

**THE LABOR MARKET EFFECTS OF IMMIGRATION:
EVIDENCE FROM THE CANADIAN EXPERIENCE**

by

Jared Cummer

A dissertation submitted to the Faculty of Arts and Sciences of the University
of Delaware in partial fulfillment of the requirements for the degree of Doctor of
Philosophy in Urban Affairs and Public Policy

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by

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ABSTRACT

In an effort to improve the economic outcomes of immigrants, starting in the mid-1990s the Canadian government introduced regulatory amendments and new legislation that altered the skill composition of new cohorts entering the country. At the same time, the government significantly increased the level of immigration through expanding the Temporary Foreign Worker (TFW) program and landed immigrant entry streams. These policy changes focused on admitting applicants with the skills needed to adjust with long-run shifts in the labor market, while addressing short-term demand.

By altering the Canadian immigration system, the government significantly altered the composition of the country's labor force. Immigrant cohorts entering under the new policy regime had a different composition of skills in comparison to earlier cohorts. By focusing on improving immigrant human capital, the Canadian government altered the skill distribution of the labor force. At the same time, increasing landed and temporary immigration levels shifted the short and long-run supply of labor. As a result, changing the composition and number of immigrants entering Canada influences the general labor market equilibrium of the country.

This dissertation contributes to the immigration literature by examining the impact that changes to Canadian immigration policy between the mid-1990s and early 2000s had on immigrant and native-born employment outcomes. This research concentrates on the supply-side effects immigration has on labor market outcomes in Canada. In the first empirical chapter, I examine immigrant entry earnings following the major policy changes. Since policy changes varied between entry streams, I estimate the change in entry earnings for landed immigrants and temporary foreign workers, separately. I find that after an initial improvement in the earnings of both immigrant cohorts in the mid-1990s, policy changes in the early 2000s eliminated most of this improvement. In the second empirical chapter, I expand the existing immigration literature through an examination of the employment patterns of landed immigrants. Following the policy changes, I find that landed immigrants are more likely to experience periodic unemployment in comparison to native-born Canadians. I attribute the majority of this difference to weak language abilities and visible minority status. In the final empirical chapter, I analyze the effects of increasing levels of immigration on the existing Canadian workforce. I find that the effects of an immigrant supply shock are concentrated within specific skill groups and regional labor markets. Overall, the results in this dissertation support policy changes that focus on matching potential immigrants with employment opportunities prior to arrival in Canada.

Chapter 1

EXAMINING THE LABOR MARKET EFFECTS OF IMMIGRATION

Immigration is a two-step selection process that first requires a prospective immigrant to select a receiving country. Next, the receiving country must select the prospective immigrant for admittance. Many factors influence the decision of an individual to immigrate and the receiving country to accept the immigrant. However, economics have had a consistent and significant effect on the immigration process. For example, individuals may immigrate to a new country in search of improved economic opportunities for themselves and their family. At the same time, the receiving country may use immigration as a source of labor to meet current and future demand. For these reasons, many immigrant-receiving countries have developed immigration policies that reflect a broader range of national economic objectives.

Canada is one of the leading immigrant-receiving countries in the World (Ferrer, Riddell, and Picot 2012). From the country's early beginnings, national economic priorities have shaped the development of Canada's immigration policy. Over time, changing economic conditions have shifted Canadian immigration policy between short-term and long-term labor market needs (A. Green and Green 2004). For nearly 30 years short-term fluctuations in the economy and demand for specific occupations has driven the level and composition of immigrants entering Canada. More recently, growing concerns over the aging domestic workforce has forced the

government to alter immigration policy to address projected long-term skill and labor shortages. Today, Canada continues to rely on immigration to fill shortages in the domestic labor force as a means to foster economic growth.

Since the early 1970s, the economic outcomes of successive immigrant cohorts have progressively deteriorated in comparison to native-born Canadians (Baker and Benjamin 1994; Bloom, Grenier, and Gunderson 1995)¹. In an effort to improve economic outcomes, the Canadian government introduced a series of comprehensive changes between the mid-1990s and early 2000s that focused on two primary aspects of the country's immigration policy. First, the Canadian government introduced regulatory amendments and new legislation that altered the human capital composition of immigrants admitted into the country. Second, the Canadian government significantly increased the level of immigration. These policy changes focused the selection process on admitting applicants with the skills needed to adjust with long-run shifts in the labor market (Ferrer, Riddell, and Picot 2012)². Applicants with greater English proficiency, higher levels of education and more work experience received preferential treatment under the new selection process. At the same time, the Canadian

¹ The majority of research examining the economic deterioration of immigrants in Canada has focused on the growing wage gap in comparison to natives. In addition, the research examines the slowing rate of economic assimilation experienced by recent immigrants.

² Landed immigrant refers to an immigrant granted permanent status to reside in Canada. Landed immigrants do not include temporary workers, visitors, refugee claimants or those granted entry on a special basis by the Minister of Immigration.

government expanded the Temporary Foreign Worker (TFW) program in an effort to meet the country's short-term labor needs.

Ultimately, changes to Canadian immigration policy over the last two decades led to an exogenous shift in the supply and demand for labor. If we assume Canada is a closed labor market, the inflow of new immigrants increases the available supply of labor, shifting out the supply curve. At the same time, the arrival of new immigrants increases the demand for goods and services, leading to a shift out in the labor demand curve. In other words, changing the composition and number of immigrants entering Canada affects the general labor market equilibrium of the country.

For the purposes of this dissertation, I have concentrated on the supply-side effects of immigration on Canadian labor market outcomes. By focusing on improving immigrant human capital, the Canadian government altered the skill distribution of the labor force. At the same time, increasing the number of landed immigrants and temporary foreign workers shifted the short and long-run supply of labor in the country. Depending on the ability of the labor market to adjust to these shifts in the supply of labor, immigrants and native-born Canadians may experience adverse employment outcomes³. This dissertation contributes to the immigration literature by examining the impact that changes to Canadian immigration policy between the mid-1990s and early 2000s had on immigrant and native-born employment outcomes.

³ Wages and employment rates are the traditional employment outcomes examine in the literature. This dissertation follows in this tradition.

In the first empirical chapter (Chapter 3), I examine the entry earnings profiles for temporary foreign workers and landed immigrant cohorts in comparison to native-born Canadians. There are two research questions of interest. Have temporary foreign workers and landed immigrant cohorts experienced different entry earnings in comparison to native-born Canadians following the policy changes introduced in the mid-1990s and 2002 by the Canadian government? Do these effects vary between temporary foreign workers and landed immigrant cohorts depending on the region of the country? Typically, the immigration literature has focused on differences in earnings profiles between immigrant cohorts and native-born Canadians over time (Baker and Benjamin 1994; Bloom, Grenier, and Gunderson 1995; Aydemir and Skuterud 2005). Since landed immigrants and temporary foreign workers enter under separate selection criteria and given the significant policy changes that have occurred between the mid-1990s and early 2000s, my research attempts to determine if differences in earnings profiles have emerged within and between these two entry streams.

The fourth chapter of this dissertation explores patterns in the employment rates of landed immigrants in comparison to native-born Canadians⁴. While examining entry earning profiles reveals a great deal regarding the impact of recent policy changes on immigrant economic outcomes, this approach does not provide the whole

⁴ Temporary foreign workers are excluded from this analysis, since they are typically required to maintain their employment status with the organization that sponsored their entry to remain in Canada.

picture. At the same time immigrant earnings were deteriorating in the 1980s and early 1990s, immigrant unemployment began to rise leading to a greater proportion of immigrants falling into poverty (Picot and Sweetman 2005). The recent changes to Canada's immigration policy have now significantly increased the number of immigrants entering the country in search of employment. In this chapter, I fill a gap in the Canadian immigration literature by examining immigrant employment outcomes over the last 20 years. I answer three specific research questions. What are the employment patterns of recent landed immigrants in comparison to native-born Canadians? What effect do differences in human capital characteristics have on the employment outcomes of recent landed immigrants? What effect do macro-economic changes have on the short and long-run employment outcomes of landed immigrants?

