UNIVERSITÉ DE FRIBOURG
UNIVERSITÄT FREIBURG

Department of Economics
Faculty of Economics and Social Sciences
Lecturer Ana FERNANDES

UNIVERSITY OF TAMPERE

School of Management
Prof. Hannu LAURILA

Master's Thesis

Can immigration save the ageing economy of Finland? The labor market integration of immigrants in the 21st century and the impacts of immigration on public economics

Under the supervision of:

Prof. Hannu Laurila
School of Management, University of Tampere

Lecturer Ana Fernandes
Department of Economics, University of Fribourg

VÄÄNÄNEN Tiina

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Kalevantie 4
33100 Tampere

vaananen.tiina.a@student.uta.fi
+358 40 835 4353

ABSTRACT

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The population of Finland is ageing, and the demographic dependency ratio is weakening. In order to fix the sustainability gap of the public sector, several institutions have suggested increasing international net migration to be a solution to the ageing population and the potential lack of labor force. In this thesis, the aim was to observe whether immigration could possibly solve the financial problems faced by the public sector as the demographic structure becomes older. The question is approached with the help of two sub-questions. The first part observes the labor market integration of immigrants in the 21st century, and the second observes the net impacts of immigrant population on public economics in the light of previous economic research and literature.

If immigration is going to be a realistic solution to the sustainability gap of public economics, the immigrants should find employment and be able to contribute to the economy as tax payers. In this thesis, the labor market participation of immigrants in 2000-2015 was observed with the help of labor market integration indicators used by the OECD and the data provided by Statistics Finland, Eurostat and OECD. The results show, that the employment of immigrants has been considerably weaker in comparison to the natives in the 21st century. In an international comparison, the gap in unemployment between natives and immigrants is exceptionally large in Finland. However, when comparing the Finnish immigrant population to immigrants living in Sweden, the labor market integration of migrants has improved significantly in 2000-2015, and the immigrant populations living in Finland and in Sweden do as well on the labor markets, on average.

It is clear, that the population is ageing, and the share of tax payers is diminishing. Immigration could fix the age structure relatively fast, yet its net impact on public economics is challenging to estimate. International research has estimated the net impact of an immigrant to be similar to a native. On the other hand, the Finnish studies state that the net impacts on public sector vary strongly among immigrant population depending on their background characteristics. The net costs caused by the heterogenic immigrant population vary across immigrant groups. The migrants arriving from other EU and EFTA member states do not differ from natives, as those migrants who have arrived due to humanitarian reasons, can cause relatively large costs to the public sector. As the indicator of labor market integration revealed, there is a significant share of labor force potential among immigrants. Immigration could therefore fix some of the problems caused by the ageing population, but the challenge is to integrate them to the Finnish labor markets. At the moment, it seems like immigration cannot solve all the problems alone but can work well together with other policy measures focusing on affecting the problems caused by the ageing of population.

TIIVISTELMÄ

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Suomen väestö vanhenee vauhdilla ja väestöllinen huoltosuhde heikkenee. Julkistalouden kestävyysvajeen korjaamiseksi useat instituutiot ovat esittäneet maahanmuuton mahdollisuutta korjata väestön ikärakennetta, sekä potentiaalista työvoimapulaa. Tässä tutkielmassa pyritäänkin tarkastelemaan maahanmuuton mahdollisuuksia vaikuttaa väestön heikkenemisestä johtuviin julkistaloudellisiin ongelmiin. Tutkimuksessa aihetta lähestytään kahden eri tarkastelukysymyksen valossa. Ensimmäinen kysymys tarkastelee maahanmuuttajien työmarkkinaintegraatiota 2000-luvulla, ja toinen maahanmuuttajien nettovaikutuksia julkistaloudelle aikaisemman tutkimuskirjallisuuden avulla.

Jotta maahanmuutto voisi olla realistinen ratkaisu julkistalouden kestävyysvajeen korjaamiseen, tulisi maahanmuuttajien työllistyä ja rahoittaa julkisia palveluita veronmaksajan roolissa. Tässä työssä maahanmuuttajien työmarkkinoille osallistumista vuosina tarkasteltiin OECD:n käyttämien työmarkkinaintegraation indikaattorien avulla ajanjaksolla 2000-2015. Aineisto kerättiin Tilastokeskuksen, Eurostat:n ja OECD:n tietokannoista. Tulokset osoittivat, että maahanmuuttajien työllistyminen on ollut koko tarkasteluajanjakson ajan merkittävästi heikompaa kantaväestöön verrattuna, ja kansainvälisessä vertailussa työttömyyden erot kantaväestön ja maahanmuuttajien välillä ovat poikkeuksellisen suuria Suomessa. Ruotsiin verrattuna maahanmuuttajien integroituminen työmarkkinoille on kuitenkin Suomessa parantunut tarkasteluajanjaksona ja Suomen ja Ruotsin maahanmuuttajaväestöt pärjäävät työmarkkinoilla keskimäärin yhtä hyvin.

On selvää, että väestörakenne on vanhenemassa, ja veronmaksajien suhteellinen osuus pienenee. Maahanmuutolla ikärakennetta voitaisiin korjata nopeastikin, mutta sen nettovaikutusta julkistaloudelle on haastavampaa arvioida. Kansainvälisten tutkimusten perusteella maahanmuuttajan nettovaikutuksen ei arvioida poikkeavan juurikaan kantaväestöstä. Suomalaisten tutkimuksien mukaan maahanmuuttajien nettovaikutukset julkiselle taloudelle vaihtelevat voimakkaasti maahanmuuttajan taustasta riippuen. Heterogeenisen maahanmuuttajaväestön aiheuttamat nettokustannukset vaihtelevatkin maahanmuuttajaryhmien kesken. Muista EU ja ETA maista saapuvat maahanmuuttajat eivät kustannuksiltaan poikkea kantaväestöstä, kun taas humanitäärisin perustein saapuneet voivat aiheuttaa suuriakin kustannuksia julkiselle sektorille. Kuten indikaattorit osoittivat, maahanmuuttajissa on kuitenkin huomattavan paljon työvoimapotentiaalia. Maahanmuutolla on mahdollista korjata ikääntyvän väestön aiheuttamia ongelmia, mutta haasteena on heidän työllistämisensä suomalaisilla työmarkkinoilla. Tällä hetkellä vaikuttaa siltä, että maahanmuutto ei yksinään voi ratkaista ikääntyvän väestön ongelmia, mutta voi täydentää muita väestön vanhenemiseen keskittyviä toimenpiteitä.

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List of Abbreviations

EC	European Commission
EDR	Economic Dependency Ratio
EFTA	European Free Trade Association
EU	European Union
ILO	International Labour Organization
INTERMIN	Ministry of the Interior
FIS	Finnish Immigration Service
LFS	Labour Force Survey
MEAE	Ministry of Economic Affairs and Employment
OECD	Organisation for Economic Cooperation and Development
PES	Public Employment Services
pp	percentage point
TDR	Total Dependency Ratio
TFEU	Treaty on the Functioning of the European Union
TFR	Total Fertility Rate
UN	United Nations
WPP	World Population Prospects

1 INTRODUCTION

The demographic changes in population are causing concerns world-wide. Rapidly growing and ageing population is going to be one of the main challenges in several societies in the following years, especially in the most developed regions. Europe is estimated to be the fastest-ageing region in the world according to the newest World Population Prospects (WPP) by United Nations (UN 2015a). With insufficient fertility rates and increasing life expectancy, Finland is one of the fastest greying nations within Europe and belongs to the super-aged societies, as more than 20% of the population consists of elder people (Moody's 2014, 2). Changes in the structure of the age-pyramid are causing challenges especially to the public-sector finances. The socio-economic systems, such as pension schemes structuring the welfare state are economically pressured when the number of working-aged persons is decreasing faster than the young- and old-age populations. This demographic change will raise the costs of public sector while the group of working-aged and future tax payers is constantly diminishing. These ageing pressures also have a direct effect to Finland's economic growth trajectories.

In Finland, the ageing of population has been a concern already for a couple of decades. The after-war-born baby boomers were, and are still, seen as a ticking time-bomb and a significant risk both to the labor markets and national economic performance. This concern was partly realized in 2010, when the number of persons of working age, 15-64-year-olds, turned down and this decreasing trend is expected to remain at least until the end of 2020s (Ruotsalainen 2016). However, the most dreaded labor shortage did not hit Finland as mightily as expected, partly due to the weak national economic performance after the financial crisis (Ruotsalainen 2016). Without the global recession after the financial crisis, the labor shortage would have most likely occurred in a more severe manner. Even if the labor shortage has not caused problems so far, it is still a realistic risk in future economic expansion and the concern of ageing population remains. Furthermore, the costs in nursing and caring services are expected to increase along longevity, which is forming another threat to the public finance in the near future.

According to several studies (see e.g. Moody's 2014; Vaittinen & Vanne 2015) the ageing population will remain a burden to Finland's economic growth for more than 20 years. Different population projections are all predicting that dependency ratio will weaken until the mid-21st century. Dependency ratio is then expected to stabilize to the same level what it was in the beginning of 20th century, with a difference that the shift in population is centered on older

population (Vaittinen & Vanne 2015, 411). To prevent slowdown of economic growth and to combat the problems of public economics caused by ageing, several reports, including Moody's report (2014) and the report by Prime Minister's Office (Borg & Vartiainen 2015), suggest different policy interventions such as focusing on increasing the overall employment rate, enhancing productivity, and increasing immigration. However, if the number of immigrants should increase, they should also be well integrated to the labor markets in order to release the current pressure of public finances.

Immigration as a solution is challenging since Finland has never been considered as a traditionally attractive host country for immigration, and a large share of immigrant population has migrated due to humanitarian reasons. However, the rapidly developed technical achievements and accelerating globalization have resulted into new migration trends with greater volume and density. New migration patterns increase the demand for scientific research on immigration, especially in Europe, to understand both the challenges and the opportunities coming along with immigration. In Finland, the amount of research has increased along with the strengthening net migration.

In this thesis, I want to analyze the questions of if and how immigration can help saving the ageing economy of Finland. To be more precise, I want to focus on the following questions:

1) How have the immigrants integrated to the Finnish labor markets in the 21st century?
2) What is the estimated total impact of immigration on public finance?

In this thesis, I will first introduce population projections published by Statistics Finland and Eurostat, and the economic problems regarding the ageing population. Then I will proceed to describe immigration in Finland and the current immigrant population. The third chapter is focusing on labor market participation of immigrants living in Finland in the 21st century. The labor market integration in 2000-2015 is being measured with three indicators from the immigrant integration framework used by OECD in 2015. The data used in the chapter has been retrieved from the open data sources of Statistics Finland, Eurostat and OECD. The fourth chapter is a literary survey on the effects of immigration to public economics. As it will be seen, immigration's impacts on public finance are highly dependent on the labor market status of immigrants. The concluding chapter includes a discussion on whether immigration is a realistic solution to ageing.

2 DEMOGRAPHY AND IMMIGRATION IN FINLAND

2.1 Population ageing in Finland

2.1.1 Development of the demographic structure

In Finland, the demographic trend has been like the trend in other developed countries and the ageing population is causing great concerns. Gradually declining fertility rate, increasing life expectancies and the ageing of the population have made politicians busy with trying to find solutions to the challenges ahead. In this section, the demographic development of Finland is being observed with the three main components of population growth. First, the development of fertility rate, second, the evolution of life expectancies, and third the international migration.

Total fertility rate (TFR) refers to the estimated number of births per woman, provided that the fertility rate of that year prevails during her whole reproductive period (Statistics Finland, Definition of total fertility). Basically, TFR gives an estimate on how many children one woman is going to give a birth to during her life. The full replacement level refers to the TFR of 2.1, which is being required for the population to sustain its size in the long run.

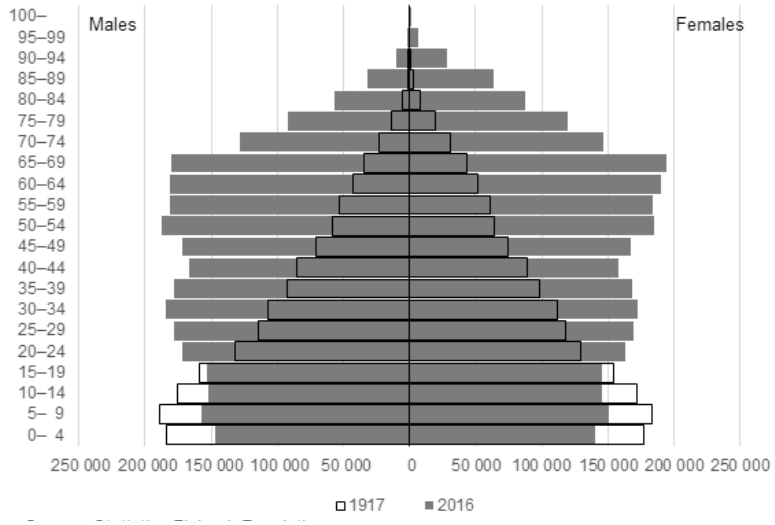

Figure 1. Age structure of the population in 2016 and 1917 (Statistics Finland, Population)

In Finland, fertility was moderate after the Civil War of 1918, but the population growth took an upward direction right after the World War II. The baby boom of 1945–1949 resulted the average number of births per woman to be 3.5 (Statistics Finland 2007), which is the highest TFR experienced in Finland so far, and more than 100,000 children were annually born

(Pajunen & Ruotsalainen 2012). Even if the number of baby boomers has been decreasing due to active emigration to Sweden in the 1960s and natural deaths, they can still be seen in the age pyramid in the age group of 65 to 69 years in Figure 1. The greatest concern with this age group has been their retirement and the future need of caring and nursing services.

However, the concerns related to the demographic development are not only fault of those born during the latter half of 1940s. As Figure 1 represents, the age pyramid has changed quite dramatically from 1917 to 2016. The general trend of decreasing fertility, is going to cause pressure on public finance and economic performance long after the baby boomers have died.

After the peak in fertility in the 1940s, the fertility rate has decreased, and it has remained below the replacement level since 1969. In self-sufficiency calculations, where population development is expressed without migration, this birth rate is insufficient to replace the number of deaths and would eventually lead to decreasing population. In 2016, TFR had diminished to the level of 1.57 children per woman which is the lowest in history, with the exception of the year 1973 when the fertility was only 1.50 (Statistics Finland 2017a). Even though some projections (e.g. WPP by UN 2015a) project fertility to slowly increase in the following years, it is still expected to stay below the replacement fertility level, which indicates negative natural population growth.

The second factor affecting the demographic structure of population is life expectancy, which gives the number of years that a person of given age would live under the assumption that mortality does not change (Statistics Finland, Life expectancy). In Finland, life expectancy has been steadily increasing at the same time as fertility has decreased. While the average life expectancy at birth was around 70 years in the 1970s it has increased to be 81 years in 2015. The improved living standards have also made the elder substantially healthier than before, which suggests that years of retirement have increased (Bloom, Canning & Günther 2010, 584). In Finland, female life expectancy at birth was 84.1 years in 2015, which is 5.6 years more in comparison with the male life expectancy of 78.5 years (Statistics Finland 2016).

The development of life expectancies has been underestimated repeatedly in population projections, as new medical innovations and improving living standards have not been predicted correctly (Rapo 2009). This unpredictability causes challenges in estimating the future population development and its effect to the public finance. In the future, health problems

including the early age obesity and the development of the treatment against cardiovascular diseases might significantly affect the life expectancies in Finland. Even with this uncertainty in mind, life expectancies are expected to increase further accordingly to the recent trend.

The development of TFR and life expectancy together has been able to sustain the rate of natural population increase positive until recent years, but this natural increase has gradually slowed down since the mid 20th century (UN 2015b, 295). WPP 2015 (UN 2015b) expected the rate of natural increase of Finnish population to turn negative first in 2025–2030 but in fact, the deaths exceeded births already in 2016 (INTERMIN 2017a, 11).

Despite the fact that there are now more deaths than births per year, the population has been growing. The population growth of the recent years can be explained with positive international net migration, meaning that there are more immigrants moving into the country than there are Finns emigrating to other countries. In 2016, the population of Finland grew with 15,285 persons as international net migration was positive with 16,269 persons (INTERMIN 2017a, 11). In the recent years, 60–70% of the population growth has consisted of net migration (Helminen 2015), but in 2014 this share was even higher with 76%, due to the European refugee crisis (Statistics Finland 2015b). The importance of international migration for sustaining the population size is crucial, given that fertility and life expectancies develop similarly as in the past few decades.

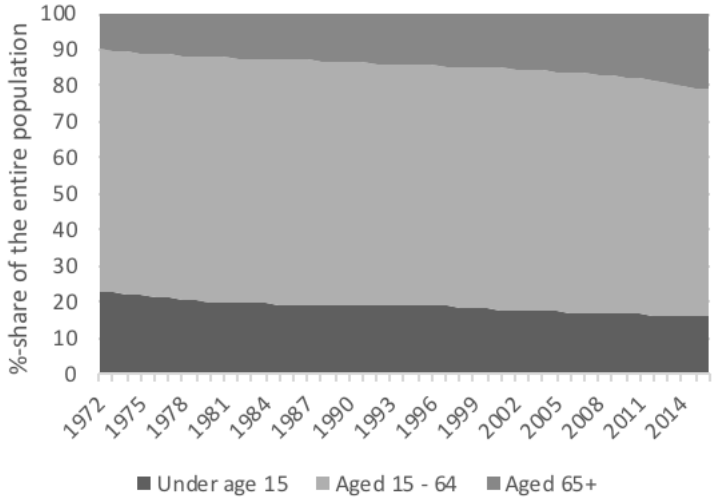

Figure 2. Demographic structure of population. (Statistics Finland's PX-Web databases, Population according to age (1-year) and sex by area 1972–2016)

The total population structure development since 1972 is depicted in Figure 2. It shows that the shares of persons of working age 15-64 and those under age 15 have been steadily diminishing while the cohort of older people has been growing. During the span of twenty years (1996-2016) the cohort of oldest people has increased with 6.41 percentage points (pp), while the cohorts of 15-64-year-olds and under 15-year-olds have decreased by 3.79 pp and 2.62 pp, respectively. As the relative proportion of people leaving labor force is increasing and the proportion of persons of working age is decreasing, the sustainable finance of public services is threatened as the main group of tax payers in decreasing.

It is important to keep in mind, that Figure 2 includes also international migration movements and therefore acknowledges positive effects of net migration on demographic structure. For instance, when excluding the population with a foreign background from the data, the oldest cohort formed solely by natives would be 22.0% of the population, as when taking the immigrant population into account, the share was smaller with being 20.9% in 2016. Also, the group of working aged benefits from net migration as their share was 62.9% with immigration but only 61.9% when migration was not considered.

2.1.2 Population projections

To understand and being able to manage the future challenges arising from the demographic changes, several institutions publish population projections to depict the future development of population. These projections provide anticipatory information for decision-makers and they help adjusting socio-economic systems like social services and pension schemes to be on a sustainable basis in the future.

Population projections are based on the previous development of birth rates, mortality rates and international migration movements, and they predict only what happens if these variables develop in a similar manner as in the past (Statistics Finland, 2015a). Therefore, projections include a sizeable amount of uncertainty, and should not be taken as the absolute truth. The population projections provided by Statistics Finland the life expectancy has been repeatedly underestimated, which has caused significant differences between the projections and the later realization (Rapo 2009). Projections are done with strong assumptions and they cannot take into account possible wars, epidemics or policy changes. A good example of an unexpected event is the refugee wave from Middle East in 2014.

In this section, the future demographic development of Finland is being observed based on the population projections by Statistics Finland and Eurostat. The reasons behind choosing these two statistical offices, are that Statistic Finland is the only public authority in Finland that is responsible for providing official statistics. The projection provided by Eurostat was chosen as it uses the national data from Statistic Finland, a different model is being used in the projection.

The newest population projection by Statistics Finland (2015a) is a demographic trend calculation to national population growth covering the time horizon from 2015 to 2065. The method used by Statistics Finland is a *demographic component model*. The model estimates the future demographic structure by using means of age-specific birth rate, mortality and migration coefficients. Each of these coefficients is calculated based on the demographic development from the few previous years. Thus, the projection predicts how the demographic structure would develop, if the population would develop like it has done in the recent years. Statistics Finland has used the following underlying assumptions in their population projection for 2015–2065: the birth rate is expected to remain constant 1.70 children per woman and the mortality is expected to decline in a similar manner as it has done for 1987–1991 and 2010–2014. The net migration gain from abroad is expected to be 14,000 persons in 2015 and from 2016 to 2065 it is assumed to be around 17,000 per year. The age distribution of immigrants has been based on the data of previous immigrants from 2010 to 2014. (Statistics Finland 2015a, 6–7.)

Eurostat's newest population projection at the national level was provided in 2015, and it covers the years from 2015 to 2081 (Eurostat, Population Projections at National Level 2015). The previous full population projection report, Europop2013 was published in 2013 but the data has been expanded afterwards to cover later years as well. Instead of using a demographic component model, the population projection is based on a *convergence approach*. In convergence approach the demographic determinants are assumed to converge over the very long term to a certain level (Eurostat, Population Projections at National Level 2015). Like Statistics Finland, the demographic determinants used by Eurostat, are the fertility, the mortality and the level of international net migration.

