration (if exist) influence the estimated economic assimilation of those immigrants remaining in the destination country. For example, return migration of the least assimilated immigrants within a certain immigrant group increases the measured assimilation of that group, and return migration of the most successful decreases it (Borjas and Bratsberg, 1994; Edin, LaLonde, and Åslund, 2000).

### 2.2 Context of reception and assimilation

The second determinant of immigrants' economic assimilation is the host country's characteristics, including migration and welfare policies, and market structure.[2] Clearly the host countries' reception contexts affect the type of immigrants that prefer to arrive to certain countries and consequently, their patterns of self-selection into those countries. The immigration regime consists of rules and norms that govern immigrants' opportunities to become citizens, to acquire residence and work permits, and to participate in economic, cultural and political life. The two destination countries in this study differ in their migration policies towards economic immigrants.

[2] Clearly, the context of reception includes other factors as well such as discrimination against immigrants at the country of destination, destination-specific human capital and more. We refer to the possible impacts of such factors on the immigrants' assimilation in both countries later in the paper.

The US had a more restrictive policy towards immigrants during the studied period (1990–2000). It was based primarily on family reunification and, to a lesser extent, on occupational qualifications. The broad outlines of the current system in the U.S. were laid down in the 1965 amendments to the Immigration Control Act when separate preference categories and levels of preference were established for those admitted for family reunification and those admitted for employment purposes. Currently, about three times as many immigrants are admitted under the "family sponsored" category as under the "employment-based" preference system (OECD, 2016). Within the employment-based system, an explicit hierarchy of preferences exists to favor individuals in higher as opposed to lower skilled occupations. Finally, there is an additional policy overlay that imposes immigration ceilings on individual countries of origin. Currently, no group of permanent immigrants (family-based and employment-based) from a single country can exceed seven percent of the total number of people immigrating to the United States in a single fiscal year. The US has been the most popular destination of German immigrants. In 2000, there were about 1.1 million German-born immigrants in the US, who constituted about one-third of all German immigrants during that period (OECD, 2015). More than 90 percent of them had a high level of English proficiency. By 2013, almost 60 percent of the immigrants of European-origin in the US who became Legal Permanent Residents there did it due to family-based considerations (mainly as immediate relatives of US citizens), and additional 25 percent thru employment-based considerations (Zong and Batalova, 2015).

Sweden had a less restrictive policy towards immigrants from Germany during the investigated period. In 1990–1994, German immigration to Sweden was still restricted to those with job offers or who were tied to someone living in Sweden. Non-Nordic immigrants had to apply for residence and work permits before arriving in Sweden. However, with the Swedish entrance into the EU in 1995, German immigration to Sweden has become free of restrictions. Because they are EU citizens, Germans have the right to live and work in Sweden if they choose to do so. About 4,300 German immigrants entered Sweden between 1990 and 2000, most of whom (approximately 80 percent) did it after 1994.[3]

[3] We tested for differences in earnings-enhancing determinants between the two cohorts of German immigrants in Sweden (1990–1994, and 1995–2000), and found no evidence for such differences. Consequently, we refer to the German immigrants that arrive there during 1990–2000 as one group.

The second host-country factor affecting immigrants' assimilation is the welfare policy at destination. The most influential welfare-regime typology is that of Gøsta Esping-Andersen's (1990) which identifies three different welfare regimes: the liberal, the conservative corporatist, and the social democratic. The US typifies the liberal welfare regime with mainly private welfare arrangements – especially employer-sponsored benefits. State-sponsored assistance is provided to the deserving poor only. In contrast, Sweden has a social democratic regime in which most benefits are mainly financed through taxation, and services are provided to the entire population. The two countries thus differed in their welfare policies towards immigrants during the period of investigation.[4] In conclusion, Sweden's the more liberal migration policy and its generous welfare policy and wider safety net made it probable that migrants with lower skills would choose Sweden over the US.

Finally, the operation of the labor markets at destination affects the economic standing of immigrants in several ways (Borjas, 1990; Portes and Rumbaut, 1990). First, the size of high- and low-skilled labor segments affects the demand for immigrants at each skill level. Second, the flexibility level at the host country's labor market determines its degree of openness towards immigrants. High levels of employment protection by legislation and unions might reduce employers' willingness to hire immigrant workers (Kogan, 2007). Third, the economic cycles have severe implications for the economic standing of immigrants because they are particularly disadvantaged in finding employment during recessions (Kogan, 2007).

The two countries to be compared vary significantly with respect to the operation of their markets. While the US is characterized by flexible markets and high returns on high levels of income determinants (mainly human capital) and consequently by high levels of income inequality, Sweden has relatively low level of income inequality, and high involvement of labor unions in earnings determination. Furthermore, it has a relatively larger low-skilled segment of the labor force than the US[5], thus it is more attractive to low-skilled immigrants. In addition, Sweden experienced a severe economic recession

[4] Even though some social benefits were reduced during the economic crisis in the 1990s, major changes in the welfare policies in Sweden did not take place until after 2006 – the latest year of our investigation.

[5] The share of natives aged 25-64 with an academic degree in 2000 stood around 15 percent in Sweden (Statistics Sweden, 2009) compared to 24.5 percent in the US (Bauman and Graf, 2003). In addition, in Sweden 32.6 percent of the work force in 1990 were employed in the Agriculture and Industry sectors, compared to 29.3 percent in the U.S. (ILO, 2017).

and high unemployment rates during the 1990s – the decade studied here. Starting to climb in 1992, the unemployment rate in Sweden during 1993–1998 was stabilized around 9–10 percent, and then it started to decline, reaching to 5.5 percent by 2000. In comparison, the unemployment rate in the US during that period reached a high of 7.5 percent in 1992, and then it went constantly down, reaching 5.6 percent in 1995, and 4 percent by 2000 (The World Bank, 2017). These across-country differences in their business cycles made it more difficult for Sweden-bound immigrants to fully assimilate there.

It is also interesting to consider the average wages in Sweden and the US as compared to those in Germany during the studied period. The 2000 average wages in Sweden, the US and Germany (in 2015 constant prices at 2015 USD PPPs) were 32,400; 51,300; and 40,700 respectively. In 2005, these figures were 35,000; 53,800; and 41, 100 (OECD.Stat, 2017). Put differently, the US might had been more attractive to highly skilled Germans than was Sweden. The ratio of the US-to-Germany Purchasing Power Parity was much more favorable for Germans who migrated to the US (1.26–1.31) than for those who chose Sweden (with a PPP Sweden-to-Germany ratio of 0.80–0.85).[6]

These differences probably affected, again, the self-selection patterns of migrants, and consequently – the ability of immigrants to close the wage gap with natives. If indeed the more abled German immigrants chose to migrate to the US over Sweden because of those differences between the two countries in the operation of their markets, then we should observe better economic assimilation of Germans in the US than in Sweden.

### 2.3 Economic assimilation of highly skilled immigrants

Notwithstanding the central role of self-selection in immigrants' assimilation, students of international migration have suggested that immigrants (regardless of their specific levels of human capital) experience considerable social and economic hardships in the labor market of the host society upon arrival (e.g., DeVoretz, 2006). They are not familiar with the new labor market; they have limited access to information and to social ties; they do not have full command of the language; their occupational skills are not always transferable to the new economic system, and at times they even face discrimination. As

[6] Clearly, the PPP of the average wages in the three countries is a crude measure of the economic wellbeing in a certain country. It does not consider the wage inequality in that country, nor its welfare benefits. Consequently, it probably overestimates the economic wellbeing in the US, and underestimates it in Sweden. Yet, it can serve as a broad indicator of the differences in the economic wellbeing across the three countries involved.

a result, immigrants (even high-skilled) are at a disadvantage when compared to native-born workers. Apparently, when competing for jobs in their new labor market, immigrants often have to take less rewarding, low-status and low-paying jobs than those attained by the native-born populations. Consequently, their economic rewards and outcomes are considerably lower than those of the native-born workers of comparable human-capital levels (Eckstein and Weiss, 2002; Chiswick and Miller, 2009a; 2009b).

With the passage of time in the host society, however, many immigrants experience upward occupational and economic mobility, and consequently, improve their relative market position. Indeed, after a certain period of time in the host society immigrants were found, many times, to close the earnings gaps with comparable native-born populations, especially among those with high levels of human capital (Borjas 1990; 1994; Borjas and Tienda 1993; Chiswick 1978, 1979; LaLonde and Topel 1997; Lofstrom 2000).

Research has shown that high skilled migrants cannot be considered as one homogeneous category. Not all are equally successful in assimilating into the labor market of their new country. The transferability of skills and human capital resources may differ not only from one country to another, but also across occupational labor markets within the same country. Some skills (e.g., those of engineers, technicians, scientists, craftsmen) may be highly transferable from the market of origin to the market of destination, while others (e.g. lawyers, accountants, doctors) are country-specific and require knowledge of laws, rules and regulations or even licensing permits (e.g. medical doctors) or depend more on language proficiency (e.g. teachers, psychologists). Certain occupations may be in great demand (e.g. nurses) yet others may be a liability because the market is saturated with them. Thus, the occupational labor market in which the immigrant worker operates may well affects her economic opportunities in the host labor market (Chiswick and Miller, 2009a; 2009b).

Although human capital is highly influential in shaping immigrants' economic fortunes, the context of reception prevalent in a specific country mediates the effect of training and skills (and specific occupations) on the incorporation of highly skilled immigrants into the market. Experience in several countries also suggests that economic assimilation of highly skilled immigrants may not be taken for granted and depends on the countries' migration policies, citizenship laws, economic opportunities in the labor

market, and welfare institutions among others (Cohen and Haberfeld, 2007; Cohen, Haberfeld and Kogan, 2011; Lewin-Epstein et al. 2003).

As already mentioned, this study also focuses on the gender dimensions of highly skilled labor migrants' in host societies as studies conducted on the topic have systematically neglected the presence of women in skilled transnational migration (see Kofman, 2000).

## 3 Setting

We focus on immigrants that left Germany between 1990 and 2000. This was the period in which Communist East Germany collapsed, and the two Germanys reunified under the leadership of the highly developed, rich West Germany. Immediately after the Wall fell, there was an internal east-west migration wave in Germany comparable in size to the migration wave that led to the building of the Wall in the late 1950s. West German trade unions acted quickly and initiated collective agreements covering East German workers, agreements that included large wage increases for them. These wage increases led to rising unemployment, but in the same time also slowed the internal migration. Studies show that the internal east-west migration was dominated by young people, highly skilled people, and older people who got laid off (Hunt 2006). In the same time, the migration of Germans to other countries intensified. Both the absolute and the relative numbers of German immigrants at the beginning of the 2000s were high and placed them as the third largest diaspora in the OECD countries – behind only to Mexico, and very close to the United Kingdom (Table A.2, OECD, 2015).[7]

In contrast to most previous research in the field of immigrants' economic assimilation in which immigrants arriving from less developed to developed countries were studied, we study immigrants arriving from a highly developed country (Germany) to other highly developed destination countries (Sweden and the US). Such a design allows us to better assess the contribution of the highly developed Western countries' attributes to the integration of well-trained and highly skilled immigrants.

