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"The Swedish Dream"

Immigrant entrepreneurship in Sweden between 1880 and 1910

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Abstract:

This thesis analyzes the impact of immigrant entrepreneurship on factory ownership in Sweden between 1880-1910. During the Swedish industrial revolution, international migration increased due to significantly changing industries all around Europe. The purpose of this thesis was to evaluate whether immigrant entrepreneurs were more likely to become factory owners compared to native Swedes, in the given time period. Moreover, this research examined if there were certain patterns regarding particular immigrant groups owning factories in specific industrial sectors. The results indicate that immigrant entrepreneurs are 1.2% more likely to be factory owners overall, compared to native Swedes. Furthermore, investigating which immigrants have had the highest probabilities of owning factories, it is evident that immigrants from Denmark, Norway, Poland, and UK were dominant players in sectors such as stone and clay products, leather and hide processing and the wood industry.

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Table of Contents

List of Tables

List of Figures

1. Introduction

This thesis looks at immigrant entrepreneurship in Sweden between 1880 and 1910. The rapid increase of international migration fostering economic growth and development in Sweden during the late 1800's and early 1900's serves as stimulation for this study of immigrants as entrepreneurs, rather than as regular employees (Aliaga-Isla & Rialp, 2013). Famous Swedish brands such as Marabou, Felix and Findus have a common denominator; they were all founded in Sweden by European immigrant entrepreneurs. According to Hagen-Zanker, Mosler Vidal and Sturge (2017), "migration is an expression of the human aspiration for dignity, safety and a better future," a centuries old phenomenon centered around the search for a better life (Hagen-Zanker, Mosler Vidal & Sturge, 2017, p. 2).

The United Nations defines international migrants as people who change their original country of residence for various reasons, one being in search of better employment opportunities (UN.org, 2019). Conversely, refugees are defined as people who are forced to move from their country of residence, due to prosecution, political instability, religious tension, and other fear (World Bank, 2020). Therefore, the UN categorizes migrants and refugees according to the motivation for their departure. Having established this difference and due to the focus on entrepreneurship, this paper will only focus upon international migrants.

Today, there are approximately 258 million migrants worldwide living in a country different from their origin (UN.org, 2019). Immigration serves as a crucial factor in maintaining population size, boosting population growth and entrepreneurial activities (MPI.org, 2020). Reviewing the historical characteristics of the immigrants coming to Sweden is therefore vital, since immigration has remarkably shaped the Swedish state and society, historically and contemporarily (Johnsson, 2015).

Immigrant entrepreneurs are also referred to as "minority entrepreneurs" or "ethnic entrepreneurs" and defined as "individuals who absorbed uncertainty caused by changing conditions and, thus, contributed to the welfare of society" (Dana & Vorobeva, 2021). Dana and Vorobeva (2021) portray the important role migrants play in receiving societies, adding that they constitute "agents of change" due to their impact on economic development. Additionally, Dana and Vorobeva (2021) further argue that minority entrepreneurs are key actors regarding the spreading of new business practices and ideas, as well as contributing to improved competitiveness. This adds value to the thesis topic since the importance of immigrants' entrepreneurship is well known, but their effect in the Swedish context is yet to be discovered.

Factory owners will be used as the binary dependent variable to understand immigrant entrepreneurship[1]. This thesis involves immigrants born outside of Sweden in the period 1880-1910, excluding Swedes born abroad[2]. Nationality is commonly defined as having a national identity and feeling a sense of belonging to a given community, where the population shares a common belief system, history and a delimited territory (Miller, 1993). Several scholars argue that nationality is an imagined concept (Andersson, 1983) and therefore country of birth is a better measurement for this thesis.

Furthermore, much literature has focused on the great historical emigration period in Sweden, occurring from the late 1800's to the 1930's, but limited literature has looked at the immigrants arriving in the same period; none have focused on their importance and contributions to Swedish entrepreneurship. As such, this thesis explores the impact of individuals who have contributed to Swedish society without proper recognition.

Historical international migration prior to the 1800's focused on discoveries and overseas movement (Bade, 2008). However, with the shift from agrarian to industrial societies, labor migration emerged (Bade, 2008). Bade (2008) depicts how immigrants often migrated to countries and communities based on common beliefs, since this facilitated the integration process and increased job opportunities. This is especially true for the North Sea region, German, Dutch and Belgian immigrants (Bade, 2008). A reason explaining this pattern is the similarity in North-Western European culture, language and traditions, thus reducing the assimilation process significantly for newly arriving immigrants. The next section will outline the research aim, and present the research questions and hypotheses.

1.1 Research Aim and Research Question

Existing literature sheds light on immigration patterns in Europe, the United States, Canada and Australia (Massey, 1999). However, according to Aliaga-Isla and Rialp (2013), minimal literature has focused on immigrant entrepreneurship in Europe and even less in Sweden. This thesis looks at how immigrants have historically shaped Swedish industries both culturally and from an entrepreneurial perspective. The purpose of this thesis is to attempt to mend the abovementioned gap by analyzing the impact and the characteristics of international immigrants to Sweden, in the particular

[1] How this variable was derived is explained thoroughly in the methodology section.
[2] The reason behind this will be discussed in the literature review in chapter 2.

time period. Moreover, it seeks to establish whether they have positively contributed to Swedish entrepreneurial activities and, if so, which Swedish industrial sectors have been influenced the most by these immigrants and their original ideas. This will be done by a systematic quantitative cross-sectional study, analyzing census data and presenting an econometric model, which will be used to answer the following research questions and hypotheses.

Research questions:

- *Did the probability of an international immigrant being a factory owner increase in Sweden between 1880 and 1910?*
- *Do migrants from different countries contribute to different industries?*

The econometric models formulated will be used to analyze the subsequent hypotheses.

Hypotheses:

Hypothesis 1 - H_0: There is no difference in factory ownership between native Swedes and immigrant entrepreneurs between 1880-1910.

Hypothesis 2 - H_0: There is no significant difference in industrial sector participation between owners of Swedish or immigrant backgrounds.

1.2. Contribution and Motivation

The years in focus, 1880 to 1910, illustrate crucial years of the European industrial revolution, characterized by rapidly changing industries. Immigrants were moving around in Europe, transferring knowledge from different industrial sectors (Bade, 2008). The foundation for this thesis on immigrant entrepreneurship is therefore the lack of studies from Sweden related to this specific period, despite data and theories being available on the topic. Moreover, the study of immigrant entrepreneurship in a particular country or region, sheds light on the cultural transformations that inevitably take place. Understanding how Swedish factory ownership evolved during this industrialization period and the probability of migrants being owners, provides insight into the economic successes of migrants and the networks, legacies, and pathways created. It is just as vital to study why people left Sweden, a strong literary focus to this day, as it is to discover why people entered Sweden and their impact.

1.3. Thesis Outline

This thesis is organized as follows. Chapter 2 presents the theory: the literature review focusing on past research and establishing the context for the topic in question and the theoretical framework aims at outlining existing migration theories. The main theories that will be looked upon for this research are the Zelinsky hypothesis, the network theory, cumulative causation and migrant selection. Chapter 3 introduces the dataset used to conduct this quantitative research as well as a description of the variables. The methodology is explained in detail in chapter 4, including the research design, procedure for variable creation, model specification, and limitations. Chapter 5 reports the regression results and chapter 6 discusses the analysis and reflects on the connection to previous research. Finally, chapter 7 presents the conclusion of the findings, provides suggestions for future research and offers practical implications.

2. Theory

2.1 Literature Review

Existing literature focuses on the importance of the great Swedish emigration period, from the late 19th century to the beginning of the 20th century and the respective effects, both positive and negative, which this phenomenon had on the Swedish economy. On the contrary, as stated, very little to no literature has focused on the immigrants arriving in this given period. Therefore, this section will outline the previous literature on Swedish emigration, immigration to Sweden, the immigrants' importance and their contribution to entrepreneurial activities.

2.1.1 From Agricultural farmers to Industrial Workers

Sweden went from being an agricultural community to a country of services; some scholars even argue that immigrants "built" Sweden, since they left such important cultural and entrepreneurial footprints, still seen today (Johnson, 2015). Significant changes in the Swedish society characterize the period between 1850 and 1930. During the 1800's, agriculture was the dominant industry, and society was almost exclusively family-oriented. However, this did not last beyond industrialization (Larsson, 1993) and (Knibbe, 2000). Some of Sweden's changes during this period include changes in production value and employment organization, development of society driven by changes in

composition (Larsson, 1993). Effectiveness, efficiency, and technological advances led to improved agricultural practices due to increasing international demand. Moreover, the Swedish GDP also began to increase, the share of agriculture as part of GDP declined as other sectors flourished, such as the service industry and the industrial sector (Larsson, 1993).

Sweden also experienced demographic changes, which both resulted in and reflected other societal changes. Sweden experienced a population decline due to emigration, high death rates and low fertility. However, during the 1880's, urbanization caused a population shift from rural areas to urban cities. In 1880, 85% of the Swedish population lived in rural areas, and only 15% lived in cities. Fast forward 30 years to 1910, and approximately 75% of the Swedish population lived in rural areas and 25% now lived in cities (Larsson, 1993).

These changes brought about alterations in society and the socio-political environment as well as the population. Even though urbanization is often associated with increased job opportunities and more services in larger cities, numerous downsides exist. More people moving to the city and limited living areas led to poor living conditions, increased unemployment during the winter months and thus made it hard for workers to provide for their families (Larsson, 1993).

Furthermore, from the 1840's to the late 1860's, several influential economic and political changes took place that created the conditions for the modernization of Sweden. Swedish politics evolved from old regulations with roots in the middle ages to new institutional terms and conditions within several areas (Larsson, Andersson-Skog, Broberg, Magnusson, Petersson & Sandberg, 2014). Examples of such new policies included the educational reform of 1842, making primary school obligatory for both males and females. Likewise, Sweden imposed an important mobility reform in 1860, allowing free emigration and immigration. This was seen as an adaptation to the newly introduced concept of free trade allowing freedom of mobility (Larsson et al., 2014).