The final empirical chapter (Chapter 5) develops a more complete understanding of the effects of immigration on the Canadian labor market. Since new immigrants enter the labor market upon entry, the inflow of new immigrants ultimately increases the supply of labor in the receiving country. A well-developed literature in the United States has extensively examined the effects of immigration on the wages and employment of the native workforce (Borjas, Freeman, and Katz 1997; Borjas 2003; Card 1990; Card 2005; Card 2009). While the research is not conclusive, there is evidence to suggest that the inflow of new immigrants puts some downward pressure on native wages (Borjas 2003). Yet, similar research into the effects of immigration on the native workforce in Canada is limited (Aydemir and Borjas 2007). In this chapter, I fill a gap in the literature by examining the effects of recent

immigrant inflows on the employment outcomes of the existing Canadian workforce. There are two primary research questions of interest in this chapter. What impact did shifts in the supply of immigrant labor have on the employment outcomes of the existing domestic labor force in Canada? Do the effects vary across regional labor markets in the country?

This dissertation proceeds as follows. The next chapter reviews the evolution of Canada's immigration policy. I pay particular attention to the influence of economic objectives in the development of immigration policy and the policy changes examined in the empirical research. Chapter 3 examines the entry earning profiles of temporary foreign workers and landed immigrants in comparison to native-born Canadians relative to recent policy changes. Then chapter 4 builds on the prior chapter through examining the employment outcomes of immigrants relative to native-born Canadians. Chapter 5 is the final empirical analysis, which investigates the effects of increasing immigration levels on the existing domestic workforce. In the final chapter, I discuss the overall implications of my findings on the development of future changes to Canada's immigration policy.

Chapter 2

THE EVOLUTION OF CANADIAN IMMIGRATION POLICY

2.1 The Development of a National Policy

National economic objectives have always had a significant influence on the development and implementation of Canadian immigration policy (Ferrer, Riddell, and Picot 2012; A. Green and Green 2004). The 1910 Immigration Act established legislation that gave the federal government a large degree of control over the immigration process. Initially, the government focused national immigration policy on populating the rural West and expanding the domestic labor force. To facilitate this objective, the government created a selection process that classified immigrants by preferred and non-preferred source countries of origin. This selection process was based on the belief that immigrants from preferred countries possessed the agricultural skills needed to expand the domestic economy in the unpopulated rural west (Weinfeld and Thompson 1995; Grant and Sweetman 2004).

For the next 30 years, Canada continued to focus on expanding the country's population and labor force. The development of two trans-continental railways created a demand for immigrant labor and the ability to move new arrivals across the country. During this time, the government placed few restrictions on the entry of immigrants in an effort to keep up with the growing demand for labor. When the Great Depression

swept across Canada in the 1930s, the demand for labor disappeared and had an immediate effect on immigration policy. Concerns over rising unemployment led the government to reduce immigration levels to nearly zero, in an effort to reduce the supply of new labor entering the country.

Following the end of the Second World War, the government introduced a new Immigration Act in 1952. Under this new legislation, the federal government gained greater autonomy over the selection process of new immigrants (Knowles 2007). However, unlike the reactionary immigration policy that existed prior to the War, the federal government outlined a more deliberate approach to managing immigration in Canada. The absorptive capacity policy was a primary aspect of this new approach. Under this policy, annual immigration levels were adjusted based on the ability of the Canadian labor market to absorb the new arrivals in the short-run (Troper, 1993). Short-term fluctuations in labor market demand now had a direct impact on the inflow of new immigrants into Canada.

By the early 1950s, an improving domestic economy had created short-term demand for labor in Canada. At the same time, economic growth in Europe limited the number of potential immigrants from preferred source countries. This reduced the supply of immigrants looking to immigrate to Canada, forcing the government to relax entry requirements to address the country's growing demand for labor (A. Green & Green, 2004 p.114). In addition to relaxing entry requirements, the Minister of Immigration extended sponsorship rights to all landed immigrants, allowing for the entry of many new arrivals from non-preferred source countries. Figure 2.1 shows the

effect that relaxing entry and sponsorship requirements had on immigration levels. Between 1955 and 1957, immigration levels increased from under 120,000 to nearly 300,000. Relaxing entry requirements helped the Canadian government ease the short-term demand for labor.

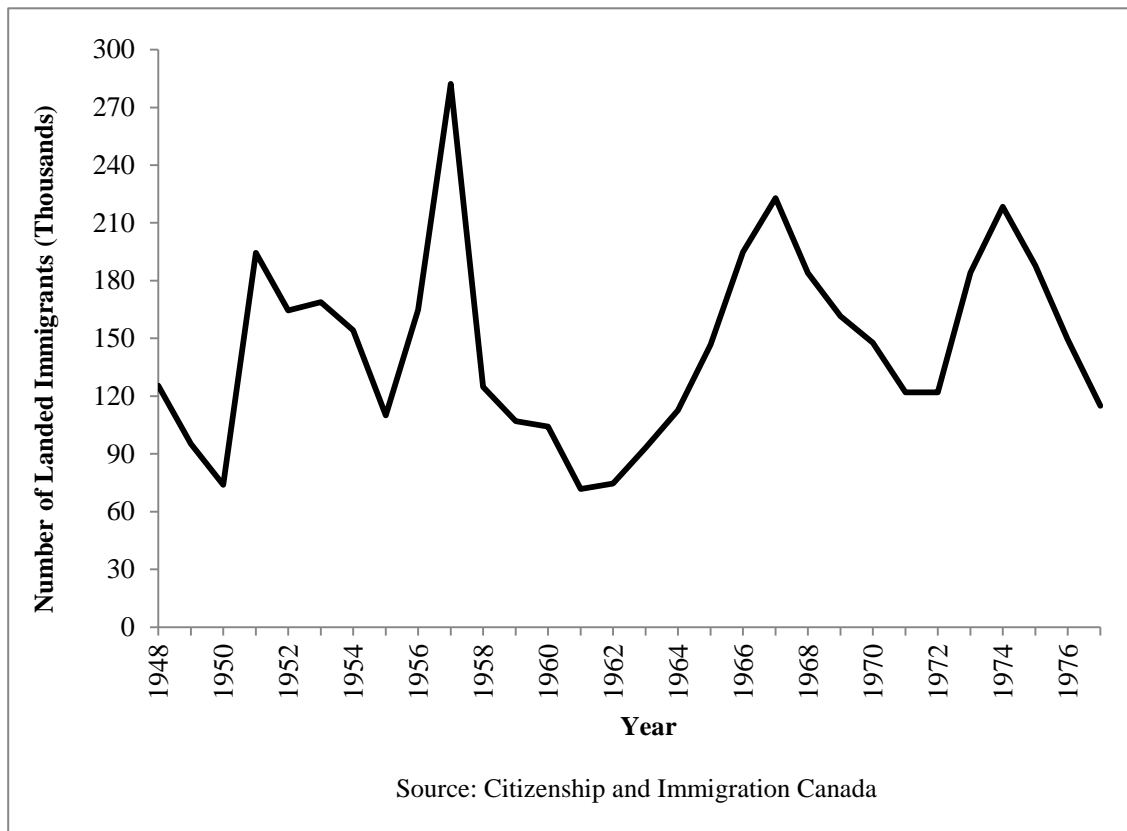


Figure 2.1 Annual Number of Immigrants Landing in Canada: 1948-1977

By the end of 1950s, labor market conditions in Canada had changed. The demand for labor began to shift from unskilled to specific high-skilled occupations.