[7] It should be noted that we do not have a way to distinguish between emigrants from East and West Germany. We have, however, some reasons to believe that immigrants from West Germany were more prone than immigrants from East Germany to go to the US and Sweden, due to the similarities in the political and higher-education systems between the three countries. In order to assess the validity of our results we estimated the models presented here using German immigrants that arrived to the two destinations between 1980 to 1990 – a period in which only emigrants from West Germany could leave Germany. Most results estimated based on this cohort resemble the results presented here.

## 4 Expectations

As already explained, economic migrants are not randomly selected from their source countries nor do they randomly select their country of destination. Therefore, highly skilled immigrants are likely to choose countries of destination where they expect to receive the highest returns on their human-capital resources.

Since there are differences in the market structures and in migration and welfare policies between Sweden and the US, we expect to find differences in patterns of self-selection and consequently, in economic assimilation of migrants from Germany. We expect that the most positive self-selection patterns will be found among the highly skilled immigrants to the US. At that time the US was more attractive than Sweden to highly qualified immigrants for several reasons. First, its migration policy attracted the highly educated due to the "employment-based"preference component in its migration policy that favored high- over low-skilled immigrants. Second, it offered higher returns on human capital and high-status occupations as indicated by its high levels of income inequality. Finally, its restrictive welfare policy probably discouraged the least qualified and abled immigrants from arriving there, a policy that might lead to a selective return-migration of the least successful immigrants. In contrast, we expect to find less intensive patterns of positive self-selection among immigrants in Sweden for the same reasons. First, every German that wished to migrate to Sweden could do so – at least during the second half of the studied period. Second, Sweden had a much more generous welfare system designed to help immigrants to integrate into the society. Clearly, such a system is more attractive to the less-qualified immigrants and to the many unemployed highly skilled Germans during that period. Finally, returns on human capital in Sweden were significantly lower than in the US – as manifested by its low levels of income inequality.

Clearly, these expectations of ours are based not only on the observed attributes of the population at risk, but also on its unobserved characteristics. Potential immigrants in Germany that prefer the US over Sweden should be self-assured, high-risk takers, and highly motivated. Unlike their German counterparts who choose to go to Sweden, a failure to economically assimilate in the US would have left them in a very dire situation – with no money, no welfare network, and no institutional help. Consequently, we expect that the positive self-selection of Germans who chose the US over Sweden was more intense than that of those who migrated to Sweden not only on their observed attributes,

but on their unobserved characteristics as well. Not only that, the Germans who chose the US over Sweden enjoyed one more advantage. In contrast to the Germans who came to Sweden, most of the US-bound Germans were more likely to have a good command of the (English) language spoken at their new destination (OECD, 2015). Obviously, speaking the local language is a major advantage in the process of economic assimilation in a new country.

If indeed our expectations about the patterns of self-selection are correct, then we expect that the economic assimilation of the highly skilled German immigrants – both men and women – in the US will be found to be more successful than that of their Sweden-bound counterparts. In addition, the across-country differences in market structures are expected as well to affect immigrant's assimilation. Specifically, some studies suggest that immigrants' employment disadvantages are smaller in liberal welfare states with flexible labor markets (Kogan, 2007) and with fewer restrictions on the operation of product markets (Huber, 2015). That is, high levels of centralized wage bargaining and union density, as well as markets' regulation are related to worse labor market outcomes for immigrants relative to natives, even after controlling for compositional effects (Huber, 2015). This might suggest that immigrants arriving to Sweden, and specifically low skilled immigrants, could find it more difficult to integrate into the Swedish labor market. Furthermore, the signals of a larger earnings disparity and the more flexible markets in the US may result a positive self-selection among the less skilled as well because their employment and assimilation prospects might be perceived as better in the US.

## 5 Methods

Four data sources were used in order to evaluate the economic assimilation of Germans in their two destination countries. We analyzed German immigrants who arrived to their destination during 1990–2000, at the age of 25–55 upon arrival. We limit the age at migration to at least 25 years of age in order to ensure that the migration decision was made by adult immigrants, who came to their destination with education and skills acquired prior to their migration from Germany. In the US, the 5 percent 2000 Public Use Microdata files (PUMS) of the US census and a pooled file of the 2005–2007 American Community Survey (ACS) (totaling about 3 percent of the population) were used. In order to measure selectivity levels on observed characteristics we first focus on recent

immigrants in 2000 (0–10 years after their arrival to the US) using the 2000 PUMS. Next, we tracked the earnings growth of this German cohort during their first 5–17 years in the US, relative to a benchmark sample of native-born Americans using the 2005–2007 ACS. For this cohort, there are earnings observations in both 2000 (when immigrants were at the age of 25–65) and 2005–2007 (when they were 30–65[8] years of age).[9]

The analyses in Sweden are based on data drawn from the 2000 and 2006 Swedish Registers from GILDA.[10] The Swedish Registers contain data about the entire Swedish population. The 2000 registers were used to assess the selectivity patterns of immigrants shortly after their arrival (0–10 years) to Sweden, and the 2006 registers were used in order to track the earnings growth of the German cohort during its first 6–16 years in Sweden, relative to a benchmark of native-born Swedish people.

The sample sizes of the various groups studied are presented in Appendix 1. All gender-by-skill level-by-destination sub-groups of the German immigrants are composed of, at least, 300 persons, except for low-skilled men in the US ACS database (n = 175).

The variables used in this study include an indicator for immigrant status for individuals born in Germany and tenure at destination – Years Since Migration (YSM), which is defined by subtracting the year of immigration from the year of the data collection. As we are interested in the different patterns of assimilation of high- and low-skilled immigrants, we include a sequence of four dummy variables for highest-level education completed (elementary, secondary, post-secondary nonacademic, and academic

[8] The age of both natives and immigrants was restricted to 65 in 2005-2007 under the assumption that many of those who are older than 65 either do not work or work part-time.

[9] The more generous retirement benefits in Sweden than in the US may lead to age-related biased comparisons between the US and Sweden. However, Table 1 indicates that the age distributions in both countries are very similar.

[10] Administrated by the unit of Human Geography at the University of Gothenburg. It comprises official register data provided by Statistics Sweden from the database Longitudinell Intgrationsdatabas för Sjukförsäkring- och Arbets-marknadsstudier, (the official name in Swedish (LISA)). It contains data on every individual, sixteen years or older, registered in Sweden as of the 31st of December each year.

education)[11] in which the omitted category is completing secondary education.[12] Age in years (and its squared term) was used as a proxy for persons' experience in the labor market. We controlled for part time employment using an indicator for individuals working less than 35 hours a week in the US, and earn less than a third of the average monthly salary in Sweden.[13] We also included an indicator of marital status (married=1), salaried employment (self-employment=1), and the presence of a child under the age of 3 (for women only). All regression analyses for both countries are based on salaried and self-employed workers at the ages of 31–65 in 2006[14], who had positive earnings, and that were located in the ninety-ninth percentile and below of the earning distribution[15].

The comparison between the self-selection patterns and economic assimilation of Germans in the two countries is based on three types of analyses. The first analysis is a comparison between the individual characteristics of recent immigrants to Sweden and the US upon their arrival there (immigrants that are 10 years or less in the host country) and their relative earnings close to their arrival using the 2000 data in the US and Sweden. This analysis sheds light on the observed self-selection patterns of immigrants. We pay special attention to their education levels, because education serves as the main observed indicator of immigrants' self-selection patterns. The main indicator of economic assimilation in this first part of our study is the mean income from work across all immigrant groups – relative to the mean earnings of the equivalent native-born populations. In the second stage we compare assimilation models of immigrants' earnings in the two countries in 2006 (2005–2007 in the US) after 6–16 years at destination. These

[11] As the definition of education levels differ somewhat between the two countries, we harmonized the categories to the Swedish scale: elementary education is defined up to 9th grade and secondary education is defined as 10th to 12 grads ("gymnasium").

[12] GILDA reports the highest level of education for a person in each point in time. For immigrants, the education variable is derived from a self-reported education level acquired in the sending country prior to migration provided by the immigrant upon arrival. However, education completed later in the Swedish system are reported as well.
As a result, our sample was limited to immigrants who provided the information on education. Approximately 15 percent of the immigrants from Germany have no information on education in 2000, and about 3 percent in 2006. This difference in across-year missing data rates results from the efforts made in Sweden to complete the missing information by sending every year questionnaires to immigrants with missing data.

[13] There is no information on working hours in the Swedish registers. Consequently, we assigned the value of "part time employment" to individuals that earned 5243 SEK or less in 2000, and 6308 SEK or less in 2006. In order to assess the sensitivity of our analyses to this definition we repeated the estimations of the models using the same definition of part-time employment in the US. The results of the repeated earnings equations are practically the same as those presented here. There are some differences however when the decompositions are repeated after applying the Swedish "part time employment" definition to the US. The main difference is, as expected, the smaller magnitude of the portion of the between-county gap in native-to-immigrant gaps that is due to differences between the two countries in returns to observed characteristics.

[14] 2005-2007 in the US ACS data.

[15] In the US data we also restricted the sample to individuals that worked at least five hours per month – a restriction we could not use with the Swedish data.

models are based on the standard immigrants' assimilation model developed by Chiswick (1978) and are designed to estimate the annual rate of immigrants' earnings assimilation (as captured by the YSM coefficient)[16]. Finally, we employ a decomposition method offered by Juhn, Murphy, and Pierce (1991) to distinguish between the effect of immigrants' individual characteristics (observed and unobserved) and the effect of labor market structure on the immigrants-to-natives earning gap in 2006. All analyses are conducted separately for male and female/ high- and low-skilled immigrants.

# 6 Results

## 6.1 Descriptive overview

Table 1 presents the descriptive statistics of the observed characteristics for men and women and respectively natives and immigrants 0–10 years after their arrival in Sweden and the US.[17]

[16] Estimations of YSM in our study are derived from cross-sectional data, and consequently might be biased due to cohort-effects (Borjas, 1995). However, this is not a major threat to our estimates because we study immigrants who arrived at their destinations during a relatively short period of time (10 years). Even if this specific cohort was composed mainly of highly skilled Germans – more than of other cohorts of German immigrants, it did not lead to a cohort-effect bias because it was the only cohort analyzed here. Another possible source of biased YSM estimates is, of course, the possibility that out-migrants are self-selected on earnings determinants. Unfortunately, we do not have data on out migrants. However, when comparing the more recent to the earlier immigrants belonging to this cohort and that are still in Sweden and the US, we find that the earlier immigrants were slightly more educated than the more recent ones (results are available upon request), thus lowering the possibility of positively censored out-migration.