A crucial revolution of the Swedish economic practices occurred in 1864 with the establishment of freedom to conduct business or "näringsfriheten" as it is called in Swedish (Larsson et al., 2014). The new practices allowed individuals to establish trade movements and factory activities in rural and urban areas, which is central to this thesis' relevance. Prior to 1850, most businesses were family-owned, but with industrialization came the new form of business known as "aktiebolaget", established in 1849 (Larsson et al., 2014). "Aktiebolaget" is translated into English as joint-stock company/limited liability companies, and their popularity rose because they allowed for the division/share of ownership and thus more significant financial capital mobilization, sharing of risk and limited liability.

The next section will outline the industries of importance during the given time period and thereby present possible industries where immigrants could possibly be factory owners in, determined by the results section. It is important to note that the countries of birth included in this research were abundant and so were the possible ownership sectors. Therefore, in-depth research has not been done for every single country and for every individual industry, but rather the big picture of the industrial revolution actors related to the Swedish context.

2.1.2. Flourishing Industries

As stated before, agriculture dominated the Swedish economy and employment during the 1800's. Thus, improved agriculture could now feed more people than before. During the second half of the 1800's, further developments occurred in Swedish society. Population growth and high demand for Swedish products abroad were vital factors. Likewise, there were several other European agriculture-dominant regions and countries at the time, who also experienced increased agricultural growth rates, induced by the technological advancements and the introduction of chemical pesticides around 1880 (Knibbe, 2000). The "Flemish-agricultural" region was also very famous for the high yield agriculture, however, Knibbe (2000) argues that it disappeared within 20 years of the introduction of poor-quality chemical pesticides.

Between the 1870-1890's, Sweden experienced yet another economic breakthrough as the shoe, textile and food industries grew (Larsson, 1993). The British textile industry served as a great role model for the Swedish industrialization. The textile industry was key, starting in the 1820's, due to its rampant and sustained growth, even if the initial progress had been slow. Schön (1980) claims that the growth in textile was a result of the agricultural revolution. This push was credited to the increased demand, rising wages, which in turn, increased the profitability of mechanization of the textile factories (Schön, 1980). Another reason for growth in the textile industry, apart from changing demand and the industrial revolution, is presented by the growing Swedish population during the 1800's.

As a result of the Swedish state investments, occurring between 1870-1890, significant infrastructural investments and improvements were made. Consequently, the iron, steel, paper, timber, and sawmill industries underwent noteworthy changes (Larsson, 1993). A paper from the Economist, from 1925, describes the position of various industries in the Swedish economy, stating the "iron industry is, at present, the dark spot in Swedish economic life" (Sweden - Some Features Of 1925 -

Harvests - Wood Pulp - Timber - Iron And Steel, 1926). Moreover, the paper argues that the sector had seen declines in two years prior. Consequently, it could be used as an indicator predicting that the iron industry had been decreasing in the years prior to 1925 as well. The paper supposes that the cause could be an increase in imports of foreign pig-iron combined with a decline in high-quality steel products. Steel became an important Swedish product after the important immigrant group, the Walloons, arrived from Southern Belgium in the 17th century. Wallonian iron and the Wallonian forge, the world's finest steel at the time, was known in the most important export market in England as Oregrund Iron. The British military used the steel and iron as materials for anchors and other iron objects for the British navy. On a civilian level, it was utilized as a starting material for Sheffield's fuel steel for crafting tools, and more (van Geyt, Rousseau & Smets, 1946). Given that the exports of steel declined in Sweden in the early 1900's, it would suggest that the results of this analysis show less factory ownership overall in the iron industry, not only regarding immigrant ownership.

Similarly, the paper argues that the timber industry was not performing as well as expected either, caused by a sudden fall in prices (Sweden - Some Features Of 1925 - Harvests - Wood Pulp - Timber - Iron And Steel, 1926). If there was a sudden decrease in timber prices in 1925, chances are that the period before, this thesis' period between 1880 and 1910, oversaw positive developments and growth in the timber and wood industries.

On the contrary, the paper states that the agriculture was in a very favorable position in Sweden, along with the paper and pulp industries, and the mechanics industry, particularly focused on gasoline engines and ball-bearings (Sweden - Some Features Of 1925 - Harvests - Wood Pulp - Timber - Iron And Steel, 1926). The reason for improvements in the agricultural sector could be a result of the technological advancements as proposed by Larsson et al. (2014), caused by increased popular demand for agricultural products. Moreover, the paper also emphasizes the fact that one-third of the Swedish population lived off agriculture. This seems to be in alignment with previous research presented as well. Given the increasing importance of various industries in Sweden during the time in focus, it is interesting to look at the specific roles immigrants had in the industrial revolution.

2.1.3. Immigrant Entrepreneurship

Entrepreneurs have played a key role in development due to their unique characteristics, including taking initiatives and organizing innovative activities (Johnsson, 2015). Immigrants have

since the Middle Ages been influential in Sweden's economic development as entrepreneurs, experts and professionals. This is because immigrants often bring skills not yet available in Sweden. They can provide the country with capital for investments and potentially have an extensive international network which can be beneficial for international affairs (Massey, Arango, Hugo, Kouaouci, Pellegrino & Taylor, 1993). People who leave their home country also seem to take more initiatives and tend to be more adaptive to new environments (Johnson, 2015).

Dana and Vorobeva (2021) state that comparing various immigrant entrepreneurs from differing backgrounds shows "occupational clustering", meaning that when different minority entrepreneurs face the same opportunity, their behavior tends to differ depending on their ethnic background. This can also be explained by the "one size does not fit all" statement (Dana & Vorobeva, 2021). Understanding which immigrants contribute to which sectors is in line with the literature by Dana and Vorobeva and also central to this thesis. Moreover, Dana and Vorobeva (2021) argue that this phenomenon has mostly been addressed from an ethno-cultural and linguistic perspective, rather than economic development and immigrant impact point of view. This reinforces the idea of this thesis topic.

Immigrant entrepreneurs often face unequal distribution of resources and societal disadvantages, resulting in "socially disadvantaged" minorities (Dana & Vorobeva, 2021). This is mainly caused by discrimination, lack of certain country-specific skills and access to financial resources. However, these disadvantages often become opportunities. Dana and Vorobeva (2021) describe how immigrant entrepreneurs often travel between their country of birth and their new country of residence, acquiring ideas and mastering multiple languages, resulting in transnational entrepreneurs who are constantly updating and transferring knowledge.

A counterargument of the increased possibilities attributed to immigrants regarding transnational information transfers is presented by the concept of "missing entrepreneurs" (Menzies, 2021). Menzies (2021) argues that immigrant entrepreneurs are associated with underrepresented and disadvantaged people in the labor market. This ties back to the purpose of the thesis, analyzing if migrants are over or under-represented in certain sectors of the Swedish economy between 1880-1910. In the case of Sweden, there are several indirect immigrant influences in society, looked upon next.

Many of the cultural traditions and things people associate with being Swedish actually have various origins outside Sweden (Johnson, 2015). A beautiful portrayal of this can be seen in Ingvar

Svanberg and Mattias Tydén's book from 1992 titled, "Tusen År av Invandring: En Svensk Kulturhistoria" where they illustrate an authentic traditional Swedish Christmas as:

> We are the only country in the world to celebrate the Sicilian Saint Lucia with German glühwein, flavored with spices originally brought from the Islamic Orient and with lucia bread baked with saffron harvested by Berber villagers in the Atlas Mountains. Santa Claus in his modern guise is not a folklore figure but a 20th-century fictional character who merely borrowed his name from older tradition. In behavior and appearance, Santa Claus is an Americanized and distorted saint from an area that is now in western Turkey.[3] (Svanberg & Tydén, 1992).

This excerpt demonstrates how Swedish society is and always has been influenced by the introduction of foreign ideas and people. The number of historical immigrant individuals to Sweden is very small compared to the immeasurable impact they have had on Swedish societal development (Johnson, 2015). Historians often believe that their acknowledgement and importance are underrated, especially after 1850, when statistics on immigrants were made available. It became clear that few people had immigrated to Sweden, and thus, people questioned how such few individuals could have such a substantial impact on a host country (Johnson, 2015).

The following section will look upon the origins of individual immigrants to Sweden from a historical perspective and provide insight about immigrant literature today.

2.1.4. The Importance of Migration – Immigration and Emigration

Migration is a term associated with change and adaptation and it is one of the significant characteristics of the globalization and industrialization waves occurring in the late 19th century (Bohlin & Eurenius, 2010). The rise of emigration began with the industrial revolution, a consequence of rapid economic development in Europe and the increased spread of industrialism in the colonies (Massey, 1999). Massey (1999) reflects that more than 48 million people left Europe to find better fortune in the Americas and Oceania. 85% of the people ended up in just five different countries, namely: Argentina, New Zealand, Australia, Canada and the United States, with the United States receiving

[3] Translated from Swedish

about 60% of the immigrants alone. The immigrants originated mainly from Portugal, Italy, Britain, Norway, Spain and Sweden (Massey, 1999).

Sweden was particularly hit by large emigration waves between 1881-1910, resulting in the loss of one fifth of the Swedish population, equivalent to about 1 million people, who emigrated mainly to the United States (Bohlin & Eurenius, 2010). Similarly, Massey (1999) builds on this idea, suggesting that most people lived in rural areas when the mass emigration period began. Therefore, there were migration pulls towards the bigger developing cities in Sweden, where wages were higher, but also to developing cities abroad with even higher wages. This led to the large migration flows abroad, supported by Bohlin and Eurenius (2010), who show that most Swedish emigrants came from the countryside in Southern and Western Sweden. This crucial period of emigration came to an abrupt end when the outbreak of World War I put everything on hold (Massey, 1999).

Elinderson (2017) believes that one of the main reasons for emigrating was the income differences between Sweden and potential destinations abroad. During the 1860's and 70's, the Swedish wages were less than half the wages in the UK and far below the average wages in Northwestern Europe. However, this is very interesting given that Sweden is among the wealthiest countries in the world today, in terms of the Human Development Index (Vylder, 1996). Consequently, Sweden must have adequately compensated for the loss of the population during the emigration waves, as 200,000 of the 1 million emigrants returned to Sweden a couple of decades later (Elinderson, 2017). These migrants were incentivized to return by either the Swedish progress or they had become disillusioned with their new host country. Interestingly, literature tends to focus on return migration rather than examining the immigrants arriving as a consequence of increased industrialization.