However, by relaxing entry requirements to meet short-term demand, the government had created an influx of unskilled immigrant labor in Canada (A. Green and Green 1995). Government and industry officials became increasingly concerned with the ability of the labor market to absorb the influx of unskilled labor and meet the current skill specific demand that existed. To reduce the inflow of unskilled labor entering Canada, the federal government cited the absorptive capacity policy and introduced strict entry and sponsorship restrictions. Figure 2.1 reveals that these policy changes in the mid to late 1950s were effective in reducing annual immigration by over 50 percent in just one year.

While the absorptive capacity was able to reduce the inflow of unskilled labor, it did not improve the skill level of new immigrants entering the country. To address the growing skills gap in the labor market, the government eliminated the discriminatory preferred source country policy. In 1962, an Order-in-Council created a new selection process based on matching the education and skills of potential immigrants with those currently needed in the labor market (A. Green and Green 2004; Knowles 2007). Initially, immigration officers encountered difficulty implementing this policy because the government did not properly define what skills were in demand. To remedy this problem, the government amalgamated the Department of Immigration with the Department of Labor in 1966, to create the Department of Manpower and Immigration. The purpose of this merger was to align the skill composition of new immigrants with the current needs of the labor market (Hawkins 1988).

2.2 Skill Based Selection System

In 1967, Canada became the first country to introduce a formal skill based immigration selection system. Through an Order-in-Council, the government established three available entry streams for potential immigrants and created the Points System to evaluate the eligibility of applicants. Prospective immigrants now applied as sponsored dependents, nominated relatives or independents, with the latter two classes subject to a skill based assessment under the points system. The process required immigration officers to assign points for characteristics such as age, education, experience and skills that filled shortages in specific sectors of the economy (A. Green and Green 1995).

To gain entry under the points system, applicants in the nominated relative and independent classes had to reach or surpass a pre-determined point level. Table 2.1 shows the distribution of the points system in 1967 and the pass mark applicants needed to obtain to gain entry. This initial distribution placed greater emphasis on education and employment. Applicants received up to 20 points based on their level of education and up to 35 points for specific vocations, occupational demand and arranged employment. Independent class applicants needed to obtain a minimum of 50 points to gain entry to Canada, while the threshold level was set lower for nominated relatives. Depending on the applicant's relationship to the sponsoring relative, the pass mark was 20 or 30 points and only based on the first five factors (Parai, 1975 p.458). Close relatives such as spouses or dependents had to reach the 20-point pass mark,

while parents, grandparents and more distant eligible relatives needed to reach 30 points to gain entry.

Table 2.1 The Distribution of the Points System, Canada, 1967-1978

Category	1967	1974	1978
Education	20	20	12
Personal Suitability	15	15	10
Occupational Demand	15	15	15
Specific Vocation	10	10	15
Age	10	10	10
Experience	-	-	8
Arranged Employment	10	10	10
Language	10	10	10
Relatives	0/3/5*	0/3/5*	0/3/5*
Destination	5	5	5
Total	100	100	100
Pass Mark	50	50	50
Note: * Points awarded depended on relationship to sponsor			
Source: Parai, 1975; Green and Green, 1999			

By replacing the preferred country selection process with the points system, the demographic mix of immigrants entering Canada began to change drastically. Table 2.2 shows that between 1960 and 1975 the number of Asian immigrants as a percentage of total immigration increased by nearly 22 percent. During the same period, the proportion of immigrants from Northern and Southern Europe fell by 13 and 20 percent, respectively. Immigrants from the United Kingdom and Ireland and

the United States were the only groups from the old preferred source countries that maintained their annual immigration levels following the introduction of the points system.

Table 2.2 Landed Immigrants by Source Country, Canada, 1960 - 1975

Source Country	1960	1965	1970	1975
United Kingdom and Ireland	18.8%	27.2%	17.9%	18.6%
Northern Europe (1)	18.4%	11.4%	7.1%	4.7%
Southern Europe (2)	29.4%	25.7%	15.4%	9.4%
Other Europe	13.1%	9.5%	10.7%	6.1%
Africa	0.8%	2.2%	1.9%	5.3%
Asia (3)	3.8%	7.6%	14.3%	25.2%
Australasia	1.6%	1.8%	3.0%	1.2%
United States	10.8%	10.3%	16.5%	10.7%
Central/South America and Caribbean	3.2%	4.0%	12.4%	17.4%
Other countries	0.1%	0.2%	0.6%	1.4%
Notes: (1) Includes France, Germany and the Netherlands, (2) Includes Greece, Italy and Portugal and (3) Includes Hong Kong and Israel				
Source: Statistics Canada, CANSIM Table 075-0008				

In the early 1970s, the Canadian labor market began to show signs of weakness. In response, the federal government issued an Order-in-Council in 1974 that introduced a 10-point reduction on potential immigrants that did not have pre-arranged employment prior to submitting an application. This restriction applied to both, the independent and nominated relative classes. The reduction in points made it difficult for applicants under the independent and nominated class to gain entry without pre-arranged employment. Once again, the primary objective of these changes

to immigration policy focused on the ability of the immigration selection process to meet the current needs of the labor market (Parai, 1975, p.459).

Another important development that occurred in the early 1970s was the creation of the Temporary Foreign Worker (TFW) program. The government introduced employment visas in 1973 that allowed non-landed immigrants to work in Canada on a temporary basis. In order to participate in this program, applicants had to pre-arrange employment and apply for a valid work visa. This temporary work visa carried mobility restrictions limiting the visa-holder to one year of employment. In addition, any change in employment status required formal permission from the federal government (Hawkins 1974). Prior to the creation of this program, all immigrants had to receive landed status, with the exception of some large employers that had permission to bring in foreign workers for specific projects⁵. Initially, the federal government introduced the program to accommodate seasonal agricultural workers, but eventually the program expanded to include high skilled temporary laborers.

The 30-year period following the end of the Second World War was a dynamic time for Canadian immigration policy. The federal government outlined their intent to align immigration policy with the short-term capacity of the labor market.

Implementing the points system gave the federal government greater control over the

⁵ The Canadian National Railway and Canadian Pacific Railway struck special agreements with the government to obtain foreign labor, this ended in 1931 when Canada severely restricted immigrations levels due to the Great Depression.

skill composition of immigrants entering the country. Immigrants entering under the points system had higher levels of education and more employment experience in comparison to earlier immigrant cohorts (Borjas 1991). The introduction of the TFW program further aligned immigration policy with the short-term needs of the Canadian labor market. Both the points system and the TFW program, remain central aspects of Canada's current immigration system. These policies emphasized the effect that changes and demand in the Canadian economy have on the development and implementation of the country's immigration policy (A. Green and Green 2004).

2.3 A Shift Away From Economic Priorities

Following the introduction of the points system, the next major changes to Canada's immigration policy came in 1976 with the introduction of a new immigration act. This legislation marked the first time the Canadian government focused immigration policy on issues outside of the broader national economic objectives. The new Immigration Act introduced two primary changes that focused immigration policy on family reunification and humanitarian efforts. First, the government restructured the previous entry streams by establishing a humanitarian class to process all refugee applicants and the family class replaced the sponsored dependent and nominated relative classes. The independent class remained unchanged and continued to process all skill-assessed applicants, but the new Act gave processing priority to immigrants from the humanitarian and family classes. Second, the 1976 Immigration Act formalized the absorptive capacity into Canadian immigration policy.

Now, the Minister of Immigration was granted the authority to set annual immigration targets in consultation with the provinces (Veugelers and Klassen 1994). However, to maintain the integrity of the new processing priority requirements, the Minister of Immigration only had the authority to set overall annual immigration targets.

