

DOKUZ EYLÜL UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS
ECONOMICS PROGRAM
MASTER’S THESIS

**IMMIGRATION AND INCOME INEQUALITY
ACROSS CANADIAN PROVINCES**

EGE DEMİRTÜRK

Supervisor
Prof. Dr. Pınar Narin Emirhan

İZMİR-2021

MASTER THESIS/PROJECT
APPROVAL PAGE

University : Dokuz Eylül University
Graduate School : Graduate School of Social Sciences
Name and Surname : Ege DEMİRTÜRK
Title of Thesis : Immigration And Income Inequality Across Canadian Provinces

Defence Date : 01/07/2021
Supervisor : Prof.Dr. Pınar Narin EMİRHAN

EXAMINING COMMITTEE MEMBERS

<u>Title, Name and Surname</u>	<u>University</u>	<u>Signature</u>
Prof.Dr. Pınar Narin EMİRHAN	- Dokuz Eylül Üniversitesi	
Prof.Dr. Evrim TURGUTLU	- Dokuz Eylül Üniversitesi	
Assistant Prof. Doc. Hakan ULUCAN	- Pamukkale Üniversitesi	

Unanimity ()

Majority of votes ()

The thesis titled as "**Immigration And Income Inequality Across Canadian Provinces**" prepared and presented by Ege DEMİRTÜRK is accepted and approved.

Prof. Dr. Asuman ALTAY
Müdür

DECLARATION

I hereby declare that this master's thesis title as "Immigration and Income Inequality Across Canadian Provinces" has been written by myself in accordance with the academic rules and ethical conduct. I also declare that all materials benefited in this thesis consist of the mentioned resources in the reference list. I verify all these with my honour.

Date

.../.../.....

Ege DEMİRTÜRK

Signature

ABSTRACT
Master's Thesis
Immigration and Income Inequality Across Canadian Provinces
Ege DEMİRTÜRK

Dokuz Eylül University
Graduate School of Social Sciences
Department of Economics
Economics Program

Immigration plays an important role in the socio-economic state of the host countries. Increasing income inequality as a result of high immigration flows in the globalization process has started to pose a major problem for both developed and developing countries. Canada is famous for having multiple admission programs in immigrant selection/placement and stands out from other countries with its high immigration demand. On the one hand, Canada has a high immigration demand, on the other hand, immigrants from different parts of the globe want to immigrate to Canada. This high immigration demand raises the question of whether immigrants have negative economic impacts. The aim of this study is to examine the relationship between immigration and income inequality for Canadian provinces. In this study, the effect of immigrants from different source regions and the effects of current immigrant selection regulations that were put into effect in 2002 on income inequality are investigated as well. For this purpose, five different models have been estimated using panel data analysis model and fixed effects regression estimation method for the period 1994-2017. According to the empirical results, immigration has a positive effect on reducing income inequality across Canadian provinces. Additionally, this positive effect can be observed even before the regulations about the admission of immigrants that were put into effect in 2002. Finally, when immigrants are grouped according to their source regions, it is

observed that they do not have particular effects on income inequality in Canadian provinces.

Keywords: Immigration, Income Inequality, Panel Data, Canada, Globalization, Fixed-Effects Regression



ÖZET
Yüksek Lisans Tezi
Kanada Eyaletlerindeki Göçmenlik ve Gelir Eşitsizliği
Ege DEMİRTÜRK

Dokuz Eylül Üniversitesi
Sosyal Bilimler Enstitüsü
İngilizce İktisat Anabilim Dalı
İngilizce İktisat Programı

Göçmenler, göç alan ülkenin sosyo-ekonomik durumunu belirlemede önemli bir rol oynarlar. Küreselleşme sürecinde ortaya çıkan yüksek göç akımlarının bir sonucu olarak artan gelir eşitsizliği, hem gelişmiş hem de gelişmekte olan ülkeler için büyük bir sorun oluşturmaya başlamıştır. Kanada, göçmen seçimlerinde/alımlarında birden fazla kabul programına sahip olmasıyla ünlüdür ve göçmen talebinin yüksek olmasıyla diğer ülkelerden ayrışmaktadır. Bir taraftan Kanada yüksek göçmen talebine sahipken, diğer taraftan dünyanın farklı bölgelerinden göçmenler de Kanada'ya göç etmek istemektedir. Bu yüksek göçmen talebi göçmenlerin olumsuz ekonomik etkileri olup olmadığı sorusunu akla getirmektedir. Bu çalışmanın amacı göç ve gelir eşitsizliği arasındaki ilişkinin Kanada eyaletleri için incelenmesidir. Çalışmada farklı kaynak bölgelerden Kanada'ya göç eden göçmenlerin etkisi ve 2002 yılında uygulamaya konan güncel göçmen seçim düzenlemelerinin bu ilişki üzerindeki etkileri de araştırılmaktadır. Bu amaçla, 1994-2017 dönemi için panel veri analiz modeli ve sabit etkiler regresyon tahmin yöntemi kullanılarak beş farklı model tahmin edilmiştir. Ampirik sonuçlara göre göç, Kanada vilayetlerindeki gelir eşitsizliğini azaltıcı olumlu bir etkiye sahiptir. Ayrıca bu olumlu etki, 2002 yılında uygulamaya giren göçmen kabulüne ilişkin düzenlemelerden önce bile gözlemlenebilmektedir. Ek

olarak, göçmenler kaynak bölgelerine göre gruplandırılarak incelendiğinde, Kanada eyaletlerindeki gelir eşitsizliğine farklı etkileri olmadığı gözlemlenmiştir.

Anahtar Kelimeler: Göç, Gelir Eşitsizliği, Panel Veri Analizi, Kanada, Küreselleşme, Sabit Etkiler Modeli



IMMIGRATION AND INCOME INEQUALITY ACROSS CANADIAN PROVINCES

CONTENTS

THESIS APPROVAL PAGE	ii
DECLARATION	iii
ABSTRACT	iv
ÖZET	vi
CONTENTS	viii
LIST OF TABLES	x
LIST OF FIGURES	xi
INTRODUCTION	1

CHAPTER ONE

IMMIGRATION AND CANADIAN PROVINCES

1.1. IMMIGRATION IN CANADA	6
1.2. CANADIAN PROVINCES	15

CHAPTER TWO

LITERATURE REVIEW

2.1. LITERATURE REVIEW	21
------------------------	----

CHAPTER THREE

DATA AND METHODOLOGY

3.1. DATA AND VARIABLES	32
3.2. METHODOLOGY	40

CHAPTER FOUR

EMPIRICAL RESULTS

4.1. EMPIRICAL RESULTS	43
CONCLUSION	62
REFERENCES	65



LIST OF TABLES

Table 1: Immigration Numbers Divided for Immigration Classes (1994-2017)	p. 7
Table 2: List of the Factors Affecting Comprehensive Ranking System Point	p. 13
Table 3: Impact of Immigration on Income Inequality (Total Migration- All years)	p. 43
Table 4: Impact of Immigration on Income Inequality (Immigration from Source Areas- All years)	p. 49
Table 5: Impact of Immigration on Income Inequality (Total Migration-1994-2003 and 2004-2017)	p. 58

LIST OF FIGURES

Figure 1: Immigration Numbers Divided for Immigration Classes (1994-2017)	p. 8
Figure 2: Employment Rates as Percentage in Canadian Provinces (2007)	p. 10
Figure 3: Total Immigration in Canada (1994-2017)	p. 15
Figure 4: Total Immigration in Ontario and Quebec (1994-2017)	p. 17
Figure 5: Total Immigration in Alberta, Atlantic Provinces, British Columbia and Manitoba (1994-2017)	p. 19
Figure 6: Total Immigration in Nova Scotia and Saskatchewan (1994-2017)	p. 20
Figure 7: Lorenz Curve	p. 34

INTRODUCTION

With the beginning of the information age, globalization and its economic effects became a popular subject of interest among academics. During the globalization process international labor movements, especially in developed countries, have increased. If one is not satisfied with his or her life, he craves a better life and more advanced socio-economic standards. It is challenging for an individual to change his or her socio-economic standards overnight. To make this change possible, the process must be supported by the government and certain institutions. This change may take years, and it may fail despite all the effort that is put into it. Acknowledging this process, many individuals try to change their life standards by migration.

Immigration is a rising trend with the recent developments in the world, people choose to migrate to raise the standards of their lives, have better economic conditions, and sometimes reunite with their families. It is challenging for one to make this decision, starting a new life, especially after a certain age. However, various factors can force the masses to make this decision to immigrate. Popular immigration destinations in the world today are European Union countries, Northern Europe, and Anglo-Saxon countries, namely, the United States, Canada, the United Kingdom, and Australia.

Countries with immigration policies that are focused on qualifications of immigrants such as Canada benefitted from these movements, however, countries like the United States and the United Kingdom experienced economic and social problems. Europe is exposed to an immigration shock more severely than other countries recently. People that had economic or political problems in their home countries rushed to the nearest haven where they can prosper. Many made this choice due to war, civil unrest, or just plainly because of dissatisfaction with their current living conditions. With the recent immigration waves from Syria and Africa, Europe experienced one of the largest immigration inflows in its history. Some European countries believed that Europe could manage this shock; others thought that these immigrants could break the balance of Europe's socio-economic state and disrupt the allocation of the labor force. As a result, Europe was ideologically divided on this immigration issue as stated by Hutter & Kriesi

(2021). The U.K. had its share of the problems as well, as stated by Coleman & Rowthorn (2004) immigration had a small, nevertheless a negative impact on the United Kingdom economy. The U.S.'s immigration issues are known for many years. Battling with the illegal immigration from the south made the 45th U.S. President Donald J. Trump build a wall between Mexico and the U.S.

Increasing immigration in the world affected the economies of the destination countries and especially their labor markets. This forced countries to reevaluate their economic plans to make room for incoming immigrants while protecting the living standards of their citizens. In this context, income distribution effects of immigration became an important research topic. Rising income inequality worries economists and policymakers in the world as stated by (Asteriou et al., 2014: 592). The widening gap between the number of high-skilled workers and the number of low-skilled workers tends to increase income inequality in destination countries. To tackle increasing income inequality, countries must have grounded, well-developed policies. It needs an adequate tax policy for the rich and an effective transfer system for the poor and in need, especially in the situation of receiving high immigration from all over the world. With its high living standards, Canada is one of the most attractive destinations for immigrants. There are 10 provinces in Canada with different labor market characteristics, and each province attracts some number of immigrants depending on their economic conditions. According to the regulations of the Government of Canada, immigrants can choose whichever province they would like to move to, and they are being offered various immigration pathway programs. Each immigration program has its regulations, and immigrants must choose the ones most suitable for them to have a successful immigration journey. In 2002, the Government of Canada made significant changes in the immigration selection criteria. The changes that were made allowed Canada to receive immigrants above a certain threshold of skills. As a result, from 2002, accepted applicants did have a higher overall skill level compared to their forerunners. This helped the labor market to preserve its balance of skill distribution. Canada provides a clear pathway for immigration without letting many confusions obscure the flow. Such well-defined immigration programs don't exist in the United States or the European

Union. Some countries like Germany and the United Kingdom have their versions of immigration programs but none is inclusive enough to match with the Canadian equivalent. In today's world, there are not many countries that are willing to receive immigrants in a large amount. In Canada, there is demand from immigrants to immigrate to Canada, furthermore, there is also a demand from the Canadian Government to immigration. One would get curious about the positive and negative sides of immigration in Canada, its economy, and income inequality. Furthermore, as a result of this high demand to live in Canada as an immigrant, it could be thought that the Canadian government is managing this immigration situation better than other immigrant-receiving developed countries.

Immigration is one of the most important income sources for the Canadian economy, as stated by Immigration, Refugees and Citizenship Canada (CIC) (2020). Immigrants pump a lot of cash into the economy each year and this makes the economy grow every year. The importance of these cash flows is so high for Canada that the Canadian government announced record numbers of planned immigration intake for the following years to come. Canada has an immigration policy that can benefit from this large number of incoming immigrants. Different from other countries, Canada's refined immigration policy allows the country to receive a high-skilled bunch with the help of their immigration policies as proven by CIC (2020).

Canada plans to welcome over 400,000 immigrants for the years 2021, 2022, and 2023 (CIC, 2020: 24). Immigration is an important factor determining countries' economic conditions. It can be harmful to the labor market by lowering the overall wages. Immigration can also benefit the country's economy if the skill qualification of an immigrant exceeds the skill level of the local labor market, so the labor market can move one step forward with the new immigrants. Furthermore, one would also expect to observe a severe impact of this immigration on income inequality.

According to the annual data published by Statistics Canada, the Gini coefficient, which is used to measure income inequality within a country, was 0.33 in 1994. After 1994 Gini coefficient increased and reached a value of 0.365 in 2004 which indicates that income distribution in Canada became more unfair. Although the Gini

coefficient decreased partially after 2004, it is still higher than in 1994 with a value of 0.352 as of 2017. Increases in the Gini coefficient after 1994 arouse curiosity about the reasons for the deterioration in income distribution in Canada and whether increased immigration flows had any effects on this deterioration. The effects of immigration on income inequality are less addressed for Canada, so this study is an attempt to fill this gap in the literature.

The aim of this study is to analyze the relationship between immigration and income inequality across Canadian provinces for the 1994-2017 period. There were a few studies that researched this relationship for Canada, some examples of these studies are Breau (2007), Breau (2015), and Moore & Pacey (2003). However, these studies covered the period before the radical change in Canada's immigration policy in 2002. The contribution of this study on literature is twofold. First, it is the first study that considers the policy changes made in Canadian immigration selection criteria that are implemented in the year 2002. Secondly, it analyzes the income inequality effects of immigrants from different source country groups for Canadian provinces. This study is the first study in the literature that grouped immigrants according to their source areas. These country groups are Asia & Pacific, Africa & Middle East, Europe and the United Kingdom, the United States, and South & Central America.

To better understand the relationship between immigration and income inequality across Canadian provinces, the remainder of this study is structured into four chapters and the conclusion. Chapter one gives information about the immigration trends and policies in Canada and its provinces. In this chapter, the immigration issue is discussed for Canada, with presenting data about immigrants' characteristics, and economic impacts on the Canadian economy. Furthermore, immigration programs in Canada are explained as well. Finally, the chapter is concluded with a brief overview of the socio-economic characteristics of Canadian provinces. In the following chapter, chapter two, the literature review related to income inequality and immigration relationship is presented. In this chapter, not only the literature regarding Canada but also studies for U.S. and Europe are reviewed. In chapter three, data used to investigate the relationship between immigration and income inequality across Canadian provinces are described

along with the methodology used to analyze and interpret this phenomenon. In chapter four, the empirical findings from the analysis of various models are presented. Additionally, a discussion about the results is made for Canada. The thesis ends with the conclusion part which includes policy recommendations for immigration and income inequality across Canadian provinces.



CHAPTER 1

IMMIGRATION AND CANADIAN PROVINCES

In this chapter, trends in immigration and characteristics of immigrants in Canada and Canadian provinces will be analyzed. The chapter will begin with an introduction to recent developments in immigration in Canada and followed by a discussion of the crucial changes in the immigrant selection criteria. Furthermore, the socio-economic characteristics of Canadian Provinces will be presented.

1.1 IMMIGRATION IN CANADA

There are several immigration classes in Canada, these classes are namely: Economic Immigration, Family Reunification Immigration, Humanitarian Immigration, Refugees, Protected Immigrants, and Asylum Seekers.

Economic Immigration Class is the largest immigration class among other classes as stated by CIC (2020) with 58 percent of total admissions in 2019. Family Class Immigrants are the relatives of permanent Canadian citizens and these citizens admit that they hold all the financial responsibilities about their relatives. With the recent trends in the right-wing populism in the world, and civil unrest and wars in the Middle East, many individuals decided to relocate, immigrate and find a new home elsewhere. When immigrants feel under political pressure or endangered, they can apply to be under Humanitarian Class Immigration and Refugees Class in Canada. Furthermore, there are protected persons and asylum seeker classes for the immigrants who felt threatened by certain organizations because of their political view, ethnic identity, or religion in their origin countries.

Canada received immigrants from various immigration classes over the years. In Table 1, the number of immigrants is shown according to their immigration class types between 1994 and 2017. These class types are Economic Immigrants, Family Class, Refugees, and Others. As it can be seen in Table 1, the Economic Immigrants class has the highest number of immigrants. This is followed by Family Class. The third biggest

class by immigrant number is refugees. Lastly, the smallest class is the Others. The Other class is formed of immigrants such as temporary residence permit holders and illegal immigrants waiting to be deported.