2.1.5. Where did immigrants to Sweden come from?

When discussing the origin of immigrants to Sweden, the geography of Europe and the changing national borders becomes key. The Swedish example, in this case, is that Finland was a part of Sweden until 1809 (Johnson, 2015). This means that there were still many Finns living on Swedish border territory during the period in focus. Therefore, the results in terms of Finnish nationals might be ambiguous depending on whether one considers the country of birth, or the nationality people identify themselves as. The reason why the researcher of this thesis decided to exclude Swedes born abroad was because including them, significantly increased the number of immigrants. In addition,

including Swedes born abroad would suggest more of a return migration study based on the noteworthy emigration wave in Sweden, starting in the 1860's (Elinderson, 2017). Moreover, these return migrants may not have experienced the same difficulties and barriers to re-entering Swedish society, as international migrants face when arriving. Consequently, for the purpose of this thesis, excluding Swedes born abroad ensures the analysis of authentic immigrant contribution to the Swedish society and not return migration.

2.1.6. Influential Individual Entrepreneurs – An Anecdotal Perspective

Anecdotal stories of successful immigrant entrepreneurs are vital in understanding the impact of single individuals on the Swedish entrepreneurship. The Dane, Johan Dunker, founded a rubber factory in Helsingborg in 1891, known as the Helsingborgs Gummifabrik AB and later as Tretorn. The chemist, Julios Von Gerkan, from Riga succeeded in solving the technical problems of manufacturing the factory's first product, the galosh. Johan's son, Henry Dunker became known as Sweden's wealthiest man before his death in 1962 and his wealth was donated to the city of Helsingborg (Johnson, 2015). The German, Wilhelm Wendt, is another example of an immigrant who achieved enormous and noteworthy success. He founded the company Perstorp in 1881, which was known as Stensmölla Kemiska Tekniska Industri then. He became famous for his production of acetic acid. Today, Perstorp is a very successful global specialist chemicals company. Moreover, The Swiss Du Bas, was in 1781 recruited to Marsvinsholm municipality near Ystad to make Emmentaler cheese, resulting in the famous Swedish "herrgårdsost" (Johnson, 2015). Likewise, the company Felix was established in 1939 in the town of Eslöv by Herbert Felix, a Czechoslovakian entrepreneur and similarly, Findus, was founded in 1941 in Bjuv, by a Norwegian entrepreneur named Henning Throne-Holst. Finally, Carlos Zoéga was an Italian entrepreneur living in Brazil, who established the coffee trading company, Zoéga, in Landskrona in 1881, and later moved it to Helsingborg in 1886.

2.1.7. The "Laws of Migration"

The seven "laws of migration" postulated by Ravenstein (1889) outline specific immigrant characteristics and typical behavior that creates the foundation for modern migration starting in the 1880's. The first law expresses that most migrants relocate short distances from their origin and usually to larger cities. The second law proposes that rapid growing cities tend to have large migrant

populations from adjacent rural areas. The third law theorizes that emigration is inversely proportional to immigration and the fourth law says that a significant migration wave will consequently create a counter wave. The sixth law states that people living in rural areas tend to migrate more than people from urban centers and, finally, the seventh law predicts that women are more likely to migrate than men (Ravenstein, 1889). But why did Ravenstein come up with these laws?

The industrial revolution starting in the mid-late 1800's drastically transformed the life and working conditions for people in Europe and also North America. Economies of scale, railroads and factories were the main victims of this disruptive wave, inspiring many people to relocate and abandon their traditional lifestyles in search of better opportunities and life standards (Corbett, 2001). According to Corbett (2001), Ravenstein wrote the laws of migration in 1885 as a prediction of migration patterns within and among countries, attempting to explain migratory behavior. The success of his laws is reflected in the fact that they form the basis and foundation of most existing migration theories today. The next section will present the theoretical framework and outline the theories relevant to this thesis.

2.2 Theoretical Framework

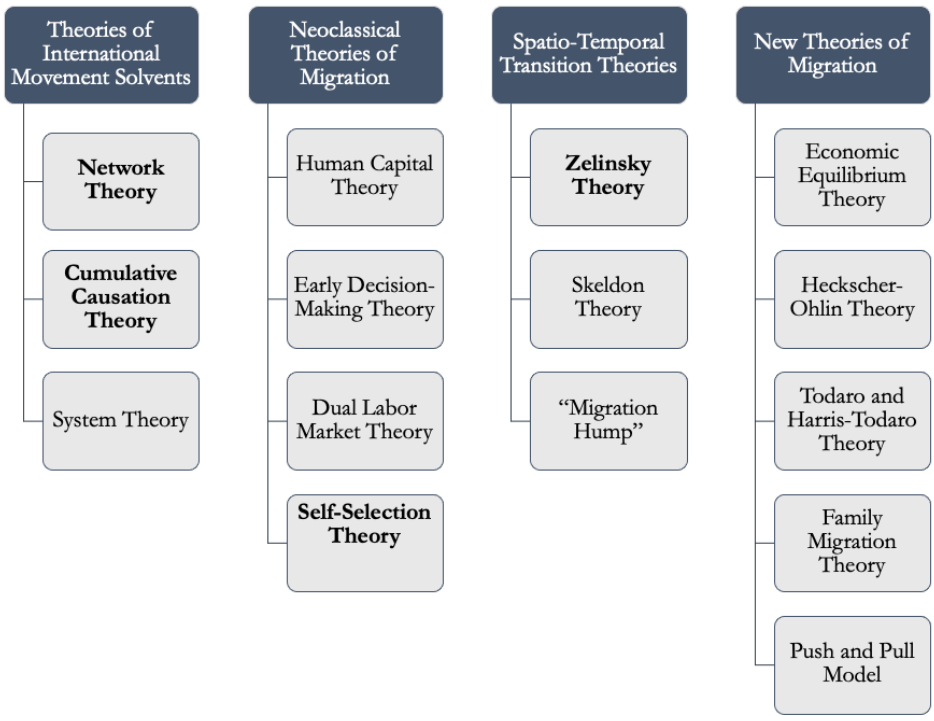
The importance of national borders is becoming more and more debatable given that approximately 3% of the world population are immigrants. As expected, the United States, as a receiving country has seen an increase from 6-13% within the past 30 years, partly due to its status as a historical migrant receiver. Surprisingly, however, is the fact that countries with less historical immigration backgrounds, such as Sweden, have seen record-high shares of their population being of a foreign-born descent, reaching 14.4% in 2012 (Borjas, 2014) and (Sweden - OECD, 2021). Historically, immigration patterns suggest workers move from low-wage countries to high-wage countries, while capital flows from capital-rich countries to capital poor-countries, thus resulting in an international wage equilibrium (Massey et al.,1993).

2.2.1. Migration Theories

International migration, its causes and its consequences, make up a complex phenomenon often debated by scholars. Massey et al. (1993) present a groundbreaking review of the existing migration theories, everything from the initiation of an international movement to the perpetuation

of international migration. In their paper, the authors explain that there is not one universal theory of migration but rather several fragmented theories developed in isolation from one another. They attempt to integrate and analyze these theories on the macro, meso and micro levels. Similarly, Hagen-Zanker (2008) acknowledges Massey's innovative work but also criticizes the work, stating that it is "brief and incomplete" for researchers interested in migration. As a result, Hagen-Zanker (2008) provides a more complete review of the development of migration theories, also on the macro, meso and micro level. Likewise, Kumpikaitė and Žičkutė (2012) present an overview of the existing migration theories (see figure 1). One of the macro theories illustrated by Kumpikaitė and Žičkutė (2012), and further described by Hagen-Zanker (2008) is the Zelinsky Hypothesis from 1971, depicting mobility transition. This hypothesis is directly applicable to the topic of this thesis, since it is a theory relating to migration as a consequence of the modernization of societies.

Figure 1 - Overview of migration theories, own creation based on Kumpikaitė and Žičkutė (2012)[4]



[4] The theories in bold are the ones focused upon in this thesis

2.2.2. Zelinsky's Hypothesis of Mobility Transition

Zelinsky (1971) proposed a theory referred to as the "Hypothesis of Mobility Transition", which dissects the concept of migration into human geography and behavior components as well as a demography component. Zelinsky (1971) defines his hypothesis by stating that, "there are definite, patterned regularities in the growth of personal mobility through space-time during recent history, and these regularities comprise an essential component of the modernization process" (Zelinsky, 1971, p. 222). This theory is composed of eight unique characteristics that each strengthen its validity. Firstly, the transition from a relatively mobile society, characterized by very little social and physical movement, to a significantly mobile society due to modernization (Johnson, 2015). This highlights the importance of modernization as a driver for increased international movement. Likewise, mobility transitions are characterized by changes in function, frequency, duration, countries of origin of the migrants, social classes of origin, periodicity and lastly, the destination. Furthermore, the mobility transition of a given community is closely related to the current state of the demographic transition. In addition, Zelinsky (1971) illustrates that a consequence of mobility is also the movement of information. Therefore, migrants may seek to exploit information elsewhere, by migrating, rather than keeping up with regional changes.

2.2.3. Network Theory

Another theory that is relevant to immigrant entrepreneurship is the network theory. This theory was proposed by Massey et al. (1993), and reflects that migrant networks are composed of interactive connections between former migrants, current migrants and the native population in the origin and host countries. These networks are formed through friendships, connections, and shared cultural beliefs. The role of these communities is crucial, since they increase the possibility of international migration by lowering the initial costs and risks associated with international mobility, and furthermore increase the expected returns to immigration (Massey et al., 1993). The expansion of international migrant communities and of these networks occur when the number of immigrants reaches a critical limit. As a result, these communities expand and lead to the spread of migration over time, encompassing broader categories of immigrants (Massey et al., 1993).

2.2.4. Cumulative Causation

The cumulative causation theory of migration, proposed by Myrdal (1957) and further explained by Massey et al. (1993), also includes vital components to consider. Myrdal (1957) portrays economic growth as a cumulative process because a positive initial change will produce an incremental upward movement, whereas a change for the worse will contribute to the cumulative movement downwards. In terms of immigration, Massey et al. (1993) state that the causation of migration is cumulative because each act of migration modifies the social context, usually making the transitions for future immigrants smoother in the receiving country. This, in turn, leads to increased migration. Factors that are typically affected cumulatively in the host country are: income distribution, land distribution, agricultural organization, human capital, the social meaning of culture and finally, the social meaning of work (Massey et al., 1993). This leads to the concept of the selectivity of migrants.