After the 1976 Immigration Act came into effect, the number of skill assessed immigrants admitted annually became a residual of the family and humanitarian entry classes. The government first began reporting the proportion of immigrants admitted by entry class in 1981. Figure 2.2 shows that between 1981 and 1995 the family and refugee class became the primary source of immigrants admitted into Canada. Shifting immigration policy to focus on family reunification and humanitarian objectives impeded the ability of the points system to improve the skill level of new immigrants entering the country (Wright and Maxim, 1993). For nearly 15 years skilled immigration became a small percentage of the overall annual immigration inflows. As a result, the employment rates and wage levels of immigrants arriving during this period began to deteriorate in comparison to earlier immigrant cohorts (Abbott and Beach 1993; Beach, Green, and Worswick 2006).

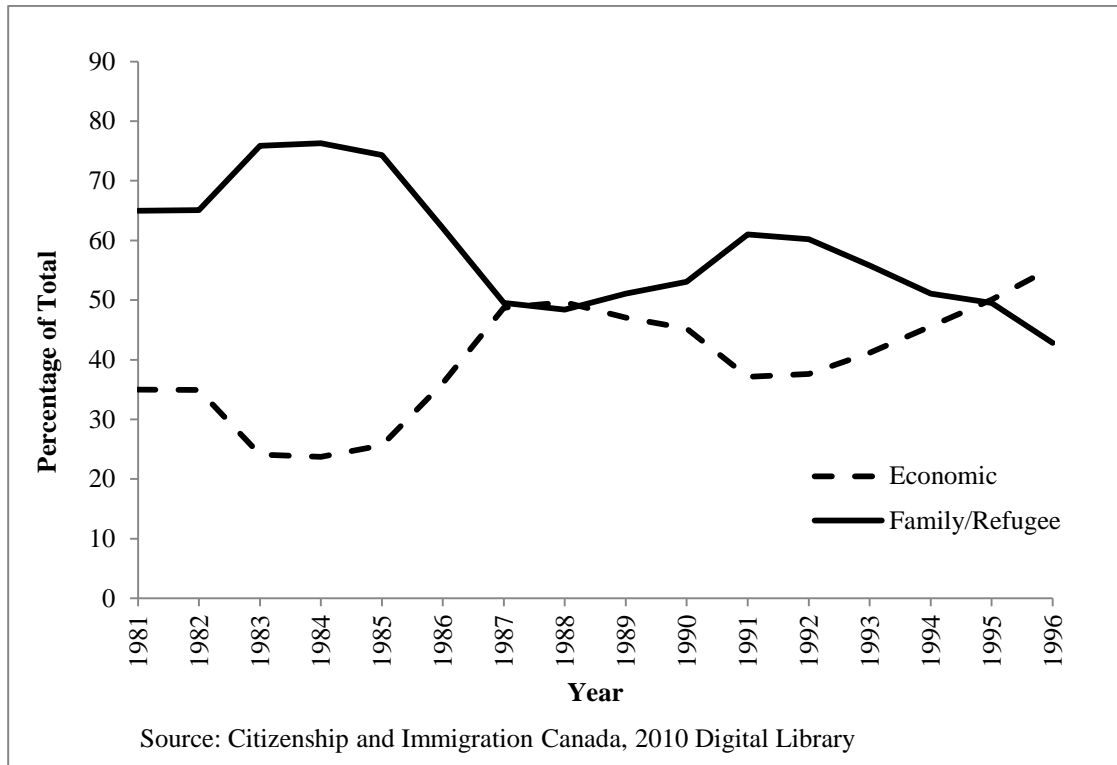


Figure 2.2 Annual Landed Immigration by Entry Class, Canada, 1981-1996

In the years following the introduction of the 1976 Immigration Act, the Canadian economy experienced large fluctuations in macro-economic conditions. During this time, the only economic policy lever available to government was the absorptive capacity. In response to rising unemployment rates, the Minister of Immigration reduced total immigration levels to limit the supply of new and unskilled labor entering the country (Veugelers and Klassen 1994). In an attempt to improve the skill level of those entering under the assessed class, the Minister also made adjustments to the points system that decreased the number of points awarded for

education. Since the independent-economic class continued to remain a smaller proportion of total immigration levels, these regulatory changes had only limited effects on controlling the skill level of new immigrants entering Canada (Wright and Maxim 1993).

By the early 1990s, the focus of Canada's immigration policy began to shift back towards economic priorities. An amendment to the 1976 Immigration Act was introduced by the Canadian government in 1992, which gave the Minister of Immigration the authority to set annual inflow targets by entry classes. The ministry used this authority to limit the proportion of applicants admitted under the family and refugee classes (Green & Green, 2004, p. 124). By 1995, applicants from the independent-economic class became the largest entry stream. Once again, the focus of Canada's immigration policy began to focus on selecting immigrants based on the needs of the labor market. However, unlike the short-term priorities that dominated the period following World War II, new economic priorities shifted Canadian immigration policy towards the long-term needs of the labor market.

2.4 The Human Capital Approach

An aging workforce and low fertility levels had raised concerns in Canada over the ability of the country to meet the future needs of the labor market without the help of increased immigration levels (Bloom, Grenier, and Gunderson 1995). New policy changes in the 1990s focused on ensuring a steady supply of labor, but more importantly, improving the human capital of the Canadian labor force. The immigrant

selection process began to place greater emphasis on admitting applicants with the skills and abilities needed to adjust in a rapidly changing economy. During the same changes were made to the selection process, the government also increased immigration levels to ensure a steady supply of labor into the country. These changes to Canadian immigration policy reflected a human capital approach, more concerned with the long-term economic needs of the country than the current demands of the labor market.

The first major change to the immigration selection criteria came in 1995, when the government introduced a new version of the points system that broadened the occupational classifications required for entry into Canada. Applicants no longer received points based on narrowly defined occupations and skill levels (A. Green and Green 2004). Instead, a list of skilled occupations were created and organized into four categories; professionals, skilled administrators, technical occupations and trades. As before, the same point criteria applied to all occupational categories, but now, a deferent point threshold applied to each of the four categories. Table 2.3 reports the new points thresholds and categories introduced by the federal government. For example, to gain entry under the trade category, applicants were required to obtain a minimum of 45 points. While applicants in technical occupations required 47 points, and professionals and skilled administrators required 52 points (Citizenship and Immigration Canada 1994).

Table 2.3 The Points System: Human Capital Model

Category	1978	Pre-IRPA (1996)	Post-IRPA (2003)
Education	12	20	25
Personal Suitability	10	16	-
Adaptability	-	-	10
Age	10	12	10
Labor Market Balance	-	10	-
Experience	8	9	21
Arranged Employment	10	4	10
Language	10	20	24
Relatives	0/3/5*	5	-
Total	100	96	100
Pass Mark	50	*	75/67

Note: * Pass mark varies by skill group; professionals, 52; skilled administrators, 52; technical, 47; trades, 45. IRPA refers to the Immigration and Refugee Protection Act.
Source: Citizenship and Immigration Canada; Green and Green, 2004

Other changes to the points system occurred after 1995, which placed less emphasis on selecting applicants based on specific occupational demand. Table 2.3 shows the categorical distribution of points from 1978 and 1996. In comparison to 1978, the most significant changes occurred to the language and education categories. Total points available to applicants that were fluent in French or English increased from 10 to 20, while the education category increased by 5 points. In addition, there were marginal increases in the total points available for age and personal suitability. Adjustments to the age category benefited younger applicants, while changes to personal suitability were more subjective. Immigration officers were directed to award

personal suitability points based on their assessment of the applicant's job search skills and possession of a positive attitude towards personal development, learning and change (A. Green and Green 2004). The new policy also eliminated the category for specific vocations and reduced the total points available for arranged employed. Ultimately, this shift in policy represented a movement away from using immigration policy to address short-term occupational needs and a movement towards the long-term human capital model.