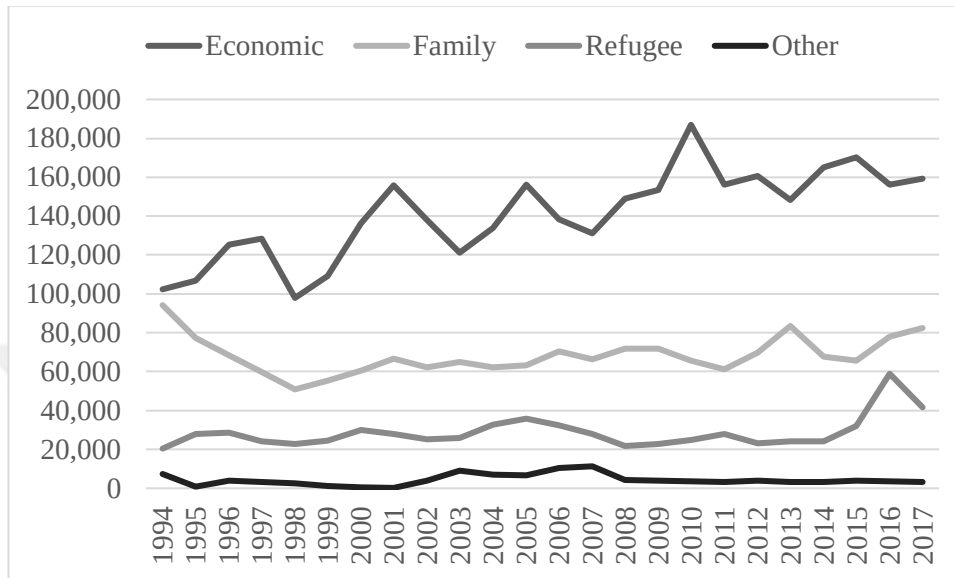
Table 1: Immigration Numbers Divided for Immigration Classes (1994-2017)

Year	Economic Immigrants	Family Class	Refugees	Others
1994	102,305	94,187	20,433	7,453
1995	106,624	77,377	28,093	761
1996	125,367	68,315	28,474	3,865
1997	128,349	59,925	24,307	3,400
1998	97,909	50,864	22,842	2,547
1999	109,244	55,260	24,398	1,031
2000	136,282	60,613	30,091	460
2001	155,716	66,786	27,916	206
2002	137,863	62,288	25,111	3,781
2003	121,046	65,120	25,983	9,196
2004	133,746	62,272	32,686	7,115
2005	156,313	63,373	35,775	6,778
2006	138,248	70,515	32,499	10,375
2007	131,244	66,240	27,954	11,312
2008	149,099	71,894	21,860	4,390
2009	153,514	71,982	22,851	3,823
2010	186,940	65,553	24,699	3,498
2011	156,100	61,335	27,876	3,391
2012	160,744	69,870	23,095	4,054
2013	148,253	83,375	24,139	3,266
2014	165,203	67,647	24,070	3,377
2015	170,390	65,484	32,114	3,844
2016	156,029	78,007	58,914	3,430
2017	159,257	82,467	41,477	3,275

Source: CIC, Facts and Figures: Immigration Overview, (02.10.2020).

To make this table more visually understandable, Figure 1 shows the data above on a line chart for the years between 1994 and 2017.

Figure 1: Immigration Numbers Divided for Immigration Classes (1994-2017)



Source: CIC, Facts and Figures: Immigration Overview, (02.10.2020).

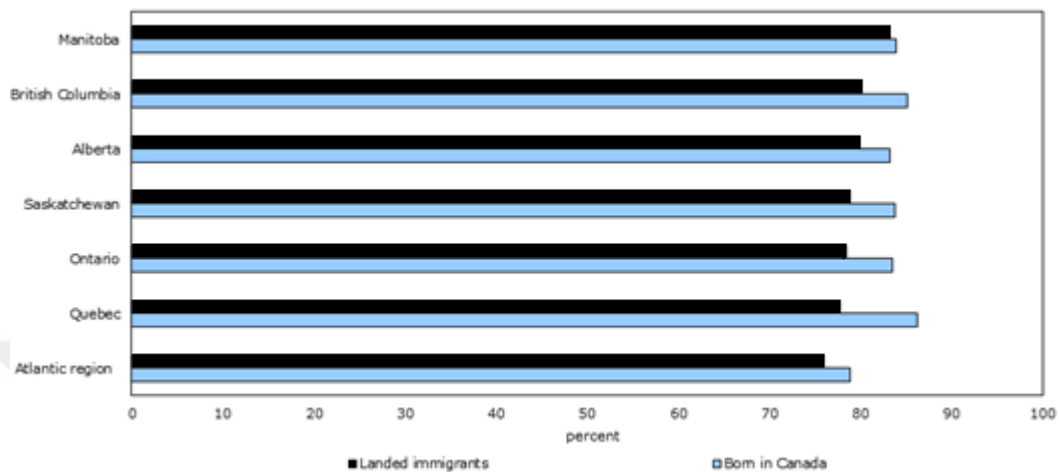
As it can be seen above, compared to other immigration classes, Economic Immigrants, by the population of immigrants, is the largest. Furthermore, there is a large gap between the Economic Immigrants group and other groups. If one compares all four classes, one can observe that the number of immigrants belongs to the Economic Immigrants class is increasing over time. This persistent increase cannot be observed in other classes. In some years one can see that the Economic Immigrants class is larger than the rest of the classes combined.

Canada admitted many types of immigrants over the years, from different origin countries. Some of these immigrants arrived as refugees, others as students. A handful of them came as skilled workers under the economic family class, and finally, some came in a family class to reunite with their spouses and partners. As it is stated in Annual Report to Parliament on Immigration 2020 (CIC, 2020: 5), immigration is a positive driving force for population and cultural growth in Canada, and also, immigration affected the economy positively. With the help of the contributions of immigrants, Canada became a multicultural and diverse country with a promising economic trajectory.

Immigration is a key factor for future population growth in Canada. Like the majority of developed countries, Canada is struggling with low birth rates and an aging population as well. El-Assal & Fields (2018) proved that immigrants will be the most important element in population growth by the early 2030s in Canada.

Immigrants help Canada's economic growth as proven by Akbari & Haider (2018). They proved that immigration has a statistically positive impact on economic growth in Canada. As stated by Hayes (2020), immigrants also fill gaps in employment in certain sectors with high demand. Furthermore, immigrants are demanded by all sectors in Canada. Yssaad & Fields (2018) explained that 26 percent of workers in Canada are immigrants. This is a very large number for any country, meaning that one of every four workers is an immigrant. In the year 2016, there were over 600,000 self-employed immigrants (CIC, 2020: 6), and Ostrovsky & Picot (2020) stated that immigrants are also very successful at the innovation of new products and marketing. Wong (2020) proved that, in the year 2019, the labor participation rate of immigrants was averaging 74 percent. According to Turcotte & Savage (2020), in the year 2016, one-third of the healthcare workers, namely nurse aides and patient service associates were immigrants. As proven by Hou & Bonikowska (2016), immigrant children earn as much as their native counterparts when they reach adulthood. As seen from the above examples immigrants' participation in Canada's economy is very high, this phenomenon can be also observed from the following figure.

Figure 2: Employment Rates as Percentage in Canadian Provinces (2007)



Source: Statistics Canada, The Canadian Immigrant Labor Market, (29.03.2020).

In Figure 2, the employment rates of natives and immigrants in Canadian provinces are presented. It can be seen from this figure that Manitoba has the highest percentage of employed immigrants. Furthermore, the difference in employment levels of natives and immigrants is minor. The most western province of Canada, British Columbia is second. The following provinces are Alberta, Saskatchewan, Ontario, and Quebec. In the provinces following British Columbia, the immigrant employment levels are nearly stabilized however, native employment rates are higher. It can be said that even though employment levels are relatively low compared to other provinces, the ratio resembles the province, Alberta, the most.

Immigrants enrich Canada's societal structure. Since the foundation of Canada, its inhabitants have had multicultural and diverse backgrounds. They mainly talked English and French and over the years, with the newcomers, other languages like Mandarin on the west side started to be spoken widely. And as stated in the Government of Canada (2014) this multicultural environment enriched the country's cultural diversity. Immigrants are raising the education level in Canada. As proven by Wong (2020), on average 53 percent of the immigrants have a college or an equivalent degree in 2019. Immigrants are also politically engaged with society, 82 percent of the economic immigrants have voted in the 2011 federal election (CIC, 2020: 8). As proven

by Hou & Bonikowska (2016), children of immigrants have the same level of education as the Canadian-born natives when they grow old and their participation characteristic in the labor force resembles the Canadian-born. Refugees are reaping the benefits of being an immigrant in Canada as well. As proven by The United Nations Refugee Agency (2019), after ten years 66 percent of the refugees own a house.

The government of Canada offers numerous pathways for volunteers to immigrate to Canada. Immigration, Refugees and Citizenship Canada is the main body that governs these pathways. To use it in this study, details of these immigration programs were acquired from the CIC. The Provincial Nominee Program caused 20 percent of the permanent resident applications by itself. The program has launched in the late 1990s firstly in the province of Quebec as stated by Seidle (2013). Each province can nominate a person or persons that meet its standards such as skill level and educational background. The needs of the provinces can change from province to province but overall, the applicant must be in a state that can contribute Canadian economy. In this case, the immigrants must contribute to the designated province's economy. Certain types of experience and education may be valuable for one province but useless for the other province. Thus, the applicant must apply to the most suitable province according to its skill level and education. After getting accepted these nominees can live and work in that specific province.

There are several pilot programs for immigration. Atlantic Immigration Pilot is a program to meet the employers' demands in Atlantic Provinces. This program was launched in 2017 and it is for skilled immigrants who want to work and live in one of Canada's four Atlantic Provinces. These provinces are New Brunswick, Newfoundland-Labrador, Prince Edward Islands, and Nova Scotia. Rural and Northern Immigration Pilot is a program for the small communities to get the benefits of immigration. With participation in this program, an immigrant can earn the right to live and work in these specific communities. This program is a new program that was launched in November 2019. For experienced immigrants in the agricultural sector, Agri-Food Pilot Program provides a pathway for these immigrants to get their permanent residency.

Moving on to the programs that receive the largest number of applications, the two of the most popular programs for immigration are Federal Skilled Worker and the Canadian Experience Class Program. Federal Skilled Worker Program is for people with foreign work experience and a desire to immigrate to Canada. Furthermore, the Canadian Experience Class is for the people who are already living and working in Canada temporarily but wanted to get a permanent residency status. These two programs are under the Express-Entry Program of the government of Canada. In this program, applicants are given points according to their age, language skills, work experiences, and other specifications like having a job offer or a certain valid certificate. After the points are calculated for each applicant, they are being ranked from the highest point to the lowest. Each year government of Canada announces the number of applicants that can get permanent residency status. After this announcement, they are giving permanent residency status to the candidates from the highest point candidate to the lowest one without exceeding the designated quota of the planned number of immigrants to be accepted. As stated in (CIC, 2020), the quotas for 2021,2022, and 2023 are respectively 401.000, 411.000, and 421.000 people.

In the Express-Entry System, the Government of Canada uses the Comprehensive Ranking System (CRS). This is a tool that is used to rank applicants according to their points. In Table 2, the factors that are taken into consideration when ranking the immigrants are listed.

Table 2: List of the Factors Affecting Comprehensive Ranking System Point

Core Points	Description
Age	Candidates up to age 29 receive the biggest point however, after the age of 30 the number of points received is decreasing each year.
Education	Higher the education the candidate has, the bigger points he receives. For example, having a master's degree gives bigger points than having a bachelor's degree.
Language Skills	Better English language proficiency yields bigger points.
Work Experience	More Canadian work experience a candidate has, the more points she receives.
Spouse Skills and Experience	Mainly spouse's Canadian work experience, language proficiency, and education level.
Skill Transferability	Having foreign work experience for more than one year yields more points as more experience the candidate has.
Extra Points	
Sibling in Canada	If a brother or a sister living in Canada exists, more points the candidate receives.
French Language Skills	Better French language proficiency yields higher points.
Post-secondary Canadian Education	Having a Canadian post-secondary education gives more points with the higher education the candidate has. For example, studying three years yields bigger points than studying one year.
Canadian Job Offer	If the candidate applies with a received job offer for his name, he will get more points.
Provincial Nomination	If the applicant is nominated by the province or territory, she will receive more points.

Source: Government of Canada, Comprehensive Ranking System Criteria – Express Entry, (29.03.2020).

As it is stated in Hou & Picot (2014), the immigration selection criteria for the Federal Skilled Worker class has changed significantly in 2002. After the alterations, the newly accepted applicants have more language skills, better education levels, and more skills overall. As stated by (Variyam, 2006) before 2002, the Canadian immigration system was focused on accepting immigrants and assign them to jobs that native Canadians are not willing or able to do. After 2002, the Canadian immigration policy was focused on receiving well-educated, high-skilled immigrants regardless of they have a job waiting for them or not and integrating them into the Canadian society. One would

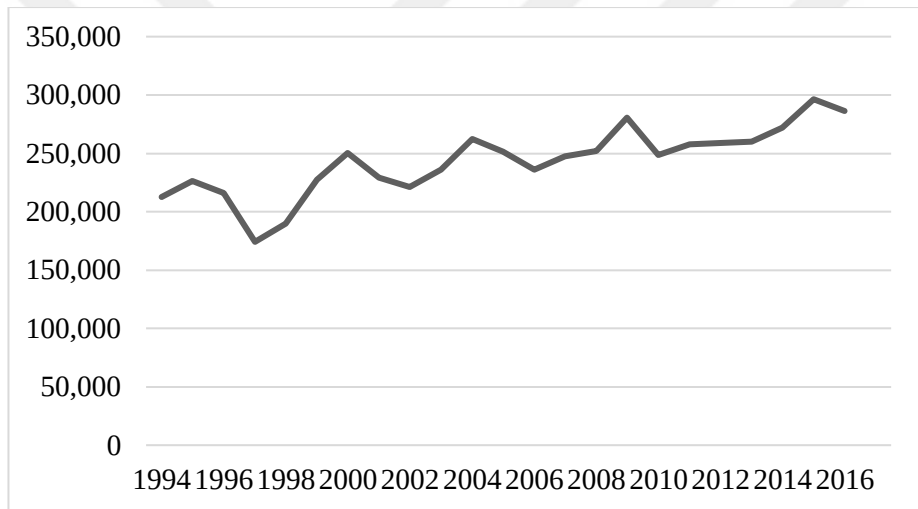
think this increase in average skill level is to increase the income as well. The recent decrease in low-income rates among immigrants might be a result of this increase in the skill composition of the immigrants.

As stated above there are various immigration pathway programs of the government of Canada. Immigrants can choose whichever program they would like to apply for however, applying to the program they are most suitable for increases their chances of being accepted by the Canadian government. The goal of these programs is to improve Canada's economic well-being and improving immigrants' living standards simultaneously.

Immigration, Refugees, and Citizenship Canada (IRCC) fund various organizations and foundations that help immigrants in many ways. These organizations provide services such as preparing the immigrants for the Canadian labor market, helping them improve their language skills, and helping them to settle and integrate them with their communities. These organizations work in harmony with the federal, general governments, and provinces to increase the efficiency of the program and help immigrants settle as planned (CIC, 2020: 13). In 2019, Canada accepted the highest number of refugees in the world with 10,937 immigrants (CIC, 2020: 14). According to the report published in 2020 by The United Nations Refugee Agency, Canada is followed by Sweden with 4,790 refugees and France with 4,169 refugees. Canada is the fifth biggest economic supporter of the International Organization for Migration as shown in the reports of the International Organization for Migration (2020). Many of these immigrants start their journey as students and move upwards to Canada's workforce. Canada has the seventh biggest tertiary education international student intake among OECD countries as stated in OECD (2021). The economic contribution of international students to Canada's economy is significantly high. Canada earns from the expenditure of international students more than it earns from exporting auto parts and lumber. International students spent nearly 21 billion Canadian dollars on education fees and other items when they are present in Canada, as shown in the reports of the International Education Division of Global Affairs Canada (2019).

As stated in the recent report of Immigration, Refugees and Citizenship Canada (CIC, 2020: 24), in 2019 Canada experienced the highest immigrant inflow in its history with nearly 340 thousand immigrants accepted. Below, the total immigration numbers are charted for a visual representation of the time period used in this study. In certain years numbers went down, however, there is an increasing trend. The total immigration numbers peaked in 1995, 2000, 2004, 2009, and 2015.