[17] The gender ratio of the immigrants in the US had changed dramatically from 2000 (54 percent men) to 2005–2007 (47 percent men) – See Appendix 1. This difference results from the fact the immigrant women in the US are less likely to have earnings shortly after immigration relative to immigrant men. The total immigrant women-to-men ratio in the US is over 1 both in 2000 and 2005–2007. However, the same ratio for immigrants with positive earnings in 2000 is less than 1, reflecting the fact that immigrant women join the labor market later than their male counterparts.

Table 1 Means (SD) of variables – German immigrants and natives, in the US and Sweden 2000, by gender [a]

| | US | | SWE | |
|---|---|---|---|---|
| | Native | Immigrants | Native | Immigrants |
| | | **Men** | | |
| LN(earnings) | 8.014<br>(0.718) | 8.208***<br>(0.787) | 12.176<br>(0.896) | 11.972***<br>(1.178) |
| Percentile on the natives' earnings distribution | | 58.762 | | 46.929 |
| Earnings (USD, SEK) | 3,849.434<br>(3,181.659) | 4,773.944***<br>(3,787.156) | 20,140.228<br>(9,920.087) | 19,081.864***<br>(11,776.430) |
| Part time employment | 0.070 | 0.056** | 0.077 | 0.137*** |
| Age | 41.152<br>(9.299) | 37.021***<br>(6.711) | 41.663<br>(10.075) | 37.160***<br>(7.297) |
| BA+ degree | 0.282 | 0.603*** | 0.213 | 0.645*** |
| Post-secondary non academic | 0.314 | 0.188*** | 0.083 | 0.046*** |
| Secondary education | 0.375 | 0.197*** | 0.514 | 0.251*** |
| Elementary education | 0.029 | 0.012*** | 0.190 | 0.058*** |
| YSM | | 3.791<br>(2.813) | | 3.445***<br>(2.746) |
| Married | 0.682 | 0.631*** | 0.596 | 0.533*** |
| Married to a native | | 0.279 | | 0.230*** |
| English very well | | 0.842 | | |
| Labor Force Participation Rate [b] | 0.855 | 0.876** | 0.912 | 0.687*** |
| Self-Employed [b] | 0.123 | 0.100*** | 0.086 | 0.041*** |
| *Observations (earnings variable)* | *2,280,289* | *1,362* | *1,660,966* | *1,208* |
| | | **Women** | | |
| LN(earnings) | 7.578<br>(0.761) | 7.591<br>(0.802) | 11.745<br>(1.044) | 11.364***<br>(1.361) |
| Percentile on the natives' earnings distribution | | 50.71 | | 42.010 |
| Earnings (USD, SEK) | 2,532.291<br>(2,079.574) | 2,637.317*<br>(2,210.469) | 14,163.604<br>(7,991.827) | 12,279.121***<br>(9,774.748) |
| Part time employment | 0.248 | 0.256 | 0.150 | 0.284*** |
| Age | 41.209<br>(9.262) | 37.162***<br>(6.730) | 41.914<br>(10.030) | 37.292***<br>(7.249) |
| BA+ degree | 0.293 | 0.422*** | 0.316 | 0.660*** |
| Post-secondary non academic | 0.353 | 0.289*** | 0.046 | 0.037 |
| Secondary education | 0.336 | 0.279*** | 0.507 | 0.260*** |
| Elementary education | 0.018 | 0.011* | 0.130 | 0.042*** |
| YSM | | 4.824<br>(3.008) | | 4.004 |
| Married | 0.626 | 0.628 | 0.632 | 0.531*** |
| Married to a native | | 0.424 | | 0.237 |
| English very well | | 0.890 | | |
| Labor Force Participation Rate [b] | 0.739 | 0.621*** | 0.894 | 0.610*** |
| Self-Employed [b] | 0.065 | 0.067 | 0.038 | 0.037 |
| Having a child under the age of 3 [c] | 0.124 | 0.209*** | 0.130 | 0.219*** |
| *Observations (earnings variable)* | *2,066,451* | *1,174* | *1,587,177* | *1,106* |

[a] Included are salaried and self-employed workers with positive earnings, located at the ninety-ninth percentile and below of the earnings distribution, and that were at the age of 25–59 in 2000.

[b] Calculated based on the entire population at working age. For the US but not for Sweden, those unemployed are included in the numerator.

[c] For women only.

*** indicates a significant difference in means at $p<0.01$.

Interestingly, all four groups of German immigrants – men and women immigrants in Sweden and in the US – have higher education levels than their native counterparts. The educational levels of the Germans are exceptionally high. About two-thirds of them have an academic degree, as compared with 22–32 percent only among Swedish and US natives. In contrast to our selectivity expectation, the only exception is the group of female immigrants in the US, of whom 42 percent only acquired academic degrees in Germany prior to their migration. The immigrants-to-natives' educational gaps are more pronounced in Sweden than in the US. German men are three times, and German women are two times more likely to have an academic degree compared to their Swedish native counterparts. The equivalent gaps in immigrants-to-natives' education in the US among men and women are 2 and 1.5 times respectively. Furthermore, the German immigrants to both countries are found to be much more educated than the Germans who stayed behind in Germany. The rates of highly educated Germans, age 25–55, who lived in Germany during the 1990s ranged between 21 (1989) and 31 (2000) percent among men, and 14 (1989) to 26 (2000) percent among women (LIS, 2016). Put differently, the German immigrants to the US and Sweden belong to a highly selective group from their population of origin. In addition, the Germans are found to be younger than both Swedish and US natives. The average age of natives in the two countries is 41–42 years, and that of the four immigrant groups is 37 years. The tenure of the immigrants in the US is slightly higher than that of the immigrants in Sweden (4–5 vs. 3.5–4 years since migration), a difference that could result from the relative rise in the German migration to Sweden during the second half of the 1990s following the enacting of its less restrictive immigration policy starting in 1995, as well as a possible higher rate of return migration from Sweden to Germany due to this less restrictive policy in Swede and the lower cost of returning to Germany from Sweden than from the US. A higher proportion of the immigrants (and natives) in the US are married (about two-thirds) than that proportion among the Germans (and natives) in Sweden (about 53–63 percent).[18] In addition the share of immigrants who are married to natives differ somewhat between the two countries. While in the US 28 percent of men and 42 percent of women are married to natives, in Sweden only 23–24 percent of both men and women are married to a native.

[18] This difference is probably the result of the higher rate of couples in Sweden than in the US residing together without being formally married.

This difference is important as interethnic marriages to natives serve as both a sign of and a catalyst of assimilation, implying that we might expect better assimilation in the US than in Sweden (but again, see footnote 17).

The labor force participation rate of the German immigrants 0–10 years after their arrival in Sweden is lower than that of natives (approximately 60 and 70 percent among immigrant women and men respectively, as compared to about 90 percent among Swedish of both gender groups).[19] The equivalent figures in the US are about 88 percent for German men (slightly higher than that rate among native men) and about 62 percent among German women (which is lower than the rate among native women).

Two more figures are worth noting. First, the rates of self-employed German men are lower than those of natives, and very similar among immigrant and native women. Second, full-time employment, as expected, is very high among men (92–95 percent). The only exception is the group of immigrant men in Sweden, of whom 86 percent only work full time.[20] Among women, most groups show similar rates of full-time employment (approximately 75 percent). The exception is the group of native-born Swedish women that has a significantly higher rate of full-time employment – 85 percent.

Finally, language acquisition is an important determinant of assimilation. In the US, 84–89 percent of German immigrants declared that they speak English only, or very well. This implies that the vast majority of Germans in the US are fluent in English shortly after arriving there. Unfortunately, we do not have information on language proficiency in Sweden, but the share of Germans in Sweden that are fluent in Swedish is probably much smaller.

To compare selectivity regarding both observed and unobserved characteristics, Table 2 presents the immigrants-to-natives earnings ratios in the two countries at both points of time.

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[19] Prior to the 1990s, the difference between German immigrants and natives in employment was rather small in Sweden. The economic crisis in the early 1990s lead to increasing unemployment and a general decrease in employment that hit immigrants more than natives. At the end of the decade, the gap in employment between natives and German immigrants was much wider, even though Germans did better than most other immigrant groups (Bevelander 2000:81; Lundh et al. 2002: 25). In addition, the relatively low levels of immigrants' labor force participation in Sweden result, probably, from data limitations. The Swedish data used in this study do not provide information on the unemployment status of those with no earnings or income, thus including the unemployed in the non-participants group. Since the unemployment levels among recent immigrants are usually high, the estimated rate of non-participants is probably upward biased.

[20] Note however that this variable in the Swedish case was constructed from earnings since information about the annual working time was not available. See footnote 12 above.

Table 2 Immigrant-to-native mean earnings (in US dollar, Swedish Krona) ratios by country, gender, level of education, and year of survey [a]

| **US arrivals** | **Men** | | **Women** | |
|---|---|---|---|---|
| | 2000 | 2005–2007 | 2000 | 2005–2007 |
| Immigrants-to-natives ratio (all) | 1.24 | 1.45 | 1.04 | 1.07 |
| N of immigrants [b] | 1,386 | 577 | 1,174 | 651 |
| Immigrants-to-natives ratio without BA | 1.12 | 1.20 | 0.94 | 0.98 |
| N of immigrants | 550 | 175 | 679 | 350 |
| Immigrants-to-natives ratio with at least BA | 1.01 | 1.16 | 0.99 | 0.99 |
| N of immigrants | 836 | 402 | 495 | 301 |
| **Sweden arrivals** | **Men** | | **Women** | |
| | 2000 | 2006 | 2000 | 2006 |
| Immigrants-to-natives ratio (all) | 0.95 | 1.04 | 0.87 | 0.96 |
| N of immigrants [b] | 1,208 | 1,100 | 1,106 | 1,117 |
| Immigrants-to-natives ratio without BA | 0.77 | 0.82 | 0.80 | 0.90 |
| N of immigrants | 429 | 408 | 376 | 359 |
| Immigrants-to-natives ratio with at least BA | 0.87 | 0.98 | 0.78 | 0.87 |
| N of immigrants | 779 | 692 | 730 | 758 |

[a] Salaried and self-employed workers, with positive earnings, that were located at the ninety-ninth percentile and below of the earning distribution, and were at the age of 25–59 (in 2000), 31–65 (in 2006); immigrants arrived at the destinations at the age of 25–56 during 1990–2000.
[b] The reduction in the number of cases in the US between 2000 and 2006 is primarily the result of using two different samples in those two time points. While the 5% census was used for 2000, the (pooled) 2005-2007 ACS samples were used for 2006. This pooled sample contains 3% only of the US population. In contrast, the Swedish Register adds information over time about immigrants who arrived there earlier, thus compensating for attrition of immigrant cases between 2000 and 2006.