In the Europop2013 publication Finland's fertility rate was projected to increase from 1.80 in 2013 to 1.86 by 2060 (European Commission 2014, 8–11). In the newer projection of 2015, the assumed TFR in Finland has been lowered and it is expected to increase from 1.65 in 2015 to 1.78 by 2060. In Eurostat's projections, life expectancies are assumed to follow convergent

trajectories which development is dependent on countries current level. The net migration estimates are based on the data collected by Eurostat from European Union (EU) and European Free Trade Association (EFTA) member states' Ministries of Interior and related Immigration Agencies (Eurostat, Methodology and Guidance), and unlike to Statistics Finland's projections, net migration is assumed to converge to its long term natural rate. The underlying assumptions of both projections are collected into Annex 1 to help to understand the differences in these two projections. As the projections have been estimated by using different models and the underlying assumptions differ to some extent, the estimates on future population differ.

Table 1. Population cohorts according to the population projections (Source: Modified Data from Eurostat's Population projection 2015 at a national level and Statistic Finland's Population projection 2015)

	Statistics Finland				Eurostat			
	0–14, %	15–64, %	65–, %	Population	0–14, %	15–64, %	65–, %	Population
2015	16.4	63.2	20.5	5,490,245	16.4	63.7	19.9	5,471,753
2020	16.2	61.2	22.6	5,595,213	16.2	61.7	22.1	5,561,792
2025	15.7	60.1	24.2	5,690,988	15.9	60.4	23.7	5,642,172
2030	15.3	59.1	25.6	5,769,032	15.5	59.4	25.1	5,697,608
2035	15.0	58.7	26.3	5,825,225	15.4	58.8	25.8	5,723,786
2040	14.8	58.9	26.3	5,861,491	15.2	59.1	25.7	5,722,378
2045	14.7	58.6	26.6	5,887,690	15.1	58.9	26.0	5,707,065
2050	14.6	58.1	27.3	5,914,143	15.1	58.3	26.6	5,687,527
2055	14.5	57.6	27.9	5,944,377	15.0	57.8	27.2	5,668,271
2060	14.3	56.9	28.8	5,978,836	14.9	56.9	28.2	5,654,618
2065	14.1	56.5	29.4	6,017,967	14.8	56.4	28.7	5,641,469

The main results of demographic development estimated in both population projections are depicted in Table 1. It shows the proportions of broad age groups of the Finnish population in the future, according to these projections. Both authorities estimate the sizes of the youngest group and the working-aged to shrink while the share of elder people is going to increase. So far, around two thirds have been in an economically providing age to cover the costs of those being either too young or too old to earn income. As the size of the aged group is going to increase by nearly 10 pp in both projections, the size of the working-aged group in going to shrink by roughly 7 pp. By 2065, the economically active group is estimated to be only slightly over half of the population.

2.2 Policy measures against the negative impacts of ageing

As the population ageing is a long-term demographic change, it gives policymakers an opportunity to prepare for the upcoming challenges. The earlier the preventing and protecting

policies can be initiated, the earlier the social, economic and political problems can be eased. Bloom et al. (2010) examined the impacts of population ageing for economic growth and they underlined the crucial role of initiating relieving policy measures. Several policy measures have been suggested to answer the problems of ageing, including increasing overall labor force participation, increasing taxation and reducing the retirement benefits (UN 2000, 98). Also, Bloom et al. list policies that governments of developed countries could implement in order to alter the natural incentives faced by individuals and to prevent the problems following population ageing. The suggested policy measures included altering the retirement incentives, investing in improving the health of elder people, policies encouraging further labor force participation, altering the pension systems, and finally international migration.

The most relevant and interesting options are increasing the retirement age and increasing net migration. Bloom et al. (2010) examined how the policymakers have so far reacted to the population ageing. They observed 43 countries and found that average male life expectancy had increased by nearly 9 years between 1965 and 2005, yet the legal retirement age had been raised by less than a half a year. One would expect that as the lifespan gets longer, the retirement age would be increased by the public authorities, but Bloom et al. did not find any evidence to this in their empirical survey. In fact, the correlation between the change in life expectancy and the change in the actual retirement age in the same time horizon was negative at -0.21. In Finland, the retirement reform of 2017 raises the retirement age by two years to 65 by 2025, and thereafter the retirement age is linked to the life expectancy (Finnish Centre for Pensions).

Another possibility for policymakers to answer the problems of an aging nation is to increase immigration, and it has been suggested widely in economic papers. However, as Bloom et al. (2010) state, the ageing developed countries have not yet been able to increase immigration from the developing world in a successful manner. One major obstacle for policymakers to increase immigration, are those citizens expressing strong opposition to it. Today, several European countries are experiencing a strong social and political resistance against immigration, and in the recent years, several European parliaments have included members of far-right political groups opposing international migration.

Immigration has been one of the main issues in the national elections in several countries in the 2010s. Only in 2017, both Germany and France have faced a rise from the right-wing populists. In France, the Eurosceptic and anti-immigrant Marine Le Pen nearly won the presidential

elections, as in Germany the parliamentary elections resulted the far-right party AfD to surge to the third biggest party of the country. In Finland, nationalist-minded True Finns party has also gained political power in the 21st century. In 2003, their political support was 1.6%, in 2007 4.1% and by 2011 already 19.1% (Fryklund 2013, 268). In 2015, True Finns became the second biggest party in the elections, and thereby joined the governmental power. Therefore, the public atmosphere towards further migration is creating a certain kind of barrier for increasing net migration.

Medicating the ageing economy with increasing immigration has received criticism also from economists. In Finland, Viren (2017) has exposed the point of view, that international migration itself is not a simple answer to the problems of ageing. Even if immigration could fix the demographic structure to be younger, it would not automatically respond to the problems occurring from the weakening economic dependency ratio and increasing sustainability gap in public finance. To profit economically from immigration at a national level, immigrants should before anything be employment and earn enough of income to be net contributors instead of net receivers. As Viren states, the low-income immigrants might actually burden the public finance and worsen the sustainability gap even further, rather than correct it.

2.3 Immigration in Finland

What makes immigration research challenging, is the lack of official and universal definition for an immigrant, which has led to several similar, yet different definitions. In principal, a person is called an immigrant, when he is moving from his home country to another country and is planning to reside there permanently (Family Federation of Finland, Maahanmuuttajat). However, there are several subgroups who are considered to be immigrants even if they do not fit to the definition given above. For example, the second generation of immigrants is often inheriting the sociological immigrant-status even if they have already been born in the receiving country. The same situation applies to returnees, guest workers, asylum seekers and refugees. (Family Federation of Finland, Maahanmuuton perusteet.)

International migration can be defined as the movement of people to another country, leading to a permanent or temporary resettlement. International migration can be observed through several angles of approach, as it has geographical, social, political, economical and culturalaspects. (Bartham, Poros & Monforte 2014, 4.) In this thesis, only the economical aspect is being observed, even if the other aspects cannot be fully excluded out of discussion.

The Finnish history of immigration is in international comparison relatively short. Even though there have been statuses given to foreign nationals living in Finland since 1811, it was first after the independence in September 1918 when the national immigration administration was established (Finnish Immigration Service (FIS) 2015a).

In fact, during the 21st century the immigration movements were mainly created by the Finns who were moving abroad. Until the end of 1920s Finns, just like other Europeans, were moving especially to Northern America, and during the 1960s and hundreds of thousands of Finns immigrated to Sweden as the Finnish economy was not able to provide enough jobs to the baby boomers entering the labor force. In fact, in the years of 1969-1970 the movement was so intense that it even led to negative net migration and diminishing population. (Statistics Finland 2007.)

The foremost significant milestones of incoming immigration have been the first large-scale wave of Soviet refugees from Eastern Karelia escaping a revolt to Finland in 1920s (FIS 2015a) and an increasing immigration trend from 1970s onwards. The years of 1970s and 1980s are noteworthy in regard of humanitarian help as Finland accepted its first official refugees via the UN refugee agency from Chile and Vietnam (FIS 2015b). The year of 1980 became momentous, since it was eventually the first year when the number of immigrants exceeded the number of people emigrating the country (Statistics Finland 2007). After the year 1980, the international net migration has been always positive.

The world events that took place in the end of the 1980s caused tremendous changes in immigration patterns and in the beginning of 1990s, Finland faced the biggest wave of asylum seekers in its history by that time. First, the fall of the Soviet Union resulted into the remigration of Ingrian Finns, who originally had Finnish roots but had become citizens of the USSR under the Soviet Government (FIS 2015c). Besides the returning Ingrian Finns, there were groups of Somalian asylum seekers arriving and settling to Finland permanently (FIS 2015c). On top of the dissolution of the Soviet Union and Somalian refugees, there were refugees fleeing the conflicts in Iraq, Afghanistan and Yugoslavia. These new migration patterns started to remodel Finland's migration profile into a completely new shape.

Finland's accession to the EU in 1995 affected both migration policy and immigration patterns in Finland. One of the EU's fundamental principles is the free movement of people guaranteed in the Treaty on the Functioning of the European Union (TFEU). This fundamental right let other EU citizens to look for work in Finland and get employed without a working permit. Since joining the EU, work-related immigration to Finland increased, especially in the 21st century, and today a great part of immigrants arrives from other EU member states (Helminen 2015).

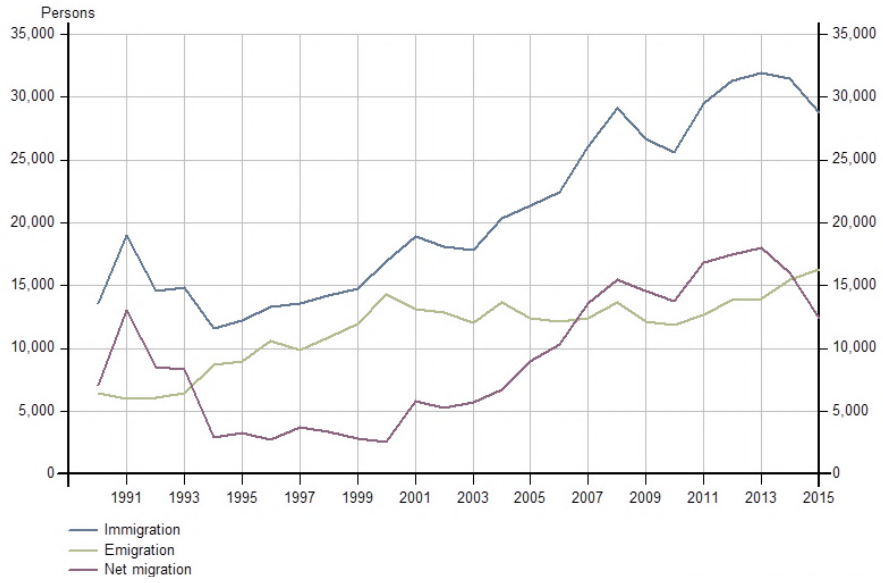

Figure 3. Immigration, emigration and net migration in 1990–2015 (Statistics Finland, Migration)

The overall development of migration flows in Finland from the beginning of 1990s onwards is depicted in Figure 3. The emigration from Finland has remained more or less stable since 2000, while immigration has had a growing trend for the entire timeline. As immigration has remained above the emigration level for 1990–2015, net migration has been positive over this time horizon. The growth of net migration accelerated in 2000 and has increased steadily due to the higher number of immigrants settling to Finland. After the millennium, immigration to Finland can be roughly described as being a combination of those escaping conflicts and those, who wish to either study or work in Finland (FIS 2015d).

The European refugee crisis that started in 2014, has had a significant impact on immigration at a global level. It is worth to mention at this point, that the asylum seekers are not taken into account in Figure 3, but they can be seen as a peak in other Finnish immigration statistics. Conflicts in the Middle East and Northern-Africa have caused the greatest movements of people fleeing their home countries after the Second World War, and people have entered to EU both as asylum seekers and refugees. The same year when the crisis started, Finland adjusted its

migration policy to meet the global needs and raised the number of quota refugees from the annual 750 refugees up to 1,050 (Helminen 2015).

To highlight the significance of the crisis, one can compare the year 2015 to the rest of the 21st century. In the beginning of 21st century, Finland received annually from 1,500 to 6,000 asylum seekers but in 2015 the amount raised up to 32,476, which indicates an increase of more than 500%. In 2016, the number of asylum seekers went notably down to 5,657. (INTERMIN 2017a.) The next dreaded immigration wave in the fuiture is feared to be caused by the climate change.

The current immigrant population living in Finland can be observed in multiple ways. As there is not an exact definition for an immigrant, collected data and research papers lead to different results, as the status of an immigrant has been given based on different classification. Immigrant population can therefore be analyzed according to different characteristics, e.g. nationality, mother tongue or country of birth. For instance, when talking about immigrants, Statistics Finland often refers to *people with an immigrant background*, which technically includes all different classifications used on immigrant population. Depending on the chosen variables, the number of 'immigrants' varies, and the data might be partly overlapping.

When observing the immigrant population living in Finland based on the citizenship, the number of foreign citizens has been steadily growing, and only during 1990–2016 the number was multiplied by 14. In 2016, there were nearly 244,000 foreign citizens living in Finland, which covers 4.4% of the entire population. Even if there are more than 170 nationality groups living in Finland, the immigrants are concentrated around certain nationalities. The biggest nationality groups in 2016 were the Estonians with more than 50,000 persons, citizens of Russian Federation (more than 30,000 persons) and Iraqis with nearly 10,000 citizens. The number of Iraqis grew significantly from the previous year and they surpassed the Chinese, which held the third place still in 2015. Other relatively big nationality groups were Swedes, Thais and Somalis, while the other nationality groups remained under 7,000 citizens. (Statistics Finland, Foreign citizens.)

Another way to analyze immigrant population is to observe those who have been born abroad and to categorize population based on their country of birth. The number of foreign-born people has increased tremendously in 1990–2016: in the beginning of the 1990s, there were roughly

60,000 persons born abroad as by the end of 2015, their number had surpassed the threshold of 350,000 persons. (Statistics Finland, Persons born abroad.)

With this classification, the size of the immigrant population in Finland is larger than with the foreign citizenship approach, mainly because many foreign-born individuals eventually get a Finnish citizenship. In 2016, there were 358,000 persons who were born outside of Finland, which is 6.5% of the entire population (2.1 pp more than foreign citizens). When categorizing individuals by the country of birth, the groups were quite similar with the foreign nationalities: those born in the former Soviet Union (over 55,000 persons), Estonia (45,000) and Sweden (32,000). However, most of those born in Sweden were actually children of Finns who had immigrated to Sweden. The number of those born in Iraq was the fourth biggest group followed by Russia. The other relatively big birth countries were Somalia, China and Thailand, where each group had more than 10,000 persons born. (Statistics Finland, Persons born abroad.)

The third way to analyze people with an immigrant background is based on their native languages. According to this classification, population has been categorized by foreign-language speakers whose native language is some other than one of the official languages: Finnish, Swedish or Sami.

As one might expect, the number of foreign-language speakers has been complying the same increasing trend as the number of foreign citizens and persons born abroad. In 2016, there were 354,000 foreign-language speakers and altogether they were 6.4% of the entire population. The biggest language groups were similar to the groups as in the previous classifications. Russian speakers formed absolutely the biggest language group with more than 75,000 native speakers and the second biggest language group was formed by Estonian speakers (49,000). In 2016, the third biggest language group was Arabic speakers, which in the previous year had been the fifth biggest group after Somali and English speakers. (Statistics Finland, Foreign-language speakers.)

The entire Finnish population in 2016 has been classified in Figure 4. It shows all the different categories, where the immigrant population might fall into, depending on which factors the observer has defined an immigrant. One exhaustive manner to study immigrant population is simply taking all the persons with foreign background (364,787 persons in 2016) into account. This classification has the advantage that it allows to study both first and second-generation

immigrants, hence, the individuals born abroad, and individuals born in Finland to immigrant parents (Statistics Finland, People with foreign background). This helps especially in researching the long-term effects of international migration. In this classification, Statistics Finland defines individuals with at least one parent born in Finland to be of a Finnish background, and those whose both parents or the only known parent were born abroad, are defined to be of foreign background (Statistics Finland, People with foreign background).

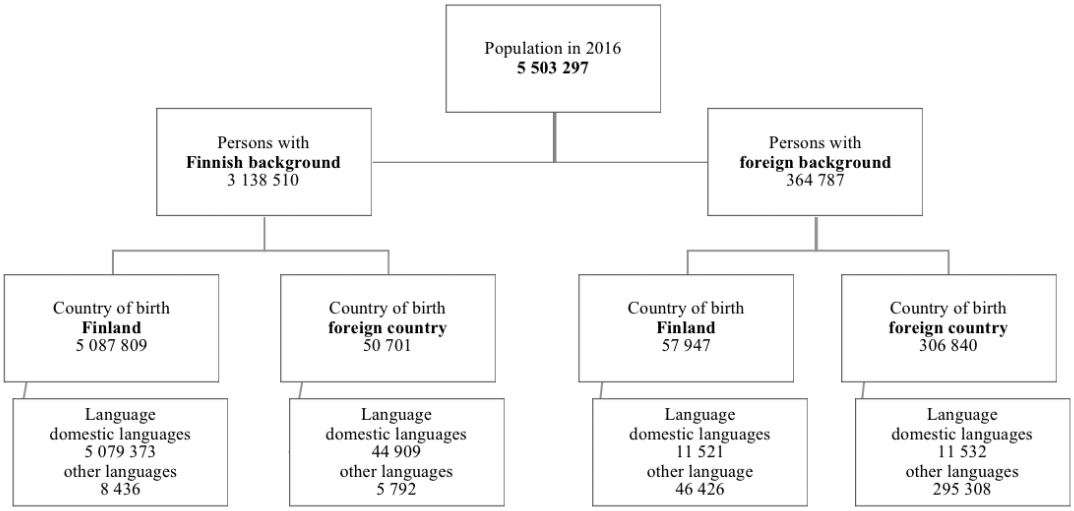

Figure 4. Finnish population structure by origin, country of birth and language.
(Modified by using Statistics Finland's PX-Web databases)

Of the population with foreign background, both generations included, more than half (56%), had European roots in 2016. The second and the third largest groups were people of Asian and African background, accordingly with 27% and 13% of all the people with foreign background in Finland. The most significant group (74,721 persons) had their origins in Former Soviet Union and they represent 20% of all people with foreign background in Finland. Other big groups were the people of Estonian (48,611), Somalian (18,878) and Iraqi (17,397) backgrounds. (Statistics Finland's databases, Population structure.)

The age structure of immigrants is often said to be favorable to the problems arising from ageing population in Finland. Immigrants tend to be relatively young compared to the native population and many are of working age. According to the Statistics Finland's Population Structure 2016, every tenth person of people aged 25 to 44 is of foreign background, and of the entire working-age population of 15–64-year-olds, 8% is of foreign background. Therefore, immigrants' labor market activity has a direct effect on the fiscal sustainability and to the entire national economic development. Even if the entire observed immigrant population has

favorable demographics, the age structure varies greatly among the different background countries, mostly because of the different reasons for migration.

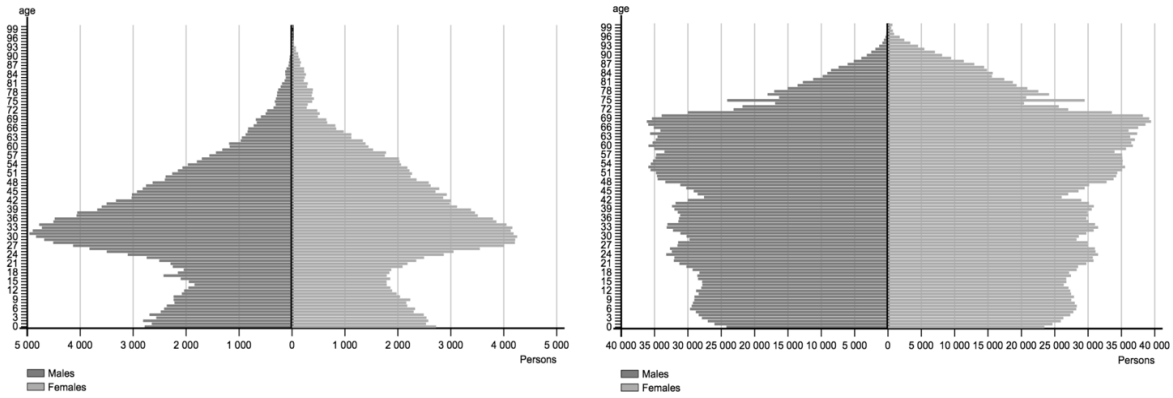

Figure 5. The age structure of persons with foreign background in comparison with the age structure of persons with Finnish background in 2015. (Statistics Finland, Persons with foreign background).

To understand the age structure of immigrant population better, the age pyramids of both, persons with foreign background and persons with Finnish background, can be compared in Figure 5. These figures show clearly that the ratio of people of working age (15–64-year-olds), is significantly higher among population with foreign background than among those with Finnish background. In 2016, 62% of persons with Finnish background were of working age while it was 76% among those with foreign background. Especially the age structure of those persons with Nepalese, Thai and Spanish background was demographically favorable, as around 90% of them were of working age. The least working-aged people were found to be of Swedish, Congolese and Somalian background. (Statistics Finland, Persons with foreign background.)

Besides a good proportion of working aged persons, immigrants have a younger age structure on average in comparison with the Finnish population. In 2016, 22% of persons with Finnish background were of retirement age when the same number was only 5% among those with a foreign background. Comparing the youngest age groups, 0–14-year-olds, the proportion of youth was 16% among persons with Finnish background and was 19% among people with foreign background. However, it is important to note that 65% of the youngest population with foreign background are already second-generation immigrants, consisting for the most parts of children of the refugees. (Statistics Finland, Immigrants in the population.)