Figure 3: Total Immigration in Canada (1994-2017)



Source: CIC, Facts and Figures: Immigration Overview, (02.10.2020).

1.2 CANADIAN PROVINCES

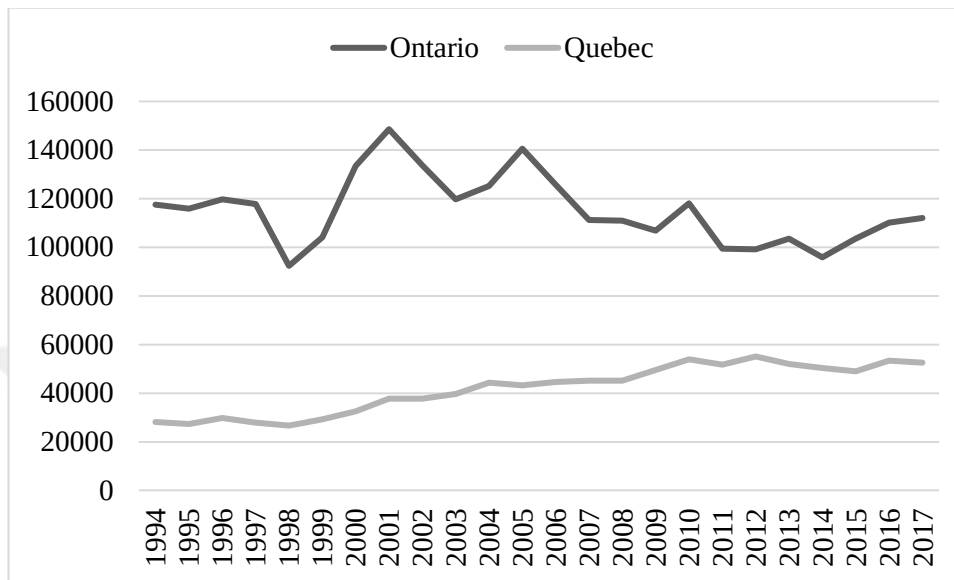
Canada has ten provinces and three territories in total. This study focuses solely on the provinces, due to the fact that most of the population is living in the provinces, and territories are largely uninhabited. In this section, Canadian provinces' socio-economic conditions will be discussed.

Ontario is the largest province in Canada by population and hosts two important cities. The first one is the capital, Ottawa and the second one is the largest city, Toronto. As stated by Anderson (2012), the province's main economic driver is the manufacturing sector, and the province exports its goods mostly to the United States, followed by the

United Kingdom, Mexico, Norway, and China. Mining and forestry industries are important for Ontario's economy as well. These industries are mostly located in the northern parts of the province. Toronto acts as a finance and banking center for the region and northern parts of the capital Ottawa, namely, Waterloo Region, which is famous for the abundance of technology firms. The province is the biggest destination for immigration due to the variety of opportunities for newcomers. Furthermore, in 2001 and 2005, the province experienced a relatively high number of immigrant intakes. For the following years, the numbers were not high as in 2001 and 2005 but the province continued to receive new immigrants.

Quebec is the second-largest Canadian province by population size. According to the report published in 2012 by Statistics Canada, 78 percent of the people living in Quebec are Francophone. According to Couture (2007), the service sector is the main economic driver in the province. Furthermore, Quebec is the largest producer of electricity in Canada. Manufacturing and forestry industries are important industries for the economy of Quebec as well. The province also has an abundance of natural resources. Years 2001, 2004, and 2010 are the notable years that an increase in immigration is observed.

Figure 4: Total Immigration in Ontario and Quebec (1994-2017)



Source: CIC, Facts and Figures: Immigration Overview, (02.10.2020).

British Columbia is the third largest province in Canada by population size. As stated in Davis & Hutton (1989) the province's economy is divided into two; Greater Vancouver Area and the rest of the province. The largest sectors in the Vancouver region are real estate and finance. Furthermore, Vancouver continues to be an important logistical location due to the railroad infrastructure, and its port for trans-pacific transportation. Greater Vancouver Area also acts as a marketplace for the goods and services such as agricultural and forestry products and manufactured goods produced in the rest of the province as well. The province experienced a rise in immigration in 1996 and 2005 significantly. This increase continued in the following years steadily.

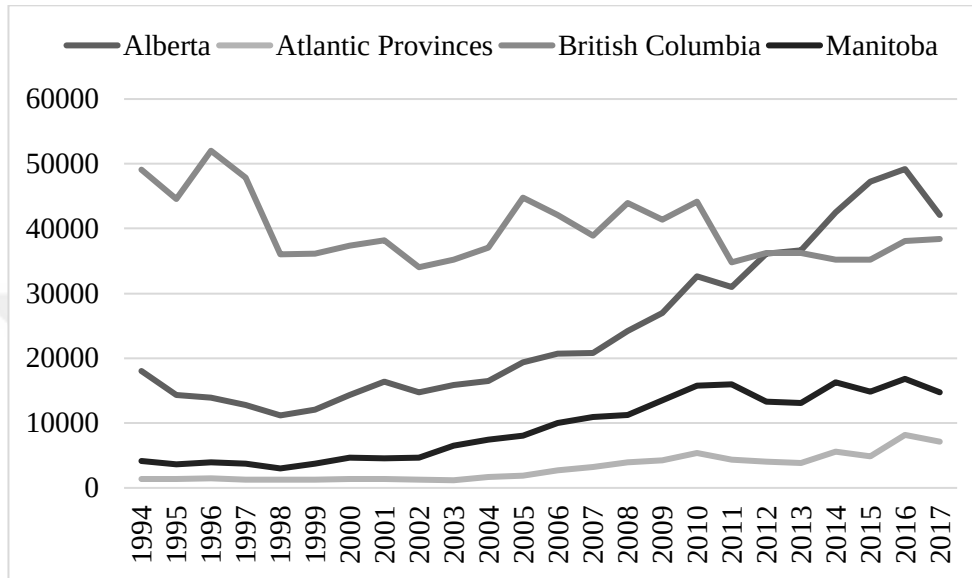
Alberta is the fourth biggest province in Canada by population size with over 4 million people living in it. As stated in Ménard (2005), Alberta's backbone is the oil industry, however, agricultural and forestry sectors are advanced as well. Alberta experienced high population growth since the start of the 21st century due to its relatively good economic conditions. The province received immigrants at a steady pace, however, in 2010 Alberta received a large number of immigrant inflow, a little over 30 thousand

immigrants, as a result of relatively better performing economic conditions compared to the United States and Europe as stated in Aubuchon & Wheelock (2009).

Following three provinces; Newfoundland & Labrador, Prince Edward Island, and New Brunswick form the Atlantic Provinces. Due to the composition of Atlantic Provinces, it reflects three different characteristics, however, similarities between these provinces are not to be ignored. As stated by Vasseur et al. (2007), in Newfoundland and Labrador, the main driving economy was fishery which crashed at the beginning of the 21st century. However, the province recovered with the rise of the service sector such as healthcare and finance. Furthermore, the oil, mining, and manufacturing sectors were the supporter sectors. Prince Edward Island did not suffer from this fishing crisis as much as Newfoundland and Labrador. The province is mainly dependent on agriculture, tourism, and fishery. The main economic drivers for New Brunswick are the primary sectors, namely, forestry, agriculture, and mining. Furthermore, the manufacturing and construction sectors are also important for the economy of New Brunswick. Atlantic Provinces continued to receive immigrants at a steady pace, however, they experienced a significant rise in immigration in 2006, 2008, and 2010.

Manitoba is Canada's fifth-biggest province by population size. As stated in Baragar (2011), the province's main economic drivers are; farming, forestry, mining, and oil. Due to this diverse nature of the province's economic sector, it managed to avoid the 2008 financial crisis with minimum damage (Baragar, 2011: 59). Manitoba experienced a high immigrant inflow just like Alberta and Atlantic Provinces in 2010 with just over 15 thousand immigrants. Furthermore, one can observe the Canadian provinces acting as a desired destination for the post-financial crisis world once again.

Figure 5: Total Immigration in Alberta, Atlantic Provinces, British Columbia and Manitoba (1994-2017)

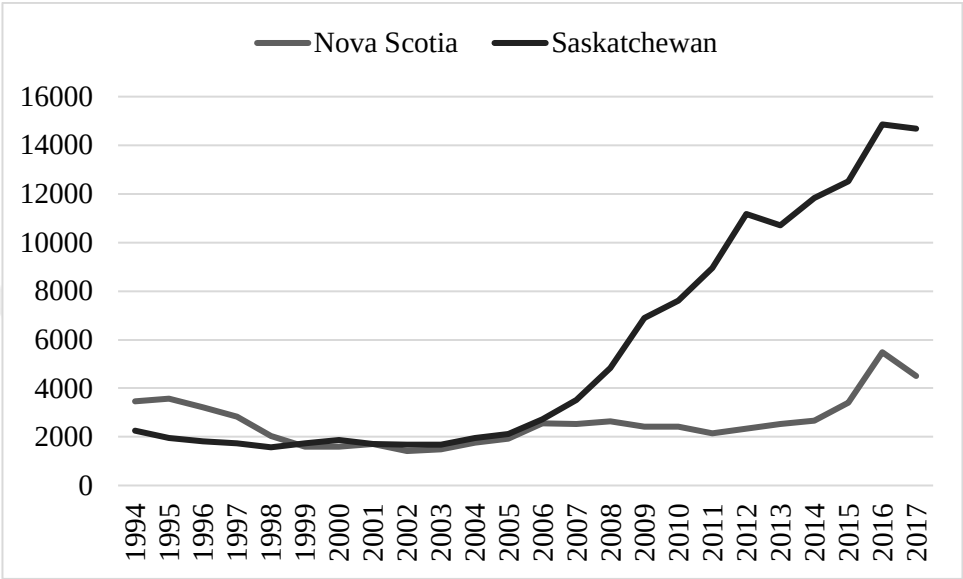


Source: CIC, Facts and Figures: Immigration Overview, (02.10.2020).

In Saskatchewan, agriculture has historical importance for the province. However, as stated by Ward (2015), mining is the key economic driver in Saskatchewan. The province is the biggest exporter of potash and uranium. 2006 and 2012 were important years for immigration. In these years immigration flow was high to the province.

The last province that will be mentioned in this section is Nova Scotia, which is the biggest province in the Atlantic Region by population. As stated by Vasseur et al. (2007), Nova Scotia's economy is dependent on manufacturing and fishing. Although it must be emphasized that the province's most important economic driver is tourism. GDP per capita of the province is lower than the national average. Furthermore, they experienced a significant rise in immigration in 2006. However, this increase was not high as it is in the other provinces.

Figure 6: Total Immigration in Nova Scotia and Saskatchewan (1994-2017)



Source: CIC, Facts and Figures: Immigration Overview, (02.10.2020).

CHAPTER 2

LITERATURE REVIEW

2.1. LITERATURE REVIEW

In the literature review chapter of this thesis, previous studies related to the income inequality and immigration relationship will be presented. Initially, studies conducted for more than one country will be analyzed. These studies are divided according to country groups as well. Firstly, studies about developing countries will be presented and following that, studies about developed countries will be analyzed. Furthermore, studies that included Canada will also be presented. This will draw a clearer picture of how Canada behaves among other countries. Following that, studies conducted only for Canada will be presented to better understand the Canadian aspect of the situation. Studies about some other developed countries will also be presented separately. Lastly, the studies that focused on income inequality and globalization will be presented to look at the matter in the hand from a different perspective. When presenting the studies mentioned above, to emphasize immigration, this study first discusses the articles that focused on immigration and move into income inequality afterward.

The labor market effects of immigration are analyzed for various country groups in several articles. In one of these studies, Uprety (2020) conducted a study for 110 developing countries to analyze the effect of skilled immigration on income inequality in the origin countries. He used the Two-Stage Least Squares method and System Generalized Method of Moments (GMM) and Generalized Estimating Equation (GEE) methods to investigate this relationship empirically. Results from his analysis indicated that emigrating high-skilled immigrants stimulate the origin country's income inequality negatively in the short-run. However, low-skilled immigrants had no effect on income inequality for the developing countries case.

In another study, Docquier et al. (2019) aimed to find out the effects of aging, immigration, and education on the labor force for all of the OECD countries. They

categorized the labor force as young and old, high-low skilled and native-foreign born, and continued the analysis with constant elasticity of substitution (CES) production function. It has been found out that the differences in age and skill composition affect the high-skilled labor the most. Meanwhile, the impact of these differences on the low-skilled labor force is minuscule. For the country group that Canada belongs to, namely Anglo-Saxon countries, the study found out that immigration has a positive effect on wages similar to the effect of aging on wages because immigrants tend to be more skilled than native workers. The main finding of this study is that immigration has a positive effect on low-skilled workers, to be more concrete, there is a 5 percent wage gain for both young and old low-skilled workers in Canada, thanks to the high-skilled immigrant inflow.

To investigate the impact of immigration on wages and employment, Longhi et al. (2009) conducted research using meta-analysis techniques for Portugal, Austria, Germany, Israel, and the U.S. They found that immigration affects wages and unemployment in the US and Europe negatively, however, this effect is very small. Determining factor for this effect is found to be immigrants' skill level.

Empirical studies suggest that immigration affects the host country's economic conditions and labor markets in multiple ways and the impacts change for the developed and developing countries. To further analyze this impact, Boubtane et al. (2013) conducted a study for 22 OECD countries and utilized the Panel Vector Autoregression technique. They found that immigration has a positive effect on a country's GDP per capita. However, immigration affects the host country's employment numbers negatively and increases unemployment. Authors state that one explanation of this rising unemployment can be the discouraged job seekers.

Rowthorn (2008) conducted a research about the impacts of immigration on countries' economies and demographic issues related to immigration. He conducted the study for the United States, the United Kingdom, and the continental European countries. In harmony with the existing literature, he found that skilled immigrants have a positive fiscal contribution to the host country. However, unskilled immigrants are a burden to the economy. He also states that the findings do not impose a strong

relationship between immigration and fiscal issues in the long run but in the short-run temporary immigrants do impact the host country.

To investigate the relationship between wages, labor supply, and immigration, Aydemir & Borjas (2007) conducted a study for the United States, Canada, and Mexico. They state that Canada gets high-skilled immigrants, on the contrary, the U.S. gets low-skilled ones. They state that Canada's immigration system was different prior to 1967. In 1967, the government of Canada announced a points system for immigrants. This system implied that their points have to be above some threshold, to be accepted as an immigrant to Canada. More skill and education the immigrant had, the more points he or she received from the system. With the help of this system, Canada received more skilled immigrants in time. Aydemir & Borjas (2007) conclude their findings by discussing the effect of international migration on income inequality. For Canada immigrants lower the income inequality, for the U.S. immigrants have a negative effect on income inequality and they make the U.S. more unequal. For the Mexico case, immigrants depress the income of the low-skilled native workforce.

Card et al. (2004) investigated the relationship between unions and income inequality for the United Kingdom, the United States, and Canada for the years between 1970-2001. They found that unions have a wage stabilization effect on their members. They also state that the union workers on average, are more skilled than their non-union member counterparts in these three countries that the study takes into account. They also add that unionized people's skill level tends to accumulate in the middle of the skill distribution. Wages of unionized workers are closer to each other than their non-union counterparts. Another important finding is that unions do not decrease the income inequality for female workers. They state that a reason for this can be the woman being at the upper end of the income distribution and the wage gap between women are larger compared with their male counterparts. Finally, they found that wage inequality for the men in Canada is not increasing as much as it does for the other two countries that this study includes.

The studies about Canadian income inequality and immigration are not numerous like they are for OECD, European Union, and the United States. The study Hou & Picot

(2014) conducted is taking income rates and income inequality for immigrants and Canadian natives for the years between 1995-2010 into an account. Ordinary Least Square estimations were conducted for the provinces and metropolitan areas to estimate the effects of immigration on income inequality. The study took variables such as family status, the type of immigration program, the source region, age, education, and linguistic abilities of immigrants into account. Firstly, they discussed that in the 2000s the number of immigrants in the low-income group declined significantly. The second deduction is that the change in the regulation for immigrant selection criteria is the likely reason for the decrease in the number of immigrants in the low-income group among recent immigrants. The third argument is the immigrants are partly responsible for the rise in the number of individuals in the high-income group between 1995 and 2010. Lastly, the authors found out that the immigrants had a small but positive impact on income inequality for Canada since the late 1990s.