The higher educational level of the Germans compared to Swedish natives is not manifested by their earnings levels. German immigrant men in Sweden earned slightly less than the natives 0–10 years after arriving there. Six years later (in 2006) their earnings surpassed those of Swedes by 4 percent. In contrast, the German men who chose the US as their destination earned 24 percent more than native-born Americans 0–10 years after they arrived to the US. Six years later their earnings advantage rose to 45 percent. Among women, the picture is less dramatic, but in the same direction as men's. German women in Sweden started (0–10 years after arriving there) in an earnings disadvantage of 13 percent, and they almost closed this initial gap - six years later. In the US, German women earned 4 percent more than native-born American women shortly after arriving there, and the immigrant-to-native women earnings ratio rose to 1.07 six years later.

When breaking the samples of immigrants into skill-based groups, a more complex pattern emerges. Starting with the US, the less skilled (i.e., those with no academic degree) German men did much better than their American counterparts. They started with a 1.12 earnings ratio soon after arrival, and improved their relative position on the earnings distribution even more six years later – reaching a ratio of 1.20. The highly skilled German men in the US also reached full earnings assimilation right from the beginning, and surpassed their native counterparts in a slope somewhat steeper than that of the less skilled German men. They enjoyed an initial advantage of one percent at the first time point (2000) and reached an advantage of 16 percent in 2006. Among woman immigrants in the US the picture was reversed. They did not reach full assimilation with native women of the same skill level, but were very close to it 2006.

Turning to Sweden, the separate earnings ratios for the two skill levels there ranged between 0.77 to 0.98 among men and women. Immigrant men with an academic degree did best and reached almost parity with their native Swede counterparts after 6–16 years in Sweden. All the other skill-by-gender immigrant groups improved their relative earnings position between $t_1$ (2000) and $t_2$ (2006), but had not reached full parity with natives of the same skill levels.

### 6.2 Earnings models

Table 3 (for the US) and Table 4 (for Sweden) present separate earnings assimilation models for men and women in each country based on the standard assimilation model (Chiswick, 1978). The dependent variable in all models is the natural logarithm of 2006 monthly earnings (2005–2007 in the US) from salaried work and self-employment[21]. The vector of the independent variables includes indicators of part-time employment[22], self-employment, and marital status; age (and its squared term)[23]; a series of four education-level indicators – a college degree, post-secondary non-academic education, and elementary education (secondary education serves as the omitted category); an indicator of

[21] Annual earning divided by 12.
[22] We used an indicator rather than number of working hours because the Swedish data did not have this information.
[23] We used age as a proxy of labor market experience rather than the standard measure of "potential experience" because when age itself is incorporated in a model along with YSM and detailed indicators of schooling, such a variable capture, in fact, the impact of pre-migration experience on earnings at destination.

immigrant status, and number of years at country of destination[24]. An indicator for the presence of young children was added to the women's models[25].

Interesting across-country differences in the assimilation process of German immigrant men in the US and Sweden can be easily observed. Starting with the two specific migration variables – the indicator of an immigrant (which captures the earnings penalty (or premium) of immigrants right upon their arrival at the destination country) and the average annual immigrants' earnings growth above and beyond that of natives of similar attributes (the "assimilation rate", as captured by the YSM coefficient) – we see that only one out of the eight immigrant groups (countries x gender x education level) suffered earnings penalty (compared with natives of similar attributes) upon arriving to the host countries - that of non-academic immigrant men who arrived in Sweden (columns 2–3).[26] In contrast, highly-skilled immigrant men who arrived in the US showed an earnings advantage over native-born American men of similar attributes close to their arrival. The earnings of non-academic immigrant men in the US, academic immigrant men in Sweden, together with all groups of immigrant women did not statistically differ from natives of similar attributes upon their arrival to Sweden and the US.

[24] The impact of tenure in the host country on immigrants' earnings (the YSM variable) in the models is captured by the interaction (Immigrant's Years Since Migration x the indicator of an immigrant status) (Chiswick, 1978). There is a relatively small variation in our samples on this variable because all immigrants belong to the same cohort (1990-2000). Consequently, we expect a very small impact of it on immigrants' earnings.

[25] We also estimated models for men containing an indicator for the presence of young children. Its impact on US native men's earnings was found to be positive, and on Swedish native men's negative. Its impact on immigrant men's earnings in both countries was found to be insignificant. All the other estimates of the models were appreciably the same as those derived from the models without it. In addition, we estimated the same models with controls for economic branch (10 categories) and an indicator for being employed in a white-collar occupation. The results of these models did not differ much from those presented here. Therefore, we decided to present the more parsimonious models.

[26] The findings of insignificant lower earnings upon arrival for seven out of the eight immigrant groups could result partially from the fact that in all cases, the immigrants studied spent, at least, 6-16 years at the host countries.

Table 3 Earnings regressions – German immigrants and natives: US 2005–2007 [a]

| | All | All low-skilled | All highly-skilled | Natives | Immigrants | Immigrants low-skilled | Immigrants highly-skilled |
|---|---|---|---|---|---|---|---|
| **Men** | | | | | | | |
| Age | 0.065** | 0.055** | 0.085** | 0.065** | 0.093* | -0.047 | 0.148** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.044) | (0.086) | (0.051) |
| Age squared | -0.001** | -0.001** | -0.001** | -0.001** | -0.001* | 0.000 | -0.002** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.001) |
| Married | 0.233** | 0.226** | 0.249** | 0.233** | 0.122 | 0.075 | 0.142 |
| | (0.001) | (0.002) | (0.003) | (0.001) | (0.070) | (0.125) | (0.084) |
| BA+ degree | 0.630** | | | 0.630** | 0.518** | | |
| | (0.001) | | | (0.001) | (0.087) | | |
| Post-secondary non academic | 0.202** | 0.201** | | 0.202** | -0.046 | -0.016 | |
| | (0.001) | (0.001) | | (0.001) | (0.108) | (0.122) | |
| Elementary school | -0.215** | -0.216** | | -0.215** | -0.358 | -0.265 | |
| | (0.004) | (0.004) | | (0.004) | (0.358) | (0.398) | |
| Immigrant | 0.254** | 0.272 | 0.251* | | | | |
| | (0.093) | (0.164) | (0.117) | | | | |
| YSM | -0.013 | -0.016 | -0.012 | | -0.006 | 0.001 | -0.009 |
| | (0.009) | (0.016) | (0.012) | | (0.010) | (0.019) | (0.012) |
| Constant | 6.368** | 6.595** | 6.524** | 6.368** | 6.210** | 9.364** | 5.414** |
| | (0.015) | (0.018) | (0.028) | (0.015) | (0.981) | (1.907) | (1.137) |
| Adjusted R2 | 0.254 | 0.178 | 0.128 | 0.254 | 0.229 | 0.023 | 0.176 |
| *N of observations* | *1,428,184* | *964,987* | *463,197* | *1,427,607* | *577* | *175* | *402* |
| **Women** | | | | | | | |
| Age | 0.051** | 0.048** | 0.062** | 0.051** | -0.050 | -0.046 | -0.025 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.047) | (0.065) | (0.074) |
| Age squared | -0.001** | -0.000** | -0.001** | -0.001** | 0.000 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.001) | (0.001) |
| Married | 0.000 | 0.012** | -0.026** | 0.000 | -0.052 | -0.104 | 0.007 |
| | (0.001) | (0.002) | (0.002) | (0.001) | (0.066) | (0.091) | (0.098) |

| | All | All low-skilled | All highly-skilled | Natives | Immigrants | Immigrants low-skilled | Immigrants highly-skilled |
|---|---|---|---|---|---|---|---|
| BA+ degree | 0.678** | | | 0.678** | 0.633** | | |
| | (0.002) | | | (0.002) | (0.076) | | |
| Post-secondary, non- academic | 0.244** | 0.246** | | 0.244** | 0.241** | 0.248** | |
| | (0.001) | (0.001) | | (0.001) | (0.081) | (0.081) | |
| Elementary school | -0.252** | -0.253** | | -0.252** | 0.579* | 0.525 | |
| | (0.005) | (0.005) | | (0.005) | (0.270) | (0.273) | |
| Immigrant | -0.045 | -0.040 | -0.044 | | | | |
| | (0.094) | (0.128) | (0.143) | | | | |
| YSM | 0.002 | 0.002 | 0.000 | | 0.017 | 0.008 | 0.027 |
| | (0.008) | (0.011) | (0.014) | | (0.010) | (0.013) | (0.016) |
| Has a child under the age of 3 | 0.082** | 0.050** | 0.123** | 0.082** | 0.202* | 0.123 | 0.250* |
| | (0.003) | (0.004) | (0.004) | (0.003) | (0.097) | (0.155) | (0.127) |
| Constant | 6.446** | 6.506** | 6.931** | 6.446** | 8.815** | 8.712** | 8.972** |
| | (0.017) | (0.020) | (0.030) | (0.017) | (1.048) | (1.488) | (1.572) |
| Adjusted R2 | 0.318 | 0.247 | 0.228 | 0.318 | 0.350 | 0.242 | 0.317 |
| *N of observations* | *1,347,769* | *905,378* | *442,391* | *1,347,118* | *651* | *350* | *301* |

[a] Salaried and self-employed workers, with positive earnings, that were located at the ninety-ninth percentile and below of the earning distribution, and were at the age 31–65; Immigrants arrived at destination at the ages of 25 to 56 during 1990-2000.
Self-Employment and Part-time employment are included in the models but not presented in the table.
Omitted categories are Secondary education, full time, salaried work, single. ** = $p<0.01$; * = $p<0.05$

Table 4 Earnings regressions – German immigrants and natives: Sweden 2006 [a]

| | All | All low-skilled | All highly-skilled | Natives | Immigrants | Immigrants low-skilled | Immigrants highly-skilled |
|---|---|---|---|---|---|---|---|
| **Men** | | | | | | | |
| Age | 0.080** | 0.072** | 0.100** | 0.080** | 0.061* | -0.035 | 0.132** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.030) | (0.053) | (0.036) |
| Age squared | -0.001** | -0.001** | -0.001** | -0.001** | -0.001* | 0.000 | -0.001** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.000) |
| Married | 0.113** | 0.116** | 0.098** | 0.113** | 0.052 | -0.039 | 0.094 |
| | (0.001) | (0.001) | (0.002) | (0.001) | (0.044) | (0.077) | (0.052) |
| BA+ degree | 0.237** | | | 0.237** | 0.325** | | |
| | (0.001) | | | (0.001) | (0.047) | | |
| Post-secondary, non-academic | 0.189** | 0.191** | | 0.189** | 0.147 | 0.151 | |
| | (0.002) | (0.002) | | (0.002) | (0.125) | (0.136) | |
| Elementary school | -0.068** | -0.067** | | -0.068** | -0.219* | -0.222* | |
| | (0.001) | (0.001) | | (0.001) | (0.095) | (0.103) | |
| Immigrant | -0.165* | -0.405** | -0.001 | | | | |
| | (0.066) | (0.109) | (0.083) | | | | |
| YSM | 0.010 | 0.026* | -0.002 | | 0.015* | 0.030* | 0.001 |
| | (0.007) | (0.011) | (0.009) | | (0.008) | (0.013) | (0.009) |
| Constant | 10.689** | 10.878** | 10.468** | 10.689** | 10.963** | 13.001** | 9.811** |
| | (0.013) | (0.015) | (0.026) | (0.013) | (0.682) | (1.227) | (0.802) |
| Adjusted R2 | 0.508 | 0.500 | 0.505 | 0.508 | 0.566 | 0.499 | 0.587 |
| *Number of observations* | *1,567,476* | *1,195,908* | *371,568* | *1,566,376* | *1,100* | *408* | *692* |
| **Women** | | | | | | | |
| Age | 0.068** | 0.068** | 0.067** | 0.069** | 0.034 | 0.019 | 0.038 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.042) | (0.085) | (0.049) |
| Age squared | -0.001** | -0.001** | -0.001** | -0.001** | -0.000 | -0.000 | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.001) |
| Married | -0.008** | -0.001 | -0.021** | -0.008** | 0.012 | 0.030 | -0.004 |
| | (0.001) | (0.002) | (0.002) | (0.001) | (0.059) | (0.114) | (0.068) |
| BA+ degree | 0.247** | | | 0.247** | 0.158* | | |
| | (0.001) | | | (0.001) | (0.064) | | |