The regional division of persons with foreign background is similar to other countries: migrants tend to move around the metropolitan area and other bigger cities. In Finland, immigrants are

represented especially in the Åland Islands (14% of the population) and in the capital region (12% of the population). The effect of the metropolitan area can easily be seen, as more than half of the population with foreign background lives in capital region, and Helsinki alone accommodates roughly one fourth of Finland's immigrant population. However, in the recent years the increased number of refugees and their placement in municipalities has increased the shares of people with foreign background in other municipalities. (Statistics Finland, Immigrants in the population.)

Besides observing immigrant population only based on the demographic variables, it is sensible to study their educational level, to possibly understand their success in the local labor markets. A study that observed the population with foreign background living in Finland in 2014 (Sutela & Larja 2015a), showed that the migrants' educational background is strongly polarized. There is a large share of highly educated migrants, but there is also a big group of migrants who are lowly educated.

Secondary education was as common for both population groups of Finnish and of foreign background. The tertiary education on the other hand was slightly more common for those of Finnish background (44%), as for those with foreign background (40%). The greatest difference between natives and immigrants was found in the group of those whose highest educational level was not higher than the basic comprehensive education. The size of this group was only 7% among Finnish population while it was 17% for those with immigrant background. (Sutela & Larja 2015a.)

The highest educational level was found to be among immigrants with EU, EFTA, or Northern American backgrounds. These migrants had mainly arrived in the country to either work or to study. The lowest educational background was found from those who had arrived in the country due to humanitarian reasons, mainly from the Middle East and Africa. The educational level was found to be strongly connected to the age of the arrival: the younger the person had migrated, the higher the probability of getting a higher education was. (Sutela & Larja 2015a.) The study on immigrants' educational background and human capital showed evidence, that the population with foreign background is higher educated than what has been previously estimated. The problem with the statistical examination of degrees obtained is that not all the degrees have been acknowledged in Finland, even if they were acknowledged in the country of graduation. (Sutela & Larja 2015a.)

Taking an overlook of the population with foreign background described above, the immigrant population appears to be very heterogenic. The most positive feature of the entire migrant population is however the same, regardless of the possible classification on citizenship, country of birth or mother tongue – the immigrant population is significantly younger than the native population. This supports the demographic dependency ratio and offers labor force potential from abroad to increase the number of workers in Finland.

2.4 Finnish migration policy

Immigration movement is not created only by the individuals, but it is also affected by the countries and different institutions. Especially states and their governments can influence the movements of people by setting up restrictions and legislative barriers for migration movements. The receiving countries can either try to prevent or encourage people to migrate. Thus, the migration policy that a country has decided to exercise may have a strong impact on migration movement direction towards it.

In Finland, the Ministry of the Interior (INTERMIN) is responsible for migration legislation and developing the administration of international immigration. The Ministry has set an aim to be able to predict immigration movements better and to '*make Finland a safe and open country, where everyone can find a role to play*' (INTERMIN, Migration). Finnish migration policy and law-making bases on three institutions. First, it follows the objectives aligned by the government's strategic program, second, it takes the EU's common migration and asylum policy into consideration, and third, it obeys the international agreements and other treaties that have been ratified in Finland (INTERMIN, Maahanmuutto- ja turvapaikkapolitiikka). Finland's current migration policy leans mainly on the Sipilä's Government Programme published in May 2015, the Government migration policy announced in September 2015, and the Government action plan on asylum policy from December 2015 (INTERMIN 2017a).

Finland's current migration policy has two main objectives. First, it focuses on advancing the labor migration. The aim is to support and ease the immigration process to help economic life to have sufficient resources of labor force, enhance employment and to improve the dependency ratio of the economy (INTERMIN 2017a, 9). For instance, immigration of labor force has been supported with an efficient permit system to prevent labor shortage resulting from the ageing of population (INTERMIN, Maahanmuutto- ja turvapaikkapolitiikka). Another objective of the

migration policy is to manage and control migration flows in an efficient manner. The latest acts of terrorism in Europe give an understandable reason for politicians to require a greater control of migration flows to be able to assure public security. Also, the refugee crisis of 2014 has had a strong impact on the migration policy targets of the current government.

In 2017, INTERMIN has set up a new project to prepare the Government's migration policy program, which will determine Finnish migration policy guidelines for the present government term. The program is planned to be published first in 2018 and is expected to include the outlines of the main objectives of migration in the fields of employment, integration, good relations and internal security (INTERMIN 2017a). The main target of the migration policy for 2018–2021 is to further support employment and to focus on increasing labor migration in order to strengthen public economics (INTERMIN 2017b).

Other governmental programs are the integration program of immigrants, and the Talent Boost –program. The current integration program has been set for 2016–2019, and its goal is to promote equality and to make sure that the skills and knowledge of arriving immigrant population benefit Finnish society. The Talent Boost –program on the other hand focuses on attracting international talents to the country in order to enhance entrepreneurship and business growth, and to boost innovations and investments that would benefit the economy. The program was launched first in 2016 and focuses on transforming the international talents into added value in Finnish economy. The taken measures include country branding, ensuring innovation platforms and international labor markets. (INTERMIN 2017a.)

As a member state of the EU, Finland's migration policy depends also on the legal basis of the free movement of people. However, the objectives of EU's immigration policy are surprisingly non-specific. Its first objective is to define a balanced approach to immigration and to manage regular immigration and to combat irregular immigration and the second objective is to follow the principle of solidarity under the Lisbon Treaty.

EU's competences in immigration policy can be divided into four sections: regular immigration, integration, combating irregular immigration and readmission agreements. The EU has competence to set the conditions that govern entry and legal residence in a member state for third country nationals. One of the EU's main items in its migration policy is to combat irregular migration. It does it by the means of return policy that is consistent with fundamental human

rights. The right to conclude readmission agreements with third countries has been centralized from the member state level to the Union's competence. (European Parliament 2017.)

Even if the EU is often seen as an authority commanding the member states and managing their legislation, there are several aspects that EU's migration policy does not require from the member states. First, the EU retains each member state to have the right to determine volumes for people who are coming to seek work from the third countries. Second, even if the EU has the competences to provide and support integration of legally immigrated third-country nationals, there is no provision for the harmonization of national laws and regulations of the member states. (European Parliament 2017.) Thus, even if Finland is obligated to follow EU's migration policy, it still has a lot of independence to arrange its own migration policies.

Besides the national alignments and the policies of the EU, Finnish migration policy follows several international agreements of which the most important ones are the European Convention of Human Rights, Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, Convention on the Rights of the Child and Convention relating to the Status of Refugees (INTERMIN, Maahanmuutto- ja turvapaikkapolitiikka).

The main target of Finnish migration policy is to promote immigration of labor to prevent the dreaded labor shortage in several industries, to enhance employment and to boost economic growth. Just like other countries, Finland is trying to attract foreign companies, investors and international specialists in order to increase its competitiveness and economic growth. The starting point for Finnish migration policy therefore is to ensure sufficiency of labor force by accessing labor markets outside of Europe in those cases where there is no suitable work force available from Finnish or Europe's internal labor markets. This is supported by creating legislation that decreases the entry barriers for foreign workers and eases immigration especially from Europe (INTERMIN, Työvoiman maahanmuutto).

Currently work-related immigration from other than EU and EFTA countries is regulated by granting means-tested working permits. This is to ensure that immigration truly bases on labor shortage, and at the same time to ensure that there is no possibility to hire anyone from inside of Europe to fill the position (SAK, Työvoiman maahanmuutto). This procedure can partially help to reduce the risk of increasing unemployment within the local labor markets.

One example of filling the lack of labor force, is to hire seasonal workers. In Finland, the agricultural sector and tourism industries are dependent on seasonal workers and this demand fluctuation is often solved by hiring seasonal workers from abroad. There are 13,000–15,000 foreigners coming to work in Finland temporarily each year to fill the need of workers. (INTERMIN, Työvoiman maahanmuutto.)

Even if the current immigration policy seems to aim towards increasing and well-controlled immigration, there are several risks that can come along. As the volumes of immigration are growing, several countries are imposing more restrictive and controlling policies for entering and settling to the country which can easily lead to an increase in illegal border crossing (Massey & Capoferro 2007). For instance, the illegal entering to the European countries was record-breaking in 2015 as approximately 1.8 million illegal border crossings were reported. INTERMIN is expecting the illegal migration to increase together with the migration numbers. However, illegal stay in the country is more difficult in Finland than in most other countries as it is extremely difficult to live paperless in Finland. There is also no opportunity to get employed, if one is in the country illegally. This leads to further risks of immigration, such as social exclusion, human trafficking and criminal behavior immigrants. (INTERMIN, Laittoman maahanmuuton torjunta.)

Another risk that needs to be taken account when designing immigration policies is how the immigrants get along financially. Even if the age structure of immigrants is usually favorable to the dependency ratio, and they can help to increase the number of working aged people, they can still cause a risk to the public economics. For instance, Viren (2017) has been concerned about the composition of immigrants coming to Finland – there is a great chance that immigrants do not find a job, or if they do, their earned incomes remain so low that they will need financial support from the public sector.

The following chapter will therefore focus on observing immigration from the viewpoint of labor markets. First the reasons for migration are being observed from a theoretic and empirical point of view, after which the labor market integration of immigrants is being analyzed with the help of indicators measuring the labor market outcomes of immigrants in the 21st century. Finally, the labor market integration of Finland's immigrant population is being compared with the immigrant population of another Nordic welfare state of Sweden.

3 INTEGRATING IMMIGRANTS TO LABOR MARKETS

3.1 Migration decision making

3.1.1 Migration decision according to economic theory

As the state is encouraging work-related migration, and immigration is often suggested to be a partial solution to the problems arising from ageing population, it is important to understand who in the end decides to move to Finland and what kind of characteristics the arriving immigrant population possesses. Analyzing these issues could help in shaping integration services and further accelerate the labor market integration of migrants.

In economic theory, the migration decision is often explained by skills distribution among people and comparison of wage differentials across areas. The theory of comparing net earnings opportunities across countries dates back to 1932, when Sir John Hicks found that differences in net economic advantages, especially in wages, to be the main cause for migration movement and most studies of migration decisions use this theory as a baseline (Borjas 2014, 9; Moisala 2004, 8). The economic theories explaining migration movements used to focus only on these economic incentives behind the individual's decision making, however, in the later theories non-economic factors, such as family relations and humanitarian reasons have been included in observation.

In regional economics, there are three common theories that explain migration. Within the neoclassical approach, individuals are expected to maximize their utility within their budget constraint and they are constantly on a job-search in different regions. Migration is then expected to balance the labor markets of all regions to the equilibrium, both in wages and in employment (Moisala 2004, 8). Migration is a result of the differences in supply and demand of labor across different areas. The model expects the wage level to be the adjusting variable, which leads to the movement of individuals following the highest wage level from those areas with higher labor supply to the areas where the demand for labor is proportionally higher (Moisio 1999, 2). Thus, the neoclassical migration theory takes the wage differences as the main explanatory factor for people crossing borders. The model has later been extended to reckon the possibility of unemployment. This Harris-Todaro-model examines expected incomes rather than the pure wage level, and it predicts these expected incomes to be equated

across different areas, when taking the possibility of unemployment into account (Todaro & Smith 2011, 337).

The second theory, human capital theory, assumes the migration decision to be built on expected net present value of one's human capital across different areas. Moving is seen as an investment, that has certain expected profits as well as expenditures (Moisio 1999, 2). Here the individual bases his decision on a long-term estimate of the incomes and costs: if the discounted net present value is higher in another area than where the person is currently residing, the migration movement is being generated (Moisala 2004, 8). Unlike in the neoclassical theory, the profits and costs that the individual evaluates can either have a price or not. Therefore, the human capital theory includes also psychic aspects besides the economic ones. For instance, leaving friends and family behind, can affect one's migration decision negatively.

The third theory bases on individuals' job search. According to this theory, migration can be explained by different job-searching strategies, such as how long one is ready to search for work and what is the required minimum wage level. The jobs located near to the residing area are prior to those areas further away. The costs of job search play also a crucial role. (Moisio 1999.) The theory has received more attention in the research of national migration rather than international aspect.

The migration decisions made by individuals are complex and all these theories have been criticized for leaving important aspects out of observation. By combining all these theories presented above, one can find different pull and push factors correlating with the migration decision (Moisala 2004). The pull factors affect positively to the decision to migrate to a certain country, as the push factors encourage one to move away from the current one. These pull and push factors take both the economic and non-economic factors into account, and the decision to migrate or not is a sum of several of these elements. The decision-making process has also been found to be a time-taking process and can develop during several years (Moisala 2004).

A well-known model explaining migration decision has been created by Borjas (2014), who has been doing research on migration and immigrants' success in the labor markets. His model takes both, the expected earnings and the value of human capital into account, and the earning opportunities are being compared across countries in a two-country framework. His theory

shows that immigrants are not randomly selected of the source country's population, as some people decide to stay, and some decide to immigrate.

In the model created by Borjas, the residents of the source country (indicated with 0) are considering migrating to a host country (indicated with 1). The migration decision is assumed to be irreversible and there is no opportunity to return. Then the residents of the source country 0 face the following earnings distribution:

$$\log w_0 = \mu_0 + v_0. \tag{1}$$

Here w_0 indicates earnings in the source country, μ_0 indicates the mean (log) earnings in the source country and the random variable v_0 (assumption $v_0 \sim N(0,\sigma_0^2)$ and i.i.d.) measures deviations from mean earnings. If the entire population of the source country would migrate, they would face the following earnings distribution in the receiving host country:

$$\log w_1 = \mu_1 + v_1. \tag{2}$$

Here μ_1 gives the mean (log) earnings in the receiving country for this specific population and the random variable $v_1$is assumed to be i.i.d. and $v_1 \sim N(0,\sigma_1^2)$. The correlation coefficient between v_0 and v_1 is given by the parameter ρ_{01}. The equations (1) and (2) give the earnings opportunities of those residing in the home country. Thus, when a person is planning to migrate from country 0 to country 1, the person is expected to base his decision on the following index function:

$$I = \log\left(\frac{w_1}{w_0+C}\right) \approx (\mu_1 - \mu_0 - \pi) + (v_1 - v_0). \tag{3}$$

Here C indicates the migration costs, and π gives a time-equivalent measure of these migration costs (can also be written as $\pi = C/w_0$). Given this index function, a person decides to move if $I > 0$, and stays in the home country in the cases where $I = 0$, or $I < 0$. However, as Borjas states, the nature of correlation between costs and skills is not clear. Moving from the source country 0 to the host country 1 creates several expenses that differ among people. These migration costs include direct expenditures, forgone earnings and psychic costs that are formed by transportation, unemployment and being separated from one's family, for instance. The distribution of the random variable π in country 0's population can be assumed to be:

$$\pi = \mu_\pi + v_\pi, \tag{4}$$

where μ_π is the mean level of migration costs, and v_π denotes the random variable ~ $N(0,\sigma_\pi^2)$. After specification of migration costs, the index function, equation (3), can now be rewritten:

$$I = \log\left(\frac{w_1}{w_0+C}\right) \approx (\mu_1 - \mu_0 - \mu_\pi) + (v_1 - v_0 - v_\pi). \tag{5}$$

Thus, the probability that a person migrates from country 0 to country 1 can finally then be written in the form of the following function:

$$P(z) = \Pr[I > 0] = \Pr[v > -(\mu_1 - \mu_0 - \mu_\pi)] = 1 - \Phi(z), \tag{8}$$

where $v = v_1 - v_0 - v_\pi$, and $z = -(\mu_1 - \mu_0 - \mu_\pi)/\sigma_v$, and Φ is the standard normal distribution function. From this function can be derived the following equations:

$$\frac{\partial P}{\partial \mu_0} < 0,\ \frac{\partial P}{\partial \mu_1} > 0,\ \frac{\partial P}{\partial \mu_\pi} < 0. \tag{9}$$

These equations summarize the entire theory by Borjas introduced above. The equations (9) implicate that migration is less likely to happen when the mean income in the source country rises, when the mean income in the host country declines, and when mean time-equivalent costs for migration rise. Thus, Borjas's Migration Decision -model combines aspects from most two convenient migration models of neoclassical migration theory and theory of human capital.

The theories and the Borjas's (2014) model above can partly explain migration, yet they do not give a direct answer to the question of who actually decides to move. It is often assumed that immigrants have been favorably self-selected, meaning that immigrants are proportionally highly educated and more enterprising, and thereby also more favorable to the economy of the receiving country (Moisala 2004, 13). This type of positive self-selection does happen to some extent, yet those who migrate are not always the most beneficial for the host country's economy. For instance, Chiswick (1999) studied the composition of immigration and found out that positive self-selection was weaker among those immigrants who had migrated due to other reasons than economic reasons (e.g. refugees and those moving for family reasons).

To find out who moves, Borjas developed a well-known Roy-Borjas model (Borjas 1987), where he extended the Roy model (Roy 1951) of self-selection for international migration. The model is based on an idea that the relative value of education between countries is the key factor in determining the type of people who eventually decide to move (Moisala 2004, 13). If the return on education in the host country is higher than in the home country, then the immigrants tend to be relatively highly educated, as the opposite is true when the return on education is higher in the home country: then immigrants are relatively poorly educated.

Using the Roy model, Borjas (2014) was able to identify three different cases of immigration in a two-country framework where immigrants were either high-skilled or low-skilled. In the case of positive selection, the immigrants had above-average earnings in both countries 0 and 1. Positive selection occurs, when the source country offers a lower return to skills than the host country. This happens when the high-skill workers are relatively more taxed in the source country than in the host country. On the contrary, immigrants are negatively selected when the host country taxes high-skill workers and subsidizes low-skill workers, which leads for people to migrate after safety and security. The third case, inverse sorting, occurs in rather exceptional circumstances. In inverse sorting a high-skilled worker suddenly is in a situation, where his skills are no longer appreciated in the source country but are valued in the host country. Borjas uses a communist revolution, where the government experiences a takeover by a redistributive regime, as an example.

The model can be graphically illustrated (Figure 6), when the incomes have been assumed to be perfectly correlated across countries, thus $\rho_{01} = 1$, and earnings in both countries depend on a single factor, that can be transferred across countries. Here s indicates the number of efficiency units possessed by the individual. The income distribution functions can now be written as:

$$\log w_0 = \alpha_0 + r_0 s, \tag{10}$$

$$\log w_1 = \alpha_1 + r_1 s, \tag{11}$$

where the r terms denote the rate of return to skills in both the indicated countries. This linear relation between the skills and the log wage of a worker for both countries is shown in Figure 6. Here the positive selection occurs, when the wage-skills profile in the host country is steeper than in the home country, as the negative selection takes place, when the case is the opposite. (Borjas 2014, 8-19.)

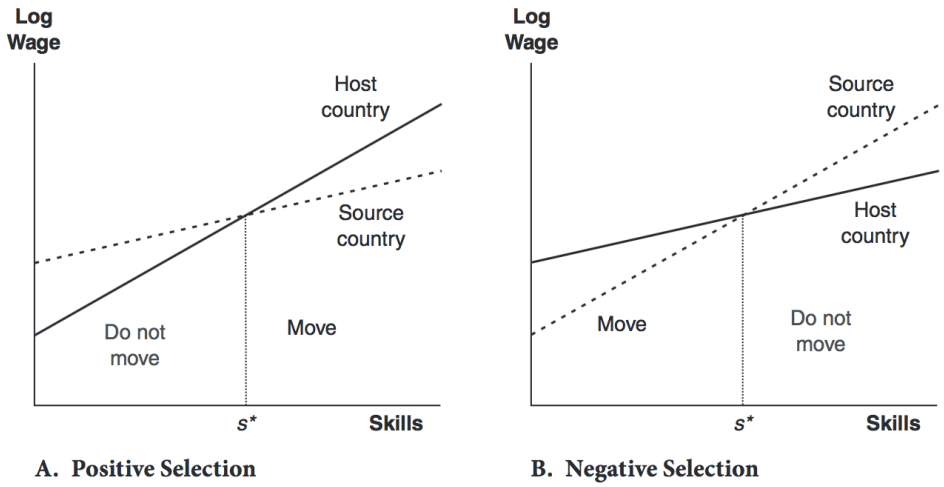

Figure 6. Roy-Borjas model assuming incomes to be perfectly correlated across countries. (Borjas 2014, 18)

To support his research, Borjas (2014) has analyzed several countries and estimated cross-country regressions to find out whether the earnings differences after the migration across national origin groups could be attributed to the differences in the characteristics of the home countries. In one cross-country regression he analyzed immigrant men aged 25–64, who were who had migrated to the US in the 5-year period prior to each census between the years 1980–2010. The regression gave the results that both, the log per capita GDP and the Gini coefficient had a strong impact on outcomes of immigrants. According to the regression model by Borjas, immigrants' earnings rise with per capita GDP and fall with the Gini coefficient that implicates the differences in income, which is in line with the Roy-Borjas-model introduced. However, Borjas's theory has been strongly criticized by economists because of the lack of further empirical evidence. (Borjas 2014.)