To investigate the composition of immigration, Bonikowska et al. (2017) conducted a study to further discover the factors that are affecting the spread of incoming immigrants in Canada. In this context, the effects of immigration policies, source countries, and economic conditions have been analyzed. By using a regression decomposition method, they uncovered which immigrant selection programs and regions affected the distribution of the immigrants. The immigration selection programs, especially Provincial Nominee Program was responsible for the biggest part of immigration to Manitoba and Saskatchewan, and Atlantic Provinces. Regional economic situations, like employment rates, affected the immigrants significantly. The authors stated that immigrants from Provincial Nominee Program were more likely to stay in the initial immigration destination when compared with the other immigration programs like Federal Skilled Worker Program.

Moore & Pacey (2003) investigated the reasons for the increasing income inequality in Canada for the years between 1980 and 1995. They used three income inequality measures namely, Gini, Theil, and Atkinson indexes. The results indicate that the increase in income inequality was more easily observable at the beginning of the 1990s and early 1980s when the country experienced an economic downturn. The

authors add that the immigrants increased the income inequality for the latter stages of the 1990s, and they have a large contribution to this increase in income inequality, nearly half of the total increase in income inequality is caused by immigrants. They also stated that even though recent immigrants have better educational backgrounds comparing to the old immigrants, the new immigrants have lower starting wages. This result is also in harmony with the existing literature about the struggle of new immigrants. However, as Hou & Picot (2014) proved, this is not the case in Canada after the alteration, a decrease in the low-income rates among recent immigrants can be observed later on after the change in the immigration selection criteria.

Frenette et al. (2007) investigated the income inequality for Canada, using the after-tax income for the years between 1980 and 2000. Authors thought that the existing databases may ignore the changes in tails of the income distribution and formed a new database using the Census files based on the information from administrative taxation data. It has been found out that taxes have less of an effect on the low end of the tail compared with the upper end, on income inequality in the 1980s. For the first half of the 1990s income inequality was substantially high. However, the transfer payments interrupted this rise in income inequality, but taxes did not affect this outcome significantly. The later stages of the 1990s witnessed a decline in income inequality contrary to the first half.

The top one percent income earners in Canada have one of the biggest responsibilities in rising income inequality in Canada. Fortin et al. (2012) investigated the Canadian income inequality and focused on the top one percent. They stated that the income inequality in Canada increased significantly and just as in the United States the share of income that the one percent receives increased with it. The main reasons for this increase in income inequality are explained as the decrease in unionization rates and technological change. Lastly, they found out that women are less likely to be negatively affected by this problem in income distribution. The study focuses on creating well-thought-out policies that can be implemented to better the state of income inequality in Canada. The first sets of policies were to alter the after-tax income distribution with the

help of a tax and transfer system. These policies were followed by a try to change the pre-tax income distribution.

To investigate the trends in income inequality for Canadian provinces Breau (2007) conducted a study for the years between 1981-1999. He used a panel data technique and used two inequality measures, first one is the Gini index and the second one is the ratio of highest to lowest income earners. He states that income inequality was rising in the early 1990s and for the whole 1980s. He categorized the factors affecting the rise in income inequality into three groups. These are demand, supply, and institutional factors. He did not find a meaningful relationship between immigration and income inequality across Canadian provinces, but he added that he could have taken a better measure to analyze this specific effect. He also states that the skill-biased technological change, trade openness, the decline in manufacturing and forestry employment, unionization rate, and skill level of workers are the main determinants of income inequality in Canada.

To investigate the innovation and income inequality relationship for Canada, Breau et al. (2014) conducted a study for Canadian cities. They combined two data sources to conduct this research and they utilized Canadian Census data and the U.S. Patent and Trademark Office. Panel data analysis method was selected as an appropriate measurement technique. They uncovered a positive relationship between increasing innovation expenses and rising income inequality. Size of the city, percent employed in manufacturing and government, minorities, and level of education were found out to be the factors affecting income inequality. Mainly, people employed in the manufacturing sector are found to have an inequality decreasing impact. They also state that the demand for high-skilled employees is increasing, and the low-skill employees experience wage reductions.

Breau (2015) investigated the trends in income inequality across Canadian regions. He used Census data and a multi-level model to analyze the variables affecting income inequality in Canada. He discussed that income inequality is rising in the western regions. Furthermore, for the eastern regions, income inequality is relatively low. For the urban and rural regions, skill level, education, and population density are

found to have a significant impact on income inequality. At the provincial level, he found out that there is a positive relationship between government transfers and income inequality. The author adds that for the rising regional income inequality, the increasing wage difference is the biggest perpetrator. He states that income inequality rose significantly in Canada for the years between 1980-2010 with the steepest increase being in the early 1990s with the economic recession.

To further explain the growing income inequality problem in Canada, Yalnizyan (2007) investigated the income inequality data for the 28 years between 1976-2004. She unraveled that the bottom 80 percent of the Canadian families are working more hours than before, however, they are still struggling to make ends meet. The richest 20 percent and mainly the top 10 percent are reaping the positive effects of economic growth. She also adds that Canada's tax and transfer system helped half of the population from losing their incomes significantly. With the help of this tax and transfer system, the poorest 10 percent of Canadian families are doing better than before, but this improvement is very small.

The southern neighbor of Canada, the United States is a popular destination for immigrants. To analyze the relationship between immigration and income inequality, Xu et al. (2016) conducted a study to investigate this relationship for the years between 1996-2008. They used the Ordinary Least Squares method and Error Correction Model to measure the impact of immigration on income inequality. They found that immigrants have a negative impact on income inequality and, this negative impact is mainly caused by low-skilled immigrants. Furthermore, they uncovered that for certain levels of income distribution high-skill immigrants lower the income inequality. But this positive impact is not strong as low-skill immigrant's negative impact. They state that, while increases in unionization rate and female labor force participation rate decreases the income inequality, increases in the unemployment rate, percentage of college graduates and non-white population, and per capita income growth increase the income inequality for the U.S. states. They conclude with the suggestion that countries should focus on altering their immigration policy on admitting more high-skilled immigrants.

Card (2009) investigated the relationship between immigration and income inequality emphasizing cross-city comparisons for the United States. He found that immigrants with under high-school diploma can be a perfect substitute for native workers with a high-school education. He also stated that high-school and college graduates can substitute each other but the level of substitution is not as strong as between the below high-school and high-school graduates. He also found that immigrants and the natives are imperfect substitutes to one another. However, he also adds that immigration has a very small impact on natives' wages for the US.

In another study, Card (2005) investigated the impact of immigration on the United States labor market. He focused on immigrants' plausible negative effect on low-skill natives and analyzed the 1965 Immigration Reform Act's success. He found very little evidence of immigration's negative effect on less-skilled native's wages. To measure the success of the 1965 Immigration Act, he focused on the children of immigrants who were born on U.S. soil. He found that these children are coping well with their new lives and even the low-educated parents' offspring are reducing the education gap between them and natives.

Hibbs & Hong (2015) also analyzed the effect of immigration on income inequality for the United States. They found that using Gini as a measure for inequality yields a stronger effect for immigration on income inequality compared to other studies that utilized skill-related wage premiums as a measure. Contrary to the norm, they found that low-skilled immigrants' impact on income inequality is scant. For the education level of both immigrants and natives, they found out that among immigrants there are more high-school dropouts than natives as a percentage of the total population of each group.

To study the income inequality and what is affecting it to rise and fall, Partridge et al. (1996) conducted a study for the United States for the period between 1960-1990. As a measurement method, they used the Panel data method and OLS estimation technique to investigate the factors affecting income inequality. Overall, they found a negative relationship between immigration and income inequality. Immigrants made the

U.S. more unequal. Furthermore, unionization rate and labor force participation were positive contributors to income inequality.

Overall, when the empirical studies for the U.S. are evaluated, it can be said that the results are not similar to Canada. The Canadian immigration system's difference can be seen more clearly when comparing these two countries which have similar immigration situations. Immigrants overall have a negative effect on income inequality in the U.S. However, the Canadian government's more liberal and high-skill demanding immigration policies that were implemented after the millennium resulted relatively better than its southern neighbor regarding income inequality. Empirical studies show that immigration has a positive impact on income inequality in Canada especially after the year 2000.

Sweden shares certain characteristics with Canada about being a popular destination for immigration. The number of immigrants that deserved citizenship and received a citizenship status was 64.2 thousand people in 2019 as stated in (Eurostat, 2019). Sweden has one of the largest citizenship acquisition rates among immigrants in Europe.

Sweden is an advanced country with good living standards and a well-developed social system. This makes Sweden attractive for many immigrants all over the world just like Canada. Sweden's population is aging, and fertility rates are lowering. This is becoming a concerning issue for the country's labor market. On the other hand, the increasing inflow of migrants is worrying citizens about their employment opportunities and wage standards. Feridun (2007) aimed to analyze the causal relationship between immigration and two macroeconomic factors, GDP per capita and unemployment for Sweden. To do this, he used annual data spanning from 1980 to 2004 and used ARDL and Granger Causality method with VECM to conduct the analysis. He unraveled that there is a long-run positive relationship between immigration, GDP per capita, and unemployment. According to the causality test, there is a causality between immigration and GDP per capita in the long run. To be clearer he states that immigration causes GDP per capita to rise and GDP per capita increase causes immigration as well. His findings also state that unemployment causes immigration.

Ung & Olsson (2019) analyzed the relationship between immigration and Swedish income distribution. They categorized the immigrants as low and high-income class. They used the OLS regression estimates to unravel the relationship between the income gap and immigration. Furthermore, the analysis was conducted for male and female groups separately to discover the gender aspect of immigration. The authors found out that the income inequality is more persistent on the bottom end of the income distribution. They conclude that the income gap between natives and immigrants is three times larger for the low-wage class compared to the high-wage class.

To analyze the effects of immigration on natives' wages, Dustmann et al. (2013) conducted a study for another developed country, the United Kingdom. Using a constant elasticity of substitution production function, the authors showed that immigrants are working at jobs in which they are mostly overqualified in the first years of immigration. They showed the depreciation in wages for the native workers at the bottom 20 percent of the income distribution is caused by recent immigrants. However, for the upper end of the distribution, a minuscule wage increase has been observed. They also point that a possible explanation for these increasing wages can be the situation when immigrants are appropriately placed to the jobs according to their skill levels.

There are several empirical studies on the effects of globalization on income inequality. These studies focus on globalization almost exclusively because of globalization's impact on international immigration movements and income distribution in various countries. Globalization is known to be highly related to income inequality. To observe how globalization affected income inequality, Goldberg & Pavcnik (2007) conducted a study for developing countries. Studied countries are Mexico, Colombia, Argentina, Brazil, Chile, India, and Hong Kong. The authors stated that the exporter countries are more productive than non-exporter countries. If production for exports requires more high-skilled workers, and the country evolves to exporting country status, the demand for a skilled workforce will rise with it. They add to their argument that unemployment will be the biggest problem caused by globalization in developing countries. Getting used to the new production techniques will take time and it will create structural unemployment.

Rising income inequality is observable not just in Canada, but in many other countries in the world. However, in some Latin American countries, a decrease in income inequality is observed. Of course, this should not mean that Latin American countries have low inequality. According to the findings of Orrenius & Zavodny (2018), an increase in income inequality can be observed for the United States and a decrease can be observed for Mexico over the years. Orrenius & Zavodny (2018) proved that the main reason for the income inequality is the increasing ratio of high-low skilled wages. The study also states that low-skilled immigration to the U.S. lowered global inequality. They also stated that labor immigration to capital-rich countries increases the total factor productivity. Furthermore, the study concludes with “The problem policymakers face is not that migration doesn’t create gains, it’s who gets the gains” (Orrenius & Zavodny, 2018: 12).

To investigate the relationship between globalization and income inequality, Asteriou et al. (2014) used panel regression and system GMM technique and utilized trade and finance variables in a model. The study is conducted for the EU-27 countries and the time period is between 1995 and 2009. Overall findings suggest that trade openness has an income equalizing effect. Foreign direct investment is the most impactful factor that affects income inequality negatively. An increase in research and development had a large negative effect as well. By using a dummy variable, they found out that after the financial crisis, income inequality rose significantly in some new member countries. Furthermore, they found that this increase in income inequality is also significant in early members like Ireland, Spain, Greece, Portugal, and Finland compared to the rest of the European Union.

Roser & Cuaresma (2016) investigated the reasons behind the notorious increase in income inequality in some selected developed countries. They analyzed 32 developed countries and utilized the System GMM method to conduct their analysis. Their findings suggest that increasing imports from developing countries stimulate income inequality in the developed countries. They also found that unionization has a significant positive impact on income inequality. However, the most important finding of the study is, low-wage imports from developing countries affect income inequality negatively.

CHAPTER 3

DATA AND METHODOLOGY

In this section, the dataset and methodology used in the study will be described. Firstly, the data set will be described, and the data selection criteria will be explained. Furthermore, a discussion will be presented about the applied modifications to the data set.

3.1. DATA AND VARIABLES

In this study, the purpose is to observe the effects of immigration on income inequality across Canadian provinces. To achieve comprehensive results for the research annual data covering the 1994-2017 period was used. To further explain the effects of the characteristics of immigrants on income inequality, the immigrants are also classified according to their source countries of origin.

Canada's immigrant selection process was not refined before the 2000s, however, in 2002 the selection of immigrant criteria is changed drastically. The Immigration and Refugee Protection Act adjusted the system that determines the selection of certain immigrant category named Federal Skilled Workers. With this alteration, certain compositions of an immigrant like language skills and education changed significantly, which was explained in the previous chapter more in detail. As a result, the total and expendable income of this immigration class increased. This increase started to being observed after 2004 more clearly (Hou & Picot, 2014: 14). Thus, to observe the effect of this change in 2002 on income inequality more clearly, the main data set will be split into two sub-periods. To observe the situation before the change in regulation, the first sub-period covers the years 1994-2003. The second sub-period covers the years between 2004 and 2017 to observe the effects of this regulation on labor markets.

The main dataset used in this study is spanning from 1994-2017, the reason for choosing this timeframe was the availability of immigration data. The data are drawn

from Statistics Canada databases and for the immigration data from Strategic Research and Statistics Division of Citizenship and Immigration Canada (CIC). By getting the data from the government of Canada's official sources, reaching more robust results was intended. As the explanatory variable, the study used the adjusted total income Gini coefficient. To make the model more grounded, nine other independent variables were also utilized. Firstly, the study considers the female labor participation rate for the age fifteen and older. Secondly, general governments' final consumption expenditure to observe the governmental side of this relationship was used. Moreover, the percent value of people employed in the manufacturing and forestry industry was added to the list of independent variables. As a general indicator of income inequality and as a social and demographic control variable, the unemployment rate was used as a measure. Furthermore, the unionization rate data was used to further investigate the characteristics of the labor market. The trade openness variable was also used in the model to analyze the effects of globalization on income inequality. The average total income growth was used to analyze the household income side of this relationship. To measure the demographics, the population numbers for each province were used. Lastly, immigration permanent residency numbers were used in the study. To sum up, the main dataset contains 184 observations for 8 provinces.

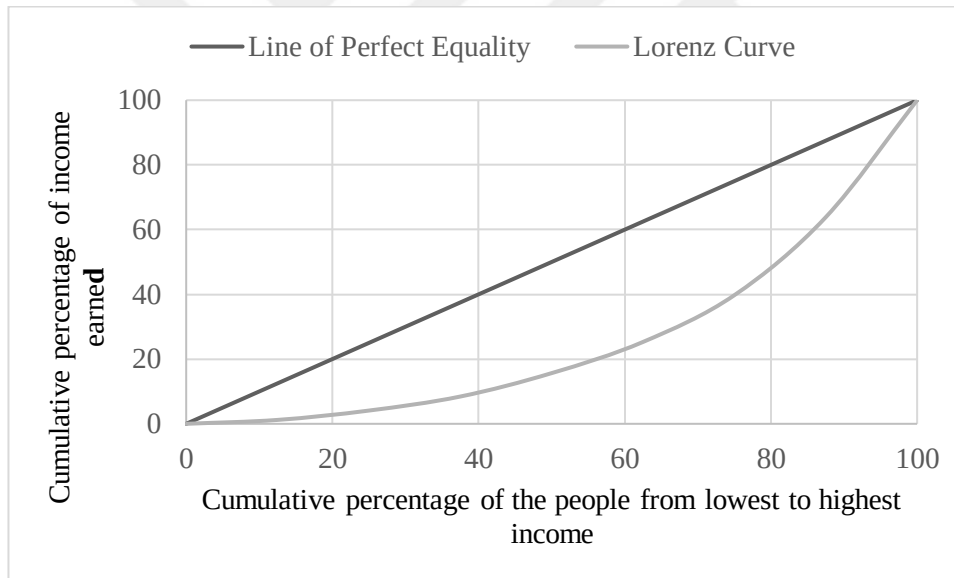
In this part of the chapter the variables listed above will be briefly described and the data collection and calculation methods will be explained.