2.2.5. Migration Selectivity

Migration is a relatively selective process, especially in terms of human capital. The reason behind this idea is that migration attracts comparatively well-educated people, very likely to be skilled, productive and motivated (Massey et al. 1993). These are all crucial factors for entrepreneurship and workplace success. This is also considered a factor of accumulation because sustained emigration leads to the accumulation of human capital in the host country and the decline of human capital in the immigrant's country of origin. Chiswick (2000) calls this concept positive and negative selectivity of migrants. Chiswick takes the analysis one step further, adding that migrants looking for economic successes tend to be "self- selected". This means that economic migrants are classified to be more ambitious, dedicated, entrepreneurial and positively selected, on average, as compared to the individuals left behind in the country of origin. As a result, Chiswick (2000) suggests that the more favorably selected the immigrants are, the more likely they are to have a positive impact and become successful in their new destination. On the contrary, the opposite would also be true. This becomes critical when talking about immigration policies and their implementation outside the scope of this paper.

On a similar note, Borjas (1988) also explores the concept of self-selection related to immigration. He argues that immigrants usually have two crucial characteristics. Firstly, they believe that they can find better opportunities outside their country of origin, and secondly, they are willing to incur the consequential costs of relocating. Therefore, Borjas (1988) believes that immigrants are

not randomly distributed in receiving countries, but rather form a subsample of self-selected people, who believe they can find better opportunities in one potential host country compared to other destination countries. By making such decisions, migrants can mitigate the costs related to the process and optimize the move.

However, in contrast to many other migration scholars, Chiswick (2008) debates that countries of origin with higher inequalities than the destination countries do not necessarily lead to negative selection of migrants, instead, it may lead to less positive selectivity. Essentially, Chiswick (2008) argues that even if immigrants come from impoverished countries, they may still be more positively selected in comparison with the people who remain in the country of origin. The result is that these immigrants are more likely to contribute positively to human capital and assimilate faster in the host country.

There is also a vital relationship between immigrant incentives and earnings. An additional study by Chiswick (1978) reflects that the ambition and determination that drives international immigration carefully selects the most competent individuals, with the prospect of rising above their fellow peers in the host country. Chiswick (2008) notes that if immigrants eventually exceed native workers in the respective sectors, then a country's mean wages can increase as a result of immigration. This will also result in the immigrants receiving their benefit in the form of higher wages. It is important to notice that the migration process tends to run in a circular motion, becoming less selective with time, as immigrants assimilate, where costs and risk of migration decrease with the rise of immigrant networks and ethnic communities, leading to the formation of new networks.

2.2.6. Immigrant Entrepreneurship and Innovation

There is a strong connection between immigration and entrepreneurship worth examining in depth (Brettell & Hollifield, 2014). Immigrants are often seen as bright innovators and linked to entrepreneurship in broad ranges of economic sectors. One way to measure innovation is proposed by Brettell and Hollifield (2014), who suggest it can be measured by the "share of foreign-born students in science and engineering, or by the share of patents issued to foreign-born residents" (Brettell & Hollifield, 2014). Looking further into the concept of how to measure immigrant entrepreneurship, evidence suggests that in 2010, there were approximately ten million self-employed people in the United States, compared to the 140 million people making up the total workforce in 2010 (Brettell & Hollifield, 2014). Moreover, Brettell and Hollifield (2014) highlight that in 2009, the self-employment rate was higher among foreign-born residents, compared to native residents, namely

7.4% and 7% respectively. Similarly, using an American example, Martin (2015) depicts that increasing the percentage of university-educated immigrants in a state would lead up to a 10% increase in patents given out per capita in the given state. In summary, given strong individual drive, immigration can be economically beneficial both to migrants and for the destination, since immigrant entrepreneurs establish ethnic enclave, bring capital for investments and search for jobs in the "immigrant niches of the economy" (Martin, 2015).

3. Data

3.1. Data Description

This thesis uses primary, quantitative census data based on surveys. The data has been retrieved from the North Atlantic Population Project (NAPP), an international database deriving from the Integrated Public Use Microdata Series (IPUMS). The IPUMS contains cross-sectional microdata datasets on population censuses in European countries as well as the United States, Canada and Australia, covering part of the nineteenth and the twentieth century. By combining migration and population census data, it is possible to analyze the immigrants arriving in Sweden based on specific characteristics. The complete database is made up of 90 million observations, with hundreds of variables, both simple, transcribed variables representing factors such as birthplace, age, gender and marital status, as well as constructed variables such as fertility rate and household composition. The statistical software Stata will be employed to analyze and manipulate the given dataset and selected variables.

The complete NAPP Swedish census dataset between 1880 and 1910 has 20,255,078 million individual observations and 67 variables initially. The years presented correspond to all the population census data available for Sweden. However, this thesis will focus on individuals born outside Sweden, immigrants to Sweden, and compare particular characteristics to the native Swedes. Not all original 67 variables of the selected years will be analyzed in this thesis, since many of the variables go beyond the scope of the research. The census data will be triangulated with secondary data sources in the shape of books and journal articles.

3.2. Variables

The variables used in the models are presented in table 2 below. The *factoryowner* variable is the binary dependent variable used in model 1. The main independent variable for model 1 is *birthcountry* and then the rest are control variables.

Table 1 - Variable overview (Source: Own creation)

Variable	Label	Type	Description	Hypothesis
factoryowner	Factory Owner	Binary dependent variable, dummy variable	This variable is = 1 if the person is a factory owner and = 0 if the person is not an owner	1
birthcountry	Country of Birth	Independent variable, categorical	This variable describes the country of birth of the individuals.	1
foreignborn	Immigrants and Swedes	Independent dummy variable with 1= immigrants and 0 = Swedes	This variable identifies people born outside Sweden - Immigrants to Sweden	2
agecat	Age Categories	Control variable; categorical	The data has been divided into 10 age categories to study the effect ages can have on ownership	1 & 2
sex	Sex	Control variable, categorical	Male/female	1 & 2

Table 2 - Binary dependent variables for all model 3 (own creation)

Variable name	Description of Sector from original code1	Model
agriproducts	Products of grains and potatoes	3a
textile	Textile finishing	3b
leather	Leather and hide processing	3c
stoneclay	Products of stone and clay	3d
wood	Wooden products	3e
ironsteel	Iron and steel work	3f

4. Methodology

4.1. Research Design

This research paper will employ a descriptive research design in the shape of a quantitative approach, specifically a survey method, given that the research is based on census and population data from NAPP. Creswell (2009) supports the approach by denoting that the survey design method is appropriate when analyzing a population sample, to discover certain trends, matching individuals to certain behaviors and characteristics. The census population data from NAPP was collected using structured interviews and surveys, and this method allows the individuals to be matched to specific occupations and countries of origin, thus attempting to answer the research questions and hypotheses. Another reason why a quantitative approach is more advantageous for this research is the possibility to formulate quantitative and directional hypotheses. Specifically, Creswell (2009) refers to directional hypotheses as being hypotheses formulated to predict certain outcomes regarding the expected relationships of the variables in question, using the data collected.

4.2. Procedure

This thesis separated all the foreign-born persons from the native Swedes to facilitate analysis and it was done by creating a new dataset only including immigrants. Immigrants are in this case defined as individuals with a country of birth different from Sweden. This is because if the research includes Swedes born abroad as immigrants, then the number of observations is more than 92,000. However, when filtering out Swedes born abroad, the resulting number of immigrants is equal to 30,163. Thereafter, a new dataset was generated, including a 10% random sample of the native Swede population. The Swedes are, in this case, defined as people born in Sweden. Finally, the 10% random sample was merged to the dataset containing only immigrants. As such, a new dataset was created, with a large native population size, roughly two million, and a proportionally significant immigrant population.

May (2011) highlights the importance of random sampling, stating that it ensures that each individual has an equal probability of being selected from the population. This procedure resulted in the final master dataset that will be used throughout this analysis, containing a total of 2,113,295 individual observations. Even if it is only 10% of the total population, May (2011) states that the sample size and its validity depend on the population size and the variability. Therefore, the smaller

the population, the bigger the ratio between sample size and population needs to be to ensure as much variability as possible. The thesis mitigates this concern by sampling 10% of 20 million observations, maintaining a large dataset. Creswell (2009), also reflects upon the importance of representativity of the data, which affects the estimation of the sample. Another reason to ensure representativity is to minimize the sampling error, which measures the difference between the sample estimates and the actual population (May, 2011).

The binary dependent variable for models 1 and 2 is *factoryowner*. The procedure implemented to create this variable was complex. This thesis aims at examining how many immigrants became factory owners after immigrating to Sweden, and therefore, the interest lies in "owner" occupations. The original dataset included three different occupation variables, *occhisco, occstrng and ocstatus*. They are all string variables, which makes them harder to manipulate. The first step was to identify the codes corresponding to each occupation, then filtering all the occupations that were possible "owners" and finally analyzing the frequencies. To find the codes, the IPUMS website was used, since they provide an extensive guide to the variable composition of the initial dataset (IPUMS-I: Descr: OCSTATUS, 2021) and (IPUMS.org, 2021). The IPUMS codes correspond to the original transcription codes and categories in the censuses or to the codes created by scholars who have used the IPUMS for research in the past.

Once the codes had been identified, a regular expression was performed on Stata, filtering out every possible Swedish name for "owner". Examples of such keywords include *egare, ägare, egarinna, ägarinna, fabrikant, fabrikör and fabrik*. Once these observations had been filtered out, a new variable called *owner* was created. The next issue was that this variable now included every possible owner in any possible business, adding up to 96,851 observations. This means it included homeowners, as well as villa owners and landowners. Since this study focuses on entrepreneurship, further cleaning needed to be done before the model could be constructed. By tabulating the owner variable with the *code1 variable* (variable deriving from the factory census, described shortly), the number of observations was now reduced to 918 different ownership categories, since it matched factory owners based on the factory census, who match the Identity Document (ID) of individuals in the dataset[5].

To create the *factoryowner* variable, a manual selection of "owners" that would be relevant for this thesis was done. The selection process was based on relevance to the literature review, whether they were industry owners, manufacturing owners or if they were property and landowners. The latter

[5] The personal ID linked to each individual observation is given by the variable ***pidse*** from the original NAPP dataset.

two were excluded because they do not fit the purpose of this thesis. The final number of immigrant factory owner observations included in this research is 8,072. Lastly, the owner variable was recoded to become binary and the *factoryowner* variable was created. Through this process, the different ownership names were disregarded as the focus was on the factory ownership itself, not how it had been transcribed in the census or the factory census.