Not only did the government want to improve the overall skill level of immigrants entering the country, they wanted to increase overall immigration levels. The second major aspect of the government's human capital approach focused on ensuring a steady supply of labor to meet future demand caused by an aging workforce and low domestic replacement levels. To increase immigration levels, the Canadian government announced in 1994 that annual immigrant inflows would be set at 1 percent of the current Canadian population (Citizenship and Immigration Canada 1994). Immigration levels would no longer reflect the absorptive capacity policy that was in place for over 50 years. Following this announcement, the number of landed immigrants entering the country continued to increase despite rising unemployment rates (Knowles 2007).

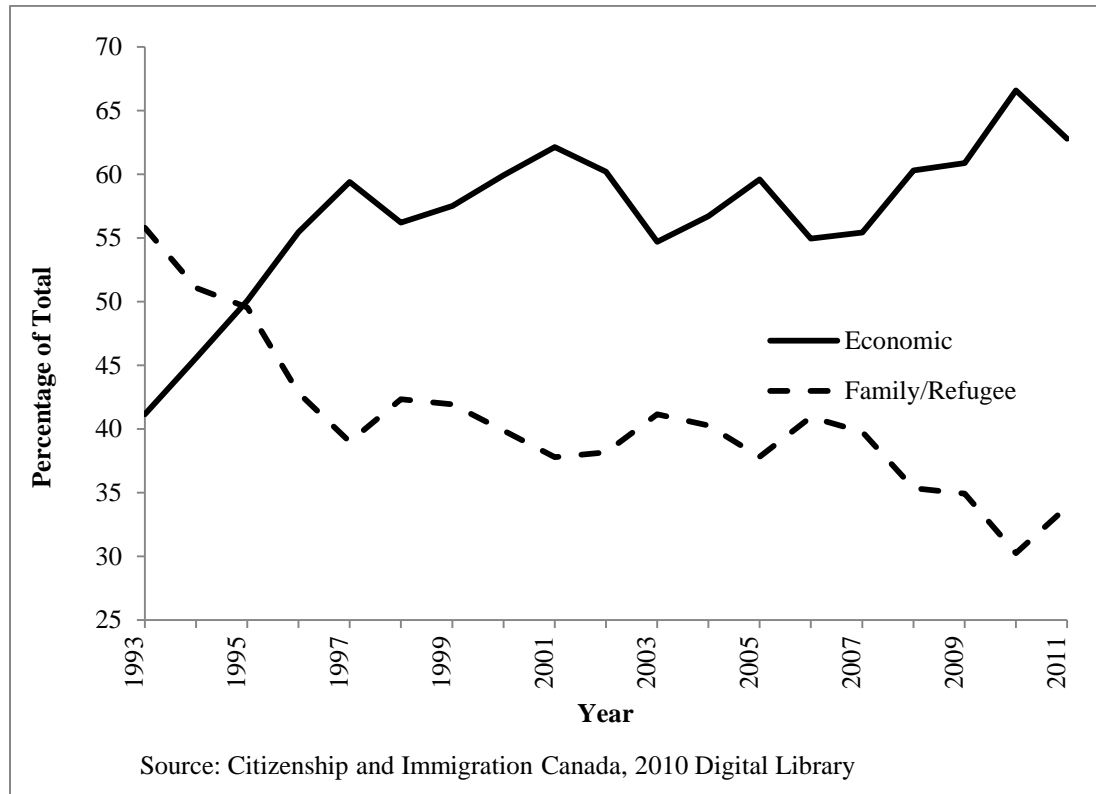


Figure 2.3 Landed Immigrants by Entry Class, Canada, 1993-2011

While the federal government was increasing overall immigration levels, they also focused on adjusting the proportion of immigrants admitted in each entry class. In 1993, new regulations expanded the authority of the Minister of Immigration to set annual targets by entry class. The Minister used this authority to increase the proportion of applicants entering under the economic entry class (Citizenship and Immigration Canada 1994). Figure 2.3 shows total annual landed immigration by entry class. In 1996, applicants entering under the economic entry class represented the largest proportion of annual landed immigrants. Since 1995, the economic class has

remained the dominant entry stream as applicants in the family and refugee class no longer receive processing priority.

Over the course of nearly 30 years, Canada's immigration policy had become very complex. The combination of numerous Orders-in-Council and amendments to the 1976 Immigration Act created many regulatory and implementation issues for the Ministry of Immigration (Citizenship and Immigration Canada 2001). To address these issues the government introduced the Immigration and Refugee Protection Act (IRPA) in 2002, replacing the 1976 Immigration Act and all subsequent amendments. The intent of this new legislation was to simplify the regulatory structure and clearly identify a human capital approach to Canadian immigration policy.

To streamline and manage applicants under the economic entry class, the IRPA established the Federal Skilled Worker Program (FSWP). This new program became the primary sub-entry stream under the economic class and all applicants in this sub-stream were subject to assessment under the points system. At the same time, the government rebalanced the points system and further emphasized education, language abilities and experience, while eliminating all points for intended occupation⁶. The intent of these changes to the points system was to select immigrants based on factors that imply their ability to adjust in an increasingly complex and knowledge based economy (Ferrer, Riddell, and Picot 2012). Table 2.3 shows a pre and post IRPA

⁶ The only exception to the new regulation pertaining to intended occupation was applicants continued to receive up to 10 points for having pre-arranged employment prior to arrival.

comparison of the point distribution by category. In 1996, the pass mark for applicants varied depending on skill category. Initially, the IRPA replaced this category based pass mark with a universal pass mark of 75 that applied to all applicants. However, in the fall of 2003, the government reduced the pass mark to 67. This policy change was in response to rising demand for skilled workers and the need to admit a greater number of immigrants to meet the demand (Citizenship and Immigration Canada 2003).

While the majority of policy changes introduced by the IRPA addressed the permanent immigration system, the government did make a significant adjustment to the Temporary Foreign Worker program. Initially the program was limited to high skilled applicants, but in 2002 the federal government launched the Occupations Requiring Lower Levels of Formal Training pilot project. For the first time, this pilot program allowed employers to recruit temporary low-skilled foreign workers to fill positions that required only a high school degree or some on the job training (Nakache 2010). Applicants under this program required a valid employment offer and a Labor Market Opinion from the Department of Human Resources and Skills Development Canada. The opinion letter required the employer to state that a permanent Canadian resident was not available to fill the position, citing the need for a foreign temporary worker.

Unlike the permanent resident entry system, there are no annual limits set on the number of temporary foreign workers. Figure 2.4 shows the influx of temporary foreign workers compared to landed immigrants between 1986 and 2010. By 2006, the

number of temporary foreign workers had surpassed the number of landed immigrants admitted annually. This rapid growth in temporary foreign workers is a result of the expansion of the program to allow low-skilled applicants (Nakache 2010). Over the last 4 years, the TFW program has continued to expand and remains the largest immigration entry stream in Canada.