Allison (1978) conducted a study about ways of measuring inequality. Focusing on the Gini and Theil indexes and the coefficient of variation technique, he stated that the Gini, as a measure of inequality tends to ignore the tails and focuses on the middle of the income distribution. Furthermore, for the Theil index, he stated that it is preferable when it is used for measuring something with decreasing marginal utility like income. When the variables that have characteristics like their utility is non-existent or increasing or irrelevant, the coefficient of variation measure is useful.

As a measure of inequality, the adjusted total income Gini coefficient was used in this study. As Breau (2007) suggested, total income Gini is a better instrument for the empirical analysis because it does consider government transfer expenditures, unlike

after-tax income Gini. Thus, using this instrument helped this study to avoid possible correlation among the response variables such as general governments' final consumption expenditures and the Gini coefficient. Gini coefficient is one of the most popular and accepted income inequality measures, which is based on the Lorenz Curve. The value of the Gini coefficient is calculated with the area below the perfect equality line and the Lorenz curve. The value of the Gini coefficient can be between 0 and 1, the closer the number is to 1, the more unequal the society gets. Thus, 0 means perfect income equality, and 1 means perfectly unequal income distribution.

Figure 7: Lorenz Curve



Data is an annual data published by Statistics Canada. Data is available for all the years and provinces, there are no missing data. The logarithmic value of this variable was calculated and used in this study to explain the statistical results more appropriately.

Immigration is a key economic driver for Canada. Yssaad & Fields (2018) showed that approximately 1 in 4 workers (26 percent) in Canada are immigrants so one would expect to observe a sizable impact of these immigrants on income inequality. Moore & Pacey (2003) proved that income inequality and immigration have a positive

relationship in Canada. The government of Canada made important changes in its immigration policy and altered the points system for the federal skilled worker class, and in the latest immigration report, the Government of Canada published (CIC, 2020) and it's shown that Canada and its provinces are ready to accept more immigrants than they did before. The projected admission targets for the years 2021, 2022, 2023 respectively are 401.000, 411.000, 421.000. The immigration dataset was formed using three immigration reports published by Citizenship and Immigration Canada (CIC, 2003, 2012, 2017). The start date of the data set was determined by data availability. The study used the Strategic Research and Statistics Division of Citizenship and Immigration Canada's (CIC) Facts and Figures Immigration Overview Publications as a data source. The first publication (CIC, 2003) divided the provinces into eight provinces/areas that were named in the previous section. However, the latest publication (CIC, 2017) divided the provinces into ten. Due to the publishing type of data, Atlantic Provinces' data between 2013-2017 was scattered to three provinces listed in the previous section. The immigration values were generated by summing the immigration numbers in three provinces to have an aggregate number for Atlantic Provinces. Due to the similar characteristics of Atlantic Provinces, the generated dataset is not expected to cause any biased results. Furthermore, the Territories were ignored due to the number of immigration data being too little and not all territories were a part of Canada from the beginning of the dataset. This can be applied to all three publications that were used in this study since they are being conducted by the same organization. To better emphasize the income inequality in Canadian provinces the permanent residency numbers by provincial and territorial region and source area data were utilized (CIC; 2003, 2012, 2017). The reason for this choice is that permanent residents compared to temporary residents have a bigger and more crucial impact on income inequality across Canadian provinces, thus, to make the models used in this study more cohesive, the study only takes permanent residents into consideration. Moreover, the logarithmic value of this variable was calculated and used due to the number being too large compared to other variables to enhance its statistical explanation. Considering the qualifications of

immigrants and immigrant selection criteria a positive relationship between immigration and income inequality is expected to be observed.

To capture the gender side of the relationship between immigration and income inequality across Canadian provinces and analyze this impact of immigration on income inequality the female labor participation rate was added to the model. The earnings of women are rising compared to men in Canada as proven by (Fortin et al., 2012: 134), and the effect of this change in the social structure is expected to be observed on income inequality. Data is an annual data published by Statistics Canada. It contains data for the woman in the workforce age 15 and older. Nielsen & Alderson (1997); Treas & Bengtson (1987) showed that low-income female labor participation has an equalizing effect on overall income inequality but as Maclachlan & Sawada (1997) stated, it is hard to predict the impact of this variable due to its ambiguous effects on previous studies.

Regarding the amount of money spent and distributed by governments, institutions, and non-governmental organizations to individuals, one would expect to observe certain changes in income inequality. To explain the institutional effects of this phenomenon this study utilized general governments' final consumption expenditure as an independent variable. General governments' final consumption expenditure data accounts production of non-market goods and services and market goods and services and social transfers. Military, justice, healthcare, and education expenses are also included in the variable. Since it takes into account social transfers, government transfer payments were not taken as another variable in the model to avoid multicollinearity. In this study, the logarithmic value of this variable was calculated and used due to the number being too large compared to other variables to enhance its statistical explanation. Data is annual data published by Statistics Canada. The data is calculated with 2012 constant prices and the scalar factor is millions. It is predicted that there is a negative relationship between general governments' final consumption expenditure and income inequality, it can be said that the negative impact on income will widen the gap between rich and poor.

The number of employees in manufacturing and forestry industries is known to affect income inequality due to the magnitude of these sectors compared to other sectors.

According to Statistics Canada, the number of people employed in manufacturing industries is decreasing. To better understand the effects of the manufacturing industry on income inequality in Canadian Provinces, this study follows Breau (2007) and adds forestry, fishing, mining, quarrying, oil, and gas industry workers to the argument. Data is annual data published by Statistics Canada. It contains data for the percent employed in the manufacturing and forestry industry at age 15 and older. The data was generated by dividing the sum of employees in manufacturing and forestry-related industries by the number of total workers in all industries. It is expected to observe a positive relationship between income inequality and percent employed in the manufacturing and forestry industry. Nielsen & Alderson (1997) found that for the United States there is a positive relationship between increasing deindustrialization and increasing income inequality. Breau et al. (2014) also uncovered this positive relationship for Canada between income inequality and percent employed in the manufacturing and forestry industry.

The unemployment rate is known to have a negative relationship with income inequality, Thurow (1987) proved that unemployment tends to accumulate people at the lower end of the income distribution. According to the labor force characteristics data published by Statistics Canada, the unemployment rate averages 6.5 percent in Canada. The unemployment rate is an adequate general macroeconomic variable to use in the study following Breau et al. (2014) and Roser & Cuaresma (2016). Data is annual data published by Statistics Canada. It contains data for the unemployment rate for the people in the workforce age 15 and older. A negative relationship between the unemployment rate and income inequality is expected in the models.

Unions and the rate of unionization played a major role in income inequality over the years. This is proven by Breau (2007) for Canada and Xu et al. (2016) for the United States. Unionization tends to have a positive effect on the wages of union members. Data is annual data published by Statistics Canada. Unionization data for the years 1994 and 1995 was originally published by Corporation and Labor Unions Returns Act (CALURA). In 1995, changes were made in CALURA to improve the data quality and reliability. After 1997, this data is published by Labor Force Survey (LFS). Furthermore, resulted from this change in data publishment, the 1996 unionization rate data for all

provinces is missing. To assess this, the study follows Breau (2007, 2015) and uses 1997 unionization rate data as a proxy. Data shows us that the unionization rate is falling across Canadian provinces. As Card et al. (2004) stated it is expected to observe a positive relationship between income inequality and unionization rate.

Trade openness explains the weight of international trade in the domestic economy (OECD, 2011: 176). Trade openness was computed following Breau (2007); Heston et al. (2002), by adding exports and imports of Canada and dividing the sum by the Gross Domestic Product at market prices. Trade openness had a slow and steady increase since 1994 in Canadian provinces. An increase in imported goods is expected to depress domestic production and employment if the imported goods are mainly low-quality goods. Data is obtained from Statistics Canada and calculated with 2012 constant prices. According to the latest GDP data published by Statistics Canada, the importance of international transactions is increasing for Canadian provinces, substituting domestic transactions and hurting local businesses. (Halmos, 2011) proved that, an increase in high-tech exports increases the income inequality in eastern European countries. According to The World Bank, high-tech export numbers are increasing in Canada, it rose to 16.5 percent in 2019. Thus, it expected to observe a negative relationship between trade openness and income inequality.

High-income inequality is related to high-income growth as proven by Bartels (2018: 91). Bartels (2018) stated that the income is not evenly distributed, in other words, income increase for individuals is not fair, specific groups get bigger increases and get it more frequently. However, others do get a little increase once in a while and this causes income inequality. For the income variable, the study followed Breau (2007) and used the average total income as the income variable. Furthermore, because the main focus in this study is immigration, characteristics of the immigration data had to be considered while determining the income variable. Instead of using individual income, the study employs an income type that considers both families and persons that are not in economic families. The meaning of an economic family is, two or more people are living in the same household and they are related either by blood or by some kind of union, like marriage or common-law. In this study, to explain the income side of the model in

harmony with the dependent variable that is used in this study, study employs the average total income. Furthermore, to make the indicator more dynamic, the growth value of the average total income was calculated. This value generated by adding the average total income for the two following years such as 1994 and 1995 and dividing to the first one, in this case 1994. The average total income data is annual data published by Statistics Canada and calculated with 2018 constant Canadian dollars. It is expected to observe a negative relationship between the average total income growth and income inequality.

When the number of people that share the total income grows, one would expect to observe the share of income to be smaller or unequal. To measure the broader demographic side of the model, the study utilizes population numbers to further explain the relationship between immigration and income inequality. Data is an annual data published by Statistics Canada and it accounts for the population of all ages. Moreover, the logarithmic value of this variable was calculated due to the number being too large compared to other variables to enhance its statistical explanation. According to the population estimates data published by Statistics Canada, the population is increasing in Canada. However, in this study, after the recent developments in immigration and considering the number of immigrants accepted and planned to be accepted, it is expected that population will be highly related to immigration by 2040 and for Canadian provinces case, a positive relationship between population and income inequality is expected to be observed.

To investigate the relationship between immigration and income inequality more in-depth study considers immigration source areas as well. By doing this study aims to investigate the source area effects on income inequality. Source areas were grouped as Africa and the Middle East, Asia and Pacific, Europe and the United Kingdom, the United States of America, South and Central America, and Source Area not Stated. The main countries that belong to these sources are the following: for the Asia group; Bangladesh, Japan, Nepal, Philippines, and Vietnam. For the Pacific group; Australia, New Zealand, and Fiji. For Africa; Egypt, Ethiopia, Ghana, and Kenya. For the Middle East; Bahrain, Iran, and Iraq. For the South and Central America; Colombia, El

Salvador, Brazil, and Mexico. The United States is a source area by itself, the United Kingdom belongs to Europe and the United Kingdom group. Main European Source Countries are Turkey, Armenia, Azerbaijan, France, Georgia, Germany, Italy, Kyrgyzstan, Serbia, and Russian Federation. Source areas immigration dataset was formed using three immigration reports published in 2003, 2012, and 2017, the same dataset that was used to form the total immigration data. Moreover, as a result of this choice, the same data characteristics apply to this dataset (CIC, 2003, 2012, 2017). It is hard to predict the effect of these source area variables on income inequality when they exist altogether in the model, because all the immigrants are measured according to the same criteria regardless of their source area, and differentiating them is quite challenging with using only immigration numbers. Furthermore, for Asia and Pacific group, it is possible to analyze this variable alone, without other source areas present, due to the number of immigrants belongs to this group being large compared to the other source areas. Thus, one can expect to observe a positive relationship between Asia and Pacific source area and income inequality across Canadian provinces. The possible reason for this is, it is nearly the half of total immigration number. Due to the magnitude of the Asia and Pacific group, the logarithmic value of this variable was calculated to enhance its statistical explanation. In comparison to the other source area immigrant numbers, it can be seen that the number is too large compared to other source area variables and its character resembles the total immigration data more. However, the study employs the logarithmic value of this specific data only when there is no other source area in the model to avoid statistical confusion.

3.2. METHODOLOGY

To better explain the relationship between income inequality and immigration, this study follows Gustafsson & Johansson (1999) and Kerr & Kerr (2011) and employs a panel data analysis. The expected result of using this method is to explain this phenomenon between income inequality and immigration more comprehensively and in-depth.

In this study, eight Canadian provinces were utilized as cross-sectional data. These provinces, in alphabetical order, are Alberta, Atlantic Provinces, British Columbia, Manitoba, Nova Scotia, Ontario, Quebec, and Saskatchewan. As a time period, the study covers the years 1994-2017.

Panel data used in this study is strongly balanced. By using panel data study aims to lower the possibility of encountering multicollinearity issues. Panel data is an adequate tool to analyze the effects of factors that affect income inequality in specific provinces. As stated by Hsiao (1985) using panel data aids to tackle heterogeneity bias issues in the model that the study utilized to explain the relationship between income inequality and immigration.

In panel data analysis, a decision has to be made between fixed-effects estimation and random-effects estimation due to the ordinary pooled OLS method taking all observation as serially uncorrelated and homoscedasticity is present (Jarque & Bera, 1980: 255). As Gray et al. (2003) suggested, varying individual province effects may lead to bias OLS outcomes and heterogeneity among the variables that were used to conduct this study. To decide the estimation method, the Hausman test on regressions will be conducted to decide between fixed and random effects estimations. Hausman Test unravels if the unique errors are correlated with the regressors or not. The null hypothesis of the Hausman Test means that errors are not correlated with the regressors (Torres-Reyna, 2007: 29). Hausman Test suggests that for this study, the fixed-effects model is a more appropriate choice.

As Wooldridge (2010) suggested, the fixed-effects model considers the unobserved variable as unchanging, thus a change in a response variable must be caused by something other than fixed-effects. In other means, unchanging differences among the entities are controlled by using the fixed-effects model. Fixed-effects estimation helps to discard the fixed characteristics by mean-differencing or first-differencing the equation. Furthermore, this study aims to observe the impact of time-variant variables on income inequality thus, as suggested by the Hausman Test, a fixed-effects estimation model has been utilized.

The fixed-effects model used in this study is as follows:

$$\ln (Gini) = \alpha_i + \beta_1 \ln immig_{it} + \beta_2 fem_{it} + \beta_3 \ln gov_{it} + \beta_4 man_{it} + \beta_5 unemp_{it} + \beta_6 union_{it} + \beta_7 trade_{it} + \beta_8 ginc_{it} + \beta_9 \ln pop_{it} + u_{it} \quad \text{Equation 1}$$

$i = 1, \dots, N, t = 1, \dots, T,$

Where the symbol i denotes the Canadian provinces, t is the time period used in this study (1994-2017). $\ln (Gini)$ denotes the dependent variable, in this study, it is the total income Gini coefficient. On the right-hand side of the equation, the independent variables can be seen; *immig* denotes the immigration numbers, *fem* is the female labor participation rate, *gov* denotes the general governments' final consumption expenditure, *man* is percent employed in manufacturing and forestry, *unemp* represents the unemployment rate, *union* is the unionization rate, *trade* denotes the trade openness, *ginc* symbolizes the average total income growth and *pop* is the population. β is the coefficient for the independent variables, and α_i is the unknown intercept possibly correlated with the explanatory variable. Lastly, u_{it} is the error term that is assumed to be uncorrelated with the independent variable. After conducting Hausman Tests for each model that will be utilized in this study, no random-effects regression was suggested to be used. Thus, results and interpretations of the models used in this study will be presented using fixed-effects estimations in the following chapter.

CHAPTER 4

EMPIRICAL RESULTS

4.1. EMPIRICAL RESULTS

In this chapter, empirical results for the models used in this study will be presented. This study uses five different models to explain the relationship between immigration and income inequality in Canada. The estimation results of these models will be presented in three different tables for clearer interpretation.

The first model specified in equation 1 is estimated with the fixed effects estimation method and the estimation results are reported in Table 3. According to the result of the Hausman test, the null hypothesis cannot be rejected with a 1 percent significance level and that's why the fixed-effects estimation method is chosen.