| | All | All low-skilled | All highly-skilled | Natives | Immigrants | Immigrants low-skilled | Immigrants highly-skilled |
|---|---|---|---|---|---|---|---|
| Post-secondary, non-academic | 0.161** | 0.154** | | 0.161** | -0.410** | -0.409* | |
| | (0.003) | (0.003) | | (0.003) | (0.151) | (0.170) | |
| Elementary school | -0.083** | -0.077** | | -0.083** | 0.087 | 0.072 | |
| | (0.002) | (0.002) | | (0.002) | (0.143) | (0.161) | |
| Immigrant | -0.076 | -0.076 | -0.042 | | | | |
| | (0.072) | (0.137) | (0.079) | | | | |
| YSM | -0.007 | -0.006 | -0.009 | | -0.002 | -0.001 | -0.002 |
| | (0.007) | (0.013) | (0.008) | | (0.009) | (0.018) | (0.011) |
| Has a child under the age of 3 | -0.179** | -0.164** | -0.177** | -0.179** | -0.242** | -0.475* | -0.160 |
| | (0.002) | (0.003) | (0.003) | (0.002) | (0.081) | (0.185) | (0.088) |
| Constant | 10.677** | 10.703** | 10.940** | 10.676** | 11.613** | 12.053** | 11.625** |
| | (0.017) | (0.022) | (0.025) | (0.017) | (0.954) | (1.947) | (1.083) |
| Adjusted R2 | 0.488 | 0.468 | 0.497 | 0.488 | 0.497 | 0.412 | 0.535 |
| *Number of observations* | *1,494,127* | *952,919* | *541,208* | *1,493,010* | *1,117* | *359* | *758* |

[a] Salaried and self-employed workers, with positive earnings, that were located at the ninety-ninth percentile and below of the earning distribution, and were at the age 31–65; Immigrants arrived at destination at the ages of 25 to 56 during 1990–2000.

Self-Employment and Part-time employment are included in the models but not presented in the table.

Omitted categories are Secondary education, full time, salaried work, single. ** = $p<0.01$; * = $p<0.05$

We can conclude already at this early stage of the analyses that most German immigrants in the US and Sweden followed a pattern of an extremely positive self-selection. During 6–16 years after their arrival to both countries, most German immigrants reached earnings parity with native-born Americans and Swedes of similar attributes. There are only two exceptions to what has been just described. First, highly skilled German men in the US enjoyed a significant earning advantage over their native counterparts immediately after arriving there. Second, non-academic German immigrant men in Sweden followed the pattern of a negative self-selection process. They are expected to close the earnings gap with their native counterparts only towards the end of their working-life. In order to check if these results are robust, the assimilation models presented here (derived from the 2006 data) were re-estimated using the 2000 data (i.e., 1–10 years after the Germans arrived in Sweden and the US). The main motivation for this re-estimation is to learn about a possible bias due to return migration within this cohort of immigrants. Clearly, the probability for the occurrence of return migration in 2000 is much lower than in 2006. The results for 2000 (not presented here, but available upon request) follow a similar pattern to that derived from the 2006 data. Again, the highly skilled German men in the US enjoyed a significant earning advantage over their native counterparts immediately after arriving there, and all other immigrant groups that headed to the US earned in 2000 as much as US natives of similar observed attributes. In Sweden, all German groups suffered in 2000 an earnings penalty of about 12–35 percent when compared to native Swedes of similar attributes. The highest penalty (approximately 35 percent) was paid by the low-skilled men. However, in contrast to their immigrant counterparts in the US, German immigrants in Sweden still enjoyed in 2000 positive assimilation rates of 2–4 percent. The only group not to enjoy such earnings growth rate was that of highly-skilled German women (which suffered the lowest earnings penalty upon arrival).

From further examining Table 3 and Table 4 it is evident that all groups of highly educated Germans in both countries received an earnings premium on their academic degrees (column 5). The premiums of academic immigrant men and women in the US are high, but somewhat smaller than the premiums paid to academic natives (column 4). In contrast, the higher-education earnings premium paid to the German men in Sweden is

higher than that paid to academic native Swedes, and the premium paid to the German women is lower than that paid to their native counterparts.[1]

In both Sweden and the US academic German men enjoyed a much higher premium on their pre-migration labor market experience (as captured by the age variable) than the returns on experience received by native men. The immigrants' extremely high returns on their pre-migration experience can be explained by their relative young age. For example, the group that received the highest returns on this variable is that of highly skilled German men in the US [(b(AGE) = 0.148; b($AGE^2$) = -0.002)]. The average German man in the US sample is 37 years old, and he arrived to the US approximately 4 years prior to the data collection. Assuming that he stayed in school until the age of 22, and began to work right after graduation, he had 11 years of experience in the German labor market prior to his departure to the US. Put differently, the average highly skilled German man in the US received, on average, about 7.4 percent premium to his wage for each year of work in Germany. However, we should remember that the highest returns for experience are received during the first years in the labor market, which might explain this relatively high premium for experience. In comparison, the average return for a year of pre-migration experience received by a highly skilled German man in the US that is older by ten years from his group's average goes down to 5.4 percent only[2]. In contrast, immigrant women in both countries were not compensated for their pre-migration experience. It implies that the returns on life-time experience received by immigrant (and native) women both in the US and in Sweden are smaller than those received by their native counterparts.[3] One possible explanation to the disadvantage of German women as compared to their man counterparts could be the fact that some German immigrant women were tied movers – along with their male spouses, and were willing to settle for jobs in which their life-time experience was less relevant.

[1] Differences between natives and immigrants on returns to higher education are well documented (e.g., Borjas, 1996; 1999; Chiquiar and Hanson, 2005). The main explanations provided for these differences in returns are the lower/ higher quality of higher education at the countries of origin, the less-than-perfect transferability of higher education acquired at the countries of origin to the labor markets at destinations, and discrimination against highly educated immigrants. However, it seems that none of these explanations is relevant to the situation studied here.

[2] The post-migration experience of immigrants is captured by the YSM variable, and the returns on it are statistically insignificant. However, since the average age and YSM of those immigrants in 2006 were, approximately 43 and 10 years respectively, and the average natives' age was around 47 years, it is hard to believe that the natives will be able to close the gap with the German men in the returns on life-time market experience – especially in the US.

[3] Recall that the YSM coefficients for all German immigrants are insignificant.

An interesting finding specific to the immigrant women in both countries is related to the presence of young children at home. While in Sweden, most women (both natives and immigrants) were penalized for having young children, most working women with young children in the US enjoyed an earnings premium. These results relate, probably, to the unique selection patterns of mothers to young children into different labor markets. The two destination countries differ in their welfare policies towards women's employment (e.g., paid maternity leave, publicly funded day-care facilities). In fact, the two countries are located far away from one another on the index of state protection to working mothers ("Welfare State Intervention Index", Mandel and Semyonov, 2005; 2006). While Sweden has the highest score (100) on that index out of 22 countries, the US scores 4 only. It was found that the effect of such welfare policies on women employment and occupational achievements is not trivial. Progressive welfare policies (similar to those in Sweden) facilitate women's access to the labor force, but in the same time, cause women to concentrate in female-type, low-paying jobs. More specifically, welfare policies might lead to limited economic rewards to highly skilled working women (Mandel, 2010) and reduced occupational upward mobility of women (Aisenbrey, Evertsson, and Grunow, 2009). In contrast, lack of such policies (like in the US) probably intensified the positive selection pattern of mothers into paid work.

In sum, the most important result of the earnings assimilation models is that six out of the eight groups reached full earnings assimilation with natives of similar observed attributes after 6–16 years in the US and Sweden. As stated already, there are two exceptional groups. One is that of highly-skilled German men in the US. Not only they reached earnings assimilation with their American counterparts, but they surpassed them and earned more than the highly-skilled US natives. The second exceptional group it that of the low-skilled German men in Sweden. They did not reach full assimilation with the low-skilled Swedes after 6–16 years in Sweden. The younger among them might reach full assimilation towards the end of their working life due to a three-percent annual earnings growth above and beyond that of low-skilled Swedes.

Additionally, the highly-skilled immigrant men and women were compensated for their human capital both in the US and Sweden. The highly-skilled men were compensated generously for both their degree and market experience acquired in Germany. Immigrant women in both countries were compensated for their degrees only.

Unlike the highly-skilled immigrants, the low-skilled German men that arrived to both countries were not compensated for their human capital acquired in Germany. Furthermore, while low-skilled German women in US enjoyed an earnings premium for their post-secondary non-academic education, low-skilled German women in Sweden were penalized for this type of education.

What could explain the differences in earnings assimilation patterns of immigrants from one highly developed country (Germany) who arrived to two different and similarly developed destinations (the US and Sweden) during the same time period? Two types of explanations, not mutually exclusive, can be offered. First, there might be differences among the two contexts of reception. Maybe, the US migration policies and labor market structure facilitated the earnings assimilation of immigrants arriving from a highly developed country better than those in Sweden. The second explanation focuses on differences in self-selection patterns of the Germans who arrived to the two countries. It is possible that the US migration policies and labor market returns attracted "better" immigrants – as manifested by the better-than-perfect earnings assimilation process of the highly educated German men, and the Swedish context attracted German men of lower "quality" – as manifested by the failed assimilation of the less educated German men in Sweden. In an attempt to disentangle these two possible explanations, we decomposed the across-country differences in the native-to-immigrant earnings gaps. We created a common base-line (i.e., native attributes and native earnings structure) that allowed us to separate the role of immigrants' attributes (observed and unobserved) from the role of the context of reception (i.e., market returns) in the earnings assimilation of German immigrant men and women, both high- and low-skilled, in the two countries.