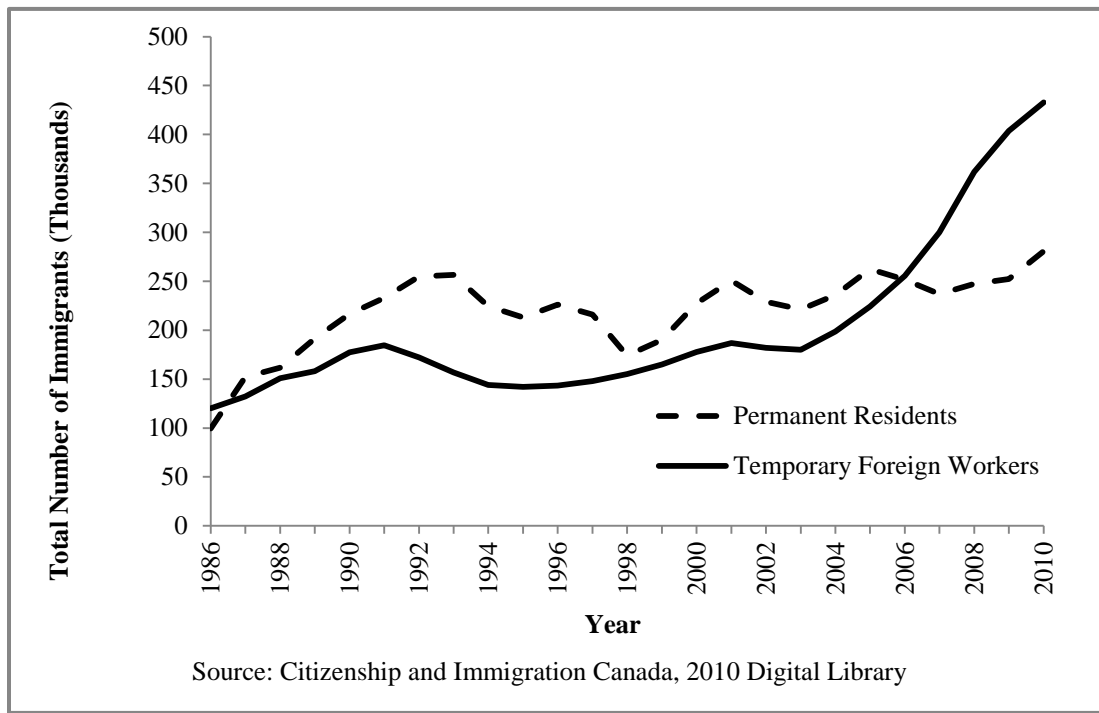


Figure 2.4 Annual Immigration by Status, Canada, 1986-2010

The introduction of the 2002 IRPA also placed some emphasis on a commitment to enhancing family reunification. The IRPA formalized the family class in the legislation and clearly defined eligible applicants (Citizenship and Immigration

Canada 2006). Applicants eligible under the family class were spouses, common-law partners, children or parents of permanent residents or citizens of Canada. Eligibility also extended to parents and same-sex couples if one of the individuals was a permanent resident or Canadian citizen. Despite these legislative changes to enhance the family class, the government's initial commitment to family reunification never materialized. The proportion of immigrants admitted under the family class remained significantly less than the economic entry classes.

Other regulatory changes introduced by the 2002 IRPA provided the Minister of Immigration with greater flexibility to manage immigration inflows, but also attempted to restrict unilateral authority over the immigration process. The legislation removed the previous requirement of provincial consultation in establishing annual immigrations levels. In addition, the new regulations gave more targeted authority over the assessment of applicants by allowing the Minister of Immigration to issue binding instructions to immigration officers. These 'Ministerial Instructions' could adjust immigrant sponsorship requirements, conduct of entry examinations and the issuance of temporary ministerial resident permits (Citizenship and Immigration Canada 2001)⁷. However, these Ministerial Instructions could not make permanent statutory changes to the legislation. Unlike earlier legislative changes that granted

⁷ For more detail on the scope and authority of Ministerial Instructions, see Bill C-11: The Immigration and Refugee Protection Act <http://publications.gc.ca/Collection-R/LoPBdP/LS/371/c11-e.htm>.

more authority to Cabinet, the new Act introduced greater restrictions on the government to adjust policy without Parliamentary approval

The introduction of the 2002 IRPA and the expansion of the TFW program created a bifurcated status based immigration system in Canada. Changes to the permanent entry streams focused the selection system on admitting applicants based on the long-term economic needs of the country. While the expansion of the TFW program created a short-term, economic driven entry stream that gave employers and business a larger role in the immigration process. The result was an immigration policy that attempted to address the short and long-term needs of the Canadian economy through two separate immigration programs.

Chapter 3

IMPACT OF RECENT SHIFTS IN IMMIGRATION POLICY ON IMMIGRANT ENTRY EARNINGS

3.1 Entry Earning Profiles of Permanent and Temporary Immigrants

Beginning in the 1970s, the economic outcomes of new immigrants entering Canada began to deteriorate in comparison to earlier cohorts. This decline continued throughout the 1980s and into the early 1990s, creating a significant wage gap between immigrants and native-born Canadians. By 1995, the earnings differential between male immigrants arriving within the previous five years and native-born Canadians had reached 34 percent (Aydemir and Skuterud 2005). This large wage gap made it increasingly difficult for new immigrants to assimilate into the labor market and achieve earnings comparable with native-born Canadians over time. Previous cohorts were able to achieve earnings comparable with native-born Canadians within 15 years of arriving in the country (Bloom, Grenier, and Gunderson 1995). Now, the sharp deterioration in entry earnings has made full economic assimilation into the labor market unrealistic for many immigrants (Morissette and Frenette 2005).

Amid rising concerns over the weak economic outcomes of recent immigrant cohorts, the Canadian government introduced a series of new immigration policies between the mid-1990s and early 2000s that significantly altered the composition and level of immigration. Starting in the mid-1990s, the landed immigrant entry streams

began to emphasize a human capital approach, which focused on selecting applicants with higher levels of education, work experience and language abilities (Ferrer, Riddell, and Picot 2012)⁸. At the same time, the government increased annual immigration levels and the overall proportion of skill assessed applicants admitted into the country. In 2002, the introduction of new legislation further emphasized the human capital approach, while continuing to sustain high levels of annual immigration. In an effort to meet specific industry and regional demands for labor, the new legislation also expanded the Temporary Foreign Worker (TFW) Program (Gross and Schmitt 2010). This change allowed low skilled applicants to enter under the program for the first time, which significantly increased the number temporary workers entering the country annually. The introduction of these policy changes created two distinct status-based entry streams that admit applicants under very different assessment requirements.

In this chapter, I examine the impact that the changes to Canadian immigration policy in mid 1990s and 2002 had on the economic outcomes of recent immigrant cohorts. Prior literature has mainly focused on the decline in immigrant earnings that began in the late 1960s and continued through successive entry cohorts (Baker and Benjamin 1994; Bloom, Grenier, and Gunderson 1995; Aydemir and Skuterud 2005). This research has documented the growing earnings differential between male landed

⁸ The government admits immigrants entering Canada either under permanent or temporary status. Landed immigrant refers to immigrants granted permanent status.

immigrants and native-born Canadians. However, landed immigrants and temporary foreign workers enter under distinct assessment criteria and given the significant policy changes that have occurred over the 15-year period, differences in earnings profiles may have emerged within and between these two immigrant cohorts. This chapter adds to the existing literature by exploring the following two questions. Have temporary foreign workers and landed immigrant cohorts experienced different entry earnings in comparison to native-born Canadians following the policy changes introduced in the mid-1990s and 2002? Are these effects different for temporary foreign workers and landed immigrants depending on the region of the country?

Using native-born Canadians as a control group, I created a natural experiment to test the effects of recent policy changes on the entry earnings of both landed immigrants and temporary foreign workers. My initial estimates reveal that entry earnings improved among the landed immigrant cohorts that entered Canada following the mid-1990s policy changes. Over this same period, I find that the earnings of temporary foreign workers remain essentially flat between cohorts. This is expected, since changes to immigration policy in the mid-90s did not impact the TFW program.

In my second set of estimates, I examine the effect that the 2002 policy changes had on immigrant entry earnings. The landed immigrant cohorts that entered Canada following the 2002 policy changes experienced a significant decline in earnings. This decline in entry earnings largely eliminated the previous gains experienced by the prior cohorts. At the same time, I find that the entry earnings of

temporary workers also began to deteriorate. However, this deterioration in earnings was only found among the male temporary worker cohorts.

By adjusting the selection criteria to improve immigrant human capital, the government was initially able to increase the earnings of landed immigrants. However, policy changes in 2002 significantly increased the annual number of landed and temporary immigrants admitted into the country. Results from my second set of estimations show a sharp decline in the entry earnings of both, landed immigrant and temporary worker cohorts. This suggests that increasing human capital is only effective if total immigration levels are controlled. By increasing annual immigration levels, the government effectively diluted their efforts to improve human capital characteristics, which reversed the prior gains in immigrant entry earnings.