3.1.2 Empirical evidence on reasons to migrate in Finland

The migration decision -model and the Roy-Borjas-model introduced in the previous chapter give a theoretic explanation why people migrate and who in the end decides to move. It is interesting to find out whether these theories correspond to the real life. Is Borjas right about high-skilled workers migrating to those countries with lower taxation and social welfare, whereas the low-skilled workers move to countries with high taxation and good social welfare systems? According to this theory, Finland with an extensive Nordic welfare system should have mainly experienced negatively selected immigration. However, as the empirical evidence suggests, real life is not as simple as Borjas suggests, as it does not take possible migration restrictions or psychological aspects in account. Reasons for migration have varied greatly among the immigrant population in Finland and the newest research evidence suggests that

most of the migrants have migrated because of something else than the search of subsidizing welfare benefits for their low skill level in the labor markets.

There is still no complete data or a way to register the reasons why foreigners migrate to Finland. In the past, the knowledge of migration reasons has been based only on which grounds the FIS has granted residence permits to immigrants. The problem with this database is that it is not complete, and not reliably informative. First of all, as immigrants from EU and EFTA countries do not need a residence permit, they are not included in the data and thus the database lacks a big subgroup of immigrants coming to Finland. The second problem is that the residence permits are given on a legal basis. Thus, the actual reason to migrate could be family reasons, even if the residence permit has been given on a ground of employment. (Sutela & Larja 2015b.)

To fulfil this lack of information, National Institute for Health and Welfare, Statistics Finland and Finnish Institute of Occupational Health conducted a large-scale research on employment and wellbeing of population with foreign background. This UTH-research represents 15-64-year-olds with a foreign background living permanently in Finland in 2014. It is so far the most extensive interview study done on immigrant population as they interviewed 3,262 persons, who's both parents (or the only known one) had been born elsewhere than in Finland. It covered all the foreign background groups, unlike the previous studies that had included only the biggest groups (e.g. Pohjanpää, Paananen & Nieminen 2002; Castaneda, Rask, Koponen, Mölsä & Koskinen 2012). UTH-research provided a lot of new information on the reasons why people have decided to migrate to Finland. (Nieminen, Sutela, Hannula 2015, 8-11.)

Data collected for the research is more informative in comparison to the information collected from the residence permit statistics, as the subset of interviewees was a random sample that included also immigrants from EU and EFTA countries. Another advantage of this study was that it gave people the opportunity to explain their migration decision process in their own words, and therefore the data goes beyond the legal articles leading to the residence permit.

The main results on the migration reasons give the policy makers a new basis on which to build their policies on. The study revealed that foreigners move to Finland mainly because of family and love, work, studies and humanitarian reasons. Family reasons were clearly dominating as 54% of the respondents said family and relationship had been the prime motive for migration. It is important to note that one quarter of those respondents had immigrated together with their

family when they were younger than 15 years old. For those who had immigrated in their adulthood, 47% said family reasons to be the most important factor when making the immigration decision. After that the mostly reported prime reasons were work (18%), humanitarian reasons (11%), and studies (10%). For some there were several reasons that affected the immigration decision but, in the study, they were categorized based on the reason that they had identified as the most important one by themselves. (Sutela & Larja 2015b.)

The reported migration reasons varied depending on the gender and the age of the respondent. Men were twice more likely to have been immigrated due to work or studies, and also refugees were significantly more often men than women. Female immigrants had immigrated because of family and love considerably more often than men as two out of three women told family reasons to have been the prime motive. The reasons differ also when observing the respondents based on their age of migration. Those who had migrated younger than at the age of 15 were automatically categorized to have been moved because of family reasons. Also, in the group of 15–19-year-olds more than half (58 %) had moved to Finland because of family, and 21% as refugees and 13% because of studies. Family reasons were the prime reason also in the groups of 20–29-year-olds and over 30-year-olds, but these groups had also substantially larger proportions of those who reported that they migrated because of work (17% and 28%, respectively). (Sutela & Larja 2015b.)

The study revealed a difference between those who have lived in Finland more than 10 years and those who have migrated more recently. Those who had lived in Finland for more than 10 years reported that they had migrated mainly because of family reasons (64%) and humanitarian reasons (12%) as those who had lived less than 5 years ago in Finland reported the family (43%) but also work (23%) and studies (18%) to be the prime reasons for moving. Sutela & Larja suggest that this phenomenon is a consequence of the free movement of people within the EU. However, if the data is analyzed only on those people who have migrated older than 15-year-olds, the family reasons remain the most important (53%), and both the refugees and those moving after work increase to 15% and studying to 8%. (Sutela & Larja 2015b.)

It is interesting to observe the results from the perspective of work-related migration. Who comes here for work? The UTH-research showed that Estonians were the only group where the biggest share of respondents said work to have been the reason for moving (43%). In all other groups, family reasons were the prime reason for migration. Another positive group from the

labor force perspective were those migrating from the EU and EFTA countries. As there was previously no data of the migration reasons from those migrating within the EU and EFTA area, the UTH-research gave valuable information on this subgroup. Based on the interviews, nearly half (47%) of the respondents had moved because of family reasons but over one third (36%) reported that work had been their reason to migrate. (Sutela & Larja 2015b.)

3.2 Immigrants' integration to the society

Regardless of the reasons behind the immigration decision, it is important that the new arrivals can orientate to be part of the society in an efficient manner. Fast integration eases the adjusting of both, the arriving immigrant as well as the native population receiving immigrants. Especially the labor market integration is crucially important as it has a direct effect on both, the immigrant's own life and well-being, as well as to the country's public economy.

Integration itself can be defined as a process where a migrant learns skills, gains knowledge and creates social networks, through which he becomes part of the local society (Alitolppa-Niitami & Säävälä 2013, 7). It is a two-way process requiring contributions from both participants, from the immigrants and from the receiving society. The society is obligated to offer the opportunity to integrate, as the immigrant is expected to have an active role in becoming part of the society (MEAE, Two-way integration). Integration happens in everyday interactions, and the integration processes can therefore take various forms depending on the arriving individual's situation (MEAE 2017a). As a whole, the process requires broad cooperation between different interest groups, such as organizations and educational institutions. For instance, foreign nationals living permanently in Finland are entitled to health and social services and those who are in search of work can use the Finnish Public Employment Services (PES) (MEAE 2017a). Integration is also subject to the attitudes of the native population (Alitolppa-Niitami & Säävälä 2013, 7), and a welcoming atmosphere is one of the key factors in a successful integration (MEAE 2016b, Integration of Immigrants).

In Finland, the integration of immigrants is prescribed by law. The immigration policy of 2006 focused mainly on developing the work-related immigration, and at the same time the discussion on helping the immigrants to settle into the Finnish society became active in order to keep foreign labor force in the country (MEAE, Towards the New Act). Act on the Promotion of Immigrant Integration came into effect in 2011 and its main targets are to support

immigrants' participation in the society and to ensure that the foreigners have the access to the basic information of the Finnish society, working life and services helping with integration (MEAE, Laws and International Agreements). The act aims to improve equality between natives and foreigners both in rights and in duties (MEAE, Act on Promotion of Immigrant Integration). The act is applicable to those persons who have a valid residence permit in Finland.

The act requires government to set goals and measures for immigrant integration. These goals and actions are published in Government Integration Programme for each term of office. The programme of 2016–2019 has set four main targets: i) to combine immigrants' own culture to enhance Finnish innovation capacity, ii) to improve effectiveness of integration through cross-sectoral measures, iii) to increase collaboration between the state and municipalities when receiving people in the need of international protection, and iv) to encourage open national discussion on immigration policy that does not accept racism. (MEAE 2016a.)

Another law affecting the immigrant integration is the Act on public employment and business services, which aim is to advance the functionality of labor markets. The PE-services are securing the availability of labor force and offer job seekers the opportunity to find work, and they help creating new business activities. For immigrant customers, these PE-services are offered mainly in the form of an integration plan. Integration plan is made in collaboration with the immigrant himself, PES Office and local authorities, and it consists of public PE-services and other actions improving integration and employment. (MEAE, Laki julkisesta työvoima- ja yrityspalveluista.) The integration plan is built for each immigrant individually depending on person's needs, and it might include a language course, integration training or a work try-out for instance (TE-Services, Integration plan). The main challenge is to identify the individual needs. Initial assessment done by the PES Offices helps to understand immigrant's family situation and the possible special needs, which helps in creating the most suitable integration plan for each migrant (MEAE, Maahanmuuttajien palvelut).

Integration is beneficial, both for the arriving immigrant and for the receiving society. A successful integration helps immigrants to find work, through which it is easier to become part of the society. On the other hand, integration helps to transform the immigrant population to be a good investment for the receiving country. If resources have been invested on integration in the beginning of the immigrants' stay, they may pay themselves back as increased tax contributions, increased private consumption, and a younger population structure in the later

years. Integration and improving the employment of immigrants can furthermore help to create new innovations in the private sector companies. (MEAE, Kotouttaminen kannattaa.)

3.3 Measuring integration and factors affecting labor market integration

Integration has to be followed-up, in order to develop a fruitful integration policy that helps immigrants to become a beneficial part of the public economy. Collected follow-up data helps to understand the factors affecting the integration and to notice the possible changes in immigration trends. However, measuring integration is challenging. Integration is a multidimensional process and includes several aspects, such as employment, social and educational dimensions. No dimension is purely exclusive, and together they form a whole, where failing in one dimension might affect others negatively (OECD 2015, 19). Therefore, integration is normally measured through a follow-up method that contains several aspects of life. For instance, Eurostat's Zaragoza pilot study on common integration measures included the policy areas of employment, education, social inclusion, and active citizenship, which were each measured with 3 to 5 different indicators (Eurostat 2011). Besides these 'Zaragoza-indicators' Other well-known indicators are the Migrant Integration Policy Index (MIPEX) and Sustainable Governance Indicators (SGI) (Friedrich 2015, 65).

Some dimensions of integration are easier to measure than others. While labor market integration can be measured quantitatively by observing how many immigrants are employed and how many are in job-search, analyzing social inclusion, for instance, is challenging. These social dimensions are measured with qualitative manners and they include relatively subjective indicators such as feelings or attitudes. Besides measuring these dimensions, comparing them internationally is demanding as they might differ due to national contexts. (OECD 2015, 19.)

In Finland, Ministry of Economic Affairs and Employment (MEAE) is responsible for monitoring the integration of immigrants, as one main priority of the integration policy is to integrate migrants to the labor markets. The current monitoring system consists of six dimensions which are in line with the integration frameworks used by the EU and OECD (MEAE, Monitoring of integration). The dimensions monitored in Finland are the employment, education, health and well-being, living, participation and, two-way integration including ethnic relations. The monitoring system is being developed constantly, and MEAE has not defined the specific indicators for the newest monitoring method yet (MEAE, Monitoring of integration).

The latest full-scale immigrant integration survey in Finland was conducted in 2013, and the next large-scale survey is expected to be published in 2019 (MEAE, Monitoring of integration). In the latest integration survey from 2013 (MEAE 2013a), there were eleven policy areas which were measured through 29 different indicators. The main policy areas were: integration of immigrants, labor market participation, social participation, safety, discrimination, knowledge of languages, education and skills, socio-economic factors, health, attitudes between immigrant and native populations, and the public service system. In this thesis, the focus is on examining the indicators of labor market integration.

In Integration Survey 2013, the immigrants' integration to the labor markets was measured by analyzing the labor market participation of immigrant population. This labor market integration was measured by following indicators: i) employment rate (mean) compared to the entire population, ii) development of the employment rate, iii) unemployment rate (mean) compared to the entire population, iv) the development of the unemployment rate, and v) experience of settling in to a work that corresponds education. The information used by these indicators was compiled by using the Statistics Finland's employment statics, except for the last indicator the data source was the Immigrant Barometer from 2012. (MEAE 2013a.)

Measuring integration and collecting follow-up data of immigrants' settling into the country is crucial for improving the integration policies and to enhance migrants' employment. When measured correctly, indicators give a general overview of the national performance in adapting immigrants into the society. However, the results can be somewhat blinding and misleading if integration is analyzed only at a national level and focusing on the right issues and identifying the challenges of integration might be. Therefore, it is profitable and fruitful to compare immigrants' integration at an international level. Comparison helps to identify the right issues in integration performance and it points out the magnitude of differences to other countries. Besides, international comparisons help to notice changing integration trends at the global level.

Measuring integration is difficult at a national level, yet, it is even more challenging to compare these indicators internationally. First of all, integration is dependent on contextual factors, such as immigrants' socio-demographic characteristics, and other characteristics defining immigrant population, such as duration of stay or citizenship. Second, each country has specific economic and social contexts that have an effect on integration outcomes. Third, sufficient data is not

always available at international level, and the data is not harmonized and directly comparable. As the data is then adjusted and harmonized, the exactness and country-specific factors become misty. In 2015, OECD published a report where it had compared the immigrants' and their offspring's outcomes in OECD and EU countries. To overcome the problem of different immigrant populations in different socio-economic contexts, the OECD survey classified the observed countries in eight groups with similar integration challenges. (OECD 2015, 17–27.)

Employment is the most important factor for integration, according to the immigrant population living in Finland (MEAE 2013b). Therefore, it is justified to pay attention to the indicators of labor market integration and the factors affecting the employment. With improving the employment of migrants, immigration could ease both the ageing economy of Finland, and to help immigrants to integrate better into the society of their new country of living.

What are then the factors affecting labor market integration and finding work? Expatriate employees and others moving due to work are automatically employed when settling into the receiving country. Integrating to the labor markets is easier also for those who come into the country to study a degree: they have the opportunity to integrate into the society during the years of study and they can create social networks and gain knowledge that helps them to enter the working life after graduation. Refugees and asylum seekers on the other hand are normally facing the most difficulties in integrating to the labor markets (Zimmermann 2016, 7).

As discussed in chapter 2.3, the immigrant population in Finland is heterogenic and there is no representative immigrant that could be observed or analyzed. Eronen et al. (2014) conducted a regression analysis on different background factors affecting the probability of employment for the immigrant population in Finland. This study helps to understand, which factors can explain the labor market outcomes of immigrants. The data used was a random sample of foreign nationals who had moved to Finland in years 2000, 2001, 2005 and 2006. The data was available until 2010. The definition of a migrant was restricted, and a person with a foreign citizenship was categorized as an immigrant only if the planned time of residing was at least one year. Thus, the data was able to leave out those foreign workers on short-term assignment and exchange students. During the years of observation, 45,000 foreign nationals moved to Finland, and the study contained information on 22,515 of them.

The probability of employment was estimated by using a linear regression model. The nominal variables therefore explain the differences in the probability of employment between the

subgroup and the control group (c). Some of the variables are inseparable (e.g. nationality and mother tongue) and when interpreting the results, they should be both taken into consideration. The results of the regression model by Eronen et al. (2014) are presented in Annex 2.

Eronen et al. (2014) found that employment depends on the year of moving, duration of stay, individual characteristics and the labor markets in the region of stay. Age explained the probability of employment considerably. The probability of employment increases until the age of 37, after which it slowly starts to decrease. They also noticed that men's employment situation was better than women's: men's employment was on average 14 pp more likely than women's. Besides the age and gender, employment varied between different years, different arrival cohorts and duration of stay. The duration of stay caused significant differences and was found to be the foremost significant factor in the estimated regression model. The probability of employment increased by about 3 pp after each year spent in Finland. For women, it was more significant than to men: their employment increased nearly 4 pp each year as it was 1.5 pp among men. This difference cannot be explained by the number of children as it has already been taken into account in the regression model. However, Eronen et al. suggest that the gender gap could be explained by the different migration reasons.

The regression model shows the differences between nationalities and language groups. The employment was high among Estonians and among those whose mother tongue was either English or Swedish. The lowest employment rates were found among those from North-Africa and among Somali speakers, thus among humanitarian migrants. (Eronen et al. 2014.)

One factor affecting the probability of employment was the marital status and the nationality of the (possible) spouse. Those who were not married were more likely employed than those who were married or divorced. The marital status' effect was different to women than men, as married men were clearly more often employed than other men, as married women were less likely to be employed than women with some other marital status. However, if the spouse was Finnish, the probability of employment was clearly higher. Men who had a Finnish wife had 9 pp higher employment, as for women with a Finnish husband, the employment increased by more than 1 pp. Another family factor, the number of children, was found to have a negative impact on employment, and the higher the number of children, the lower the probability of employment. (Eronen et al. 2014)

Eronen et al. (2014) included the level of education into their regression model. Higher educational level had naturally a positive effect on employment, and those who had a master's degree, were 5 pp more likely employed than those with a lower educational level. However, as Eronen et al. and Sarvimäki (2010, 256-257) have stated, the registration of educational data is defective, and several degrees completed abroad, are not acknowledge in Finland. Therefore, interpreting these results should be done carefully.

3.4 Labor market integration of immigrants in Finland in 2000–2015

3.4.1 The framework for observation

In Finland, as in other countries, the immigration and integration policies emphasize the importance of employment of immigrants, as it has great impacts on public economics. In order to improve the offered integration services and to raise the share of employment, it is meaningful to analyze and understand the labor market integration of immigrants in Finland so far. In this section, the success of immigrants in the Finnish labor markets is being observed in 2000-2015.

Table 2: Indicators of labor market integration.

Indicator	**Object of measurement**	**Source**	**Notes**
Employment and activity	Immigrant population, defined both on ground of nationality and of place of birth	Statistics Finland, Statistics on Employment	Statistics Finland's data covers the 18-64-year-olds
Unemployment	Immigrant population, defined both on ground of nationality and of place of birth	Statistics Finland, Statistics on Employment; OECD, Foreign-born unemployment; Eurostat, Unemployment rates	Statistics Finland's data covers the 18-64-year-olds; OECD's data 15-64-year-olds; Eurostat's data 20-64-year-olds
Risk of labor market exclusion	Foreign-born population	i) OECD report (2015) ii) Eurostat (2018c), OECD report (2015)	OECD's data covers the 15-64-year-olds and observes the year of 2012; Eurostat's data observes 20-64-year-olds

The labor market integration of immigrants is in this thesis being observed with the help of the same indicators that have been used by OECD in its Indicators of Immigrant integration 2015 -report. The labor market integration indicators used are: i) employment and activity, ii) unemployment, and iii) risk of labor market exclusion. The reason for choosing these indicators are that they are strongly related to the latest labor market integration indicators used by MEAE,

and because the newest indicators of the Finnish follow-up system have not yet been published. For this thesis, the data for the indicators has been collected from several sources, namely from Statistics Finland, Eurostat and OECD, and the data is being analyzed in the light of these indicators for the timeline 2000-2015. The indicators, object of measurement and the used sources have been collected into the Table 2.

It is important to notice the differences in the age groups that are being observed. The data of Statistics Finland covers 18-64-year-olds, as the OECD takes the population aged 15-64-years-old into account. Eurostat's data covers the population aged 20-64-years-olds. Here, again, is a proof that the international comparison of integration can be extremely challenging as the institutions often publish data with different background characteristics.

3.4.2 Indicator I: Employment and activity

The first indicator focuses on analyzing the employment rate and labor market activity of immigrants in comparison to the native peer-population. In the employment indicator, the main focus is on the development of the employment rate which is being calculated by determining the share of employed people of the entire population of same age.

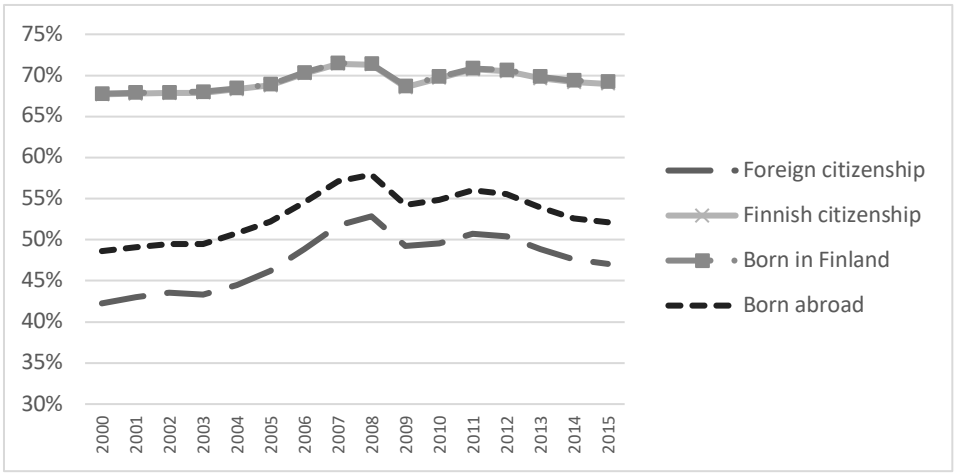

Figure 7. Development of the employment rate 2000–2015. (Statistics Finland PX-Web databases, Statistics on Employment)

The development of employment rates of the chosen time frame of 2000–2015 are depicted in Figure 7. The data used was retrieved from the Statistics Finland's Employment statistics, and it covers the population aged 18- to 64-year-olds. Here the immigrant population is being observed based on two different classification: citizenship and place of birth. The data shows native population to have a higher employment level than immigrant population for the entire

timeline. The employment of Finnish population has been alternating around 70%, as for the immigrants (depending on the classification), the rate has been varying between 40% and 60%.

In 2015, the employment rate of the entire population living in Finland was 67.8% as the employment rate of those born abroad was 52.2%, and of foreign citizens only 47.0%. As the employment of the native population has been alternating around 70% for the entire 21st century, and the development of the immigrants' employment rate has been following this trend by staying well below the employment of the Finnish. A slight improvement can be seen from the beginning of the 2000's, as the gap between natives and migrants has shrunken by 2008.