The independent variable used in models 1 and 3 is *birthcountry*. This variable was included in the initial dataset as the *bplcntry* variable, but it was a string variable. String variables need to be encoded before they can be used as a categorical variable. This variable has been coded using the IPUMS International guide for codes and frequencies related to the NAPP data (IPUMS-I: Descr: BPLCOUNTRY, 2021). Therefore, each country had a given code and was subsequently labelled. Several other countries were included in the IPUMS list, however, many countries had zero to one immigrant arriving in Sweden between 1880 and 1910 and were therefore excluded. The countries with the greatest prevalence of incoming immigrants are all included in the models.

Another key variable to discuss is the *code1* variable. This variable represents the standardized information in English regarding factory owners in 34 different industrial sectors, retrieved from a factory census undertaken in this period[6]. It is based on the Swedish variable *industri*. Firstly, this variable was examined to determine which sectors had the most people in them, both in terms of immigrants but also regarding Swedes. Consequently, six dominant sectors were identified, and six dummy variables were created for the regression analysis of model 3. The six variables are: *agriproducts, textile, leather, stoneclay, wood* and *ironsteel*, and they will each serve as binary dependent variables in model 3 for the respective regressions. The name and descriptions are presented in table 3.

The control variables used in all three models are *sex* and *agecat*, both variables from the original dataset, which have required minimal manipulation. The *agecat* variable was created using the SweCens NAPP variable documentation for the Swedish censuses, a guide that explains how the variables were created. This guide classifies ages 14 and below as children, therefore the author of this thesis did the same.

[6] A table with the 34 industry categories is found in Appendix A.7/10/21 9:19:00 PM

4.3. Model Specification

This thesis will use a linear probability model (LPM). The LPM model is special version of the Ordinary Least Squares model (OLS) with a dependent dummy variable (0,1) that produces unbiased estimates of the coefficients, instead of a normal continuous variable. Linear regression models are characterized by a binary dependent variable, given by Y_i. Creswell (2009) defines the independent variables as the variables that do not undergo any form of manipulation, whose effect on the dependent variable is what we are interested in. The control variables are other variables kept constant in the given models to control for factors, which may influence the coefficient and the association between the independent and the dependent variables.

The LPM model derives from a regular OLS model, but the difference is that it uses a binary (dummy) dependent variable. The LPM model that will be used in this research is given by equation 1 below, defined by Allison, Williams and von Hippel (2020).

Equation 1

$$\hat{P}(y = 1|x) = \hat{y} = \widehat{\beta_0} + \widehat{\beta_{1i}}X_{1i} + \cdots + \widehat{\beta_{ni}}X_{ni} + \varepsilon_i \text{ (LPM)}$$

Looking at the equation, $\hat{P}$ represents the probability that the dependent variable takes a value between 0 and 1. $\hat{y}$ stands for the dependent variable and is an estimate of the sample of a population, not the whole population. $\widehat{\beta_0}$ is the intercept and $\widehat{\beta_{1i}}$ is the independent variable whose effect on the dependent variable is being measured. The additional variables are control variables.

4.3.1. Model 1

In this thesis, the binary dependent variable is the *factoryowner* variable for model 1, describing immigrant entrepreneurs in terms of factory owners in Sweden. If *factoryowner* = 1, then the person being analyzed is a factory owner and if *factoryowner* = 0, then the person is not a factory owner. So, model 1 is testing which countries immigrant factory owners came from. The independent variable in model 1 is *birthcountry*. The *birtcountry* variable explores whether there are differences in terms of ownership depending on your country of birth. The control variables for this model are given by the *sex* variable, with male as the baseline, thereby controlling for differences in ownership based on sex. This has been derived from Ravenstein's seventh law that women are more likely to emigrate than

men (Ravenstein, 1889). The other control variable is *agecat*. The *agecat* divided the ages of the dataset into 10 different categories. This relates to the model since it shows which age group is more likely to own factories. One would expect that as people age, the probability of owning a factory increases. The age category 25-34 is used as the baseline because literature suggests that people who migrate tend to migrate during this age range, and it is thus interesting to compare the likelihood of being a factory owner of people above and below this age category (Massey et al., 1993).

4.3.2. Model 2

Model 2 is very similar to model 1 and follows the same LPM equation shown above. The binary dependent variable is still *factoryowner,* however the independent variable is *foreignborn*, which represents immigrants if it equals 1 and Swedes if it is equal to 0. Likewise, the control variables from model 1 are also kept constant in model 2. This model is used to analyze the probability of immigrants being factory owners, regardless of their country of birth.

4.3.3. Model 3

Model 3 corresponds to hypothesis 2, determining whether Swedes and immigrants engage in the same industrial sectors. In model 3, there will be different regressions of the same equation (equation 1 from above) using modified binary dependent variables created from the original categorical variable, *code1*, representing different industrial sectors. The six possible binary dependent variables that will be regressed are *agriproducts*, *textiles, leather, stoneclay*, *wood and ironsteel*. These variables will be regressed as model 3a, 3b, 3c, 3d, 3e, and 3f respectively, with the same independent variable, *foreignborn*. As such, the models explore the associations between the *foreignborn* independent variable and the different sectors, determining the distribution of native Swedish and immigrant owners.

Furthermore, the same models will be regressed using the *birthcountry* variable as the independent variable, instead of *foreignborn*. Using *birthcountry* allows for a deeper analysis of the relationships between individual countries and specific sectors, and not just immigrants in general. The differences between the coefficients can be explored as the models all have the same independent variable and same observation counts.

4.4. Robustness Checks

Since the sample used for the models is extremely large, there are several limitations to them. One of the limitations is the inconsistent standard errors caused by heteroskedasticity. In order to minimize this effect, robust standard errors were included in the model regressions (Allison, Williams & von Hippel, 2020).

4.5. Limitations

The limitations to the Linear Probability Model predicted by Allison, Williams and von Hippel (2020), are mainly three.

(1) Heteroskedasticity can lead to inconsistent standard error estimation and thus incorrect p-values and inefficient parameter estimates.

(2) Non-normal distribution of the dependent variable, which affects the reliability of the p-values

(3) Sometimes an unrealistic probability model since there are always implied possibilities of the outcomes having numbers greater than 1 or less than 0.

These limitations can, however, be mitigated in some ways. By running a robustness check, one can fix the heteroskedasticity. Non-normal distribution is another common problem associated with large samples, and the sample of this thesis can be classified as extremely large since it deals with millions of observations. Lastly, the problem related to the possibility of outcomes having other values than 0 and 1 also depends on the hypotheses being tested and on the estimating effects. Once you start doing very complicated manipulations with the variables, this might become an issue, but it is unlikely due to the simple model specifications.

There are several limitations that could possibly be caused by the NAPP data. A lot of the results from the regressions in terms of the *factoryowner* variable and *foreignborn* variable depends on how the data was coded and defined by NAPP. Additionally, the *birthcountry* variable takes country of birth into consideration, but as mentioned in the literature review, the borders could have changed with time or people could have become naturalized citizens, and thus the results might also be affected and limited by this. Lastly, the unavailability of certain variables from the data further limited the scope of this research.

5. Results & Analysis

5.1. Regression Results

The regression results from model 1 are shown in table 4. The results suggest that a person's country of birth greatly influences the likelihood of being a factory owner in Sweden between 1880 and 1910. Looking at the regression, it is noticeable that being Polish, Danish, Norwegian or German significantly increases the probability of being a factory owner. However, it is also interesting to note that the countries of birth of Latvia, the UK and Belgium prove to be statistically insignificant. Taking a closer look at the regression, it is also visible that being a woman decreases your likelihood of becoming a factory owner by 0.4%. This difference would be expected to decrease over time since Larson et al. (2014) expressed that primary schooling became mandatory for both males and females as a result of the educational reform of 1842.

The results also illustrate that middle-aged people, specifically the age categories from 25-64, have a larger probability of being owners.

Table 3 - Regression results from Model 1 with robust standard errors

factoryowner	Coef.	Robust SE	t-value	p-value	[95% Conf	Interval]	Sig
birthcountry							
Poland	.021	.004	4.92	0	.012	.029	***
Russia	.006	.002	2.44	.015	.001	.011	**
Denmark	.008	.001	5.74	0	.006	.011	***
Estonia	-.006	0	-26.58	0	-.007	-.006	***
Finland	.002	.001	2.29	.022	0	.003	**
Latvia	-.001	.005	-0.17	.865	-.011	.009	
Norway	.01	.001	7.11	0	.007	.012	***
Sweden (Baseline)	0	.	.	.	.	.	
UK	.003	.003	0.90	.366	-.003	.009	
Belgium	.023	.02	1.17	.241	-.016	.062	
Germany	.025	.002	11.81	0	.021	.029	***
Netherlands	-.006	0	-22.41	0	-.007	-.006	***
Male (baseline)	0	.	.	.	.	.	
Female	-.004	0	-51.92	0	-.005	-.004	***
Children	-.005	0	-37.62	0	-.005	-.005	***
15-24	-.001	0	-6.32	0	-.001	-.001	***
25-34 (Baseline)	0	.	.	.	.	.	
35-44	.001	0	5.91	0	.001	.002	***
45-54	.001	0	6.14	0	.001	.002	***
55-64	.001	0	6.07	0	.001	.002	***
65-74	0	0	0.11	.914	0	.001	
75-84	-.001	0	-4.29	0	-.002	-.001	***
85+	-.002	.001	-2.10	.036	-.003	0	**
Constant	.007	0	48.62	0	.007	.008	***

Mean dependent var	0.004	SD dependent var	0.062
R-squared	0.004	Number of observations	2113293.000
F-test	368.607	Prob > F	0.000
Akaike crit. (AIC)	-5785264.456	Bayesian crit. (BIC)	-5785000.617

*** p<.01, ** p<.05, * p<.1

In order to examine the main research question both on a basis of previous literature but also in quantitative terms, model 2 was created. Model 2 is very similar to model 1, the only difference is that the independent variable in model 2 is the *foreignborn* variable, describing whether the owners are immigrants or native Swedes. *Foreignborn* =1 represents immigrants and the *foreignborn* variable =0 portrays Swedes, therefore the baseline is Swedes in this case. The results are shown below in table 5. Here it is evident that being an immigrant, increases the probability of being a factory owner by 1.2% overall, at the 99% significance level. In model 2, the control variables are the same as in model 1, to keep it consistent and make the results more reliable.