This chapter proceeds in six parts. Section 3.2 reviews the previous literature examining the deterioration of immigrant entry earnings in Canada. This literature review focuses on the causes behind the decline in entry earnings and the difference found between temporary foreign workers and landed immigrants. Section 3.3 describes the data and methodology used in the analysis. In section 3.4, I present descriptive statistics for the samples used in the analysis. Then section 3.5 reports findings from my initial specification. In section 3.6, I adjust my initial specification to include provincial fixed effects and report these findings. Finally, section 3.7 provides an overall discussion of my findings in relation to the policy changes introduced in 1996 and 2002.

3.2 Declining Immigrant Entry Earnings

Early research examining the decline in immigrant entry earnings points to shifts in the source country as a primary cause (Wright and Maxim 1993; Bloom, Grenier, and Gunderson 1995). The introduction of the points system in 1967 significantly altered the demographic mix of immigrants entering Canada. This resulted in a greater proportion of immigrants entering the country from developing instead of developed countries. Towards the end of the 1960s, Wright and Maxim (1993) found the entry earnings differential between male immigrants from Asia and Latin America, compared to native-born Canadians was 22.5 and 13.9, respectively. By 1985, they found this differential increased to 52 percent for Asian male immigrants and 53.2 percent for Latin American male immigrants. Following the mid-1980s, immigrant entry earnings continued to decline into the early 1990s before improving slightly by the end of the decade.

A possible cause for improved immigrant entry earnings in the second half of the 90's might be a result of changes to immigration policy introduced in 1996. Amid rising concerns over the deteriorating economic outcomes of recent landed immigrant cohorts, the Canadian government introduced policy changes that focused on improving the human capital of newly admitted immigrants. Aydemir and Skuterud (2005) found that the earnings of male immigrants from the 1995-9 cohort improved by nearly 8 percent in comparison to the 1990-4 cohort. Despite this improvement following the policy changes, male immigrants from the 1995-9 cohort continued to

experience a 26 percent differential in earnings when compared to native-born Canadians (Aydemir and Skuterud 2005).

Recent research has focused on explaining the earnings differential experienced by landed immigrants by examining differences in human capital. Aydemir and Skuterud (2005) and Green and Worswick (2010) find that declining returns to foreign work experience accounts for approximately one quarter to one half of the deterioration in immigrant entry earnings. They find that weak English and French language skills of recent immigrant cohorts account for an additional one quarter to one third of the earnings deterioration. Both Aydemir and Skuterud (2005) and Green and Worswick (2010), attribute the decline in language abilities to the shift away from developed to developing countries that occurred in the late 1960s. They also find that immigrants receive less return for an additional year of schooling than native-born Canadians. Interestingly, Ferrer and Riddell (2008) find when returns to education are estimated using educational attainment rather than years of schooling, immigrants receive higher returns. Overall, the research suggests that declining returns to foreign experience and weak language abilities account for nearly three quarters of the decline in immigrant entry earnings over the last four decades.

The labor market outcomes of temporary foreign worker cohorts followed a much different path in comparison to landed immigrants. In particular, temporary foreign workers have experienced much different returns to human capital. By comparing cohorts of landed immigrants with temporary foreign workers by year of entry, Warman (2005; 2007) finds that temporary workers receive slightly higher

returns to education and significantly higher returns to foreign work experience. These higher returns to human capital result in improved entry earnings. Warman (2005) found that the temporary foreign workers entering between 1996 and 2000 only experienced an 8 percent earnings differential with native-born Canadians, while the similar landed immigrant cohort experienced a 33 percent differential (p. 67).

One of the major reasons behind the higher returns to human capital and improved entry earnings for temporary foreign workers is the result of the program's entry requirements. Prior to 2002, the TFW Program had rigorous admittance requirements. First, the applicant required an eligible offer of employment, which required the prospective employer to demonstrate to Human Resources and Skills Development Canada (HRSDC) that a permanent resident was not available to fill the position. Then the position required a high skill classification by HRSDC and the department must agree that the applicant had the necessary qualifications to fill the position⁹. This set of requirements increased the probability that the position filled by the temporary foreign worker was currently in demand and required a specific skill-set. In addition, the TFW Program was more responsive to differences in regional labor market demand. Typically, temporary foreign workers had to remain employed

⁹ The government frequently adjusts the definition of high skilled occupations to reflect the current needs of the labor market. Occupations deemed high skilled are based on the National Occupation Classification list.

with the employer that sponsored their entry to maintain their legal status¹⁰. This increased the likelihood that temporary foreign workers would settle and remain in regions of the country with a greater short-term demand for their labor. As a result, the program requirements significantly improved the probability of the applicant receiving higher entry earnings in the Canadian labor market.

In 2002, the Canadian government made significant changes to the TFW Program and the landed immigrant entry streams. The primary change to the Temporary Foreign Worker program was an expansion to include low-skilled applicants. Prior to the change, temporary foreign workers only formed a small proportion of the Canadian labor force, but following the expansion the number of temporary workers admitted annually exceeded the number of immigrants entering under all landed entry streams. Changes to the landed immigrant entry streams focused on improving the skill level of new immigrants and meeting long-term demand for labor. To address concerns over an aging workforce, the government abandoned the policy of immigration levels to changes in unemployment. This increased the number of landed immigrants entering the country every year (A. Green and Green 2004). The government also introduced changes that altered the selection criteria in an effort to increase the education levels of language abilities of new landed immigrants. Changes

¹⁰ The exceptions being refugee claimants granted work permits and applicants entering under the North American Free Trade Agreement (NAFTA).

created large and distinct entry streams and significantly altered the composition of immigrants entering the country.

From the limited amount of research completed on temporary foreign workers, there is no empirical evidence determining the effects this recent change in policy on immigrant entry earnings (Warman 2005; Warman 2007). In addition, there is limited research examining the entry earning profiles of landed immigrants into the late 1990s and following the 2002 policy changes. In the next section, I attempt to fill this gap in the current immigration literature by empirically examining the entry earning profiles of temporary foreign workers and landed immigrants between 1990 and 2005.

At the same time immigrant earnings were deteriorating, native-born Canadians entering the labor market also experienced declining earnings profile (Beaudry and Green 2000). The exact cause behind this decline remains largely unexplained in the literature. Prior research examining the entry earnings of both immigrant and temporary foreign workers notes the difficulty in disentangling the effects of this broader decline in Canadian earnings from immigrant entry earnings (Aydemir and Skuterud 2005; Morissette and Frenette 2005). I attempt to address this issue by introducing an empirical technique to isolate the effects of declining native-born wages on immigrant earnings. I use this methodology to assess the effects of the 1996 and 2002 policy changes on immigrant entry earnings.

3.3 Data and Methodology

Samples for the analysis in this chapter come from the 1996, 2001 and 2006 Canadian Census Public Use Microdata Files (PUMF). Statistics Canada creates the PUMF by drawing a one-fifth sample from the Master Census files that represent 20 percent of the Canadian population. The result is a Microdata file that represents 2.7 percent of the entire Canadian population. The inclusion of a weight variable allows the sample to represent the entire Canadian population.

Currently, the Census is the only Canadian data source that provides the needed detail on the labor market activities of both temporary foreign workers and landed immigrants. The PUMF Census files contain an immigrant status variable that identifies non-permanent residents, immigrants and non-immigrants. Temporary foreign workers are contained in the non-permanent resident class along with refugee claimants, holders of a minister's permit and students. The immigrant class contains all individuals that immigrated to Canada at some point, regardless of current citizenship. Non-immigrants are individuals with Canadian citizenship by birth.