### 6.3 Decompositions

We use a decomposition method offered by Juhn, Murphy, and Pierce (1991) to distinguish between the effect of immigrants' individual characteristics (observed and unobserved) and the effect of the labor market structure on the immigrant-to-native earnings gaps in 2006 (Sweden) and 2005–2007 (in the US).[4]

[4]It should be noted that the decomposition to be used estimates the impact of one component only of the context of reception on the economic reception – that of the market structure at destination (i.e., the returns on earnings determinants).

The decomposition technique decomposes the total difference in the relative position of immigrants-to-natives in two countries ("difference in differences" – column 1 in Table 5) into two main portions.[5] The first is the effect of the differences in the mean attributes of immigrants relative to the attributes of natives in the two countries (column 4). The second is the effect of differences between the two countries in their market structures (column 7). The first portion (column 4) can be further divided into two fractions: a fraction due to the relative differences between the two countries in natives' and immigrants' observed characteristics (column 2) and a fraction due to the relative differences in natives' and immigrants' unobserved characteristics (column 3).[6] Similarly, the difference between the two countries in market structures (column 7) can be further divided into differences between the two countries in returns to observed characteristics (column 5) and differences between countries in returns to unobserved characteristics (column 6).[7]

The decompositions are based on estimating 12 earnings equations – separately for native men and women in each of the two countries compared.[8] The dependent variable is the natives' natural logarithm of monthly earnings from salaried work and self-employment, and the vector of the independent variables includes four categories of natives' education, part-time employment and self-employment indicators, age and its squared term, marital status, and an indicator of the presence of a child 3 years old or younger (for the native women's models only).[9]

[5] For a detailed explanation of this method of decomposition, see Appendix 4, and Haberfeld (2013).
[6] This specific fraction is also referred to as the "gap" – the effect of inter-country differences in the relative position of natives and immigrants on the residual distribution, net of observed characteristics.
[7] This fraction was termed elsewhere as "unobserved prices effect" and represents the contribution of the inter-country difference in residual inequality to the between-country difference in native-to-immigrants' earnings gap.
[8] The country-based comparisons are (Sweden–US). Six models were estimated for each country: (Native men/ women) x entire sample/ highly-skilled/ low-skilled. These estimated models are not presented here, and are available upon request.
[9] The same decompositions were also estimated including also a sequence of indicators for economic branch (ten categories). The results of these decompositions do not differ substantially from those presented here. Therefore, we decided to present the more parsimonious models.

Table 5 Decompositions of the differences between countries in mean (ln) earnings (2006) gaps between natives and German immigrants who arrived during 1990–2000 [a]

| | Total difference in differences between the two countries | Due to natives-to-immigrants' differences in observed characteristics | Due to natives-to-immigrants' differences in unobserved characteristics | Due to difference between the two countries in mean group-specific | Due to differences between the two countries in returns to observed characteristics | Due to differences between the two countries in returns to unobserved characteristics | Due to differences between the two countries in market structure characteristics | Number of observations |
|---|---|---|---|---|---|---|---|---|
| SWE–US | (1) | (2) | (3) | (4) | (5) | (6) | (7) | |
| **Men** | | | | | | | | 2,995,660 |
| All | 0.430*** | 0.011 | 0.225*** | 0.236*** | 0.213*** | -0.019*** | 0.195*** | 2,841,896 |
| | 0.046 | 0.019 | 0.031 | 0.041 | 0.014 | 0.008 | 0.015 | |
| Without BA | 0.432*** | 0.065** | 0.305*** | 0.370*** | 0.099*** | -0.036*** | 0.062* | |
| | 0.068 | 0.025 | 0.070 | 0.067 | 0.026 | 0.017 | 0.035 | |
| With BA | 0.259*** | 0.057*** | 0.159*** | 0.216*** | 0.047** | -0.005 | 0.042 | 2,160,895 |
| | 0.058 | 0.014 | 0.046 | 0.050 | 0.020 | 0.011 | 0.027 | |
| **Women** | | | | | | | | 1,858,297 |
| All | 0.184*** | -0.152*** | 0.120*** | -0.032 | 0.223*** | -0.007 | 0.216*** | |
| | 0.051 | 0.023 | 0.036 | 0.042 | 0.018 | 0.012 | 0.022 | |
| Without BA | 0.162* | -0.028 | 0.084 | 0.056 | 0.076** | 0.030 | 0.106** | 834,765 |
| | 0.095 | 0.031 | 0.052 | 0.066 | 0.030 | 0.023 | 0.042 | |
| With BA | 0.232*** | 0.028 | 0.107** | 0.134** | 0.121*** | -0.023 | 0.098*** | 983,599 |
| | 0.073 | 0.025 | 0.053 | 0.064 | 0.020 | 0.014 | 0.023 | |

[a] Salaried and self-employed workers, with positive earnings located in the ninety-ninth percentile and below of the earning distribution and aged of 31–65; Immigrants arrived at destination at the ages of 25 to 56 during 1990–2000.

The independent variables included in the earnings equations used for the decomposition are four categories of education, part-time employment and self-employment indicators, age and its squared term, marital status, and an indicator of the presence of a child 3 years old or younger (for the women's models only).

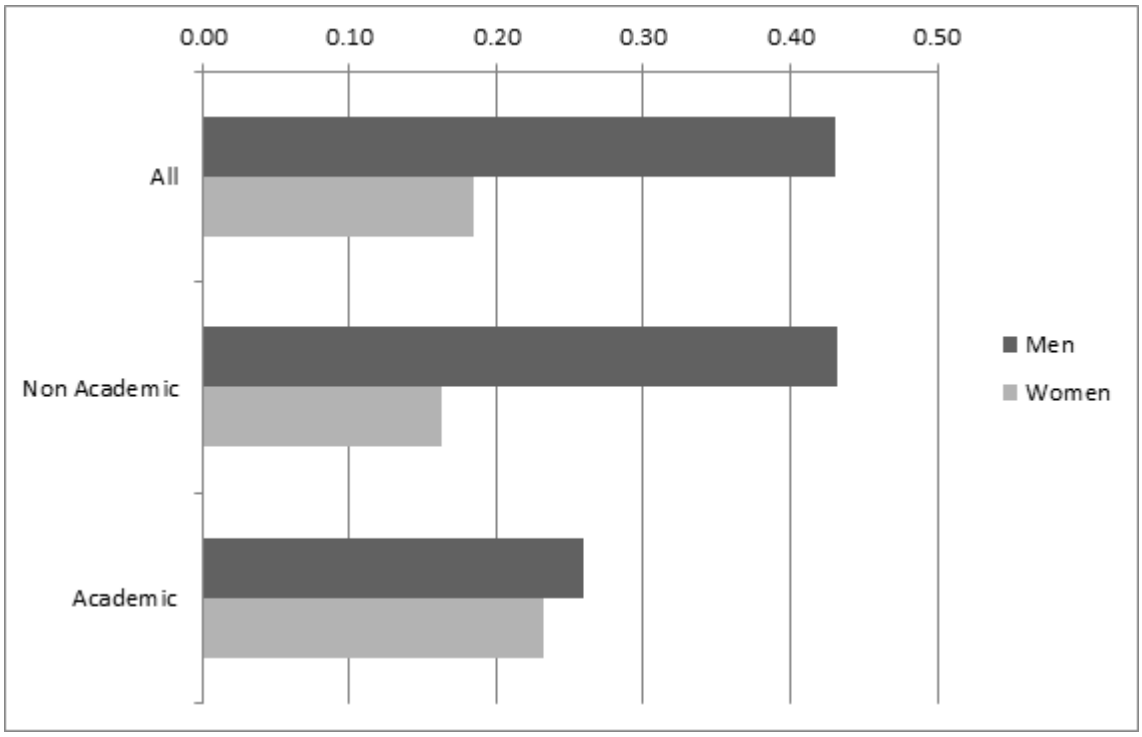
$[D_{(nb\text{-}imm)SW}] - [D_{(nb\text{-}imm)US}]$

Looking at the total difference between countries in the native-to-immigrant earnings gaps (that is, the difference in the relative position of immigrants on the earnings distributions) in the two countries, the men's immigrant-to native earnings ratio in the US was much higher than in Sweden - as was presented already in the descriptive tables. Put differently, based on the earnings means only (column 1 in Table 5), German men's economic performance in the US was much better than that of German men in Sweden. Even though German immigrant men in Sweden did almost as good as the average natives there (see top row, Appendix 2), immigrants' wage premiums in the US were larger than those in Sweden by 43 log points among all men. This superior relative position of the German men in the US can be also seen in their position on the US native men's earnings distribution. While in Sweden, the average German men's earnings is located on the 47$^{th}$ percentile only of the native men's distribution, in the US it is located on the 59$^{th}$ percentile (see Table 1, upper panel).

When breaking down the German men (and natives) by their skill level, we see that the across-country gap between low-skilled native and immigrant men's earnings (43) is larger than the equivalent gap between the highly-skilled men (26). In other words, the relative position of the low-skilled German men in Sweden is worse than the relative position of the highly-skilled German men there. More specifically (see appendix 2), while both highly-and low-skilled German immigrant men in the US gain there about the same earning premium (about 15 and 19 log points respectively), low-skilled German immigrants in Sweden experience a natives-to-immigrants wage penalty (28 log points) which is larger than the penalty of highly-skilled immigrants (7 log point).

Among women, the results are similar, though smaller, to those obtained for men: the native-to-immigrant earnings gaps in Sweden are higher than those in the US. There is a total difference of 18 log points between Sweden and the US in the females' native-to-immigrant earnings gaps. Again, this superior relative position of the German women in the US can be observed in their position on the US native women's earnings distribution. While in Sweden, the average German women's earnings is located on the 42$^{nd}$ percentile only of the native women's distribution, in the US it is located on the 51$^{st}$ percentile (see Table 1, lower panel).