Table 4 - Model 2 results with foreignborn as the independent variable instead of birthcountry with robust standard errors

factoryowner	Coef.	Robust SE	t-value	p-value	[95% Conf	Interval]	Sig
foreignborn	.012	.001	15.60	0	.01	.013	***
Male (baseline)	0	.	.	.	.	.	
Female	-.004	0	-51.81	0	-.005	-.004	***
Children	-.005	0	-37.31	0	-.005	-.005	***
15-24	-.001	0	-6.17	0	-.001	-.001	***
25-34 (Baseline)	0	.	.	.	.	.	
35-44	.001	0	6.03	0	.001	.002	***
45-54	.001	0	6.25	0	.001	.002	***
55-64	.001	0	6.15	0	.001	.002	***
65-74	0	0	0.24	.814	0	.001	
75-84	-.001	0	-4.20	0	-.002	-.001	***
85+	-.002	.001	-2.01	.045	-.003	0	**
Constant	.007	0	48.49	0	.007	.008	***

Mean dependent var	0.004	SD dependent var	0.062
R-squared	0.004	Number of observations	2113294.000
F-test	736.598	Prob > F	0.000
Akaike crit. (AIC)	-5784784.923	Bayesian crit. (BIC)	-5784646.722

*** p<.01, ** p<.05, * p<.1

The regression results for the different versions of model 3 are reported in table 6. Model 3 uses binary dependent variables represented by the different sectors, respectively and *foreignborn* as the

independent variable. The results from table 6 will be compared with regression results replacing *foreignborn* with *birthcountry* in the analysis section[7].

Table 5 - Regression Results from Model 3a, b, c, d, e and f with foreignborn as the independent variable and the different sectors as the binary dependent variables (own creation)

VARIABLES	Binary Dependent Variables					
	Agriproducts	**Textile**	**Leather**	**Wood**	**Stoneclay**	**Iron/Steel**
foreignborn	0.0176	-0.0913***	-0.0898***	0.0240	0.0564***	-0.0135
	(0.0156)	(0.00974)	(0.0174)	(0.0128)	(0.0187)	(0.00815)
Constant	0.0735***	0.119***	0.200***	0.0368***	0.0845***	0.0356***
	(0.00366)	(0.00454)	(0.00561)	(0.00264)	(0.00390)	(0.00260)
Observations	5,449	5,449	5,449	5,449	5,449	5,449
R-squared	0.000	0.005	0.003	0.001	0.002	0.000
F-statistic	1.284	87.91	26.61	3.501	9.082	2.734
Adjusted R-Squared	9.57e-05	0.00498	0.00301	0.000786	0.00226	0.000153
Number of Observations	5449	5449	5449	5449	5449	5449
Robust standard errors in parentheses *** p<0.01, ** p<0.05						

Table 6 - Regression Results from Model 3a, 3b, 3c, 3d, 3e and 3f replacing foreignborn with birthcountry as the independent variable and the different sectors as the binary dependent variables. Robust standard errors in parentheses (own creation)

	Coefficient for the Respective Industrial Sectors					
birthcountry	**agriproducts**	**textile**	**leather**	**stoneclay**	**wood**	**ironsteel**
Poland	-0.086	-0.058	0.298	-0.101	-0.064	-0.037
	(0.007) ***	(0.006) ***	(0.108) ***	(0.009) ***	(0.007) ***	(0.005) ***
Russia	-0.091	0.447	-0.199	-0.113	-0.073	-0.036
	(0.009) ***	(0.25) *	(0.012) ***	(0.01) ***	(0.008) ***	(0.006) ***
Denmark	0.078	-0.025	-0.074	-0.033	0.005	-0.027
	(0.031) **	-0.025	(0.032) **	(0.019) *	(0.017)	(0.008) ***
Estonia	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)
Finland	-0.036	-0.09	-0.193	-0.08	0.005	-0.052
	(0.021) *	(0.027) ***	(0.025) ***	(0.027) ***	(0.01)	(0.02) **
Latvia	0	0	0	0	0	0

[7] The full regressions using *birthcountry* can be found in the Appendix B.

	(.)	(.)	(.)	(.)	(.)	(.)
Norway	0.111	-0.094	-0.222	-0.025	0.143	0.004
	(0.042) ***	(0.007) ***	(0.02) ***	(0.024)	(0.042) ***	(0.02)
Sweden (baseline)	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)
UK	-0.08	-0.157	-0.203	0.448	-0.002	0.071
	(0.005) ***	(0.015) ***	(0.008) ***	(0.072) ***	(0.029)	(0.042) *
Belgium	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)
Germany	-0.03	-0.108	-0.188	0.023	0.033	0.025
	(0.015) *	(0.007) ***	(0.015) ***	(0.023)	(0.006) ***	(0.018)
Netherlands	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)

Robust standard errors in parentheses

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

5.2. Analysis

5.2.1. Findings related to Model 1

This thesis explores the following research questions:

- *Did the probability of an international immigrant being a factory owner increase in Sweden between 1880 and 1910?*
- *Do migrants from different countries contribute to different industries?*

Model 1 is linked to the first research question and was created to answer hypothesis 1, with the null hypothesis stating: *There is no difference in factory ownership between native Swedes and immigrant entrepreneurs between 1880-1910.* Looking at the coefficients, the results indicate that people from a few countries of birth are more likely to be factory owners. Polish nationals are 2%, German nationals 2.5% and Belgians 2.3% more likely to be factory owners than native Swedes. Interestingly, immigrants from Estonia and the Netherlands show a decreased probability of being factory owners compared to Swedish entrepreneurs. This can be connected back to Ravenstein's first law of migration, expressing that, migrants usually relocate short distances from their country of origin (Ravenstein, 1889). Germany and Poland are relatively close to Sweden, thus supporting the existing literature on the topic. However, it is worth noticing that Belgium and the Netherlands are approximately the same

distance from Sweden, so there might be cultural factors influencing Belgian immigrants to migrate more to Sweden compared to Dutch immigrants. An interesting difference is the fact that being Finnish only shows a 0.2% increased probability of becoming a factory owner. In the case of Finland, there is a minor contradiction to the hypothesis. This could be attributed to the fact that the Sweden-Finnish border region has been somewhat blurry on the past, explaining substantial Finnish presence living in Swedish territory during the years in focus, making it hard to separate Finnish immigrants from residents of the border region. Likewise, referring back to the third and fourth laws of migration, which illustrate that significant migration waves create counterwaves as a consequence. This can help explain the period between 1880 and 1910, since most literature focuses on the great emigration wave during that time, this thesis demonstrates that there was a counterwave on migration to Sweden as well. The anecdotal examples in the literature review show evidence of successful German and Belgian entrepreneurs (the Walloons), which furthermore, support the results from the regression of model 1. Therefore, it can be said that the geographical proximity to Sweden was an important factor and did contribute to entrepreneurship indirectly. As a result, due to the significance levels of the associations and the relative proximity of the most important countries, the first null hypothesis is rejected.

5.2.2. Findings related to Model 2

The results from model 2, also supporting the first research question, suggest that people born in countries outside of Sweden, that is, immigrants to Sweden between 1880-1910, have an increased probability of being factory owners equal to 1.2%, compared to native Swedes. The regression also shows that female immigrants have a reduced likelihood of being factory owners of -0.4% compared to foreign-born males.

This becomes interesting to look at since the period of study is characterized by significant societal and industrial changes in Sweden. The leading cause of this shift was the introduction of the freedom to conduct business and the novelty of limited liability companies (Larsson et al. 2014). Such freedom represented several entrepreneurial opportunities in Sweden and served as an attraction for immigrants (Larsson et al., 2014). Similarly, the modernization breakthrough taking place during the 1890's and increased urbanization can also be determining factors in attracting immigrants from abroad, and thus explain why immigrants were more likely to own factories. Referring back to the literature review, Chiswick (2008) argued that people who migrate away from their country of origin tend to have several characteristics in common, such as ambition, drive and determination.

Additionally, Brettell and Hollifield (2014) agree with Chiswick's concepts and present evidence from the United States reflecting on the fact that immigrants are more likely to be self-employed compared to natives.

Therefore, the theory and literature back up model 2 regarding immigrants having an increased likelihood of being factory owners compared to natives, in this case, compared to native Swedes. However, the increased probability is not as significant as expected based on the previous research on emphasized immigrant entrepreneurship.

5.2.3. Findings related to Model 3

Model 3 looked at the probability of immigrants being factory owners within the selected industries represented by the binary dependent variables and compared to native Swedes. This model will be used to evaluate hypothesis 2. The regression results from model 3a looked at the probability of immigrant entrepreneurs being owners in the agricultural sector, specifically within potato and grain products. However, the results for this regression prove to be inconclusive, since the coefficient is very low and statistically insignificant. Therefore, it cannot be concluded with precision whether or not immigrants were more likely to be factory owners within agriculture compared to native Swedes. These results depend on how the variables for agricultural ownership were coded within the dataset. However, it could also mean that immigrants were less likely to be agricultural factory owners since Sweden was a very agricultural society, having more than one-third of the population working in the agricultural industry (Sweden - Some Features Of 1925 - Harvests - Wood Pulp - Timber - Iron And Steel, 1926) and (Larsson et al., 2014). Agriculture can also be seen as a seasonal occupation and thus it might have required seasonal immigrant workers, explaining why immigrants did not stay permanently and became factory owners.

Model 3b analyzed the likelihood of immigrants being factory owners in the textile industry. The results illustrate that immigrants were 9.1% less likely to be factory owners within the textile industry when compared to native Swedes. This is an interesting result since it is also significant at the 99% level. Schön (2008) expressed how the textile industry was growing during the industrial revolution as a result of the British textile industrial influence. The outcome suggests that Swedes were more likely to be factory owners with respect to immigrants. Since the textile machinery and techniques were inspired by Britain, it would be interesting to see if immigrants from specific countries were more likely to be factory owners compared to the overall result. Surprisingly, the results from the model 3

regressions with *birthcountry* as the independent variable show that British immigrants were less likely to be factory owners within the textile industry compared to Swedes. Here it could be argued that Swedish entrepreneurs imported the British machinery and replicated their techniques of textile manufacturing and therefore became owners themselves. Furthermore, it is noticeable that the results from the regression using *foreignborn* are in agreement with the individual country results, concluding that immigrants from various countries were in fact less likely to be textile factory owners with respect to native Swedes.