Table 3: Impact of Immigration on Income Inequality (Total Migration- All years)

Independent Variables	Model 1
Immigration	-0.015** (0.006)
Female labor force participation rate	0.373** (0.185)
General governments final consumption expenditure	0.187*** (0.060)
Percent employed in manufacturing and forestry	0.574*** (0.142)
Unemployment Rate	0.415* (0.238)
Unionization Rate	-0.274* (0.152)
Trade Openness	0.094 (0.071)
The average total income growth	0.368*** (0.087)
Population	-0.232*** (0.084)
Constant	-1.014 (0.602)
Number of Observations	184
Number of Provinces	8

R ² within	0.352
R ² between	0.550
R ² overall	0.177
F	10.12
Probability	0.000
Hausman	113.34

Note: The numbers in parentheses denote the standard errors. *, **, *** indicate significance at 1, 5, and 10 percent levels, respectively.

The main variable and the focal point of this study is immigration. In Table 3, it can be observed that there is a strong negative relationship between immigration and total income Gini coefficient. At a 5 percent significance level, a one percent increase in immigration reduces the income inequality across Canadian provinces by 1.5 percent. This proves the reason for the Canadian government's ambition to receive more immigrants for the following years. The immigrants make Canadian provinces and Canada as a whole more income equal. Furthermore, this is a promising result for the immigrants as well, raising a family and living in a more egalitarian country is an important reason to immigrate. Immigrated country's social state is crucial for potential immigrants to kick start their new journey and immigration decisions. The magnitude of the estimated coefficient is relatively smaller when compared to other variables but still, it is a positive contributor to income equality. As proven by Moore and Pacey (2003: 47) immigrants affect the income inequality negatively in Canada for the years between 1980-1995. The main reason for this negative impact on the Gini coefficient can be the characteristics of immigrants across Canadian provinces before the regulation change in 2002. These immigrants before the regulation change were mostly had lower-paying jobs and this difference between immigrants and natives was polarizing the income in the meantime. Looking at the characteristics of the immigrants all around the world, one can see that refugees, asylum seekers, and unqualified cheap labor dominate. But in the Canadian case, it is slightly different from its peers. Immigrants are diverse, by language and by skill. With the change in immigration regulations made in 2002, the new immigrants had a higher skill and language level before regulations made by the Canadian government. There are plenty of immigrant placement programs for adequate

immigrants, selecting and forming a pathway for unique skills that immigrants possess. There are also various social benefits that immigrants receive and they return the favor by paying their taxes and contributing to Canada's economy. Boubtane et al. (2013) proved that immigrants affect a country's GDP per capita positively in 22 OECD countries.

The second independent variable in the model is the female labor participation rate. The results presented in Table 3 reveal that increased female participation in the labor force, increases income inequality in Canada: At a 5 percent significance level, a one-unit increase in the female labor participation rate increases the total income Gini coefficient by 37.3 percent, due to the dependent variable being log-transformed. It can be said that a rise in the female labor force participation rate increases the income inequality in Canadian provinces. Furthermore, as Maxwell (1990) proved that increasing the female labor participation rate may increase income inequality for dual-earning families. This result overlaps with Cancian & Reed (1999: 183) who discovered a positive relationship between earnings of females and income inequality in the USA, meaning that an increase in female labor participation reduces income inequality. Due to the similarity of demographic characteristics of the United States and Canada, this result is far from being surprising.

Moving on to general governments' final consumption expenditure, it can be seen that there is a very strong and significant relationship between income inequality and this variable. At a 1 percent significance level, a one percent increase in the general government's final consumption expenditure increases the total income Gini coefficient by 18.7 percent. From this finding, it can be deduced that the Canadian government's choices of spending and transfer payments were not positively contributing to income inequality. The cause of this can be reckless spending on national defense, over-buying military equipment, the government may not have a plan to reduce the income gap between rich and poor in Canadian provinces, and judicial expenditures may not consider this as a problem. Unstructured planned healthcare, housing, and education expenditures may harm income inequality.

The share of workers employed in manufacturing and forestry industries affects income inequality negatively according to the findings presented in Table 3. One would expect these relatively low-wage sectors to have a positive impact on income inequality across Canadian provinces. However, this is not the case here. There is a very strong negative relationship between percent employed in the manufacturing and forestry industry and income inequality. Percent employed in the manufacturing and forestry sector increases the income inequality across Canadian provinces. At a 1 percent significance level, a one-unit increase in percent employed in manufacturing and forestry results in an increase of 57.4 percent in total income Gini coefficient. This contradicts Breau (2007) and Breau (2015) which found a positive relationship between these two variables for Canada. In this study this result can be interpreted as follows: The Average Total Income increased across Canadian provinces over the years significantly and inevitably income inequality rises due to the characteristics of rising income. According to Statistic Canada's latest report on income ratios in Canada, the upper bound of the income distribution tends to affect average income more than the lower bound. The income gap rose significantly between medium-income earners and poor. As a result of this enlarging average income, manufacturing and forestry industry employees began to have more disposable income and they became wealthier compared to their prior state. In addition to that, as proven by (Dustmann et al., 2013) for the United Kingdom, immigrants tend to be employed below their skill level initially. Mostly these jobs are relatively low-paid compared to natives and old immigrants. This initial low-wage of immigrants widens the gap between the poor and the rich and increases the income inequality across Canadian provinces.

The unemployment rate is known to have a negative relationship with income inequality, regardless of being a high or low-income earner. Furthermore, one might think that, in case of an institutional change in a company or a firm, low-wage, low-skill employees are first to be cut to change with the lower-skilled ones or to shrink the firm size. However, the high-paid managers and employees stay in the company to steer the firm in a different direction. As a result of this, income inequality rises inevitably. During economic crises, the high-income earners tend to be affected less than low-

income earners. These people tend to have income from other sources as well such as their previous investment or rent, a type of income that is not directly tied to their job. Thus, being unemployed does not affect them like it does the low-income group. This is proven in this study no different than previous studies such as Mocan (1999); Roser & Cuaresma (2016). When looking at Table 3, it can be observed that there is a positive relationship between the unemployment rate and the high total income Gini coefficient at a 10 percent significance level across Canadian provinces. One unit increase in the unemployment rate increases the income inequality by 41.5 percent. The low significance level can be explained by the unemployment rate not being persistent across Canadian provinces. According to the labor force characteristics data published by Statistics Canada, since 1996, the unemployment rate in the dataset averages around 7 percent, and unemployment was never an actual problem in Canada in general.

Unionization is known to be an important factor affecting income inequality. Collective demands of the masses alter wages and raise standards for member workers. Companies and institutions tend to move their workers away from unions and union-like organizations to be able to control their employees' wages and benefits to their bidding. Card (1998) proved that unionization has been an impactful trend for the United States labor market by lowering the wage inequality for both men and women employed in the public sector. This relationship can be observed by taking a glance at Table 3 above. It can be seen that at a 10 percent significance level, a 1 unit increase in the unionization rate results in a 27.4 percent reduction in income inequality across Canadian provinces. It can be said that unions are significant institutions to reduce income inequality.

The estimated coefficient of the trade openness variable was insignificant in our first model. Even though the coefficient of the variable is expectedly positive, nothing can be said about it due to its insignificance. In the less developed regions of countries, trade openness can affect income inequality positively (Rivas, 2007: 556). But trade openness is known to be a negative contributor to income inequality in the developed world. Importing from labor-cheap countries affects the cost of production, comparing to the average wage in Canadian provinces, it's cheaper for companies to import certain

products than produce them domestically. However, the study cannot confirm this theory in the model.

Moving on to the next variable in the model, the average total income growth variable is found to have a positive and significant effect on the high total income Gini coefficient. It can be said that a one-unit increase in the average total income growth increases the income inequality by 36.8 percent at a 1 percent significance level. It can be deduced from this result that this income growth is skewed to the high-income growth, as a result, the increase in the high-income growth outweighing the increase in the low-income growth causing income inequality to rise across Canadian provinces. As Bartels (2018) stated for the United States, this study proves that in Canadian provinces income growth is distributed unevenly across people and the high stratum is taking the lion's share of it. Additionally, Uprety (2020) showed that inequality increases when GDP increases in 110 developing countries. Furthermore, as Fortin et al. (2012) stated, just like in the United States of America, from total income, the share that is taken by the richest 1% increased since 1980. This uneven distribution is expected to increase inequality over time. Overall, it can be said that this income growth is one of the biggest contributors to rising income inequality, Iceland (2003) proved that trends in poverty can be explained by income growth and he also stated that higher-income growth increased poverty significantly between 1969 and 1999 for Canada's neighbor the United States of America.

Canada is an immigrant-friendly country and shelters immigrants from all over the world, the characteristics of the population resemble highly with immigration, El-Assal & Fields (2018) stated that the population growth will rely on immigration flow by early 2030s in Canada. Thus, one would expect to see a similar effect for immigration and the population. Looking at Table 3, it can be observed that there is a negative relationship between population and total income Gini coefficient, which means that the population reduces the income inequality across Canadian provinces. A one percent increase in the population results in a 23.2 percent reduction in income inequality across Canadian provinces at a 1 percent significance level. The difference in magnitude of the effect compared to immigration can be caused by not all of the population formed of

recent immigrants, but still, this result should not be overlooked, one would expect to see an increase in income inequality when there is more share to take from the pie. Immigrants have an important role to play in the rise of the population in the Canadian provinces. And for this study, both variables reduce income inequality significantly.

In this study, a second model is estimated to analyze the effects of immigrants from different source countries on income inequality in Canada. In this model, coefficients are estimated separately for six different source groups, which were described in Chapter 3. The estimation results for this model are presented in the first column of Table 4. Although six groups are analyzed in the study, also another model is estimated to examine the effects of migrants from only Asia and Pacific countries, which have almost 50 percent share in total immigrants on average, so dominate the immigration flows. The results for this model are presented in the second column of Table 4.

The results shown in Table 4 are obtained by using fixed effect estimation methods. The initial result of the Hausman Test was negative, this is a common issue when dealing with such data and to resolve this problem Hausman Test was conducted again with the sigma more option, this method yields a more proper estimate of the contrast variance for exogeneity and overidentification in instrumental variables regression. As a result, the null hypothesis cannot be rejected with a 1 percent significance level and the fixed-effects estimation method is chosen.

Table 4: Impact of Immigration on Income Inequality (Immigration from Source Areas- All years)

Independent Variables	Model 2	Model 3
Female labor force participation rate	0.651*** (0.202)	0.327* (0.188)
General governments final consumption expenditure	0.118** (0.056)	0.196*** (0.063)
Percent employed in manufacturing and forestry	0.626*** (0.178)	0.565*** (0.142)
Unemployment Rate	0.510* (0.262)	0.437* (0.240)

Unionization Rate	-0.304* (0.156)	-0.298* (0.152)
Trade Openness	-0.019 (0.070)	0.100 (0.073)
The average total income growth	0.417*** (0.088)	0.379*** (0.087)
Population	-0.194** (0.091)	-0.259*** (0.087)
Africa and the Middle East	-7.570 (1.080)	
Asia and Pacific	-8.190 (5.680)	-0.011** (0.004)
Europe and the United Kingdom	1.870 (1.830)	
The United States	9.380 (7.020)	
South and Central America	-1.920 (2.720)	
Source Area Not Stated	-0.00009*** (0.00003)	
Constant	-0.654 (0.758)	-0.784 (0.604)
Number of Observations	184	184
Number of Provinces	8	8
R ² within	0.380	0.349
R ² between	0.398	0.596
R ² overall	0.111	0.208
F	7.11	9.97
Probability	0.000	0.000
Hausman	37.26	95.25

Note: The numbers in parentheses denote the standard errors. *, **, *** indicate significance at 1, 5, and 10 percent levels, respectively.

Looking at the female labor participation rate, one can observe the increase in the significance level and its coefficient in Table 4. In this model female labor participation is a more impactful variable affecting income inequality in Canadian provinces. It can be seen that at a 1 percent significance level, a one-unit increase in the female labor participation rate results in a 65.1 percent increase in the Gini coefficient. Comparing with the first model, the strength of this relationship between female labor participation rate and income inequality nearly doubled.

Moving on to general governments' final consumption expenditure a decrease in both significance level and the coefficient can be observed in Table 4. It can be said that

when accounting for the source areas, the relationship between general governments' final consumption expenditure and income inequality across Canadian provinces is weaker compared to taking only immigration into account. It can be observed that at a 5 percent significance level one percent increase in the general governments' final consumption expenditure results in an 11.8 percent increase in the Gini coefficient.

The next variable is the percent employed in manufacturing and forestry; one can see a slight change in the coefficient when looking at Table 4. However, the variable is still very significant. Change in the structure of the model seems like it does not affect the validity and the composition of this variable significantly. It can be said that at a 1 percent significance level, a one-unit increase in the percent employed in the manufacturing and the forestry industry increases the Gini coefficient by 62.6 percent. It can be said that the ever-continuing negative relationship between percent employed in the manufacturing and the forestry industry and income inequality across Canadian provinces continues.

The unemployment rate experienced a bump in the value of the coefficient as well. Looking at Table 4, one can see that the unemployment rate is still significant and a possible rise in it, increases the income inequality. Furthermore, in this model, it can be seen that the value of the coefficient is somewhat bigger. At a 10 percent significance level, a one-unit increase in the unemployment rate increases the Gini coefficient by 51 percent. It can be said that there is a negative relationship between the unemployment rate and income inequality across Canadian provinces.

Another variable that experienced a minuscule amount change in the coefficient value is the unionization rate. It seems that this change in the immigration variable does not cause a significant change in the unionization rate. When looking at Table 4, one can observe that at a 10 percent significance level a one-unit change in the unionization rate increases the Gini coefficient by 30.4 percent. It can be said that the positive relationship between the unionization rate and the income inequality across Canadian provinces continues. Unions are continuing to be an important factor affecting income inequality.

Moving on to the trade openness, this variable continues to be insignificant in this model as well after the changes made in the composition of the immigration

variable. Although the sign of the coefficient changed from positive to negative as Reuveny & Li (2003) suggest. We can say that there is no relationship between trade openness and income inequality across Canadian provinces. Trade continues to be an unrelated variable in this study.

Moving on to the next variable, one can see that a rise is in the coefficient value of the average total income growth is present. In the second model when taking source areas into account the effect of the average total income growth on the Gini coefficient is stronger. When looking at Table 4, one can observe that at a 1 percent significance level, a one-unit increase in the average total income growth increases the Gini coefficient by 41.7 percent. It can be deduced that a negative relationship between the average total income growth and income inequality is still present and when dividing the total immigration number by the source areas this relationship's magnitude is bigger than the one in model one.

The population variable had a change in this model, a decrease in the significance level and a decrease in the value of the coefficient can be observed. This is somewhat unexpected because one would expect to observe a rise in the value of the coefficient just as it can be observed at other explanatory variables. Due to the slight change in the composition of the variable immigration this potential rise in the value of the coefficient would be normal. However, this is not the case in model two. At a 5 percent significance level, a one percent rise in the population results in a 19.4 percent decrease in the Gini coefficient. Even though the significance level and the value of the coefficient are lower, there is still a positive relationship between the population and the income inequality across Canadian provinces.

The individual source areas that were used in this study gave unsatisfactory results. When they are present under the name of immigration, they yielded significant and meaningful results in the previous model. However, when used as divided areas of immigration, they lost their power of explainability.

First variable Africa and the Middle East group is insignificant in the second model used in this study. Furthermore, the sign of the coefficient is negative, however, nothing can be explained due to the insignificance of the variable. One would expect to

see a positive relationship between Africa and the Middle East group and the income inequality across Canadian provinces due to the characteristics of this group, however, such comment cannot be made after the analysis conducted in this.

The Asia and Pacific group is no exception, one would expect to observe a similar negative relationship between this variable and the Gini coefficient due to this variable is the halved immigration number. However, such an impact cannot be observed. Furthermore, the sign of the coefficient is meaningfully negative, nevertheless, the variable is insignificant.

Moving on to the next source area in model two, Europe and the United Kingdom is insignificant as well. However, the sign of the coefficient is positive, and it is aligned with the predicted sign due to the high-income background of European and British immigrants. One would expect this variable to have a positive relationship with the high Gini coefficient, nevertheless, due to the insignificance, there is no relationship between Europe and the United Kingdom group and income inequality across Canadian provinces.