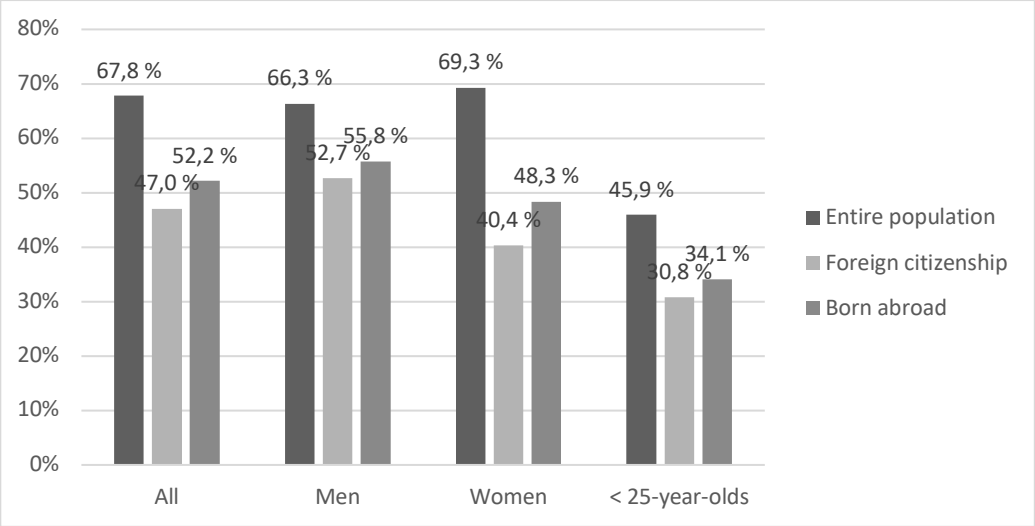

Figure 8. Employment of foreign nationals in comparison to the entire population in 2015. (Statistics Finland, Väestön pääasiallinen toiminta (työmarkkina-asema) iän ja sukupuolen mukaan alueittain 1987-2015)

The employment rates for different subgroups in 2015 are presented in Figure 8. The difference between the employment rates of the entire population and foreign citizens was 20.8 pp. The biggest cause explaining this gap is the great difference between immigrant women and local women. The most significant difference (28.9 pp) in employment was indeed found in the group of women, as the immigrant women do significantly worse than women on average in the labor markets. The weak labor market participation of immigrant women is not a problem solely in Finland, as the same situation prevails throughout the EU (OECD 2015, 82).

The smallest gap between immigrants and their native peers was in the group of the youngest population of those aged 18-25-year-olds. In 2015, the difference between the entire population and those with foreign citizenship, was only 15.1 pp, and according to this viewpoint, the prospects of young immigrants seem to be better than for the rest of the immigrant population.

However, the difference is still large in comparison to the native youth, and the immigrant youth has not been found to be as educated as the Finnish youth. When observing the early leavers from education and training (18-24-year-olds with no higher education than comprehensive school), the share was 14% among those with a foreign background as to those with Finnish background, the share was only 6% in 2014 (Larja, Sutela & Witting 2015, 58). Low education might create a barrier for employment in the future, as the number of jobs that require only low education and low language skills are diminishing in the near future (Eronen et al. 2014, 17). Thus, the small employment gap between the Finnish and immigrant youth is not necessarily going to remain as they age.

Even if higher education does improve the chance of entering work everywhere, the studies have shown that highly educated immigrants have comparatively more difficulties finding work than their native peers (see e.g. OECD 2015, 82). The gap in employment between immigrants who had studied in Finland and those who had gained their degree abroad was one of the largest of the OECD countries. Immigrants in Finland who had studied abroad had an employment rate of 62%, as those immigrants who had gained their degree in Finland had an employment rate that was 20 pp higher (OECD 2015, 101). In general, lowly educated immigrants do relatively well when comparing to their native-born peers in the EU, but Northern Europe makes an exception, and in Finland lowly educated immigrants struggle more in finding employment than lowly educated natives (OECD 2015, 84).

As the regression analysis by Eronen et al. (2014) already revealed, the labor market activity among immigrants improves as the years spent in the host country increase. In the long-run the employment rate of an immigrant starts to converge closer to native level (Sarvimäki 2010, 257) but even for those who had stayed in the country 20-30 years, the employment rate was 7 pp lower than native population (MEAE 2013a, 17).

3.4.3 Indicator II: Unemployment

The second indicator considers the unemployment of immigrants. International Labour Organization (ILO) defines ‘unemployed’ as a person who is without work, currently available for work, and seeking work (ILO 1982). The used unemployment indicator focuses on comparing the unemployment rates of native and immigrant population. Unemployment rate tells the percentage share of unemployed persons of the same-aged population that belongs to the labor force (thus, it includes both the employed and the unemployed). The official

unemployment rate in Finland is calculated for 15-74-year-olds, which is why the official unemployment rate differs from the unemployment rates presented below.

The development of the unemployment rates in the 21st century is depicted in Figure 9. The rates have been calculated to the entire population aged 18-64 living in Finland, as for the immigrant population based on two different classifications. As in the previous indicator, immigrant status has here either been given on grounds of nationality or foreign place of birth, and the data has been retrieved from the database of Statistics Finland.

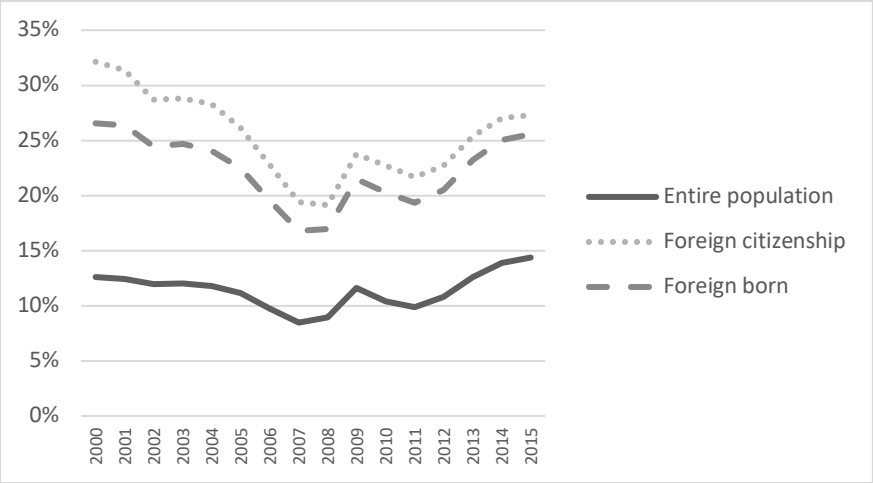

Figure 9. Development of the unemployment rate in 2000–2015.
(Statistics Finland PX-Web databases, Statistics on Employment)

The development of the unemployment in the 21st century is roughly speaking U-shaped, especially for the immigrant population. For the entire population, the unemployment rate has remained somewhat stable by varying between 8-15%. An increase after the financial crisis 2008 can be seen as a tiny peak in 2009's unemployment rate, after which there is an ongoing increasing trend from 2011 onwards. For the immigrants the unemployment rate's U-shape is much more intense. For those with a foreign citizenship, the unemployment stood above 30 % in the beginning of the 21st but the unemployment decreased by 13 pp to 19 % before the financial crisis hit. The economic fluctuations have been found to affect stronger the immigrant population than the natives (see e.g. MEAE 2013a, 23-24). The gap between the unemployment rates of the entire population and immigrants narrowed down until the financial crisis but since 2008 the gap has become broader again. Just like the unemployment of the entire population, the unemployment of immigrants has been increasing since 2011, yet in a more intensive manner.

In 2015, the unemployment rate of the entire population was 14.4%. The foreign-born population had an employment rate of 25.6%, and those with a foreign citizenship 27.3%. The gap between the entire population and immigrant population was around 22 pp.

It is in fact the unemployment rate that makes Finland different in the labor market integration of immigrants in international comparison. The first indicator reflecting the employment of immigrants has been following closely the EU's average employment rate, but there is a large difference in the unemployment rate between Finland and EU average, as well as OECD countries average unemployment rate. The following comparison arrangement between Finland, OECD countries and the EU has been done based on the provided data offered by Statistics Finland, OECD and Eurostat, and the age differences in the working-aged groups have been listed in Table 3.

The average unemployment rate in OECD countries in 2015 was 8.5% for native-born population, and for foreign-born population 12.0%, which is 3.5 pp higher (OECD 2018). For the EU 28, the average unemployment rate for native-born citizens was 8.6% and for foreign-born population 13.6 %, thus 5 pp higher (Eurostat 2018b). In Finland, the unemployment rate for population born in Finland was 13.5% and for foreign-born population 25.6% in 2015. Thus, the difference between unemployment rates of native-born and foreign-born populations is 12.1 pp, which is significantly higher than the average rates of EU 28 and OECD countries where the differences are 5.0 pp and 3.5pp respectively. In other words, there is a lot of unused labor force among Finland's foreign population in comparison to other countries.

In Figure 10 are depicted the unemployment rates of Finnish population in 2015. For the entire population the unemployment rate was 14.4% as for the foreign-born it was 25.6% and for foreign citizens 27.3%, which indicates that immigrants' unemployment rate is around 12 pp higher than the rate of the natives. When comparing genders, the greatest difference can be detected among women, just like when comparing employment rates. In 2015, the foreign-born women's unemployment rate was 27.8% and for women with foreign citizenship it was 32.0% as for the entire female population it was only 12.5% Thus, there is relatively lot of unused labor force potential among women. The situation seems to be the best for the youngest immigrants. The difference between young immigrants' and the youth of the entire population is the lowest of these subgroups by being around 6 pp.

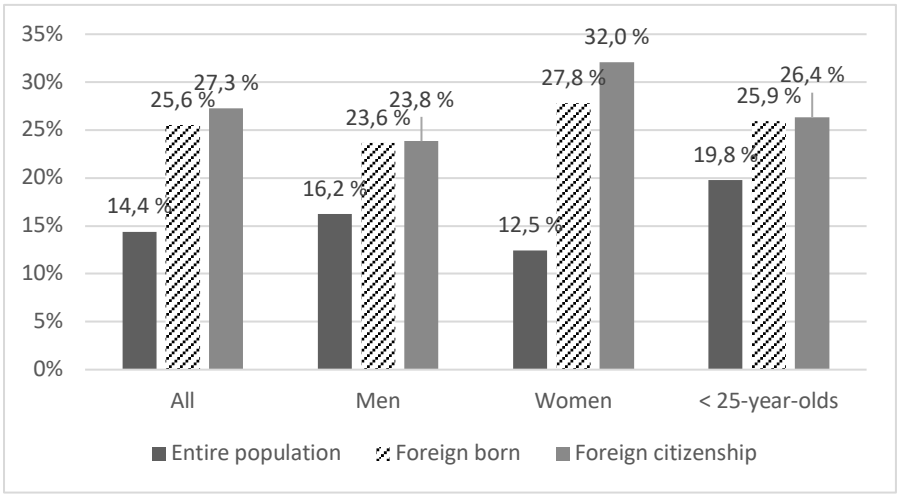

Figure 10. Unemployment rates in 2015. (Statistics Finland, Statistics on Employment)

The differences in unemployment can be marked also among the population with tertiary education. According to several data sources, the gap between unemployment rates is the highest among those with tertiary education. The situation is the same across the EU and the OECD, where the immigrants are twice as likely to be unemployed in comparison to locals. In Finland, the situation for foreign-born tertiary education graduates seems to be even worse, as the probability of unemployment is triple to the native graduates. (OECD 2015, 88-89.)

As in the regression analysis by Eronen et al. (2014), the years of settlement have a positive impact on the probability of employment. This can be partly seen when comparing the unemployment rates of immigrant cohorts who have immigrated in different terms of time. For instance, in 2010 the unemployment was much lower for those who had arrived in Finland in 1980's, in comparison to immigrant cohorts which had arrived later. However, even if they had been in the country for 20 to 30 years by then, their unemployment rate was still 6.9 pp higher than the unemployment rate of the entire population. The youngest immigrant population under 25 years, that had been living in Finland for long did well in the light of their low unemployment rates. For those who had moved into the country being younger than 5-year-olds in 1980's, had an unemployment rate which was only 1.5 pp higher than their native counterparts. (MEAE 2013a, 22-24.)

What really has a strong impact on the labor market success of immigrants is the economic situation of the country. Especially the lowly educated migrants suffer in economic downturns and they often act as a 'buffer' labor force in economic up- and downturns, protecting the local labor force from these fluctuations in economic cycle (OECD 2015, 90). It has been noticed that those immigrating during a recession have difficulties finding work even after the economic

situation has improved. In Finland, the recession of the 1990s can still be seen in the immigrant's employment rates who arrived during that time as their unemployment is still higher than those who have arrived later during 2001–2009, and also those who arrived during the newest financial crisis of 2008 seem to have a difficult situation (MEAE 2013a, 23). It is noteworthy to mention that in the 1990s a relatively large share of the arriving immigrants was of African origin and came to the country due to humanitarian reasons, which can have an effect on their high unemployment which was still 24% in 2010 (MEAE 2013a, 23).

3.4.4 Indicator III: Risk of labor market exclusion

The third indicator used by the OECD in 2015 Immigrant integration report is the risk of labor market exclusion. This indicator has been divided into two parts, and both of these sub-indicators address the risk of exclusion from local labor market. The two indicators of labor market exclusion are: i) long-term unemployment, and ii) share of discouraged workers. Analyzing unemployment and inactivity among immigrants can help to find solutions to problems like social exclusion, which might occur if the weak labor market participation persists over time (OECD 2015, 92).

The first indicator, long-term unemployment, refers to the job seekers who have been unemployed for more than a year (OECD 2015, 92). The indicator tells the percentage share of long-term unemployed people of all the unemployed.

In OECD, more than one thirds of foreign-born immigrants had been looking for work for more than 12 months, and the ratio is the same for the native-born long-term unemployed people in the OECD countries. The situation in the EU is similar, as the foreign-born long-term unemployment is 1.2 pp lower than the long-term unemployment of natives, however, the rate of long-term unemployment is much higher in the EU by being nearly 45%. The averages of OECD and EU countries, however, do not provide the entire picture of long-term unemployment as member states have drastic differences. For instance, the share of long-term unemployed persons was very low in Canada, Australia, and New Zealand, where less than one fifth of the unemployed foreign-born immigrants had been searching for work for longer than 12 months. The weakest situations were in Ireland, Greece and Latvia where more than half of the unemployed immigrants were long-term job seekers. Comparing the long-term unemployment of native-born and foreign-born population, the immigrants had the weakest situation in the Netherlands, Sweden and Switzerland, where the long-term unemployment was

10pp higher than their native peers. On the other hand, in several Southern European countries the long-term unemployment of immigrants was lower than natives. (OECD 2015, 92.)

In Finland, long-term unemployment has been varying in the 21st century. The long-term unemployment rate for the total population has been alternating between 19% and 29% (Figure 11). The long-term unemployment of foreign-born immigrants has in general been higher in comparison to the entire population, and it has been alternating between 22-38%. In general, the long-term unemployment of immigrants has been fluctuating strongly in comparison to the entire population.

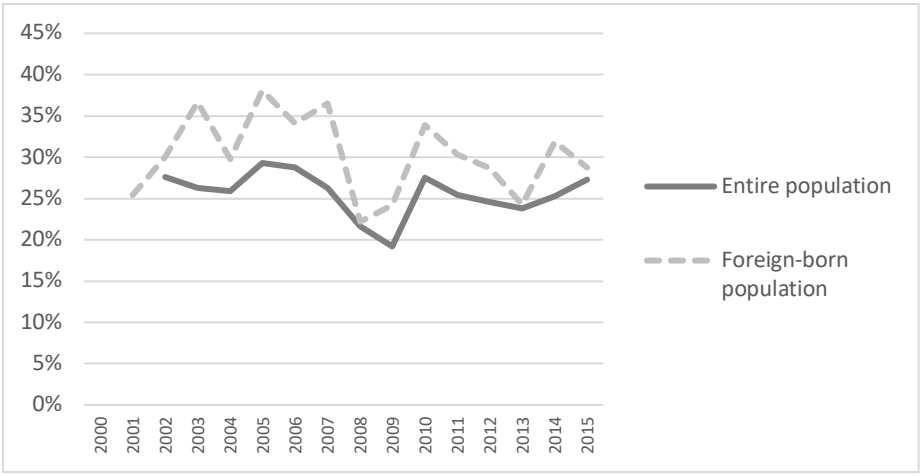

Figure 11. Long-term unemployment in Finland in 2000-2015. (Eurostat, Long-term unemployment)

The development in the 21st century (Figure 11) shows well, how the economic situation affects the long-term unemployment. The financial crisis of 2008 caused unemployment to increase, especially among immigrants (see e.g. OECD 2015, 82-87), which led to an increased long-term unemployment in the following years. In 2008, the foreign-born population's long-term unemployment was nearly the same with the entire population's rate, but the gap increased considerably in the following years. The gap narrowed down, and in 2013 the rates were again the same, yet the long-term unemployment increased among foreigners increased again.

The second indicator addressing the risk of labor market exclusion is the share of discouraged workers, which is the percentage of the working-aged economically inactive population. OECD defines discouraged jobseekers to be persons, who are not actively trying to find work or who have stopped looking for job due to their belief that there are no suitable open positions in the labor market. Otherwise these people would be willing and able to work. The second indicator,

where the jobseekers become involuntarily inactive is one of the key factors contributing to labor market exclusion. (OECD 2015, 92)

According to the OECD's data of 2012, one of six inactive immigrants wished to find work, as for the natives the ratio was one out of seven. In the EU, the share of inactive immigrants who wanted to find work was one out of five. When examining these shares in numbers of potential labor force, there are more than three million inactive immigrants in the OECD countries, and more than two million in the EU, who are hoping to find work. (OECD 2015, 92.)

The problem of inactive labor force can be caused by various factors laying in the background and the reasons for inactivity differ across countries. For instance, the inactivity among unemployed in Switzerland and in Austria was often caused by family issues or bad health. The worst situations were in Italy, Latvia and the Netherlands, where there were significantly large shares of discouraged workers among the inactive population. (OECD 2015, 92) Especially the discouraged persons can be a problematic group, as they have given up with the job seeking.

The involuntary inactivity and becoming a discouraged job seeker seems to be more common among foreign-born population than the native-born locals in the OECD countries. There are also differences in the inactivity of women and men. The inactivity in general, seems to be slightly more probable among men, yet a higher share of women with children under the age of six have been experiencing inactivity against their own will. (OECD 2015, 92.)

In 2015, there were around 37,500 inactive workers in Finland, who had a foreign citizenship, and 597,700 inactive Finnish workers (Eurostat 2018a, Inactive population). There is no recent data available on the reasons why foreigners are inactive in the labor markets, yet Eurostat has data of the main reasons of the total population of Finland. In 2015, the main reasons for labor market inactivity were own illness or disability (24.8%), retirement (22.8%), and ongoing education or training (17.1%). Only 6.8% were inactive because they thought that there is no work available. (Eurostat 2018c.)

In the OECD report (2015), the reasons for being inactive were compared between foreign-born and native-born populations. In 2012, over 20% of foreign-born working-age population living in Finland were inactive and hoping to work. The reported reasons for being inactive were illness (2.8%), family reasons (1.3%), discouraged workers (1.9%), and other reasons (14.6%).

Of the native-born population, less than 15% were inactive, and the main reasons were similar to their immigrant counterparts. An interesting fact is that 3.38% of the inactive native population were categorized as discouraged workers which is relatively more than for the immigrants. In most other EU countries, the situation is exactly the opposite, and more foreign-born than native-born persons are discouraged to find work.

3.5 Finland's success in labor market integration in comparison to Sweden

Comparing Finland's success in integrating immigrants to the labor markets to other countries can help to improve the integration policies and to benchmark good policies which might help immigrant population to find work. As the immigrant populations however do differ across countries, it is meaningful to try to compare to a country, where the background characteristics of the immigrant population match and the socio-economic systems are similar. The advantage of finding peer countries is that they often face similar integration challenges.

OECD (2015) has classified host countries into eight groups. Finland belongs into the group of destination countries which have experienced significant recent and humanitarian migration. The group consists of Nordic countries: Denmark, Finland, Norway and Sweden. Common factors for these countries are that the humanitarian immigrants have accounted for a big share of immigrant population, and nearly half of the foreign-born population has arrived first in the 21st century. The countries have similar strong integration policies, and immigrants are integrated to public services and given the opportunity for education. Besides humanitarian immigrants, there is also a big share of those who are free mobility migrants from other EU and EFTA countries. Majority of the immigrant population does not speak any local official languages. The share of immigrant population and the second-generation immigrants is still substantially smaller than in countries with long history of immigration, yet the share has increased rapidly in recent years. The greatest challenges in these countries are the humanitarian migrants who have difficulties in integrating into the society, and whose performance in labor markets has been especially weak. (OECD 2015, 27-32.)

In this thesis, the labor market integration of immigrants is being compared between Finland and Sweden in the framework of OECD's three labor market integration indicators in the previous section. The reasons for this comparing arrangement are the same group classification by OECD and the close tie between the countries: geographical location and similar social

welfare systems, which make the countries comparable. The greatest difference is, that Sweden has been seen long as a country which is open and welcoming towards immigration and the country is assumed to have strong experience in immigrants' integration.