Model 3c examined the probability of immigrant entrepreneurs being factory owners in the leather and hide processing sector. The results from the regression using *foreignborn* as the independent variable suggest that migrants were approximately 9% less likely to be factory owners in the leather industry compared to native Swedes. Similar to the results from model 3b, this outcome also shows significance at the 99% level. Looking at the *birthcountry* regression, the results indicate that apart from Polish immigrants, immigrants from the other countries included were all less likely to become leather processing factory owners. Polish immigrants seem to have an almost 30% higher probability of being leather factory owners compared to Swedes. As such, in some cases there were important relationships between different sectors and specific nationalities, which is also echoed in the stone and clay sector.

Model 3d represents immigrant ownership in the stone and clay product sector. Interestingly, the results from the regression illustrate that that migrants were 5.6% more likely to be factory owners within the stone and clay industry compared to Swedish entrepreneurs. The results also show significance at the 99% level, representing high statistical significance. Examining which immigrants were particularly more likely to be factory owners within the stone and clay product industry, it is evident that UK migrants were about 45% more likely to be owners in this industry, compared to native Swedes and compared to being owners in other industries. Conversely, Polish, Russian and Finnish immigrants show decreased likelihoods of being owners in the stone and clay sector, compared to Swedes and compared to the likelihood of being factory owners in other industries.

The regression results from model 3e show that migrants were presumably about 2.4% more likely to own factories in the wood industry, however, the model does not appear to be statistically significant, thus no conclusion can be interpreted. Nonetheless, looking at the regressions from model 3d with the *birthcountry* variable instead of *foreignborn* shows different results. Here it is visible that Norwegian immigrants are 14% more likely to own wood factories compared to Swedish entrepreneurs and the result is significant at the 99% level, making it even more credible.

Regarding the iron and steel industry, it would be expected to see a low likelihood of immigrant ownership in this rapidly evolving sector during the industrial revolution in Sweden, due to increasing imports from abroad (Sweden - Some Features Of 1925 - Harvests - Wood Pulp - Timber - Iron And Steel, 1926). Despite all the literature emphasis, immigrants could possibly have been 1.4% more likely to be factory owners within the iron and steel sector, however, the results are statistically insignificant. Taking the analysis a step further, the regressions with *birthcountry* illustrate that Polish, Russian and Danish immigrants were much less likely factory owners in the iron and steel industry compared to being factory owners in other sectors and in relation to native Swedes. These results show significance at the 99% level. On the other hand, UK immigrants appear to have a 7% higher probability of being iron and steel factory owners with respect to being owners in other industries and also with respect to Swedes.

To answer the first research question, the results indicate that immigrants have a 1.2% higher probability of being factory owners compared to native Swedes, overall. This result would suggest a marginal effect and an insignificant economic outcome. However, diving deeper into the immigrant ownership with respect to specific industrial sectors, it is seen that some immigrants were much more likely to be owners compared to other immigrants and also in relation to Swedes.

The second research question investigates whether or not immigrant and Swedish entrepreneurs engage as factory owners in the same industries. The summary of the results will answer this question.

The agricultural sector seems to be dominated by Danish and Norwegian immigrant factory owners and thereby most likely also Swedish entrepreneurs, since other immigrant owners were less likely to be owners compared to Swedish. The textile sector shows Russian dominance at the 90% significance level and otherwise all immigrant groups observed in this research seem to be unfavorable as factory owners compared to native Swedes. In terms of the leather product industry, the results indicate that Polish immigrants are much more likely to be factory owners, compared to any other immigrant group analyzed, and significant at the 99% level. The stone and clay product industry shows a very high likelihood of UK migrants being factory owners compared to being owners in other industries and compared to Swedes. In the wood industry, the Norwegian immigrants have increased opportunities of being factory owners. This makes sense due to the vast amounts of forests found in Norway. Finally, within the iron and steel industry, none of the immigrant groups show significant results regarding factory ownership. The reason for this might be that Swedish entrepreneurs are more likely to be owners in this industry, just like Swedish entrepreneurs seem to have higher probabilities of being factory owners in the textile industry, if the statistical significance level is either 99% or 95%.

The overall results illustrate that immigrant entrepreneurs from various countries of birth tend to become factory owners in differing industries with respect to other immigrant groups but also with respect to Swedish entrepreneurs. Therefore, hypothesis 2 can be rejected, since there is a difference in industrial sector participation.

6. Conclusion

6.1. Research Aims

The purpose of this thesis was to study the impact immigrant entrepreneurs on factory ownership between 1880-1910. To do so, two research questions and two hypotheses were formulated to guide the research. The first research question was, *did the probability of an international immigrant being a factory owner increase in Sweden between 1880 and 1910?* To answer this question, null hypothesis 1 was created, stating, *there is no difference in factory ownership between native Swedes and immigrant entrepreneurs between 1880-1910.* This study uses LPM regressions to estimate the coefficients of the different variables included. Model 1 and 2 are used to answer the first research question and the findings suggest that immigrants were generally 1.2% more likely to own factories in the period 1880-1910 compared to native Swedes.

The second research question asked if immigrants originating from different countries contributed to different industries. The hypothesis linked to this question stated, *there is no significant difference in industrial sector participation between owners of Swedish or immigrant backgrounds.*

The different industries were the agricultural industry, textiles, leather and hide processing, stone and clay products, wood and finally iron and steel. The findings reveal that immigrants from different countries became owners in different industries compared to other immigrant groups and also in relation to Swedish entrepreneurs.

In conclusion, it can be said that immigrants from countries such as Norway, Denmark, Germany, Poland, and UK have been very influential in the selected industrial sectors analyzed. Surprisingly, the Baltic countries, that is, Estonia and Latvia in this case, were almost always statistically insignificant in the regression results. Moreover, it is peculiar to find that Finnish immigrants do not seem to be very influential in the given sectors, since it would be expected to see more Finns in Sweden

due to the proximity and historical ties. Therefore, it can be concluded that certain immigrants had a significant impact in the Swedish industrial revolution, between 1880 and 1910, as factory owners.

6.2. Future Research

Suggestions for future research include a comparison of this thesis' findings with research using data from the 21st century and the latter half of the 20th century. It would be interesting to examine how immigrants of today differ from the immigrants arriving in Sweden between 1880 and 1910, in terms of country of birth. Given the constant technological revolutions and developments that characterize several societies of today, analyzing how the current sectors are affected by immigrant influences would also be valuable. Moreover, studying the role immigrant entrepreneurship in the 21st century would also be a major contribution, since more immigrant policies, restrictions and rules have emerged since the early 1900's. It would constitute a significant contribution to literature on the economic integration of migrants.

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Appendix A

Figure 2 - List of the 34 industries included in the code1 variable.

```
. label list codes
codes:
         1000 Not Included or Missing
         1011 Animal Products
         1012 Products of Grains and Potato
         1013 Sugar, Chocolate, Tobacco and Coffee
         1014 Alcohol, Drinks and Vinegar
         1021 Yarn, Thread and Rope
         1022 Weaving
         1023 Textile Finishing
         1024 Clothing and Other Textile Products
         1031 Leather and Hide Processing
         1032 Products of Leather, Hide and Hair
         1041 Tallow, Oils, Tar and Resin
         1042 Products of Tallow, Oils, Tar and Resin
         1051 Sawed and Planed Wood
         1052 Wooden Products
         1061 Paper and Cardboard
         1062 Products of Paper and Cardboard
         1070 Plant Products
         1081 Products of Stone and Clay
         1082 Glass and Products of Glass
         1083 Products of Coal and Peat
         1091 Inorganic Acids, Bases and Salts
         1092 Fertilizers
         1093 Explosives
         1094 Colors and Other Chemical Products
         1101 Iron and Steel Work
         1102 Other Metals
         1111 Ships and Boats
         1112 Wagons and Other Vehicles
         1113 Machines and Tools
         1114 Instruments
         1115 Clocks
         1120 Graphic Products and Others
         9999 Summary Line
```

Appendix B

Model 3a estimates the probability of immigrants from the selected countries contributing to the products of grains and potatoes sector, given by the *agriproducts* variable. Even if several countries of birth show insignificance, it can be deduced that people from Denmark, the UK, Germany and the Netherlands tend to influence this sector more in terms of ownership, compared to native Swedes.

Table 7 - Regression results from Model 3a with agriproducts as the binary dependent variable and birthcountry as the independent variable and robust standard errors

agriproducts	Coef.	Robust SE	t-value	p-value	[95% Conf	Interval]	Sig
birthcountry							
Poland	-.086	.007	-11.73	0	-.101	-.072	***
Russia	-.091	.009	-10.19	0	-.109	-.074	***
Denmark	.078	.031	2.51	.012	.017	.139	**
Estonia	0	.	.	.	.	.	
Finland	-.036	.021	-1.70	.088	-.076	.005	*
Latvia	0	.	.	.	.	.	
Norway	.111	.042	2.63	.009	.028	.194	***
Sweden (Baseline)	0	.	.	.	.	.	
UK	-.08	.005	-15.56	0	-.091	-.07	***
Belgium	0	.	.	.	.	.	
Germany	-.03	.015	-1.95	.051	-.06	0	*
Netherlands	0	.	.	.	.	.	
Male (baseline)	0	.	.	.	.	.	
Female	-.012	.019	-0.64	.523	-.049	.025	
Children	.051	.026	1.99	.047	.001	.101	**
15-24	-.018	.016	-1.14	.256	-.048	.013	
25-34 (Baseline)	0	.	.	.	.	.	
35-44	-.021	.011	-1.82	.069	-.043	.002	*
45-54	-.016	.011	-1.42	.155	-.038	.006	
55-64	-.044	.012	-3.49	0	-.068	-.019	***
65-74	-.069	.015	-4.70	0	-.098	-.04	***
75-84	-.09	.009	-9.67	0	-.108	-.072	***
85+	0	.	.	.	.	.	
Constant	.091	.009	10.19	0	.074	.109	***

Mean dependent var	0.075	SD dependent var	0.263
R-squared	0.013	Number of observations	5449.000
F-test	.	Prob > F	.
Akaike crit. (AIC)	862.811	Bayesian crit. (BIC)	955.256

*** p<.01, ** p<.05, * p<.1

In model 3b, the regression result illustrates that, Polish and German immigrants were much more likely to own factories in the textile finishing industries compared to Swedes and other immigrants.