The next source area group is Canada's neighbor the United States of America. This group's characteristics heavily resemble Europe and the United Kingdom. Both groups resemble each other by the type of immigrants they include. They both have a 4 percent share for the economic immigrant immigration group, meanwhile, Africa and Middle east group have 45 percent share, and South and Central America group have 19 percent. European and American immigrant groups have the same type of high-income immigrants compared to the other source areas historically. However, the variable that is insignificant in the model and the American immigrants have no explanatory power on income inequality across Canadian provinces.

The last immigrant source area is the South and Central American group. This is a somewhat smaller immigrant group compared to other groups, the smallest after the United States of America group to be specific. This immigration source area follows the trend of its predecessors and continues to be insignificant in the model. The sign of the coefficient is positive, and it is expected to be as it is, however, it is insignificant, thus a

comment cannot be made upon these results and it can be said that a relationship between South and Central America source area and Gini coefficient is not observable.

Lastly, the final immigration source area is Source Area not Stated, this immigrant group's number is extremely low and some years it is net-zero. It is formed from immigrants that did or could not specify their origin countries at the admission time. However, this variable is the only source area variable in the study that yielded significant results. At a 1 percent significance level, a one-unit increase in the Source Area not Stated immigrant group results in a decrease of 0.009 percent in the Gini coefficient. Furthermore, looking at Table 4 above, one can observe a positive relationship between Source Area not Stated group and income inequality across Canadian provinces.

The immigration selection criteria set by the government of Canada apply to everyone the same. Regardless of the socio-economic background of immigrants, Canada evaluates them in one pool of immigrants. The reason for this result of not finding any source area's particular effect on income inequality across Canadian provinces could be a cause of the Canadian government's fair approach to all immigrants from all over the world. According to Canada's immigration policy, regardless of the applicant's background, if the applicant has enough qualifications to contribute to the country positively by any means, he or she gets the right to be an immigrant in Canada.

Next, one can see the third model on the right-hand side in Table 4, fixed-effects estimation technique has been used to interpret the results. After regressing the variables with both fixed and random effects estimator, the Hausman test is conducted. As a result, the null hypothesis cannot be rejected with a 1 percent significance level and the fixed-effects estimation method is chosen. In this model, the study treats the source area Asia and Pacific just as the total immigration variable. In the previous model, the natural logarithm of each source area was not calculated because some values were getting lost, namely Source Area not Stated, and some were getting smaller and losing their explainability. The reason for this was to keep the observation number high and have a stronger model with better explainability power. Thus, to achieve this, in this model the natural logarithm of the value Asia and Pacific is calculated.

The first response variable for the variable is the female labor participation rate, as can be seen in Table 4 above at a 10 percent significance level, a one-unit increase in the female labor participation rate increases the Gini coefficient by 32.7 percent. Compared to model two, the decrease in the significance level can be explained by the absence of other source areas that the previous model has taken into account. The value of the coefficient halved as well, which means taking all factors into account female labor participation is still important, however not impactful as in the previous model. It can be observed that a negative relationship between female labor participation and income inequality in Canadian provinces still exists.

Moving on to general governments' final consumption expenditure, one can observe a rise in the significance level and the value of the coefficient in Table 4. At a 1 percent significance level, a one percent increase in the general governments' final consumption expenditure increases the Gini coefficient by 19.6 percent. Subtracting the other source areas increased the impact of this variable and made it more significant. It can be said that the persistent negative relationship between general governments' final consumption expenditure and income inequality across Canadian provinces is still present in this model.

The next variable is the unemployment rate, which is significant in all models. It can be said that the unemployment rate was not crucially affected by the change in the source area groups. The variable continues to be statistically significant and explains the model as predicted. As can be observed in Table 4, at a 10 percent significance level a one-unit increase in the unemployment rate increase the Gini coefficient by 43.7 percent. There is a negative and statistically significant relationship between the unemployment rate and income inequality across Canadian provinces.

The impact of the unionization rate is nearly identical as it is in the previous model that took all the source areas into account. Unions continue to affect income inequality across Canadian provinces positively. One can observe that in Table 4, at a 10 percent significance level, a one-unit increase in the unionization rate decreases the Gini coefficient by 29.8 percent. The sign of the coefficient and continues to be aligned with the predictions of this study. Unlike the variables like female labor participation and

general governments' final consumption expenditure, coefficient values of the unionization rate in the three models that are used in this study are very close. This means that the relationship between the unionization rate and the income inequality across Canadian provinces is not easily affected by the changes in other response variables.

The trade openness variable is again insignificant in this model. Despite the change in the sign of the coefficient value from negative to positive, trade openness is still insignificant. Thus, there is no relationship between trade openness and the Gini coefficient. Making the model more in detail and dividing the immigration variable into different source area groups did not make this variable impactful for our model and across Canadian provinces.

Moving on to the next variable in model three, one can observe the impact of the average total income growth in Table 4 above. Although there is no significant change in the value of the coefficient, the variable's power is still intact and very significant. At a 1 percent significance level, one can see that a one-unit increase in the average total income growth results in a 37.9 percent increase in the Gini coefficient. It can be said that there is a negative relationship between the average total income growth and income inequality across Canadian provinces. Income is still an impactful response variable in the model despite taking only one source area into account. The value of the coefficient is slightly lower than the prior model, but the difference is minuscule.

The population jumps back up in the significance level and becomes highly significant after the alterations made in the composition of the immigration variable. It resembles the result in the first model, this outcome confirms the theory of Asia and Pacific source area's characteristics similarity with the total immigration variable. One can observe that at a 1 percent significance level, a one percent increase in the population decreases the Gini coefficient by 25.9 percent. It can be observed that the variable is both statistically significant and the value of the coefficient rose considerably. The positive relationship between the population and the income inequality across Canadian provinces continues.

The last independent variable that is used in this model is the immigrant from Asia and the Pacific source area. The characteristic of the Asia and Pacific immigrant group was the reason for building this model. It is nearly half of the total immigration number. Due to this magnitude, the study explored this source area more in-depth compared to other source areas. It can be seen in Table 4 above, at a 5 percent significance level, a one percent increase in the Asia and Pacific group results in a 1.1 percent decrease in the Gini coefficient. As it was in the first model between the immigration and Gini coefficient, there is a positive relationship between the number of immigrants from Asia and Pacific group and income inequality across Canadian provinces when this group is substituted with the variable total immigration. Asia and Pacific group includes countries like India, Japan, China, Vietnam, Australia, and New Zealand. It can be said that there is a positive relationship between immigrants mainly originated from these countries and income inequality across Canadian provinces.

As mentioned above, Canadian authorities made a significant change in immigration regulations in 2002. In order to analyze the effects of this policy change, the data set is divided into two subperiods, as explained in Chapter 3. As pointed out by Hou & Picot (2014: 14) the effect of this change in immigration regulation is expected to be observed after 2004. The estimation results for these two sub-periods are presented in Table 5.

The first model can be observed on the left-hand side of the table that considers the years between 1994-2003. The second model is on the right-hand side of Table 5 and it considers the time period 2004-2017. In this study, a fixed-effects estimation technique has been used to interpret the results. After regressing the variables with both fixed and random effects estimator, the Hausman test is conducted. Hausman Test for model four that considers the time period between 1994-2003 states that, the null hypothesis cannot be rejected with a 1 percent significance level and the fixed-effects estimation method is preferable. For model five, which considers the time period 2004-2017 the initial result of the Hausman Test was negative, this is a common issue when dealing with such data and to resolve this problem Hausman Test was conducted again with the sigmamore option, by doing this common estimate of disturbance variance is

based when forming the two covariance matrices to improve the efficiency of the test. As a result, the null hypothesis cannot be rejected with a 1 percent significance level and the fixed-effects estimation method is chosen.

Table 5: Impact of Immigration on Income Inequality (Total Migration-1994-2003 and 2004-2017)

Independent Variables	Model 4	Model 5
Immigration	-0.027* (0.014)	0.010 (0.008)
Female labor force participation rate	0.150 (0.327)	-0.341 (0.305)
General governments final consumption expenditure	0.105 (0.877)	0.027 (0.087)
Percent employed in manufacturing and forestry	-1.688*** (0.570)	0.402* (0.240)
Unemployment Rate	-0.752 (0.584)	0.119 (0.315)
Unionization Rate	-0.562*** (0.189)	0.863*** (0.319)
Trade Openness	-0.071 (0.012)	-0.113 (0.097)
The average total income growth	0.596*** (0.129)	0.319*** (0.099)
Population	0.738 (0.147)	-0.059 (0.128)
Constant	-3.293* (1.685)	-0.810 (1.333)
Number of Observations	72	112
Number of Provinces	8	8
R ² within	0.709	0.321
R ² between	0.879	0.449
R ² overall	0.645	0.167
F	14.94	4.99
Probability	0.000	0.000
Hausman	205.16	51.31

Note: The numbers in parentheses denote the standard errors. *, **, *** indicate significance at 1, 5, and 10 percent levels, respectively.

The immigration variable is only significant for model four. In model five, the variable immigration is insignificant and cannot explain the model above. Thus, as seen in Table 5, at a 10 percent significance level an increase of one percent in immigration

decreases the Gini coefficient between the years 1994-2003 by 2.7 percent. For the latter model, the sign of the coefficient is positive, however, it is statistically insignificant. One can observe that before the regulation change, there is a positive relationship between immigration and income inequality across Canadian provinces.

As it can be seen in Table 5, female labor participation is insignificant and does not explain the model. However, the difference in the sign of the coefficients is worth noting. One can observe the coefficient for female labor participation is positive in the pre-regulation time period. However, for the period 2004-2017, it is negative. Nevertheless, the results cannot explain the income inequality across Canadian provinces.

Moving on to the next variable used in these models, general governments' final consumption expenditure is unexpectedly insignificant and cannot explain the model. This variable was persistently significant in the previous models and had a negative contribution to the income inequality across Canadian provinces.

Percent employed in manufacturing and forestry industries gave crucial results. This change in the immigration regulations in 2002 affected the impact of percent employed in manufacturing and forestry on income inequality significantly. For the fourth model, at a 1 percent significance level one-unit increase in the percent employed in the manufacturing and forestry decreases the Gini coefficient by 168.8 percent. The value of the coefficient is higher than any value that was included in this study. This result is in harmony with the previous literature, Breau (2007) to be specific and there is a strong positive relationship between percent employed in the manufacturing and forestry and income inequality across Canadian provinces for the years between 1994-2003. However, for the fifth model that considers the years 2004-2017 results are drastically different. At a 10 percent significance level, a one-unit increase in the percent employed in manufacturing and forestry results in a 40.2 percent increase in the Gini coefficient. One can deduct from these results that there is a negative relationship between this variable and the income inequality across Canadian provinces in the latter model. It can be observed that this change in the immigration regulation, considering the percent employed in manufacturing and forestry increased the income inequality.

The next independent variable that is used in the models is the unemployment rate. Results from the fixed-effects regressions are statistically insignificant. Thus, the unemployment rate cannot explain the models that are divided by the date of regulation change. Furthermore, the difference in sign of the coefficient is observed. For the years between 1994-2003, it is negative. However, for model five the sign of the coefficient is positive. Nevertheless, the insignificance of the results is stopping the study from interpreting the outcomes.

The unionization rate continues to be a key variable in the models. For the model that considers the years between 1994-2003, at a 1 percent significance level, a one-unit increase in the unionization rate decreases the Gini coefficient by 56.2 percent. As proven by (Breau, 2007: 84), there is a strong and positive relationship between the unionization rate and the income inequality across Canadian provinces. It must be said that there were no studies before this one that specifically investigated the after-effects of the regulation change in immigrant selection criteria. Furthermore, the next finding is unexpected and contrary to the existing literature, nevertheless, it is statistically meaningful. Moving on to the next model, as it can be seen in Table 5, at a 1 percent significance level, a one-unit increase in the unionization rate results in an 86.3 percent increase in the Gini coefficient. It can be seen that the effects of this alteration in the immigrant selection criteria in 2002 can be observed through the unionization rate's impact on income inequality. It can be said that after the change in the immigration selection, the unionized new immigrants were rising the income inequality across Canadian provinces. Besides their native counterparts, unionized immigrants with more qualifications and better language abilities too earned more than their predecessors and this possible rise in their income contributed to an increase in the income inequality across Canadian provinces.

The trade openness' coefficient sign is negative. This ever-insignificant variable throughout this study continues to be meaningless. The negative signs of the coefficients for the models 1994-2003 and 2004-2017 cannot be interpreted due to the statistical insignificance. One can observe that there is no relationship between trade openness and income inequality across Canadian provinces, as can be seen in Table 5.

The average total income growth is significant for both models. Income continues to be an impactful response variable in this study. For the model considers the years between 1994-2003, at a 1 percent significance level, a one-unit increase in the average total income growth increases the Gini coefficient by 59.6 percent. Continuing with the model that considers the years between 2004-2017, at a 1 percent significance level a one-unit increase in the average total income growth results in an increase of 31.9 percent in the Gini coefficient. It can be said that dividing the dataset into two parts did not affect the significance and the effect of this variable on income inequality across Canadian provinces. However, it must be said that after the change in the immigration system the magnitude of the effect is nearly halved.

The population variable is different for the pre-and post-alteration. Although the sign of the coefficient for the model that considers the years between 1994-2003 is positive and for the model that takes the years 2004-2017 into account is negative, the coefficients are statistically insignificant. Thus, there is no relationship observed between the population and income inequality across Canadian provinces in these models.

It can be seen in Model 5 that; the explaining power of the model is significantly lower than Model 4. To tackle this issue, a dummy variable for the 2008 financial crisis has been used, however, this application has not yielded any meaningful results and the explaining power of the model has not improved. Furthermore, due to the scarcity in the academic literature that considers the second sub-period in this study, no other explanation except the 2008 financial crisis comes to mind as a cause for this disruption in the explaining power of the model.

To investigate the relationship between immigration and income inequality across Canadian provinces five explanatory models were structured in this chapter. Furthermore, this study proved across five models that immigration was positively contributing to the income inequality in all the models that the variable was significant.

CONCLUSION

The aim of this study was to analyze the relationship between immigration and income inequality across Canadian provinces. To this end, the study utilized panel data methods and various empirical estimations to better explain the underlying causes of rising income inequality across Canadian provinces. The study covered the years between 1994-2017 and to observe the recent trends and the effects of regulatory changes on income inequality, the analysis is repeated for two sub-periods. In this thesis, for the first time in the literature, the main dataset is divided into two subperiods to observe the impact of the regulation change more clearly. In addition to that, immigration source areas are divided to analyze each source area's effect on income inequality.

The major finding of this study is that in Canadian provinces, the inflow of immigrants decreases income inequality. This result is hardly surprising judging by the Canadian government's eagerness to accept more immigrants for the following years. This study proved that there is a place for these immigrants coming from all around the world in Canada. There are enough jobs for the newcomer immigrants if they satisfy the criteria of the Canadian immigration programs. Especially after the alteration in the immigration selection criteria in 2002, the newcomers are more skilled, prior to the regulation. Federal and General governments are doing a better job of placing these immigrants in suitable positions, so the country's industries and resources are being used efficiently. This is the reason why contrary to other countries, there are not many unsupportive voices raised against new immigrants in Canada, because immigrants make Canada more income equal and more economically prosperous country.

According to the empirical findings of this study, the general government's final consumption expenditures, the average total income growth, female labor force participation, percent employed in manufacturing and forestry, unemployment rate, and the average total income growth affect income inequality negatively across Canadian provinces. Income inequality in Canada is mainly rising due to these factors. However, the inflow of international immigration, population size, and the unionization rate are

contributing the income inequality positively. Policymakers in Canada should take these factors that aid income inequality into account when implementing policies. This study focuses on immigration, and it is seen that immigrants are contributing to income inequality positively, this result might surprise some since globalization is seen as an important factor that is affecting income inequality negatively. Nevertheless, the characteristics of immigrants for Canadian case differs from its counterparts in different countries. As a result, as it is stated in (CIC, 2020) they have a significant positive effect on Canada's economic growth and income inequality.

In this study, we also attempted to find out whether the source countries of immigrants have different effects on income inequality or not. After dividing the total immigration into source areas the model was estimated again, but none of these groups were significant across Canadian provinces. Only the source area, "not stated group" was significant but due to the characteristics of this group, no socio-economic comment can be made. The other variables' significance, the sign of the coefficients did not deviate from the original model significantly.

Due to the size of the immigrant group "Asia and Pacific", an additional model was formed to explain the relationship between immigration and income inequality across Canadian provinces further. The response variables resembled the previous model's results. This proves that using Asia and Pacific group as a proxy for the total immigration conceived meaningful results in this model. The study uncovered that there is a positive relationship between the immigrants coming from the Asia and Pacific countries and income inequality across Canadian provinces. In harmony with the total immigration, Asia and Pacific group lowers the Gini coefficient by itself when it is the only source area present in the model and make Canada more income equal country to live in.