The data used in this section has been retrieved from the Labour Force Survey (LFS) data compiled by Eurostat. LFS is a household sample survey collecting information on labor market participation and inactivity. The LFSs are initially conducted by the statistical institutions of the EU member states, after which the data is centrally processed by Eurostat (Eurostat, EU LFS). In this thesis, the Eurostat's LFS data has been used by choosing the same timeframe of 2000–2015 as in the previous section. The working-age population of 20 to 64 years in Finland and Sweden is being observed based on their place of birth, and an immigrant here means a person who has been born elsewhere than in the country of residence, Finland or Sweden.

The first indicator is the employment of immigrant population. The development of the employment rates for both, foreign-born and native-born populations are presented in Figure 12. It is worth to mention, that these employment rates are not the official national unemployment rates which are being calculated by using the labor market status of 15-64-year-olds (MEAE 2013a, 15), and thus these graphs show slightly a shinier picture than the official employment rates, since they leave the youngest cohort out of observation.

The differences between the immigrant populations living in Finland and in Sweden are surprisingly small. In 2000, the difference between the employment rates was remarkable, more than 10 pp, but during the rest of the 21st century, Finland's immigrant population has been able to reach the Swedish immigrants and get even with their employment rate. The employment of both immigrant populations has been alternating between 60% and 70% in 2002–2015. However, there seems to be a slight change in the trend from 2013 onwards where the employment rates start to diverge. The immigrant population in Finland has had a decreasing trend since 2013, while the Swedish immigrant population has kept on the moderate increasing trend from 2010 onwards. This diverging pattern, and the decrease among the Finnish immigrants' employment is quite alarming and requires active measures to turn in to an upward direction.

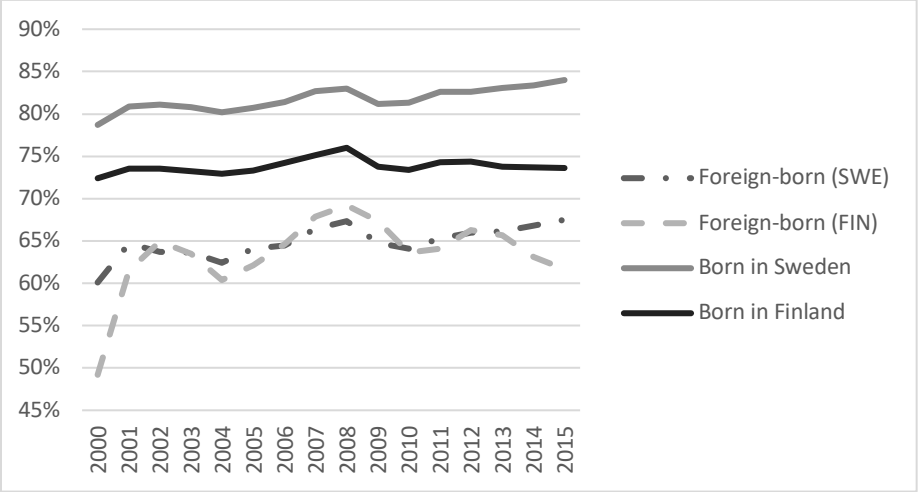

Figure 12. Development of the employment rates. (Eurostat, Employment rates)

The most striking difference between Finland and Sweden in the Figure 12 is the gap between the employment rates of native Finnish and Swedish populations. In Sweden, the employment rate among natives has been varying between 80% and 85% among the 20-64-year-olds, as in Finland the native population of same age has the employment of only 70% to 75%.

The difference between the employment rates of Finland and Sweden has been studied widely, and the scholars have found several possible explanatory reasons for the large employment gap. One difference is the classification method of parents who are on parental leave. Because of the updated, and inexact Eurostat's definition of an employed person, Finland has defined parents who are on a parental leave as people outside of labor force, as in Sweden those enjoying a parental leave are seen as employed if they have a job where they return after the parental leave (Pärnänen & Kambur 2017a). This explains partly the employment differences among women.

In Finland, women also stay longer at home with the kids, as in Sweden women generally return back to work after the child has turned one (Pärnänen & Kambur 2017b). According to several studies, Swedes, especially those with children, work substantially more often in a part-time job than Finns do, which can also explain the employment difference (see e.g. Pärnänen & Kambur 2017b). There is also a great difference between those aged 60 to 64 years, as the employment among the oldest subgroup is significantly higher in other Nordic countries, Sweden included, in comparison to Finland (Vartiainen 2013).

In the light of the first indicator, Finland has relatively speaking more labor force potential among native-born population than among immigrants, if one compares the country to Sweden.

The difference between the Finnish and foreign-born population is still large, however, the difference in Swedish populations is greater. Thus, Finland has been able to integrate the immigrants to the labor markets better than Sweden, when one takes the employment levels among natives in consideration. In Finland, it would be beneficial to focus on helping both groups, natives and immigrant, to find work, in order to increase the active labor market participation on a national level.

The second indicator where Finland and Sweden are here being compared is the unemployment of immigrant population. The unemployment rates of both populations in 2000–2015 are shown in Figure 13. Again, only the population aged 20-64-years is being observed.

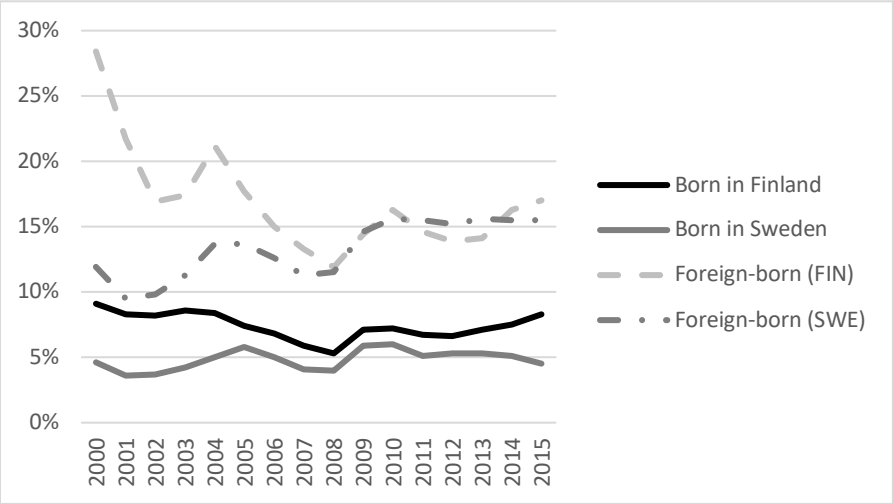

Figure 13. Development of the unemployment rates in 2000-2015. (Eurostat, Unemployment rates)

When observing the unemployment rates, the differences between countries are much greater. The biggest difference again was in the beginning of the 21st century as the Finnish immigrant population had an unemployment rate of nearly 30 %, as the rate was for Sweden's immigrants only 12%. The unemployment of Finland's immigrants has however gradually decreased, and the rates were at the same level in 2008. However, after the financial crisis hit in 2008, the unemployment rate of Finnish immigrant population turned upwards again. In the 21st century, the unemployment of Swedish immigrants on the other hand has been increasing unsteadily. As Finland was able to reduce the unemployment in the first half of the observed timeframe, the unemployment of immigrants has been increasing in Sweden. From the viewpoint of the second indicator, Finland has been able to improve the labor market integration of immigrants, as Sweden has faced new challenges in finding employment to immigrants.

Comparing the unemployment rates of native populations, the results are similar as in the first indicator: Finns do worse than Swedes. For the entire 21st century, the unemployment of Finnish population has been on a higher level than the Swedish population's, and besides trying to bring the unemployment numbers of immigrants down, Finland should also focus on employing the Finns, in order to benefit from the labor force potential of the entire population.

The third indicator, risk of labor market exclusion, gives somewhat diverging results about the differences in labor market exclusion of immigrants in Finland and in Sweden. As in the previous section, this indicator is being observed with the help of two indicators: i) long-term unemployment, and ii) discouraged workers.

The long-term unemployment among Finnish immigrants has mainly stayed above the unemployment of Swedish immigrants, however from 2010 onwards, the gap has been diminishing and in 2013 and 2015 Finnish immigrants have experienced even less long-term unemployment than immigrants living in Sweden (Figure 14).

Figure 14. Long-term unemployment in 2000-2015. (Eurostat, Long-term unemployment)

For the second indicator, there is no recent data collected to analyze the shares of discouraged workers among immigrant populations. Therefore, in this part the data has been collected from the data in the OECD report, and only the year of 2012 is being observed (OECD 2015, 93).

The foreign-born population in Finland seems to have been 5pp more inactive than the foreign-born population in Sweden (Figure 15). However, the reasons for inactivity have to be taken into account: the share of discouraged workers is relatively smaller among Finnish immigrant population than in the other comparison groups. This is a rather positive sign from the

standpoint of Finland, as discouragement is the key reason for permanent labor market exclusion (OECD 2015, 92). In Sweden, the discouraged workers are a problem rather among the immigrants than among the natives, in Finland it seems to be exactly the opposite.

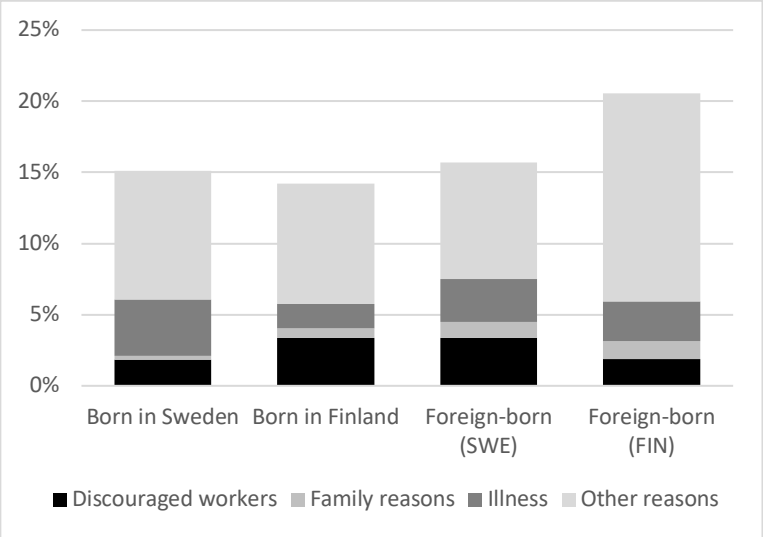

Figure 15. Inactive workers who wish to work. (OECD 2015, 93)

All in all, the labor market integration of immigrants has improved in Finland during the 21st century and is nowadays nearly on the same level with Sweden's success in integrating immigrants to the labor markets. The employment rate of Finland's immigrants has reached the level of immigrants in Sweden, as long as the diverging that started in 2013 does not continue in the future years. In fact, it seems to be that raising the employment of natives to the Swedish level, would be more beneficial for the public finance in the short-run. The unemployment rates of the immigrant populations in Sweden and Finland have converged to be on the same level, and the unemployment of immigrants living in Finland has come down in the last 15 years. The greatest problem for immigrants living in Finland, when comparing to Sweden, is the long-term unemployment and high share of inactive workers. However, luckily a substantially small share of the inactive population belonged to the group of discouraged workers in 2012.

The data of 20-64-year-old populations processed by Eurostat reveals, that Finland has in fact been able to reach the immigrant's integration success of Sweden by 2015. However, there is still space for improvement, and especially the long-term unemployment and involuntary inactivity in the labor markets remains a problem among the immigrant population living in Finland.

The most alarming fact in the comparison presented above, turns out to be the native-born population in Finland. The employment rate is much lower in comparison to Sweden, the unemployment as well as the long-term unemployment have been above the Swedish levels for the entire timeline observed, and furthermore, the Finnish natives seem to be substantially more discouraged, which implicates for a greater chance of labor market exclusion. Therefore, besides focusing on integrating the immigrants better to the labor markets, there is still a lot of unused labor market potential among the native Finns as well.

In the next chapter, the more precise effects of immigrant population on public economics are being observed. The following chapter is a literature review on empirical evidence on immigration's effects on public finances founded in several different studies. First, the immigration's impact on demographic structure are being observed, after which the economic contributions and costs of immigrants are being observed. In the last part, the net impact of immigration on public economics is being discussed.

4 EFFECTS OF IMMIGRATION ON PUBLIC FINANCE

4.1 Immigration affects the dependency ratios

4.1.1 Direct effects of ageing on future economic growth

The reason why attaining foreign labor force to Finland has been discussed so intensively lately is that ageing population has direct effects to country's economic performance on a macro-economic level. The two main channels through which it affects country's economic growth are the decrease in labor supply and the reduction in the household savings rate which negatively affects investments (Vaittinen & Vanne 2015, 397; Moody's 2014, 7-9). The demographic transition in the following years is expected to lead to a significantly lower economic growth worldwide. These macroeconomic challenges of population ageing can try to be approached with changes in public policies. However, there is no universal solution to solve these issues, since each country has a different demographic situation and the problems are tightly related to the statutes and structures of the socioeconomic systems in the country.

The first channel that affects the economic growth, is the decreasing labor supply. In Moody's report (2014) Finland falls into the category of those countries, which have faced a decline in their working-age population for the last 15 years and the same trend will continue at least another 15 years (Moody's 2014, 7). Like the previously presented projections show, there is a tremendous risk that labor supply will be reduced substantially as the working-aged share of population is shrinking. As the economic growth in the long term comes only either from an increase in labor force or an increase in productivity (Ahokas, Honkatukia, Lehmus, Niemi, Simola & Tamminen 2015), a shrinking share of working-aged should be taken seriously. The ageing population is also accelerating the structural change as the service sector becomes more and more important in comparison with extractive production and refining sectors (Ahokas et al. 2015, 115), which might call for changes in national educational policy as well.

The demographic change is expected to cause a shrink in effective work contribution, which will have a negative impact in several industries in the beginning of the 2020s, but it should be eased by the end of 2020s. However, this is highly dependent on different labor market reforms and this projection already expects the pension reform 2017 to have a positive impact on the labor market participation of elder people. The ageing of the population will increase the demand for nursing services and the employment in welfare and health sector is expected to

grow with nearly 97,000 jobs from 2013 to 2030. The negatively affected sectors mainly come from the refining and extractive industries. (Ahokas et al. 2015, 115–125.)

The second channel, through which the population ageing affects the economic growth, is the reduction in the economy's savings rate. Individuals make their saving decisions based on three main factors: planning horizon, time preference or responsiveness to interest rates and their ability to realize a utility maximizing consumption path (McMorrow & Röger 2004, 33). Various models of individuals' saving decision processes have been developed in economic literature (see McMorrow & Röger 2004).

One framework to observe the effects of aging on savings rate, is through the life-cycle model (Moody's 2014, 9; Hassan, Salim & Bloch 2011, 709). Model assumes that individual's time horizon is one's own lifetime and one's utility depends solely on consumption (McMorrow & Röger 2004, 33). In life-cycle model, individuals smooth their consumption over their lifetimes but earned income varies in different stages of life depending on the ability to work. Naturally, young and elder people consume more than they earn, and the opposite is true for those of working-age. Thus, on the aggregate level, those countries with higher proportion of persons of working age, is expected to have a higher saving rate, which leads to higher investment level and eventually, to higher economic growth. The contrary is true for those economies with higher young and old dependency ratios, as the saving rates are lower, and the level of investment is lower. (Moody's 2014, 9.) However, even if the empirical evidence supports the life-cycle model, the model has also been criticized for its strong assumptions. Especially older households have been observed to continue to increase savings also after retirement (Hassan, Salim & Bloch 2011, 709).

As presented in chapter 2, the share of youth is decreasing, and the share of elder is increasing in Finland. A decreasing share of youth indicates that the costs related to the youngest population are going to decrease, and there are going to be less and less young people transferring to working-age population in the future. On the other hand, the increasing group of retiring people is causing the savings rate to decline, and it outweighs the benefits of declining youth dependency ratio, and it brings the savings rates down. Empirical evidence from cross-country and time series studies supports this model. One pp rise in the youth-dependency ratio has led to a decline of 0.2–0.9 pp in average saving rates, and one pp rise in the old-dependency ratio to a 0.5–1.2 pp decline. In Japan, which has been the world's fastest ageing country, the

rising old-dependency ratio has resulted savings rate to decrease from 23.2 % in 1976 to -0.3 % in 2012. Furthermore, this reduction in the savings rate is directly connected to the countries investment and long-term activity, which is the concern of several developed countries. (Moody's 2014, 9-10.)

4.1.2 Dependency ratios – measuring the effects of ageing population

One way to understand the effects of ageing population is to observe dependency ratios, which can compress the population structure into one number. In principal, there are two commonly used dependency ratios. One is demographic dependency ratio that observes the age structure of population and is rather easy to predict. The second ratio is economic dependency ratio (EDR) which ties demographics to economic cycle and to the entire economy of the country. In this section, these dependency ratios and their development are being introduced.

Demographic dependency ratios calculate the dependency ratios of a country based on the age structure of population (Eurostat Statistical Books 2015, 163). Demographic dependency ratios give a good overview of the population structure but leave many important aspects, such as participation to labor markets, out of observation. Technically these ratios depict the ratio between the economically active age group to the generally inactive age groups. There are three main demographic dependency ratios: young-age dependency ratio, old-age dependency ratio and the total dependency ratio (TDR) which is the sum of the first two ratios.

The youth-dependency ratio depicts the ratio between the youngest subgroup of the population and those of working age. The ratio shows how many persons aged from 0 to 14-year-old there are per one hundred persons of working age 15 to 64 years (UN 2009, 55). The old-age-dependency ratio is calculated in a similar way as youth-dependency ratio. This indicator shows the number of elder people aged 65 and over to one hundred persons of working age 15 to 64 years (Eurostat, Dataset details). A high old-age-dependency ratio is economically more severe than the young-age-dependency ratio, as the elder people are not expected to be active in the labor markets in the future and they might be materially dependent on other's support as they are not expected to have earned income anymore. Furthermore, studies have estimated that the costs of supporting a person aged 65 years and over are substantially larger than the cost of supporting a young person (UN 2000, 97). As the life expectancies are projected to increase, the economically inactive group is going to remain to be an even bigger burden for the public finance, unless the socio-economic systems are going to be restructured.

The total dependency ratio is in principle the sum of two previous ones. It shows the ratio between those under 15-year-olds and 65 years and older to those of working-age 15 to 64 years (Ruotsalainen 2016) and can be calculated with the following formula:

$$TDR = 100 \times \frac{\big(Population(0-14) + Population\ (65+)\big)}{Population(15-64)}. \quad (1)$$

The greatest asset of TDR is that it is easy to calculate, and it gives a good overview of the age structure of population and how the demographic population structure might affect the public finance. Its future development is also rather easy to predict by using the provided population projections. However, the biggest disadvantage of TDR is that it does not say anything about the actual economic activity of the population. It could be that the entire working-age population is employed, and all individuals are taxpayers – or it could be that a significant share of those, who are said to be of working age, are out of the labor force or unemployed, and they are actually in a need of social welfare instead of contributing to the public finance.

Besides ignoring the labor market status of people, TDR's definition of working-aged people is also causing challenges. In many countries, Finland included, people tend to keep on studying several years after the age of 15 and are hence out of the labor force. For instance, OECD has eased this problem in its Society at a Glance reports by defining economically active group to be the population aged 20 to 64 in order to give a more realistic picture of old age support ratios (OECD 2011, 50). Another problem with TDR is, that several people retire before the age of 65 (Nieminen 2003; Vartiainen 2013). However, the latest pension reform of 2017 is now trying to increase the minimum retirement age in Finland to 65.

In 2015, the TDR was nearly 60 (Ruotsalainen 2016), meaning that there were 60 children and elderly people for 100 persons of working age. As one can already predict from the demographic projections presented in the previous chapter, the TDR is expected to steadily increase, and by 2065 it is expected to even reach 77. The more detailed development of TDR can be seen in Table 3 where the TDRs have been calculated for both projections estimated by Statistics Finland and by Eurostat.

The last time when TDR was as high as it was in 2015, was in the beginning of the 1960s. The situation back then was not as alarming as it is today, since the TDR was increasing mainly due to large number of children born after World War II and the TDR recovered with ease as the

children grew up to be of working age. Today, the high TDR is caused by the large number of elderly people, which is more problematic. They are not going to be active tax payers in the labor markets and can drastically be seen mainly as a possible burden to public finance. The lowest demographic dependency ratio measured in Finland was in 1984 when it was as low as 47. It remained well beneath 50 until the mid-2010s, when it started its accelerating increase, which it has kept till today and will most likely continue in the near future. (Ruotsalainen 2016.)

Table 3. Total demographic dependency ratios based on the projections provided.

	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065
Statistics Finland	58,3	63,3	66,4	69,2	70,4	69,7	70,4	72,0	73,6	75,8	77,0
Eurostat	57,1	62,2	65,6	68,3	70,1	69,1	69,7	71,4	73,1	75,7	77,2

Another way to analyze the population structure is to calculate the economic dependency ratio (EDR). EDR is the relation of persons who are unemployed or outside the labor force to the number of persons employed (Statistics Finland, Economic dependency ratio) and can be calculated with the following formula:

$$EDR = 100\times \frac{(Unemployed + Outside\ the\ labor\ force)}{Employed}. \quad (2)$$

This indicator provides a more realistic tool to analyze the possible economic effects of ageing, as it also takes the individuals' labor market status into account. TDR gives a smooth picture of the situation where all 15–64-year-olds are expected to be economically active. Realistically, the group of working aged contains also a large share of persons who are not working due to studying, illness or unemployment. Thus, EDR can give a much more realistic indicator of the demographic challenges on public economics as it shows the truly economically supportive share of the population.