Table 8 - Regression results from Model 3b with textile as the binary dependent variable and birthcountry as the independent variable and robust standard errors

textile	Coef.	Robust SE	t-value	p-value	[95% Conf	Interval]	Sig
birthcountry							
Poland	-.058	.006	-10.26	0	-.069	-.047	***
Russia	.447	.25	1.78	.075	-.044	.938	*
Denmark	-.025	.025	-1.01	.311	-.074	.024	
Estonia	0	.	.	.	.	.	
Finland	-.09	.027	-3.30	.001	-.144	-.037	***
Latvia	0	.	.	.	.	.	
Norway	-.094	.007	-12.87	0	-.109	-.08	***
Sweden (Baseline)	0	.	.	.	.	.	
UK	-.157	.015	-10.59	0	-.186	-.128	***
Belgium	0	.	.	.	.	.	
Germany	-.108	.007	-15.60	0	-.122	-.094	***
Netherlands	0	.	.	.	.	.	
Male (baseline)	0	.	.	.	.	.	
Female	-.053	.024	-2.18	.029	-.101	-.005	**
Children	-.05	.007	-7.64	0	-.063	-.038	***
15-24	-.02	.01	-1.92	.054	-.04	0	*
25-34 (Baseline)	0	.	.	.	.	.	
35-44	.019	.009	2.06	.039	.001	.037	**
45-54	.189	.013	14.81	0	.164	.214	***
55-64	.09	.014	6.27	0	.062	.118	***
65-74	.118	.027	4.35	0	.065	.171	***
75-84	.042	.062	0.69	.493	-.078	.163	
85+	0	.	.	.	.	.	
Constant	.053	.007	8.21	0	.041	.066	***

Mean dependent var	0.113	SD dependent var	0.316
R-squared	0.077	Number of observations	5449.000
F-test	.	Prob > F	.
Akaike crit. (AIC)	2517.798	Bayesian crit. (BIC)	2616.846

**** p<.01, ** p<.05, * p<.1*

The regression for model 3c shows that the leather and hide processing industry was most likely dominated by Germans and Finnish.

Table 9 - Regression results from Model 3c with leather as the binary dependent variable and birthcountry as the independent variable and robust standard errors

leather	Coef.	Robust SE	t-value	p-value	[95% Conf	Interval]	Sig
birthcountry							
Poland	.298	.108	2.76	.006	.087	.509	***
Russia	-.199	.012	-16.56	0	-.223	-.176	***
Denmark	-.074	.032	-2.35	.019	-.136	-.012	**
Estonia	0	.	.	.	.	.	
Finland	-.193	.025	-7.74	0	-.242	-.144	***
Latvia	0	.	.	.	.	.	
Norway	-.222	.02	-10.94	0	-.262	-.183	***
Sweden (baseline)	0	.	.	.	.	.	
UK	-.203	.008	-26.98	0	-.218	-.189	***
Belgium	0	.	.	.	.	.	
Germany	-.188	.015	-12.33	0	-.218	-.158	***
Netherlands	0	.	.	.	.	.	
Male (baseline)	0	.	.	.	.	.	
female	-.142	.019	-7.58	0	-.178	-.105	***
Children	-.116	.022	-5.34	0	-.159	-.074	***
15-24	-.056	.02	-2.81	.005	-.096	-.017	***
25-34 (Baseline)	0	.	.	.	.	.	
35-44	.012	.016	0.74	.46	-.02	.043	
45-54	.008	.016	0.48	.628	-.023	.038	
55-64	.135	.021	6.46	0	.094	.176	***
65-74	-.083	.024	-3.52	0	-.13	-.037	***
75-84	.313	.105	2.98	.003	.107	.519	***
85+	0	.	.	.	.	.	
Constant	.199	.012	16.56	0	.176	.223	***

Mean dependent var	0.194	SD dependent var	0.396
R-squared	0.043	Number of observations	5449.000
F-test	.	Prob > F	.
Akaike crit. (AIC)	5150.823	Bayesian crit. (BIC)	5243.268

**** p<.01, ** p<.05, * p<.1*

The products of stone and clay manufacturing seems to be dominated by immigrants from Poland, the UK and Belgium, shown by the results from model 3d.

Table 10 - Regression results from Model 3d with stoneclay as the binary dependent variable and birthcountry as the independent variable and robust standard errors

stoneclay	Coef.	Robust SE	t-value	p-value	[95% Conf	Interval]	Sig
birthcountry	-.101	.009	-10.71	0	-.12	-.083	***
Poland							
Russia	-.113	.01	-10.98	0	-.134	-.093	***
Denmark	-.033	.019	-1.72	.086	-.071	.005	*
Estonia	0	.	.	.	.	.	
Finland	-.08	.027	-2.98	.003	-.132	-.027	***
Latvia	0	.	.	.	.	.	
Norway	-.025	.024	-1.04	.299	-.072	.022	
Sweden (baseline)	0	.	.	.	.	.	

UK	.448	.072	6.23	0	.307	.588	***
Belgium	0	.	.	.	.	.	
Germany	.023	.023	1.02	.308	-.021	.068	
Netherlands	0	.	.	.	.	.	
Male (baseline)	0	.	.	.	.	.	
female	.015	.026	0.57	.567	-.037	.067	
Children	-.034	.021	-1.60	.11	-.076	.008	
15-24	-.007	.018	-0.41	.681	-.043	.028	
25-34 (Baseline)	0	.	.	.	.	.	
35-44	-.053	.012	-4.46	0	-.077	-.03	***
45-54	-.031	.012	-2.47	.013	-.055	-.006	**
55-64	-.049	.014	-3.57	0	-.076	-.022	***
65-74	.027	.028	0.98	.327	-.027	.081	
75-84	-.069	.045	-1.55	.12	-.157	.018	
85+	0	.	.	.	.	.	
Constant	.113	.01	10.98	0	.093	.134	***

Mean dependent var	0.088	SD dependent var	0.284
R-squared	0.031	Number of observations	5449.000
F-test	.	Prob > F	.
Akaike crit. (AIC)	1587.299	Bayesian crit. (BIC)	1679.744

**** p<.01, ** p<.05, * p<.1*

Lastly, model 3e suggests immigrants from a broad range of countries are likely to own factories within the wood industry. One interesting point to note is that being Polish seems to carry an even higher probability compared to the other countries of birth. Only a few birth countries are insignificant in this model.

Table 11 - Regression results from model 3e with wood as the binary dependent variable, with robust standard errors

wood	Coef.	Robust SE	t-value	p-value	[95% Conf	Interval]	Sig
birthcountry	-.064	.007	-8.85	0	-.078	-.05	***
Poland							
Russia	-.073	.008	-9.02	0	-.089	-.057	***
Denmark	.005	.017	0.27	.789	-.029	.038	
Estonia	0	.	.	.	.	.	
Finland	.005	.01	0.50	.621	-.015	.025	
Latvia	0	.	.	.	.	.	
Norway	.143	.042	3.42	.001	.061	.224	***
Sweden (baseline)	0	.	.	.	.	.	
UK	-.002	.029	-0.06	.951	-.058	.055	
Belgium	0	.	.	.	.	.	
Germany	-.033	.006	-5.39	0	-.046	-.021	***
Netherlands	0	.	.	.	.	.	
Male (baseline)	0	.	.	.	.	.	
female	-.021	.01	-2.20	.028	-.04	-.002	**
Children	-.053	.012	-4.27	0	-.077	-.029	***
15-24	-.015	.014	-1.13	.259	-.042	.011	
25-34 (Baseline)	0	.	.	.	.	.	
35-44	-.038	.01	-4.01	0	-.057	-.02	***
45-54	-.051	.009	-5.83	0	-.068	-.034	***

55-64	-.057	.01	-5.90	0	-.076	-.038	***
65-74	-.044	.014	-3.22	.001	-.07	-.017	***
75-84	.202	.095	2.12	.034	.015	.389	**
85+	0	.	.	.	.	.	
Constant	.073	.008	9.02	0	.057	.089	***

Mean dependent var	0.038	SD dependent var	0.192
R-squared	0.027	Number of observations	5449.000
F-test	.	Prob > F	.
Akaike crit. (AIC)	-2641.165	Bayesian crit. (BIC)	-2548.720

**** p<.01, ** p<.05, * p<.1*

Table 12 - Model 3f regression results with ironsteel as the binary dependent variable and robust standard errors

ironsteel	Coef.	Robust SE	t-value	p-value	[95% Conf	Interval]	Sig
birthcountry							
Poland	-.037	.005	-7.69	0	-.046	-.028	***
Russia	-.036	.006	-6.15	0	-.048	-.025	***
Denmark	-.027	.008	-3.40	.001	-.043	-.012	***
Estonia	0	.	.	.	.	.	
Finland	-.052	.02	-2.56	.01	-.091	-.012	**
Latvia	0	.	.	.	.	.	
Norway	.004	.02	0.18	.855	-.036	.044	
Sweden (baseline)	0	.	.	.	.	.	
UK	.071	.042	1.68	.094	-.012	.154	*
Belgium	0	.	.	.	.	.	
Germany	.025	.018	1.38	.166	-.01	.061	
Netherlands	0	.	.	.	.	.	
Male (baseline)	0	.	.	.	.	.	
female	.036	.019	1.87	.061	-.002	.073	*
Children	-.01	.013	-0.77	.443	-.034	.015	
15-24	.059	.015	3.86	0	.029	.089	***
25-34 (Baseline)	0	.	.	.	.	.	
35-44	.004	.008	0.47	.636	-.012	.019	
45-54	-.016	.007	-2.20	.028	-.03	-.002	**
55-64	-.02	.007	-2.71	.007	-.035	-.006	***
65-74	-.04	.009	-4.47	0	-.057	-.022	***
75-84	-.039	.006	-6.13	0	-.052	-.027	***
85+	0	.	.	.	.	.	
Constant	.036	.006	6.15	0	.025	.048	***

Mean dependent var	0.035	SD dependent var	0.183
R-squared	0.017	Number of observations	5449.000
F-test	.	Prob > F	.
Akaike crit. (AIC)	-3108.426	Bayesian crit. (BIC)	-3015.982

**** p<.01, ** p<.05, * p<.1*