Lastly, to investigate the relationship between immigration and income inequality more dynamically, the main dataset was divided into two subperiods, and analysis was conducted for these two subperiods separately. The main differentiating variables for the sub-periods were the unionization rate and percent employed in manufacturing and forestry. For the first period, namely 1994-2003, these two variables

affected income inequality across Canadian provinces positively. However, for the second sub-period 2004-2017, which covers the years after the changes made in the Canadian immigration regulations, they had a negative effect on income inequality across Canadian provinces. It can be said that after the regulation in immigration criteria that was implemented in 2002, the unionization rate and percent employed in manufacturing and forestry started to worsen the income inequality in Canada.

This study revealed the positive impact of immigration across Canadian provinces. The government of Canada should continue to focus on accepting qualified immigrants that can better the country's state of income inequality and economic well-being. The Canadian case shows that with better targeted, and well-thought-out policies countries can benefit from immigrant inflows, and with small developments in the current policies, Canada can increase the benefits of immigration even more. This study can be extended in several ways. A larger timeframe can be selected which includes the period after the Immigration Act that was implemented in 1976 if source area immigration data becomes available. In addition to that, the provinces of New Brunswick, Newfoundland & Labrador, and Prince Edward Island can be examined individually instead of grouping them under one artificial province if CIC starts publishing data for these provinces. Immigrants can be also categorized according to their immigration classes, such as refugees, family class, and economic immigration. These alterations could give more detailed explanations and interpretations of the impact of immigration on income inequality across Canadian provinces. However, for these alterations, several published reports for immigration must be analyzed and due to the characteristics of these reports, the immigrant data must be inputted manually, which can be a difficult process for this lengthy data.

REFERENCES

Akbari, A. H., & Haider, A. (2018). Impact of Immigration on Economic Growth in Canada and in its Smaller Provinces. *Journal of International Migration and Integration*, 19(1), 129–142.

Allison, P. D. (1978). Measures of Inequality. *American Sociological Review*, 43(6), 865–880.

Anderson, B. (2012). The border and the Ontario economy. Cross-Border Transportation Centre. University of Windsor.

<http://cbinstitute.ca/wp-content/uploads/2015/09/The-Border-and-the-Ontario-Economy.pdf>, (12.03.2021).

Asteriou, D., Dimelis, S., & Moudatsou, A. (2014). Globalization and income inequality: A panel data econometric approach for the EU27 countries. *Economic Modelling*, 36, 592–599.

Aubuchon, C. P., & Wheelock, D. C. (2009). The global recession. *Economic Synopses*, 2009.

<https://research.stlouisfed.org/publications/economic-synopses/2009/05/05/the-global-recession>, (11.03.2021).

Aydemir, A., & Borjas, G. J. (2007). Cross-Country Variation in the Impact of International Migration: Canada, Mexico, and the United States. *Journal of the European Economic Association*, 5(4), 663–708.

Baragar, F. D. (2011). Report on the Manitoba Economy 2011. Canadian Centre for Policy Alternatives–Manitoba.

<https://www.policyalternatives.ca/sites/default/files/uploads/publications/Manitoba%20Office/2011/09/2011ReportMbEconBaragar-smaller%20file%20size.pdf>, (11.03.2021).

Bartels, L. M. (2018). *Unequal Democracy: The Political Economy of the New Gilded Age* - Second Edition. Princeton University Press.

Bonikowska, A., Hou, F., & Picot, G. (2017). New Immigrants Seeking New Places: The Role of Policy Changes in the Regional Distribution of New Immigrants to Canada. *Growth and Change*, 48(1), 174–190.

Boubtane, E., Coulibaly, D., & Rault, C. (2013). Immigration, Growth, and Unemployment: Panel VAR Evidence from OECD Countries. *LABOUR*, 27(4), 399–420.

Breau, S. (2007). Income inequality across Canadian provinces in an era of globalization: Explaining recent trends. *The Canadian Geographer / Le Géographe Canadien*, 51(1), 72–90.

Breau, S. (2015). Rising inequality in Canada: A regional perspective. *Applied Geography*, 61, 58–69.

Breau, S., Kogler, D. F., & Bolton, K. C. (2014). On the Relationship between Innovation and Wage Inequality: New Evidence from Canadian Cities. *Economic Geography*, 90(4), 351–373.

Cancian, M., & Reed, D. (1999). The impact of wives' earnings on income inequality: Issues and estimates. *Demography*, 36(2), 173–184.

Card, D. (1998). Falling union membership and rising wage inequality: What's the connection? *NBER Working paper*, (w6520).

Card, D. (2005). Is the New Immigration Really So Bad? *The Economic Journal*, 115(507), F300–F323.

Card, D. (2009). Immigration and Inequality. *American Economic Review*, 99(2), 1–21.

Card, D., Lemieux, T., & Riddell, W. C. (2004). Unions and wage inequality. *Journal of Labor Research*, 25(4), 519–563.

CIC, Immigration, Refugees and Citizenship Canada. (2020). 2020 Annual Report to Parliament on Immigration.

<https://www.canada.ca/en/immigration-refugees-citizenship/corporate/publications-manuals/annual-report-parliament-immigration-2020.html>, (04.01.2021).

Coleman, D., & Rowthorn, R. (2004). The economic effects of immigration into the United Kingdom. *Population and Development Review*, 30(4), 579–624.

Couture, C. (2007). Quebec | The Canadian Encyclopedia.

<https://www.thecanadianencyclopedia.ca/en/article/quebec>, (12.03.2021).

Davis, H. C., & Hutton, T. A. (1989). The two economies of British Columbia. *BC Studies: The British Columbian Quarterly*, 82, 3–15.

Docquier, F., Kone, Z. L., Mattoo, A., & Ozden, C. (2019). Labor market effects of demographic shifts and migration in OECD countries. *European Economic Review*, 113, 297–324.

Dustmann, C., Frattini, T., & Preston, I. P. (2013). The Effect of Immigration along the Distribution of Wages. *The Review of Economic Studies*, 80(1), 145–173.

El-Assal, K., & Fields, D. (2018). Canada 2040: No immigration versus more immigration. The Conference Board of Canada.

<https://www.conferenceboard.ca/e-Library/document.aspx?did=9678>, (04.01.2021).

Eurostat. (2019). Migration and migrant population statistics—Statistics Explained.

https://ec.europa.eu/eurostat/statistics-explained/index.php/Migration_and_migrant_population_statistics, (04.01.2021).

Feridun, M. (2007). Immigration, Income and Unemployment: An Application of the Bounds Testing Approach to Cointegration. *The Journal of Developing Areas*, 41(1), 37–49.

Fortin, N., Green, D. A., Lemieux, T., Milligan, K., & Riddell, W. C. (2012). Canadian Inequality: Recent Developments and Policy Options. *Canadian Public Policy*, 38(2), 121–145.

Frenette, M., Green, D. A., & Milligan, K. (2007). The tale of the tails: Canadian income inequality in the 1980s and 1990s. *Canadian Journal of Economics/Revue Canadienne d'économique*, 40(3), 734–764.

Goldberg, P. K., & Pavcnik, N. (2007). Distributional Effects of Globalization in Developing Countries. *Journal of Economic Literature*, 45(1), 39–82.

Statistics Canada. (23 December 2014). The Daily — General Social Survey: Social identity, 2013.
<https://www150.statcan.gc.ca/n1/daily-quotidien/141223/dq141223b-eng.htm>,
(04.01.2021).

Gray, D., Mills, J. A., & Zandvakili, S. (2003). New Perspective on Canadian National and Provincial Income Inequality. UNU-WIDER Conference on Inequality, Poverty and Human Well-Being, Helsinki, 30–31.

Gustafsson, B., & Johansson, M. (1999). In Search of Smoking Guns: What Makes Income Inequality Vary over Time in Different Countries? *American Sociological Review*, 64(4), 585–605.

Halmos, K. (2011). The effect of FDI, exports and GDP on income inequality in 15 Eastern European countries. *Acta Polytechnica Hungarica*, 8(1), 123–136.

Hayes, E. (February 2020). Workers without borders: Addressing SME labour shortages through immigration | CFIB.

<https://www.cfib-fcei.ca/en/research/workers-without-borders-addressing-sme-labour-shortages-through-immigration>, (04.01.2021).

Heston, A., Summers, R., & Aten, B. (2002). Penn world table version 6.1. Center for International Comparisons at the University of Pennsylvania (CICUP), 18.

Hibbs, B., & Hong, G. (2015). An examination of the effect of immigration on income inequality: A Gini index approach. *Economics Bulletin*, 35(1), 650–656.

Hou, F., & Bonikowska, A. (2016). Analytical Studies Branch Research Paper Series Educational and Labour Market Outcomes of Childhood Immigrants by Admission Class. <https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2016377-eng.htm>, (04.01.2021).

Hou, F., & Picot, G. (2014). Immigration, Low Income and Income Inequality in Canada: What's New in the 2000s? In Analytical Studies Branch Research Paper Series (No. 2014364e; Analytical Studies Branch Research Paper Series). Statistics Canada, Analytical Studies Branch. <https://ideas.repec.org/p/stc/stcp3e/2014364e.html>, (24.12.2020).

Hsiao, C. (1985). Benefits and limitations of panel data. *Econometric Reviews*, 4(1), 121–174.

Hutter, S., & Kriesi, H. (2021). Politicising immigration in times of crisis. *Journal of Ethnic and Migration Studies*, 1–25.

Iceland, J. (2003). Why poverty remains high: The role of income growth, economic inequality, and changes in family structure, 1949–1999. *Demography*, 40(3), 499–519.

International Education division of Global Affairs Canada. (22 August 2019). Canada's International Education Strategy (2019-2024). GAC.

<https://www.international.gc.ca/education/strategy-2019-2024-strategie.aspx?lang=eng>, (07.01.2021)

International Organization for Migration. (2020). Financial Report for the Year Ended 31 December 2019.

<https://governingbodies.iom.int/system/files/en/council/111/C-111-3%20-%20Financial%20Report%202019.pdf>, (04.01.2021).

Jarque, C. M., & Bera, A. K. (1980). Efficient tests for normality, homoscedasticity and serial independence of regression residuals. *Economics Letters*, 6(3), 255–259.

Kerr, S. P., & Kerr, W. R. (2011). Economic Impacts of Immigration: A Survey (No. w16736). National Bureau of Economic Research. <https://www.nber.org/papers/w16736>, (25.12.2020).

Longhi, S., Nijkamp, P., & Poot, J. (2009). Regional Economic Impacts of Immigration: A Review (SSRN Scholarly Paper ID 1422483). Social Science Research Network. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1422483, (28.12.2020).

MacLachlan, I., & Sawada, R. (1997). Measures of Income Inequality and Social Polarization in Canadian Metropolitan Areas. *The Canadian Geographer / Le Géographe Canadien*, 41(4), 377–397.

Maxwell, N. L. (1990). Changing Female Labor Force Participation: Influences on Income Inequality and Distribution. *Social Forces*, 68(4), 1251–1266.

Ménard, M. (2005). Canada, a Big Energy Consumer: A Regional Perspective. <https://www150.statcan.gc.ca/n1/pub/11-621-m/11-621-m2005023-eng.htm#tm8>, (11.03.2021).

Mocan, H. N. (1999). Structural Unemployment, Cyclical Unemployment, and Income Inequality. *The Review of Economics and Statistics*, 81(1), 122–134.

Moore, E. G., & Pacey, M. A. (2003). Changing Income Inequality and Immigration in Canada, 1980-1995. *Canadian Public Policy / Analyse de Politiques*, 29(1), 33–52.

Nielsen, F., & Alderson, A. S. (1997). The Kuznets Curve and the Great U-Turn: Income Inequality in U.S. Counties, 1970 to 1990. *American Sociological Review*, 62(1), 12–33.

OECD. (2011). “Trade openness”, in *OECD Science, Technology and Industry Scoreboard 2011*, OECD Publishing, Paris. 176–177.

OECD. (2021). International student mobility (indicator), OECD. <http://data.oecd.org/students/international-student-mobility.htm>, (04.01.2021).

Orrenius, P., & Zavodny, M. (2018). Does Migration Cause Income Inequality? Mission Foods Texas-Mexico Center Research. <https://scholar.smu.edu/texasmexico-research/1>, (22.10.2020).

Ostrovsky, Y., & Picot, G. (2020). Innovation in immigrant-owned firms. *Small Business Economics*, 1-18.

Partridge, M. D., Rickman, D. S., & Levernier, W. (1996). Trends in U.S. income inequality: Evidence from a panel of states. *The Quarterly Review of Economics and Finance*, 36(1), 17–37.

Reuveny, R., & Li, Q. (2003). Economic Openness, Democracy, and Income Inequality: An Empirical Analysis. *Comparative Political Studies*, 36(5), 575–601.

Rivas, M. G. (2007). The effects of trade openness on regional inequality in Mexico. *The Annals of Regional Science*, 41(3), 545–561.

Roser, M., & Cuaresma, J. C. (2016). Why is Income Inequality Increasing in the Developed World? *Review of Income and Wealth*, 62(1), 1–27.

Rowthorn, R. (2008). The fiscal impact of immigration on the advanced economies. *Oxford Review of Economic Policy*, 24(3), 560–580.

Seidle, F. L. (2013). Canada's provincial nominee immigration programs: Securing greater policy alignment. *IRPP Study*, 43, 1.

The United Nations Refugee Agency. (2019). Are refugees good for Canada? UNHCR. MANSO.

<https://mansomanitoba.ca/resources/unhcr-canada-report-are-refugees-good-for-canada-a-look-at-canadian-refugee-integration/>, (04.01.2021).

Thurow, L. C. (1987). A Surge in Inequality. *Scientific American*, 256(5), 30–37.

Torres-Reyna, O. (2007). Panel data analysis fixed and random effects using Stata (v. 4.2). Data & Statistical Services, Princeton University, 112. https://www.academia.edu/download/57152357/_Panel101.pdf, (02.11.2020).

Treas, J., & Bengtson, V. L. (1987). The Family in Later Years. In M. B. Sussman & S. K. Steinmetz (Eds.), *Handbook of Marriage and the Family* (pp. 625–648). Springer US.

Turcotte, M., & Savage, K. (2020). The contribution of immigrants and population groups designated as visible minorities to nurse aide, orderly and patient service associate occupations. Statistics Canada.

<https://www150.statcan.gc.ca/n1/en/catalogue/45280001202000100036>, (04.01.2021).

Ung, K., & Olsson, I. (2019). The effects of immigration on income distribution: The Swedish case. (Bachelor Dissertation). Växjö: Linnaeus University, School of Business and Economics.

Uprety, D. (2020). Does Skilled Migration Cause Income Inequality in the Source Country? *International Migration*, 58(4), 85–100.

Variyam, M. N. (2006). Canada's Skilled Worker Immigration Regulation and Its Impact on the Canadian Economy. *Law & Bus. Rev. Am.*, 12, 603.

Vasseur, L., Catto, N., Burton, D., Chouinard, O., Davies, J., DeBaie, L., Duclos, G., Duinker, P., Forbes, D., & Hermanutz, L. (2007). Atlantic Canada. From Impacts to Adaptation: Canada in a Changing Climate, 119–170.

Ward, N. (2015). Saskatchewan (Province) | The Canadian Encyclopedia. <https://www.thecanadianencyclopedia.ca/en/article/saskatchewan>, (12.03.2021).

Wong, K. (2020). *The Improved Labour Market Performance of New Immigrants to Canada, 2006-2019* (No. 2020-03). Centre for the Study of Living Standards.

Wooldridge, J. M. (2010). *Econometric Analysis of Cross Section and Panel Data*, second edition. MIT Press.

Xu, P., Garand, J. C., & Zhu, L. (2016). Imported Inequality? Immigration and Income Inequality in the American States. *State Politics & Policy Quarterly*, 16(2), 147–171.

Yalnizyan, A. (2007). The rich and the rest of us. *The changing face of Canada's growing gap*. Toronto: Canadian Centre for Policy Alternatives.

Yssaad, L., & Fields, A. (2018). The Canadian immigrant labour market: Recent trends from 2006 to 2017. Statistics Canada, Labour Statistics Division. <https://www150.statcan.gc.ca/n1/pub/71-606-x/71-606-x2018001-eng.htm>, (04.01.2021).