The main challenge with EDR is its hard predictability. Its development is difficult to estimate, even for a shorter period. EDR is fragile to the changes in economic situation as employment rates might change relatively quickly depending on the economic cycle. For instance, the recession in the beginning of the 1990s caused a sharp peak in unemployment numbers and it took nearly twenty years for EDR to recover. In 2006–2008, the economic situation seemed positive as the employment rate was about 70% and EDR was 124 (Ruotsalainen 2016). However, the increase in unemployment after the global financial crisis and the ageing population made the ratio to turn upward again.

In 2015, the EDR was 143, which means there were 143 non-employed persons per 100 employed (Statistics Finland, 2017b). In 2015, the employment rate was 68.1% which is in line with the 2010s' employment rate development (Statistics Finland, Labor force survey 2016). To improve the EDR, increasing the employment rate would be crucially important. Even if the EDR is dependent on the economic cycle, there are ways to try to improve it with public policy interventions. In Finland, the public sector has already taken several measures to get the employment rate to turn into an increasing path.

Ruotsalainen (2016) has calculated different scenarios of population growth and the development of EDR. In her paper, she focused on the following questions: (i) What happens to the EDR if the average share of people employed remains same as in 2013–2014 (64.5 %) and (ii) What should happen to employment of 18–67-year-olds so that the EDR would remain at the same level of 139, as it was in 2013–2014. She based her calculations on the population projections from 2015 and without any assumptions on economic cycles or public policy interventions.

Ruotsalainen (2016) estimated that if the average share of employed persons would remain unchanged, the national EDR would increase to 148 by 2020 and reach 157 by 2030. In some regions, the EDR would even pass a threshold of 200. Thus, there is an obvious need for increasing the employment rate from 64.5%. In fact, Prime Minister Sipilä announced in his government programme that one of his key objectives during his term of office is to increase employment rate to 72% and to increase the number of employed persons by 110,000 (Prime Minister's Office 2015, 14).

In the other case, where the EDR should stay in 139, it would require a significant improvement in employment. According to Ruotsalainen's calculations, the employment rate should increase by 3.3 pp and nearly 6 pp by 2020 and 2030, respectively, in order to sustain the EDR level of 139. In the number of workers, it would mean 64,000 by 2020 and further 80,000 by 2030. Thus, by the end of 2030 the employment rate should be well above 70%, which can explain Prime Minister's goal for a high employment rate. Even if the targeted employment rate of 72% and the number of employed would not increase by 110,000 persons, Ruotsalainen's calculations show that even 64,000 would be sufficient to sustain the situation of the years 2013–2014.

4.1.3 Immigration as a partial solution to the weakening dependency ratios

In theory, there are two ways how the population structure could be changed to be younger: increasing fertility or receiving younger population from abroad. Raising fertility and increasing immigration both reduce population aging, yet they do differ in costs and consequences (Wu & Li 2003). It is hard for a government to impact fertility, as having children is a personal choice affected by personal preferences. Immigration on the other hand can be more easily adjusted by the general government and gives an opportunity to lower high dependency ratios.

There are several papers observing international migration and its possible effects on the dependency ratios of developed countries with below-replacement fertility levels. These studies often focus only on the long-term consequences of immigration, as in the short-run impacts are rather small as most of immigrants move to the host country at working age and their number is relatively small compared to the natives. In the long-run, the consequences of immigration become more significant as the number of immigrants accumulates over time, and the impacts of the second generation of immigrants can be observed (Wu & Li 2003). These long-term effects of international migration are being concerned when observing the phenomenon of *replacement migration*, which refers to the level of immigration that would be needed to neutralize declines in population size, declines in the number of working age, and what would be needed to balance the ageing off (UN 2000).

Immigration has not been found to be as effective as full replacement level fertility; however, it can reduce the dependency ratio more effectively as long as immigration is concentrated around the youngest working age (Wu & Li 2003). The optimal age structure of immigrant population has been studied widely for decades, and immigrations consequences in the long-run have been found to be dependent on both on how immigrants age and how many births immigrant women give in the host country (Wu & Li 2003). However, there is no universally optimal arriving immigrant population. The optimal immigrant population age-structure has found to be dependent on the immigration policy run by the government, for instance (Simon, Belyakov & Feichtinger 2012).

As it was shown in chapter 2, the demographic structure of immigrant population arriving to Finland has been favorable from an economic point of view. The immigrants are considerably

younger than the native population. The immigration therefore naturally influences the population structure of the entire country.

When observing the demographic dependency ratio, international migration seems to offer a simple solution to the problems of ageing. As large age-groups are transferring from the group of working-aged people to the group of 65 years or over, the native labor force of Finland is diminishing rapidly. This reduction has been estimated to be annually more than 20,000 individuals, and this trend is estimated to remain until the end of the 2030s, and it is extremely difficult to change without international migration (Myrskylä & Pyykkönen 2015, 4). Even if the fertility of today would increase, the babies born in the following years would start being in the working-age first in twenty years.

As it was presented in chapter 2, net migration has a positive impact on the demographic structure. Only in 2016, the net migration led to a 1 pp increase in the share of working-aged people and a 1 pp reduction in the share of elder people. As the annual net migration has been alternating around 15,000 individuals, a 1 pp change is not going to be enough as the population ageing goes further. If the share of working-aged people should remain the same, as it has been in the recent years, the net migration should strongly increase. According to Myrskylä & Pyykkönen (2015), Finland would need an annual net migration of 34,000 immigrants in order to solve the problem of upcoming labor shortage, which would require the net migration to more than double its size.

Increasing net migration could be possible to achieve, as at the moment there seems to be more of arriving immigrants that Finland is providing residence permits. Even if the problematic demographic structure of the population could be patched up by increasing the number of incoming immigrants, it is still not an automatic solution to the problems caused by the ageing.

The demographic dependency ratio would improve as the solution of strong positive net migration, yet it is not necessarily the same for the economic dependency ratio. About two thirds of the immigrant population is of working-age, but only half of them (110,000) are currently working (Myrskylä & Pyykkönen 2015, 4).
As it has been previously discussed in this thesis, the employment rates differ across the immigrant populations. Estonians, other immigrants from other EU member states, and immigrants from specific Asian countries have been able to reach the employment rate of the

natives (Myrskylä & Pyykkönen 2015, 6; Eronen et al. 2014). However, the employment is extremely low among certain immigrant groups, and especially those immigrants who have arrived due to humanitarian reasons have shown weak outcomes in the labor markets. Therefore, it is crucial from the economic point of view, that the immigrants arriving to the country would also integrate successfully to the labor markets in order to release the pressure caused by ageing native population. If the immigrants do not find work in Finland and rely only on the subsidies received from the state, increasing net migration will not help the problems occurring from the ageing but even strengthen them.

Immigration seems to be the only fast solution that could increase the share of working-aged people and increasing immigration can therefore be seen as a justified policy measure. However, instead of just bringing immigrants to the country, the labor market integration of immigrants should be ensured, in order to avoid an even more problematic situation in public economics. This could either be by attracting more people to migrate to Finland due to work, or by focusing on integrating humanitarian immigrants better to the labor markets.

4.2 The usage of social benefits and public services

In developed countries, people who go against additional immigration are often concerned about the fiscal impact of immigration. Immigrants are often assumed to burden the public finance of a welfare state and their fiscal impact is feared to be highly negative. The acceptance of further immigration has been found to be strongly associated with the perception of migrant's fiscal impact (OECD 2013, 126-127). Those who viewed immigrants as net recipients were more against immigration and those who believed immigrants to be net contributors were more accepting towards immigrants.

It is logical that immigration influences public sector finances and can create costs to the receiving society. As immigrants settle to the receiving country, they become part of the local social welfare system and are eligible for the welfare benefits and services financed by the public sector. To understand the fiscal effects of immigrants, it is important to know how much immigrants receive social assistance in comparison to the natives. The research done on the migrants' use of public services and welfare benefits is rather limited, as there is very little of comprehensive data available (Sarvimäki 2010, 267), and furthermore, the international comparison is difficult due to the differences in welfare systems across countries.

Even if the theoretical and empirical findings cannot exclude the differences occurring from the variety of the observed welfare states and migrant populations, there are still some similarities on how immigrants use the welfare benefits of the receiving countries. The most important factor is the employment prospect of the immigrant in question. Weaker employment causes the immigrants to depend more on welfare benefits when comparing to natives (Pekkala Kerr & Kerr 2011). This naturally has a large impact on immigrations fiscal effects on public finance, and in Finland a significant share of costs of immigration originates from the income transfers from the state and usage of public services (Sarvimäki 2010, 267).

The available data surprisingly suggests that immigrants use public services proportionally less than natives do (Sarvimäki 2010, 267). In their study, Gissler, Malin, Matveinen, Sarvimäki and Kangasharju (2006) tried to create an overall picture of the usage of health and social services among people with foreign background. Their findings seemed to be clear: immigrants use less health and social services than natives do, and the costs caused by immigrants are significantly lower than the costs of health and social services caused by native Finns.

Gissler et al. (2006) were not able to identify why immigrants use less health services than natives. One reason could be that immigrant population is healthier in comparison to the native population. Most of the first-generation immigrants are young and healthy which could explain some of the lesser use of health services when comparing to the natives. Another possibility is that the immigrant population is not aware of the services available.

The costs of immigrants were less in all types of health services in comparison to natives. The only exception was identified to be the 15-29-year-old immigrant women. They had 30% more hospital treatment stretches, which can be explained by the higher fertility of refugee women and their frequent pregnancies. They also found out that immigrants who had stayed in Finland more than 10 years used more health services than those who had settled in more recently.

Immigrants usage of social welfare institutions, housing services and home care was low as most of immigrant population is of working age. Gissler et al. (2006) identified that immigrants share of the costs was less than 20% in these services. The only outstanding group among immigrants was the group of drug addicted men as their treatment periods were longer than

drug addicted native men. However, their share of the costs was extremely low (2,1 euros per person) and does not have a considerable effect on the costs.

All in all, it can be concluded that the costs caused by immigrants remained beneath the native level in health services and social welfare institutions except for the refugee women aged 15-29-years and drug addicted immigrant men. The share of these sub-cohorts, however, is small and it does not affect the average remarkably. In general, the health service costs caused by an immigrant are on average smaller than the costs of a native, and the costs in social welfare services are significantly lower than natives. (Gissler et al. 2006.)

Besides using welfare services, immigrants are eligible to receive social benefits after they have permanently settled into the host country. They may receive financial income transfers such as social assistance and unemployment benefits, family allowances and financial housing support (OECD 2013). International comparison of these income transfers is demanding as social benefits are different in each country. Economists have tried to find out the actual usage of income transfers by immigrants in different countries and so far, the empirical studies have focused on immigrants' use of financial transfers in Northern America and Northern Europe.

Pekkala Kerr and Kerr (2011) have summarized results of several empirical research papers which have analyzed data from the US and Canada in the 1970s-1990s. The first studies of immigrants in the US showed that immigrant families used less social benefits than native American families in 1976 to 1980. However, in later studies with a longer time span, the immigrants' usage was noticed to have increased in the 1970s partly due to the weaker employment of immigrants. Another finding in these studies was that the usage of social benefits was found to increase along the duration of stay. This could be partly explained by immigrants' improved knowledge of these benefits and their availability (Pekkala Kerr & Kerr 2011, 16). These studies revealed that immigrant women were relying on social welfare benefits significantly more likely than native women and received 10% more benefits, whereas immigrant males received social benefits less than natives did (Gustman & Steinmeier 2000).

Empirical findings on European countries reveal that immigrants receive more financial benefits relative to natives than in Northern America (Pekkala Kerr & Kerr 2011). The most studied countries in Europe are Denmark and Sweden, which have the advantage of having comprehensive data on population level. In both countries, the immigrants are often reliant on

welfare benefits and they are below the poverty line more than twice more often than natives (Pekkala Kerr & Kerr 2011, 17). In Denmark, the studies gave an alarming result that social benefits were the main income source for 40% of the immigrant population, which is five times more than natives (Büchel and Frick 2005). However, the longer the immigrants stay, the likelihood of receiving social benefits decreases and after 20 years of stay, immigrants are only 5%-8% more likely to receive financial benefits than natives (Pekkala Kerr & Kerr 2011, 18). This seems to be the same level as in Northern America for those immigrants who have stayed for longer than 20 years (Pekkala Kerr & Kerr 2011).

In Finland, the use of social benefits seems to be strongly dependent on the immigrant's background, gender and duration of stay. Sarvimäki (2011) was able to identify clear differences between different migrant groups. He observed the usage of financial transfers on a household level as several benefits are granted based on a household level factors. In this particular empirical study, an immigrant household is defined as a household where the adult male or the adult female is an immigrant as the status of the spouse was left outside of observation.

The estimates indicate that immigrant households with non-OECD background receive during their first year double as much of financial transfers as a comparative native household does. However, the difference between an immigrant and native household narrows over the years and becomes statistically insignificant in roughly 20 years. The case is different to households with an OECD-born migrant: they receive on average the same amount of financial benefits as native households throughout their stay in the country. (Sarvimäki 2011, 15)

Sarvimäki (2011) studied also participation profiles for four categories of social transfers. He defined participation as an immigrant adult member of the household receiving a positive amount of specific benefit during a year. In unemployment benefits the difference between non-OECD and native as well as OECD households was significant. Four out of five non-OECD households received unemployment benefits during their first year in Finland as the same number for native and OECD households was less than one third. However, the usage of unemployment benefits in non-OECD households does decrease over the years, yet even after 20 years of stay, nearly half of these households still receive these financial transfers. (Sarvimäki 2011.)

The results for social assistance participation are interesting and show the need for further research. Sarvimäki's (2011) estimates show an exceptional increase in the participation for those households with a non-OECD male member during the first years of stay, as in other non-OECD female and OECD households the participation remains stable. This increase of participation in receiving social assistance is an interesting result, as at the same time the incomes of these families increase. Social assistance is a means-tested benefit, in which case one would expect the participation to decrease simultaneously as household's income increase.

The results could be explained by several different factors. It could be that the welfare system pushes immigrants from another benefit to another. Another explanation is that immigrants learn to use the benefit system over time during their stay. A quite depressing, yet a possible explanatory reason could be that immigrants decide personally to start participating to social assistance instead of unemployment benefits, as it offers a loophole to avoid the labor market activities that are obligatory for receiving unemployment benefits. To understand this phenomenon, one would however need more data and research. (Sarvimäki 2011.)

One of the most comprehensive studies on the costs of immigrants in Finland has been conducted by Salminen (2015) who observed the economic impacts of different immigrant groups. He estimated the costs and contributions of immigrant population and analyzed differences between immigrant groups based on their country of birth. He used data that covered population aged 20-62-year-olds and focused on the ten biggest birth countries and compared the results to the native-born population.

The differences in received income transfers across immigrant groups vary widely. In 2011, the average received transfers of income among native-born population was 4,500 euros per person. The number was more than double to those born in Somalia (nearly 10,000 euros) and in Iraq (more than 8,500 euros). The most favorable groups were those immigrants born in China (less than 2,000 euros), Germany (about 2,500 euros) and Estonia (3,000 euros). Those born in Thailand, Turkey, former Soviet Union and Sweden, received on average the same amount of income transfers as native-born Finns. However, as a whole, those born in former Soviet Union and Sweden were the most expensive immigrant groups as they received 210 million and 120 million euros respectively in 2011. This is mainly because of their big shares in the entire immigrant population. The least transfers were paid to the German-born population (10 million euros). (Salminen 2015, 17-25.)

Thus, the usage of social benefits of immigrant population in Finland seems to depend strongly on the background of the migrants. Salminen's results support even further the fact that migrants who have migrated for humanitarian reasons, tend to use more of financial benefits than the rest of the immigrants, and those who have migrated from OECD countries do not seem to burden the social welfare system more than a comparable native household. One important aspect to add to these results is, that these empirical works do not include the effects of immigrants' ageing. For instance, the usage of health and social services (Gissler et al. 2006) was not possible to be measured for the elder immigrants as the history of immigration in Finland is short and the immigrant population is still relatively young.

OECD has conducted a study on how much social benefits immigrants use in comparison to native population and the results are like the studies introduced in the previous sections. On average the immigrant households in OECD countries received nearly the same amount of social benefits as native-born households. The only exceptions were the Nordic countries, where the immigrant households appeared to receive social assistance twice as likely than natives and in Belgium more than three times more likely. This can be partly explained by the fact that these countries have large groups of humanitarian migrants whose employment status is weaker than other migrants. (OECD 2013, 154-156.)

As Sarvimäki's (2011) study showed, the costs of immigration tend to be higher in the beginning of the stay. This can partially explain the high costs of certain immigrant groups (OECD 2013; Salminen 2015) that need the most of integration and employment services. The main users of receiving and integration costs in 2011 were found among those born in Iraq Somalia, and Thailand (Salminen 2015, 65-75).

One interesting aspect for the use of social benefits, is the welfare magnet –status, that Finland together with other Nordic countries has obtained due to the comprehensive welfare systems. This is comparable with the negative selection introduced in the Roy-Borjas-model in the previous chapter. Welfare magnet effects appear if migration decision is based on income-maximizing behavior (Borjas 1999, 634). Generous social security might therefore alone attract people from the poorest countries to migrate and can affect the composition of immigrant population (Pekkala Kerr & Kerr 2011, 16). Thus, the generous public welfare system itself can lead to a self-selection of those migrants who are solely dependent on the welfare benefits

(Preston 2013). Even if Finland is said to have experienced welfare magnet effects, there is no empirical evidence on which social benefit it is associated with or whether it is the entire package of social benefits attracting the immigrants from the lowest income-groups.

4.3 Immigration's impacts from the viewpoint of labor markets

The impacts of international migration on country's labor markets cannot be left out when observing the effects on public finances. This section introduces the economic theory of migration's effects on the labor supply and employment, as the actual success of immigrants in Finnish labor markets was already introduced in the previous chapter.

In general, immigration affects labor markets from three different angles. First, it affects functional income distribution, second, it affects the wage level of natives and third, it has an impact on the total labor supply and unemployment. (Moisala 2004.)

In the short run, international migration changes the functional income distribution of labor and capital, and the capital owners are expected to profit more from migration than the workers (Borjas 1999; Moisala 2004; Viren 2017). As the labor supply increases due to immigration, the average wages decrease and the marginal revenue of capital increases. Thus, as the wages adjust, the investors win. However, in the long-run investments adjust the amount of capital, and the original income distribution is expected to return (Kiander & Vartiainen 2001, 304).

The model presented above expects the labor force to be homogenous, and wages to be the elastic adjusting factor. In Finland, the immigrant population is heterogeneous, and the wages are inelastic, which prevents them to fall and to adjust to positive net migration, and thus the model does not fully apply (Viren 2017, 34). In order to project how immigration in theory could affect the wages of natives in the long-run, the model can be extended to a situation where the labor force has been divided into two groups: high skilled and low skilled labor (reflecting heterogeneity). Capital is expected to be available from the world markets with a fixed price.

Here the impacts of arriving immigrants depend on immigrants' skill level: if immigrants and natives have the same skill distribution, then immigration has no effect on the wage level of the receiving country. However, if the immigrants are more focused on the low-skill end of skill distribution than natives, it results into a wage reduction for lowly skilled natives. This might

also lead to a reduction in labor supply by low skilled natives if the difference between the wage and unemployment benefit is so small that some people experience employment to be economically less meaningful (Moisala 2004, 21). Highly skilled natives on the other hand benefit from these skill differences: they become proportionally a scarcer factor of production which results to an increase in wage level and improved employment (Sarvimäki 2010, 262). This, however, leads to further income disparity, especially when the highly educated labor force is seen complimentary with capital (Viren 2017, 35).

If the economy has inelastic wages, the impacts of immigration become more complex. In Europe, the wages are in international comparison inflexible, and the reductions of wage levels are nearly impossible due to strong labor unions. As the inelastic wages cannot adjust to labor supply shocks, the labor markets react more likely through employment. (Moisala 2004, 26.)

The fear that increased labor force supply from abroad increases unemployment and weakens the labor market outcomes of natives is often one of the main arguments of those who are against further migration. This phenomenon has been studied by observing the possible displacement effects caused by immigration.

So far economists have not been able to come to a universal conclusion on how immigration affects the labor market status of natives (Sarvimäki 2010). Several empirical studies have tried to estimate the possible effects on locals' wages and employment and most of them have revealed the impacts to be imperceptible different to a situation where there is no labor supply shock created by immigrants. Displacement effects have been studied especially in the US and Europe, however immigration was not noticed to have significant employment displacement effects, even if displacement was found to be slightly more common in Europe than in the US (Pekkala Kerr & Kerr 2011, 11). So far, the results indicate that international migration does not significantly reduce the employment of natives (Sarvimäki 2010). The negative impacts of immigrants are more likely to appear in the short run, while the impacts become more meaningless in the long term (Moisala 2004, 27).

The development of the total employment rate depends on two factors: the employment of immigrants entering the country and labor force participation of natives after migration has occurred. The first part, the employment of immigrants, is challenging to project as immigrants are not a homogenous group as we saw in chapter 2 and their employment depends strongly on

several factors, such as the home country, age, educational background and family situation (Eronen et al. 2014). Immigrants and natives cannot be taken as perfects substitutes in the labor markets even if their educational background and working experience would be similar because they lack country-specific human capital, such as language, networks and cultural knowledge, which has a great impact on one's employment (Sarvimäki 2010, 265).