Figure 1 Total difference in differences between countries by education (A positive value indicates that Immigrant-to-native earnings ratios in the US are higher than in Sweden)

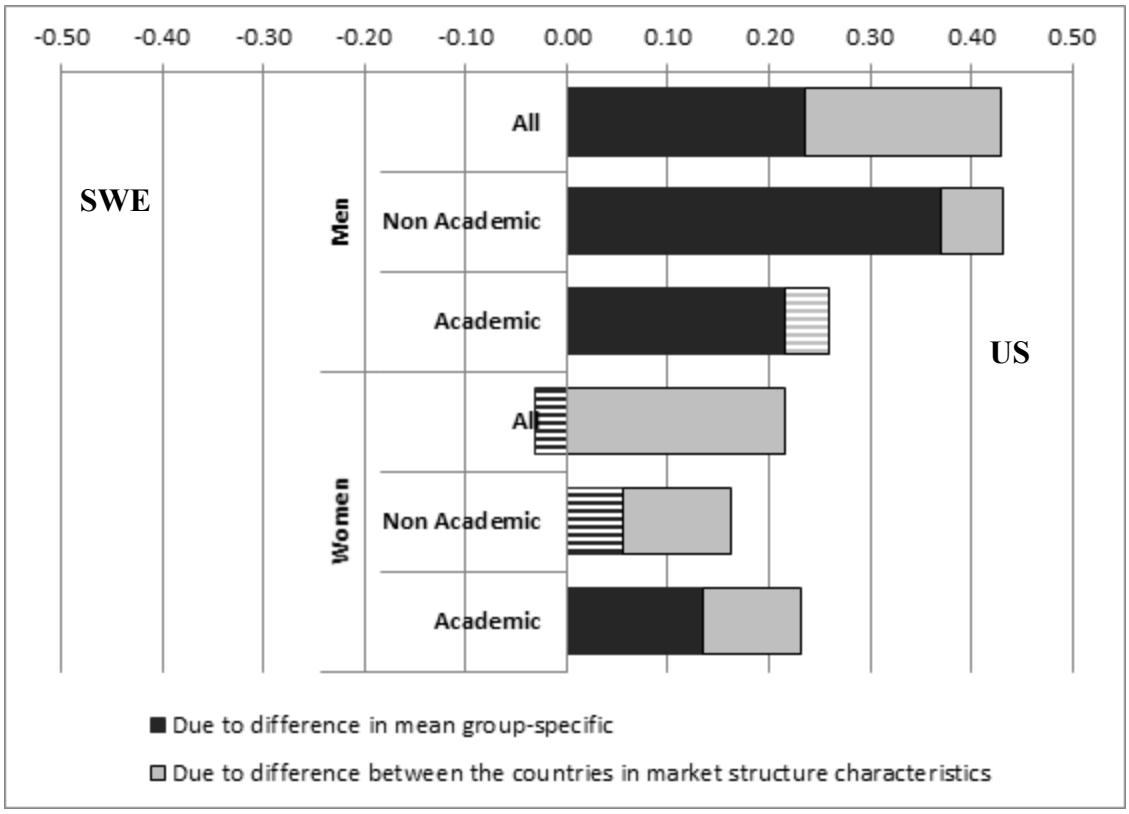



Unlike men, the across-country differences among the high- and low-skilled women are similar although in both countries highly-skilled immigrants suffer from a larger natives-to-immigrants wage gap relative to low-skilled immigrants (see appendix 2).

Figure 1 presents graphically these results of the total differences in the earnings position of German immigrants relative to natives across the two countries (column 1 in Table 5).

To evaluate the separate effects of self-selection and the context of reception on the assimilation patterns of immigrants as measured by the differences between countries in the native-to-immigrant earnings gaps, we conducted the across-country decompositions. Table 5 and Figure 2 present the results of the decompositions (the means of the variables used in the decompositions are presented in Appendix 3).

Figure 2 Decomposition of the differences between countries in mean (ln) earnings gaps between natives and immigrants to mean group specific and market structure, by levels of education

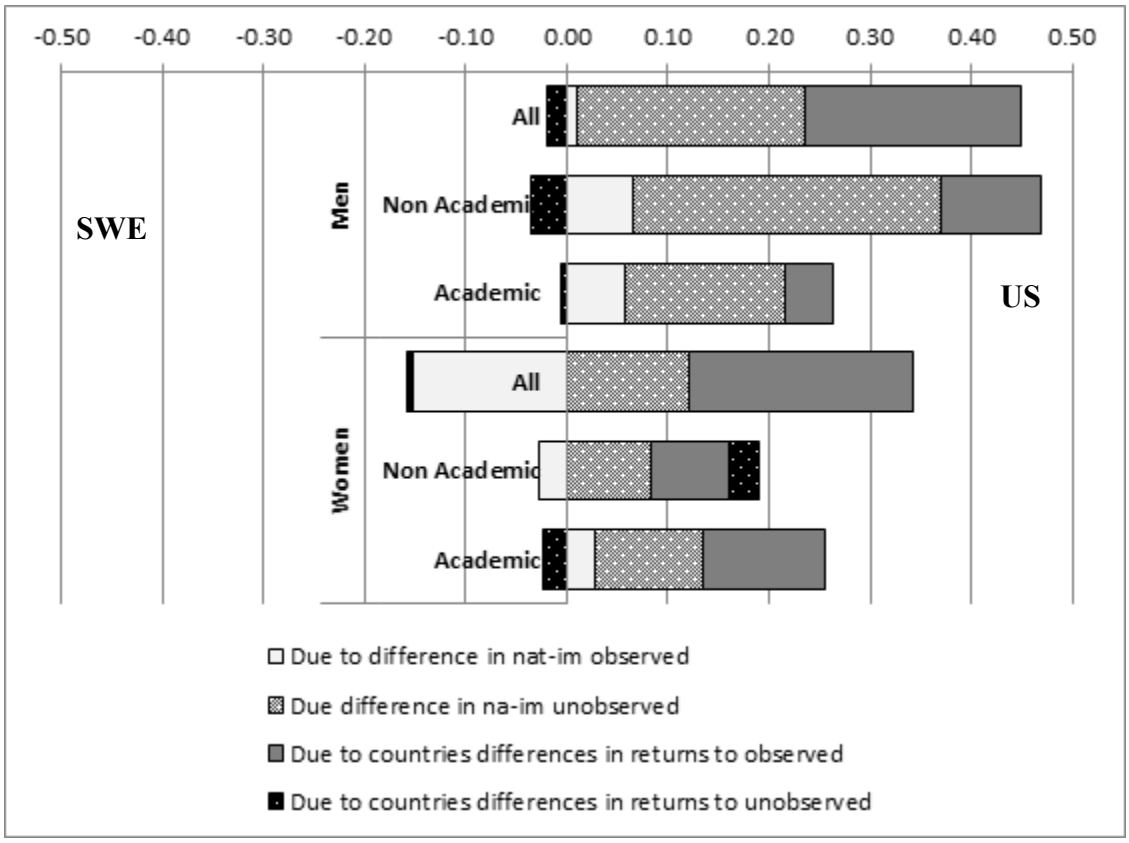



Note: Dashed indicates that the components are statistically insignificant.

Figure 2 plots the results presented in Table 5 (columns 4 and 7). Starting with the comparison between the entire samples of German immigrants in the US and Sweden, positive components of the decomposition contribute to a better position of immigrants in the US relative to their counterparts in Sweden, while negative ones contribute to a better position of immigrants in Sweden relative to the US. Among men, both Germans' individual characteristics and the US market structure (i.e., returns on earnings determinants) contributed to their better position in the US than in Sweden relative to native men. Among women, across-country differences in market structures was the only factor contributing to the better position (relative to natives) of German women in the US than in Sweden.

Figure 3 further breaks down the main components of differences between the two countries in mean group-specific attributes and in market structures characteristics into their observed and unobserved components (columns 2,3,5 and 6 in Table 5).

Figure 3 Decomposition of the differences between countries in mean (ln) earnings gaps between natives and immigrants, by levels of education




Note: Dashed indicates that the components are statistically insignificant.

Starting with the entire samples of immigrants in each country, the major source of between-country differences in the relative position of immigrant men in these two countries due to immigrant-to-native differences in mean group specific attributes was the differences in the mean unobserved attributes of immigrants (column 3, Table 5), and the higher returns on observed attributes received in the US (column 5 in Table 5).

Like men, the differences between the US and Sweden in returns to observed earnings determinants is the main factor contributing to the better position of German women in the US. However, unlike men, among the entire sample of women, the average observed characteristics of immigrants to Sweden were higher than those of immigrants to the US (mainly because they had an education level that was much higher than that of native women in Sweden – see Appendix 3), thus moderating the impact of the higher returns on observed attributes received in the US by German women.

When looking at the separate decompositions for highly- and low-skilled men, it becomes obvious that within each skill level, the one factor responsible for most of the

better position of the immigrant men in the US is their superior levels of unobserved attributes as compared with their Sweden-bound counterparts. Probably, since the main source of natives-to-immigrants' difference in observed characteristics has been controlled for by dividing the sample by education level, the importance of unobserved characteristics rises.

Among women, the main factor responsible for the better position of the immigrant German highly-skilled women in the US is the higher returns there on observed attributes. These higher returns have a similar impact on the low-skilled women as well. In addition, highly-skilled German women in the US have a better relative position on the distribution of unobserved attributes than the high-skilled immigrant women in Sweden.

These results combined indicate that German immigrant men in the US belonged to a much more selective group than their immigrant counterparts in Sweden regarding unobserved earnings determinants. Their more intense positive self-selection regarding unobserved earnings-enhancing characteristics was manifested in their better earnings assimilation as compared with the assimilation of immigrants in Sweden. Not only that, the higher returns paid in the US to their earnings determinants helped immigrant men to further improve their position in the American labor market. Among women, the higher returns paid to immigrants in the US were the main factor contributing to their better relative position than that of immigrant women in Sweden. In addition, their more intensive selection on unobserved attributes also helped to locate them in a relatively high position on the women's earnings distribution there.

# 7 Discussion

The major objective of the present study was to evaluate the interplay between the effect of host countries' characteristics and self-selection patterns on the economic assimilation of immigrants from a highly developed country that headed to other developed countries. We looked at immigrants originated from Germany, during the same period (1990–2000) that moved to two different highly developed destination countries – Sweden and the US.

The results obtained confirm our theoretical expectations. First, almost all German immigrants reached full earnings assimilation with natives of similar attributes. The only group that was not fully assimilated with their native counterparts is that of low-skilled German men in Sweden. Second, the assimilation of highly skilled Germans was better

than that of the low skilled. In general, we can conclude that highly skilled immigrants arriving from a developed country compete successfully with the highly skilled natives at the destinations, probably because their skills, education, and training are transferable to many of the occupational labor markets at the host countries (see Antonelli, Binassi, Guidetti, and Pedrini (2016) for similar results among highly-skilled Italian immigrants in developed countries). Third, we also found that the skilled immigrants were compensated for their human capital acquired in Germany prior to their migration. This finding relates, again, to the transferability of human capital acquired in a developed country (Germany) to markets in other developed countries. Finally, the results indicate that despite higher educational levels of the Germans that headed to Sweden, the better assimilation of German immigrants, especially the highly educated, took place in the US. Their success in the US was the result of an interaction between the Germans' pattern of self-selection and the US context of reception. Immigrant men do better than US natives of similar observed attributes across both skill levels, and immigrant women do as good as their native counterparts. More specifically, the Germans in the US had higher levels of unobserved earnings determinants on the one hand, and received higher returns in the US on their observed human capital on the other.

What are those "unobserved" attributes on which the Germans that headed to the US scored higher than their German counterparts who headed to Sweden? Empirically, these are the inter-country differences in the relative position of natives and immigrants on the residual distribution, net of observed characteristics. Clearly, we have to be very cautious about the interpretation of the difference. Those residual distributions can be affected not only by differences between the two German immigrant groups in some of the speculated unmeasured attributes (e.g., self-confidence, risk taking, motivation), but also by our measures of the observed characteristics. Specifically, since there might be differences between immigrants in the two countries in important observed income determinants that we are unable to control for in the present study due to data limitations, referring to this fraction as a pure selectivity term might be misleading. Examples for such variables are levels of host-country language acquisition and occupational distribution. In addition, this "unobserved" fraction might be affected by between-country differences in discrimination levels against immigrants. Although we have no reason to believe that there are differences between the two countries in levels of discrimination against German

immigrants, higher levels of discrimination in one country may result a lower position of immigrants on the residual distribution of natives there without real differences in unobserved skill levels between the two immigrant groups.

There are similarities between our findings and the results obtained in studies on the economic assimilation of immigrants arriving from less developed countries. The most successful assimilation is observed among highly skilled immigrants arriving from low-inequality to high-inequality countries (Chiswick, 1978; Borjas, 1990). In line of these results we found that the assimilation of the Germans in the US was better than that of the Germans that headed to Sweden because the level of the returns to human capital at destinations are assumed to serve as the most important factor in generating positive self-selection of highly skilled immigrants. However, our findings also add to the existing body of empirical results on this topic. We find that highly skilled immigrants moving between developed countries of similar inequality levels such as Germany and Sweden are also able to successfully assimilate at their country of destination. The reason for their success has been already outlined above, namely the transferability of their human capital acquired at their (developed) countries of origin to the markets of their destinations. Furthermore, they are not penalized for the disruption in their native-country's labor market experience. We find that the returns to their pre-migration human capital received at the counties of destinations are similar to the returns received by natives.

Developed countries compete in attracting high-skilled immigrants from other developed countries for two main reasons. First, they receive highly trained professionals with no need to invest in their training and education. In fact, the costs of training highly skilled immigrants are covered by their countries of origin. Second, the skills and training of highly skilled immigrants arriving from highly developed countries are transferable in many of the occupational labor markets at the destination countries, and they become highly productive soon after their arrival. Consequently, developed countries win a significant economic advantage when they successfully attract highly educated and trained professionals from other developed countries. Our results suggest that an important component in the "offer" given by countries to the "best" highly skilled immigrants is that of high returns to both their observed and unobserved skills.

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## Appendices

Appendix 1 The number (%) of German immigrants in the data sources used – by country, gender, and education

| | The US 2000 | | The US 2005-2007 | | Sweden 2000 | | Sweden 2006 | |
|---|---|---|---|---|---|---|---|---|
| | Men | Women | Men | Women | Men | Women | Men | Women |
| Non-Academic (N) | 550 | 679 | 175 | 301 | 429 | 376 | 408 | 359 |
| Percent | 39.68 | 57.84 | 30.33 | 46.24 | 35.51 | 34.00 | 37.09 | 32.14 |
| BA + (N) | 836 | 495 | 402 | 350 | 779 | 730 | 692 | 758 |
| Percent | 60.32 | 42.16 | 69.67 | 53.76 | 64.49 | 66.00 | 62.91 | 67.86 |
| Total (N) | 1,386 | 1,174 | 577 | 651 | 1,208 | 1,106 | 1,100 | 1,117 |
| Percent | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Appendix 2 Means differences in LN(earnings) and Dif-in-Dif – German immigrants and natives, men and women, in the US (2005-2007) and Sweden (2006)

| | **US** | | | **Sweden** | |
|---|---|---|---|---|---|
| | **Native** | **Immigrant** | **Dif-in-Dif** | **Native** | **Immigrant** |
| **Men** | | | | | |
| LN(earnings) All | 8.227 | 8.616 | | 12.384 | 12.342 |
| Native-to-immigrants wage gap | -0.388 | | | 0.042 | |
| [D(nb-imm)SW] – [D(nb-imm)US] | | | 0.430 | | |
| LN(earnings) Without BA | 8.042 | 8.190 | | 12.319 | 12.035 |
| Native-to-immigrants wage gap | -0.148 | | 0.284 | | |
| [D(nb-imm)SW] – [D(nb-imm)US] | | | 0.432 | | |
| LN(earnings) with BA | 8.613 | 8.801 | | 12.594 | 12.523 |
| Native-to-immigrants wage gap | -0.188 | | 0.071 | | |
| [D(nb-imm)SW] – [D(nb-imm)US] | | | 0.259 | | |
| **Women** | | | | | |
| LN(earnings) All | 7.771 | 7.768 | | 12.017 | 11.831 |
| Native-to-immigrants wage gap | 0.003 | | 0.187 | | |
| [D(nb-imm)SW] – [D(nb-imm)US] | | | 0.184 | | |
| LN(earnings) Without BA | 7.580 | 7.500 | | 11.899 | 11.656 |
| Native-to-immigrants wage gap | 0.081 | | 0.243 | | |
| [D(nb-imm)SW] – [D(nb-imm)US] | | | 0.162 | | |
| LN(earnings) with BA | 8.161 | 8.081 | | 12.226 | 11.913 |
| Native-to-immigrants wage gap | 0.080 | | 0.313 | | |
| [D(nb-imm)SW] – [D(nb-imm)US] | | | 0.232 | | |

Appendix 3 Means of the variables used in the decompositions – German immigrants and natives, men and women, in the US (2005-2007) and Sweden (2006) [a]

| | US | | SWE | |
|---|---|---|---|---|
| | **Native** | **Immigrant** | **Native** | **Immigrant** |
| **Men** | | | | |
| LN(earnings) | 8.227 | 8.616 | 12.384 | 12.342 |
| Self-Employed | 0.158 | 0.182 | 0.132 | 0.139 |
| Pert time employment | 0.099 | 0.057 | 0.072 | 0.112 |
| Age | 46.924 | 43.350 | 47.129 | 43.222 |
| BA+ degree | 0.324 | 0.697 | 0.237 | 0.629 |
| Post-secondary non academic | 0.300 | 0.159 | 0.081 | 0.030 |
| Secondary education | 0.351 | 0.137 | 0.505 | 0.284 |
| Elementary education | 0.024 | 0.007 | 0.176 | 0.057 |
| Married | 0.725 | 0.763 | 0.645 | 0.664 |
| *N* | *1427607* | *577* | *1566376* | *1100* |
| **Women** | | | | |
| LN(earnings) | 7.771 | 7.768 | 12.017 | 11.831 |
| Self-Employed | 0.090 | 0.138 | 0.052 | 0.082 |
| Pert time employment | 0.286 | 0.344 | 0.123 | 0.192 |
| Age | 46.972 | 42.782 | 47.240 | 43.346 |
| BA+ degree | 0.328 | 0.462 | 0.362 | 0.679 |
| Post-secondary non academic | 0.341 | 0.301 | 0.045 | 0.036 |
| Secondary education | 0.316 | 0.224 | 0.484 | 0.245 |
| Elementary education | 0.015 | 0.012 | 0.109 | 0.040 |
| Married | 0.653 | 0.705 | 0.664 | 0.653 |
| Has a child under the age of 3 | 0.066 | 0.114 | 0.110 | 0.177 |
| *N* | *1347118* | *651* | *1493010* | *1117* |

[a] Salaried and self-employed workers, with positive earnings located in the ninety-ninth percentile and below of the earning distribution and aged of 31–65; Immigrants arrived at destination at the ages of 25 to 56 during 1990-2000

## Appendix 4: Decompositions

We use the decomposition method offered by Juhn, Murphy, and Pierce (1991). This decomposition technique decomposes the difference in the earnings gaps between native and immigrants in two countries ("difference in differences") into two main portions. The first is the effect of the differences in the mean attributes of immigrants relative to native in the two countries. The second is the effect of differences between the countries in market structure. The first portion can be further divided into two fractions: a fraction due to relative differences in native-to-immigrants observed characteristics, and a fraction due to relative differences in native-to-immigrants unobserved characteristics. Similarly, the difference between the countries in market structure can be divided into differences in returns on observed characteristics and differences between countries in returns on unobserved characteristics. The decomposition is based on estimating two income equations for natives in each of the two countries compared.[1] The dependent variable in those equations is the natural logarithm of earnings and self-employment, and the independent variables includes a vector of a dummies for education, age (and its squared term),.and indicators for self-employment, part-time employment, and being married.[2]

First, the following native earnings equation is estimated:

$$Y_{nc} = X_{nc}B_c + \sigma_c\theta_{nc}$$

where $Y_{nc}$ is the logarithmic transformation of native earnings from work and self-employment for the $n_{th}$ individual in country c (Sweden or the U.S.); $B_c$ is a vector of coefficients; $\theta_{hc}$ is the standardized residual (i.e., with mean 0 and variance 1 for each country); and $\sigma_c$ is the country's residual standard deviation of individuals earnings (i.e., its levels of residual income inequality for native earnings). The gap between the average immigrant earnings and the natives' average earnings in country c can be defined as follows:

$$D_c = Y_{nc} - Y_{ic} = \Delta X_c B_c + \sigma_c \Delta\theta_c$$

[1] The country-based comparisons is (Sweden-U.S.) as in most comparisons the natives-to-immigrants are larger in Sweden.

[2] The specific equation that was estimated is the following:

$$Y_{ic} = \beta_{0c} + \beta_{1c}\text{Education}_i + \beta_{2c}\text{Age}_i + \beta_{3c}\text{Age}^2{}_i + \beta_{4c}\text{Self employed}_i + \beta_{5c}\text{Part time employment}_i + \beta_{6c}\text{Married}_i + e_i$$

Where the *n* and the *i* subscripts refer to native and immigrant average, respectively; and a Δ represents the differences between the natives and immigrants for the variable in the equation. Based on this equation, we can assume that the earnings gap between natives and immigrants in each country can be decomposed into differences between them in observed characteristics $\Delta X_c$ and differences in standardized residual $\Delta\theta_c$ (multiplied by residual standard deviation of earnings $\sigma_c$).

The differences between Sweden (SW) and the U.S. (US) in the native-to-immigrants earning gap can be decomposed using the previous equation:

$$D_{SW} - D_{US} = (\Delta X_{SW} - \Delta X_{US})B_{US} + \Delta X_{SW}(B_{SW} - B_{US}) + (\Delta\theta_{SW} - \Delta\theta_{US})\sigma_{US} + \Delta\theta_{SW}(\sigma_{SW} - \sigma_{US})$$

The first term provides the contribution of inter-country differences in the measured variables (the X's) to the between-country difference in the earnings gap between native and immigrants. The second term reflects the differences in measured prices across countries (i.e., differences between countries in returns to the measured variables). The third term reflects the effect of inter-country differences in the relative position of native and immigrants on the residual distribution, net of observed characteristics. This relative ranking reflects natives to immigrants' differences in unmeasured characteristics. The fourth term is the contribution of the inter-country difference in residual inequality to the between-country difference in native-to-immigrant earnings gap.

Finally, the bootstrap method for deriving confidence intervals for each of these decomposed components is applied. This method allows us to test the hypotheses whether the difference between the US and Sweden in the immigrant-to-native differentials on each component has an impact that is significantly different from zero on the total between-country difference in differentials.