The labor force participation of natives depends strongly on the elasticity of wages, as mentioned. If the wages adjust and decrease as there is more labor force available, the employment of natives does not change if people are willing to work with the new wage. However, the wages in Finland are stiff and they are not likely going to adjust to a lower level. Hence, the labor markets would more likely find the new equilibrium through unemployment than lower wages (Moisala 2004, 21; Viren 2017, 34). As finding employment is harder for immigrants, the unemployment would more likely occur among immigrant population than among Finnish population. However, because the immigrants arriving to Finland often find employment in the low-skilled labor markets, immigration might increase unemployment among the low-skilled natives, as the highly-skilled natives win (Päivinen 2017, 27). Eventually, immigration has not affected the labor market status of natives negatively (Bank of Finland 2015, 1).

So far only the negative effects of immigration have been introduced, yet Moisala (2004) lists also several possibilities for positive impacts on local employment and labor markets. First, immigration can increase private consumption in the country, which leads to an increased demand for labor force. Second, immigrants from other origins can also bring new entrepreneurship activities and offer new products and services that would not been produced without people from different background. Third, foreign labor might work as a buffer in economic downturns. In areas, where there is more immigrant labor force, the changes in the employment of natives are smaller than the changes for immigrants (Tani 2003; MEAE 2013a, 23-24; OECD 2015, 90).

4.4 Aggregate impact on public finance and economic growth

If the fiscal imbalances occurring from the ageing population are planned to be eased by increasing net migration, the central question is whether immigration burdens the public sector more than immigrants contribute to the economy (Pekkala Kerr & Kerr 2011, 18).

The overall impact of immigration on country's public finance and fiscal position is a complex issue which is nearly impossible to answer without detailed data and good skills of fortune-telling. The labor market outcomes and spending on public services in a static perspective is challenging to estimate, yet it gets even more complicated when the impact of immigration is being observed in a dynamic setting.

Compressing the entire theory of immigrants impacts on public economics can be derived from four different aspects. First, the labor market outcomes of immigrants and their offspring has a direct impact on their net transfers of income. Second, the first generation of immigrants often arrives to the country in the working age, which means that the public costs of the early years of the life cycle have been financed in the country of origin. Furthermore, immigrants often emigrate from Finland at one stage, which means that the public costs of the old age, such as health services, are going to be covered elsewhere. Thirdly, the number of immigrants in fact brings scale benefits when calculating the collective services financed by public sector. For instance, defense and infrastructure can often be financed with the same amount of money regardless of the size of the population. Finally, the immigrants also normally affect positively through labor markets and increased private consumption. (VATT-työryhmä 201, 32.)

Calculating the aggregate impact of immigration on public finances is in principal simple: the total contributions paid by immigrants minus the benefits received and consumed by immigrants (Sarvimäki 2010). It is needless to say that this is easier said than done. The contributions paid by immigrants depend besides on the personal taxes, also on the assumption made on how the non-personal taxes (such as VAT) are attributed to immigrant population (Sarvimäki 2010). The same assumptions need to be done also on how much immigrants receive from public sector on top of the personal income transfers and personal usage of welfare services (OECD 2013). For instance, attributing the collective costs of defense to immigrant population is challenging.

After setting the underlying assumptions, one must decide on how the fiscal impacts are being measured. The most common approaches to measure these effects are the accounting approach estimating the surplus caused by immigrants on public finance in a given year, dynamic model analyzing the impact of immigration in the long-run, and macroeconomic models observing the aggregate impact of migration. Depending on the assumptions and measurement methodologies used, the estimates of immigration's impacts on public finances differ. However, in most

countries the fiscal impact is estimated to be relatively small in terms of GDP, and in OECD countries the impact is around zero. According to the estimates of the OECD, the highest impact on public finances was found to be in Switzerland and Luxembourg, where immigrants generated a benefit of approximately 2% of the GDP. In Finland, the immigrants net fiscal impact was estimated to be positive by 0.16% of the GDP. (OECD 2013.) Also, other country-specific studies from the U.S. and Sweden have estimated the net impact of immigrants to be relatively small (Sarvimäki 2010).

Sarvimäki (2010) suggests that the best way of calculating the net impact of immigrants would be by calculating the discounted sum of yearly net impacts, since it takes into account the possibility that the costs of youth and older age are directed to elsewhere. However, he admits the method to be extremely challenging, if not even impossible. Besides, the externalities of immigration cannot be taken into account in these quantitative approaches. As a result of international immigration, the society might benefit from cultural diversity, and the labor markets can gain in competitiveness as there are more workers available (Moisala 2004, 22). Then again, these externalities can either positive or negative, depending on the viewer.

All economists seem to agree that the total impact of immigration on public finances is not possible to be estimated in an exact manner. The general question of whether immigration is beneficial to public economics, depends on several crucial factors, such as country's taxation system, offered welfare services, the immigrants selection process of migration policy and the economic cycle affecting the employment chances of migrants (Preston 2013).

In Finland, the net impacts of immigration on public finances have been studied widely and the average costs of immigrants have been estimated by several methods. One of the most extensive studies has been conducted by Salminen (2015) who observed the net impacts of foreign-born immigrants aged 20-64-years to public economics during 2011. In order to carry out an exhaustive study on immigration's impacts on public economics, he took several different costs and contributions into account: the net income transfers (including indirect taxes such as VAT), costs of social and health services, educational costs, expenditures of court, costs of labor force services, collective costs of public services, admittance and integration services.

Salminen was able to estimate the net impact caused to the public finance by those born in Finland as well as those born abroad. The annual net impact of a native-born working-aged

individual in 2011 was on average +80 EUR, thus only slightly positive. For a foreign-born person, the net impact was a lot more negative by -3,620 EUR on average. However, the net impact varied among different migrant groups. The greatest difference was between Germany and Somalia, with average net impacts of +2,340 EUR and -13,850 EUR, respectively. The net impact is closely related to the average employment of these migrant groups: those immigrant groups who have immigrated mainly due to humanitarian reasons, cause more negative net impact, as those who come to Finland for work, family or studies, are causing less expenses on public economics. After Germans, Estonians and Swedes had the most positive impact on public economics from different background groups. The estimated impacts change, if the collectively consumed public services are left out of observation: then all the given averages increase by 3,100 EUR, and besides Germany, Sweden and Estonia would have a positive net impact on public economics. (Salminen 2015, 77.)

The main cause for the gap between native-born and foreign-born population was the difference in net income transfers, thus the imbalance between contribution paid to the state and social payments received from the state (Salminen 2015, 90). The average net income transfers for native-born were + 6,500 EUR per year, as for an average foreign-born person the net income transfers were + 2,690 EUR, yet still positive. Again, the best situation was among those born in Germany, as those from Somalia and Iraq had the most negative net impacts (Salminen 2015, 40). The second generation of immigrants who were born in Finland was found to have a more positive impact on public finance than native-born population, however, the data was somewhat incomplete, which most likely would lower the net impact of the second-generation immigrants (Salminen 2015, 86). The greatest economic saving among second generation is that there is no need for admittance or integration services, and the second generation does often have better outcomes in the labor markets and does not experience discrimination as much as their parents (Bartram et al. 2014, 127).

Salminen observed the net impacts of year 2011 and gave a static picture of the costs related to migration. A study by the Government Institute for Economic Research (VATT-työryhmä 2014) observed the costs of an immigrant during immigrant's entire lifetime. They found that the aggregate impacts of immigration depend on the age when immigration has occurred and how fast immigrants have integrated into the society. Thus, the total impacts of an immigrant should be observed for one's lifetime instead of staring just the costs of one year. For instance, a male immigrant who has arrived at the age of 25 was found to have a negative net impact

during the first year of arrival, but thereafter was estimated to be positive until the year of retirement (here 63-years-old). For women, regardless of the age of migration, it took longer to integrate to the society and to become a net contributor. Yet, women who had migrated at the age of 25 or 35 had still time to be net contributors for more than 20 years before the retirement age. (VATT-työryhmä 2014, 37.)

As the labor market success of immigrants and their children has the greatest impact on whether immigrants become net receivers or net payers in the society, their labor market integration should be followed and invested in. Immigrants' participation in current active labor market programs has been found to be a cost-beneficial policy measure to integrate disadvantaged immigrants into the labor markets and improving their labor market outcomes. The most beneficial integration processes should focus, instead of traditional active labor market programs, on matching the pre-existing skills of immigrants together with the training programs and combining them with language training specialized for immigrants (Sarvimäki & Hämäläinen 2016, 503).

As a conclusion, the economic impact of immigrants depends on the immigrant population, their background characteristics, and their labor market outcomes in the receiving country. Immigrants clearly shape the demographic structure to be younger, and thereby offer a lot of labor force potential. However, Salminen (2015) found in his study, that on average, a foreign-born person causes a negative net impact on public economics, of which a great share is caused by the collective public services used. The labor market outcomes of immigrants can be influenced by improving the labor market integration, which could furthermore have a positive impact on immigrants' total net impact on public economics. With successful integration, the employment of migrants can be increased, and the need of social assistance can decrease (Päivinen 2017, 50).

There is no simple answer or conclusion on how immigration impacts the public economics. The issue of the heterogeneity of immigrants results to a situation where the impacts are not really comparable across different immigrant groups, as shown in the study conducted by Salminen (2015). Besides the disparities in immigrants' labor market outcomes, another problem is the lack of data and limited access to it. In order to understand the total impacts on public economics, one would need more research evidence. Especially developing the integration programs developed for different immigrant groups and especially for women,

could increase the labor market activity, and contributions to public economics, and further decrease the costs of immigration on public finance.

5 CONCLUSIONS

The aim of this thesis was to discuss whether immigration could help the ageing economy of Finland. Unless fertility or life expectancy is going to change significantly, the population of Finland is going to diminish and get older without strong positive net migration from abroad. As the share of tax payers is shrinking and the demographic and economic dependency ratios become weaker, the ageing of populations is projected to cause severe problems to the public economics and its finances, as well as to the economic growth. The decline of population can be prevented with the help of positive net migration; however, it does not automatically mean that the economic dependency ratio is fixed, and the problems of fiscal sustainability are solved.

If the economic slowdown of Finland would like to be eased by increasing international migration like several institutions have suggested (see e.g. Myrskylä & Pyykkönen 2015; Moody's 2014; INTERMIN 2018), it would also require the immigrants to find employment. The age distribution of immigrants in Finland is favorable to the public finance and looks therefore promising. However, if the working-aged immigrants cannot integrate to the labor markets and find work, they fall into the safety nets of social assistance and in fact, burden public economics even further. Thus, if the problems caused by the ageing population would like to be solved with the help of immigrants, the main policy measures should be concentrating on employing immigrants.

In this thesis, I wanted to focus on analyzing the labor market integration of immigrant population in Finland, and on the total impact of immigration on public economics so far. Through these questions I wanted to find out, whether immigration is a realistic solution to solve the problems of ageing, and on what issues the policy measures should be focused on, in order to increase the amount of benefits coming along with international immigration.

The first research question on labor market integration of immigrants in Finland was approached by using three labor market integration indicators used by the OECD in 2015. The observed timeframe covered the years of 2000-2015, and the data used was retrieved from the open data sources of Statistics Finland, Eurostat and OECD.

Analyzing the labor market integration of immigrants in the 21st century with the help of these indicators gave a comprehensive overall picture on the labor market outcomes of immigrant

population. The analysis also highlighted the gap between natives and immigrants in the labor markets. In 2015, the immigrant employment was nearly 20 pp lower, unemployment was nearly 20 pp higher, and inactivity was more than 5 pp higher than their native peer group.

The comparison of the labor market outcomes showed that there is a lot of unused labor force potential among immigrant population, and especially the labor market integration of immigrant women has room for development, which would improve the employment rate of immigrants. On the other hand, the indicators revealed, that young immigrants (under 25-year-olds) did relatively well in comparison to other immigrant subgroups. The results of the observation of the 21st century with these three indicators is also in line with the previous economic research and literature.

The most interesting findings arising from the observation of the indicators were the differences of immigrant population in international comparison. Especially the gap in unemployment rates between immigrants and natives is large in an international scale. The average gaps between natives and immigrants in EU 28 and OECD countries have been 5.0 pp and 3.5 pp respectively, as in Finland the gap was as wide as 12.1pp. This indicates that immigrants and natives are not perfect substitutes in Finland, and natives find employment a lot more easily. Further research on the reasons of this large gap in unemployment could be beneficial, and would help understanding what skills immigrant population lacks, or whether the immigrant population is experiencing labor market discrimination.

Even if the labor market outcomes of immigrants seem to indicate that Finland has not been able to economically benefit from immigration in the most optimal way, the comparison to the control country Sweden reveals that Finland has in fact been able to improve its foreign-born population's labor market outcomes during the 21st century. Sweden, which has traditionally been seen as an open country for immigration, has experienced even a slight increase in the foreign-born unemployment, as the indicators of Finnish foreign-born population have approached and come close to the indicator levels of Swedish foreign-born population. Especially, the low share of discouraged persons among Finnish immigrants is encouraging.

What the comparison of Finland and Sweden revealed, is that there is also a lot of unused labor force among the native Finns. The difference to Sweden emerged mostly in the comparison of native-born populations, as native-born Finns did notably worse than their peers in Sweden.

Thus, besides increasing employment of immigrants, the number of taxpayers could be increased by improving the labor market participation of native Finns.

Besides observing the labor market integration of immigrants, I observed the overall impact of immigration on public economics on the basis of an extensive literature review. The net impact of immigration on public finances is a complex issue on which economists have not been able to find a consensus on. This is partly on the lack of data, as well as the differences across countries, their immigrant populations and socio-economic systems.

This was also a problem I faced while writing this thesis. The data available is very limited, and the history of immigration in Finland is short. Another problem is that the empirical studies on other countries cannot be compared to the immigration in Finland. For instance, the US has experienced strong migration movements for more than a century, and a large share of immigrants have migrated after working opportunities. In Finland, on the contrary, a large share of migrants has arrived due to humanitarian reasons, and most of the immigrant population has arrived first in the 21st century. The only comparable countries are the other Nordic countries, as they have similar experiences with immigration, and the socio-economic systems are rather similar. As the second research question itself is quite wide, only an exhaustive review on the pre-existing literature was possible to carry out.

As the age structure of immigrant population has so far been relatively young, it has been able to improve the demographic dependency ratio and the second generation is expected to further support the age structure in the future. However, immigration's impact on economic dependency ratio and public economics sustainability gap is unclear. Discussion on the positive effects on public finances focuses on the idea, that most of the immigrants will eventually find employment or start their own business, and become tax payers, even if they might need publically financed integration programs and further help in job-search.

However, especially immigrants who have arrived due to humanitarian reasons, have hard time finding employment due to low education and poor language skills. This leads to the problem that they remain as net receivers for several years after entering to the country and they cannot economically help the ageing Finland. Internationally, the costs of an immigrant to the public sector have been estimated to be similar, or only slightly higher in comparison to natives (Pekkala Kerr 2015, 298; Sarvimäki 2010, 266-267).

However, a comprehensive study by Salminen (2015) showed, that due to the heterogeneity of immigrant population, immigrants and their impacts on public economics should not even be observed as a one single group but should rather be treated separately. The immigrant groups differ in their impacts on public economics drastically, as the annual net impact of an average working-aged immigrant varied in a range of -14,000 euros and +2,340 euros in 2011 (Salminen 2015, 77). Furthermore, the net impact of an individual immigrant changes during his lifetime (VATT-työryhmä 2014). As Eronen et al. (2014) estimated in their regression analysis, there are several background factors affecting the probability of employment, which can change during the stay. For instance, the duration of stay was found to have a positive impact on the probability of employment, as well as finding a Finnish spouse or learning the local language.

Even if economists have not been able to find an agreement on immigrations total impacts on public economics, they do agree on that a country can benefit from immigration the more the immigrants find employment and become net contributors instead of staying net receivers. If the immigration should save the ageing economy of Finland, the policy measures should focus on increasing the work-related migration, improving the employment of those migrants already living in the country, and especially on integrating the new arriving immigrants efficiently to the labor markets.

In the light of the current indicators, immigration does fix the age structure to a favorable direction, yet their employment should be improved in order to fight the challenges of the ageing economy. As the labor market indicators showed, there is a lot of unused labor force potential, and the majority of immigrants wants to find work. The greatest problem is how to try to get them into the group of active labor force.

Thus, if Finland wants to benefit more from international migration, it should focus on improving integration services offered. According to MEAE's recent survey (MEAE 2017b), labor market -oriented measures have been the most fruitful in integration services, as they have been able to advance the labor market participation of immigrants the most. Therefore, the newest research evidence suggests that integration plans should contain as much of vocational training opportunities, and immigrants of working-age should be brought as close to the working life as possible during their integration process. Also, easier acknowledgement process of degrees earned abroad, could help highly educated foreigners to find suitable employment.

Besides attracting more work-related immigration and improving the integration services, making sure that the second generation of immigrants finds employment is crucial, and it could ease the ageing issue in the long-run. Therefore, taking care of the educational level of the offspring of immigrant population, and helping them to integrate to the labor markets after youth would improve the situation of public economics, as the second generation transforms to net contributors rather than net receivers.

Even if immigration does not appear to be a clear solution to the ageing problem, it can be a partial solution together with increasing the employment of native population and pension reform. If the policymakers can find a way to attract more immigrants who are moving to Finland for work, and the consistency of immigrant population as a consequence changes, immigration could be a very economical solution to the ageing problem. Immigration could at least postpone and relieve the problems following the population ageing, which for its part gives more time to improve and develop the services helping in labor market integration. Thus, in the long-run immigration can be significantly more beneficial from the view point of public economics.

International migration seems to be a new global phenomenon, and the immigration patterns are most likely going to diversify and get more intense. Therefore, focusing on integrating immigrants better to the society would be a better option than to begin with a restricting immigration policy. As the public opinion and public discussion on immigration has a strong impact on the public attitude towards migration, the discussion should focus merely on how to integrate and benefit from these immigrants, and to focus on solving the problems instead of creating them. There is obviously a lot of unused labor force potential among Finland's immigrant population, and they offer an opportunity to benefit economically from immigration.

Therefore, there is a lot of room for further economic research. The constant development of integration measures and public employment services would be needed in order to integrate the immigrants to the local labor markets. It would also be worthy to observe the integration services needed across different immigration sub-groups, and to analyze whether it would be cost-beneficial to carry out specific integration programs to each of these groups. Another topic that would need more research is the second generation of immigrant population. The share of children born to immigrant parents has been constantly increasing, and their impact in the future is going to become more significant.

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ANNEXES

ANNEX 1 The underlying assumptions used in the population projections provided by Statics Finland and Eurostat.

Year	Statistics Finland		Eurostat 2015	
Total fertility rate				
2015	1.70		1.65	
2020	”		1.71	
2030	”		1.72	
2040	”		1.73	
2050	”		1.76	
2060	”		1.78	
Life expectancy	**men**	**women**	**men**	**women**
2015	78.43	84,29	78.4	84.0
2020	79,67	85,17	79.1	84.6
2030	81,93	86,75	80.6	85.8
2040	83,96	88,19	82.1	87.0
2050	85,72	89,48	83.4	88.1
2060	87,25	90,6	84.7	89.2
Net migration				
2015	14,000		12,441	
2020	17,000		15,808	
2025	”		14,239	
2030	”		13,681	
2035	”		11,737	
2040	”		10,723	
2045	”		9,701	
2050	”		8,517	
2055	”		8,431	
2060	”		7,815	
2065	”		6,966	

Source: Statistics Finland Population Projection 2015–2065 and Eurostat’s Population projection 2015.

ANNEX 2 The results of the regression analysis on the probability of employment among immigrant population.

Variable	Coefficient	
Age	0.038	***
Age^2	-0.001	***
Male	0.143	***
Female (c)	0	
Marital status		
Single	0.016	***
Married	0.001	
Divorced (c)	0	
Widow(er) or unknown	0.014	
No Finnish spouse (c)	0	
Finnish spouse (male)	0.094	***
Finnish spouse (female)	0.013	***
Number of children		
No children	0.218	
1 child	0.184	
2 children	0.151	
3 children	0.075	
4 children	-0.009	
> 4 children (c)	0	
Education		
Intermediate	-0.004	
Undergraduate degree (c)	0	
Bachelor's degree	0.009	
Master's degree	0.053	***
Doctorate	0.043	***
Unknown	0.033	***
Years of residence		
Year of settling (c)	0	
1	0.055	***
2	0.076	***
3	0.111	***
4	0.154	***
5	0.193	***
6	0.221	***
7	0.235	***
8	0.263	***
9	0.306	***
10	0.330	***

Variable	Coefficient	
Nationality		
Unknown (c)	0	
Russia	0.054	***
Estonia	0.207	***
Eastern Europe	0.098	***
Former Soviet Union	0.064	***
Former Yugoslavia	-0.045	***
Northern Africa	-0.200	***
Southern Africa	0.049	***
Northeast Asia	-0.056	***
Southeast Asia	-0.029	*
Western Asia	-0.098	***
Oceania	-0.039	
Northern America	-0.055	***
Southern America	-0.069	***
Western Europe	0.024	
Sweden	0.043	*
Mother tongue		
Unknown	-0.103	***
English	0.023	
Kurdish	-0.126	***
Other	0.002	
Persian	-0.093	***
Russian	-0.074	***
Somali	-0.284	***
Swedish (c)	0	

Source: Eronen et al. (2014, 40). Maahanmuuttajien työllistyminen. Taustatekijät, työnhaku ja työvoimapalvelut. MEAE Publications. Employment and entrepreneurship 6/2014. MEAE.