To create the samples used in this chapter's empirical analysis, I merge all three Census PUMF files and restrict the sample to individuals aged 18 to 54 that are in the labor force, with positive employment earnings that worked more than 30 weeks in the reference year¹¹. Employment earnings include all wages and salaries,

¹¹ The reference year refers to the year prior to the Census year. For example, 2005 is the reference year for the purposes of employment in the 2006 Census. This ensures the Census captures a full year of potential employment activity.

combined with any self-employment income defined as net non-farm income from an unincorporated business or professional practice. These restrictions limit the sample to individuals participating in the labor force in the reference year by removing retired workers, students, homemakers and those with a long-term illness or disability unable to work. In addition, the restrictions reduce the number of individuals in the non-resident category not entering under the TFW Program¹².

Introducing this set of restrictions creates potential selection bias, in particular for the females included in the sample. The labor market activities of females often reflect family decisions and lead to lower participation in the labor force, often reducing the value of their skills. To address potential selection bias, I compare weekly wages rather than annual income and include individuals that worked 30 weeks or more. This allows for some part-time employment, which captures a greater number of females in the sample. I also estimate all regressions separately by gender, to eliminate any bias caused by combining male and female samples.

All estimations in this chapter use a regression form of the difference-in-difference methodology introduced by Card (1990) and Card and Krueger (1994). The typical difference-in-difference methodology attempts to replicate a natural experiment by separating a sample into treatment and control groups. After separating the sample, the effect of a particular treatment on an outcome variable is determined

¹² The restrictions eliminate all individuals with a student visa, which form the second largest group identified as non-residents.

by comparing the mean change over time between the two groups. A typical difference-in-difference equation takes the following form;

$$DID = (X_2^t - X_1^t) - (X_2^c - X_1^c)$$

where *DID* is the treatment effect representing the mean change in outcome variable *X* between treatment group *t* and control group *c* from time-period 1 to time-period 2. This form of natural experiment assumes similar conditions exist for both groups, with the exception of the specified treatment effect applied to group *t*. By isolating the results of a specified treatment, this approach reduces common issues with sample selection and omitted variable bias.

In order to implement this difference-in-difference methodology, I create and organize my sample to replicate a natural experiment. Since changes to immigration policy only effect the skill composition of landed immigrants and temporary foreign workers, I use native-born Canadians as the control group¹³. This results in three native born-control cohorts representing the 1996, 2001 and 2006 Census years.

All individuals classified as immigrants by the immigrant status variable that arrived in the five-year period prior to one of the three Census years form the landed

¹³ See appendix B for a discussion regarding the use of an alternate control group.

immigrant treatment group¹⁴. The non-resident category containing temporary foreign workers represents the other treatment group. Comparable information on year of arrival is not available for the non-resident category. However, the Census does provide information on the place of residence of all individuals five years prior to the Census date. By restricting the non-resident sample to individuals that lived outside of Canada five years prior to the Census date, I create a comparable temporary foreign worker sample. These restrictions result in three landed immigrant and temporary foreign worker cohorts organized as follows; a 1991-1995 cohort from the 1996 Census, a 1996-2000 cohort from the 2001 Census and a 2001-2005 cohort from the 2006 Census.

By organizing landed immigrants and temporary foreign workers into cohorts that precede and follow the 1996 and 2001 Census years, I create samples that entered under the different policy regimes discussed earlier in this chapter. Unfortunately, the Census does not provide enough detail to determine exactly what policy regime immigrants arrived under and changes to immigration policy did not happened immediately. While other datasets provide more detail on the entry conditions of immigrants (i.e. Immigration Data Base and Longitudinal Survey of Immigrants to Canada), changes to immigration policy were implemented in phases and backlogs in

¹⁴ To create comparable data between the Census years, Statistics Canada uses an enumeration or Census date when collecting data. The exact date varies between the Census years, but is always in the middle of May. This date acts as a reference period for collecting time sensitive data.

the immigration system often resulted in applicants from the same year entering the country under different policy regimes (Ferrer, Riddell, and Picot 2012). Despite this inability to identify immigrants by policy regime, the cohorts capture a greater proportion of immigrants entering under similar policy conditions. Overall, this approach creates an opportunity to identify trends in immigrant entry earnings that occurred during a period of significant change in Canadian immigration policy.

To isolate the effect of recent policy changes on immigrant entry earnings and to control for other variables, I organize the difference-in-difference methodology into an Ordinary Least Squares (OLS) equation. I begin the analysis with separate estimations for temporary foreign worker and landed immigrant cohorts in comparison to natives using equation (1):

$$\log(w_{it}) = x_{it}\beta + \delta imm_{it} + \theta coh_{it} + \sigma_1(imm_{it} \times x_{it}) + \sigma_2(imm_{it} \times coh_{it}) + u_{it}$$

where the dependent variable is the natural logarithm of weekly wages, calculated by dividing total employment income by the number of weeks worked by individual i in time period t . Weekly wages are indexed to 2005 values using the Consumer Price Index (CPI) to allow for comparison over time. To maintain confidentiality, Statistics Canada applies top and bottom codes to the income data reported in the Census. If the actual earned income of an individual exceeds or falls below the top and bottom threshold levels Statistics Canada adjusts their income downward or upward until they no longer break the thresholds. These top and bottom codes vary between the three

Census years I used in this analysis. In order to maintain consistency, I top code and bottom code weekly wages for all male cohorts at \$3,500 and \$200, respectively¹⁵. I only apply the \$200 bottom code to the female cohorts, since a very small proportion of individuals within these samples exceed the \$3,500 top code limit¹⁶. I control for the introduction of these income limits by including top code and bottom code dummy variables in the estimations.

In the interest of space, I collapse all the individual and human capital variables into vector x_{it} . Educational attainment, work experience and the quadratic of work experience form the basic human capital control variables included in the equation. Prior research has included control variables for foreign work experience and foreign education, finding that immigrants receive lower returns in the labor market for foreign human capital (Aydemir and Skuterud 2005; Ferrer and Riddell 2008). However, by restricting the sample to five-year entry cohorts I created landed immigrant and temporary foreign worker samples that obtained the majority of their work experience and education prior to arrival in Canada.

I define educational attainment according to the following five categories; less than a high school education (omitted category), high school equivalent, some college,

¹⁵ I also introduce the top and bottom codes in an effort to reduce any heteroskedastic effects caused by the skewed distribution of the dependent variable. See Appendix B for a full discussion.

¹⁶ After examining female income data, I determined that only a small proportion (less than 1 percent) of the 2006 and 2001 samples had earnings that exceeded the \$3,500 top code and no individuals in the 1996 sample even met the top code limit.

university degree and graduate degree or higher. Typically, the literature has estimated returns to education using total years of schooling completed by an individual.

However, Ferrer and Riddell (2008) find that immigrants in Canada receive lower returns to years of schooling, but higher returns for educational attainment. They also find that the relationship between education and earnings is non-linear and using years of schooling to estimate returns to education discounts the value of an additional year of education (Ferrer and Riddell, 2008). This suggests that the Canadian labor market recognizes educational attainment rather than years spent in school.

I calculate work experience in the traditional format of age minus years of schooling minus six. Since I defined education by attainment level, I apply the following assumptions for years of schooling to calculate work experience; less than high school is 10 years, high school equivalent is 12 years, some college is 14 years, a university degree is 16 years and a graduate degree or higher is 18 years. In addition, the 2006 Census only provides detail on individual ages by group rather than as a continuous variable. To create a continuous variable, I take the median age of each age group.

Vector x_{it} also contains dummy variables for marital status, residence in a rural area, visible minority status, and official language ability¹⁷. Marital status

¹⁷ Previous literature has included place of birth variables to control for unobservable cultural differences between immigrants. I initially identified place of birth with dummy variables, but found a large amount of collinearity between them and the official language and visible minority dummy variables. As a result, I assume that the

indicates the individual reported being legally married at the time of the Census. I define residence in a rural area as any individual that resides outside of a Census Metropolitan Area (CMA)¹⁸. Information on visible minority status comes directly from the Census and is defined as any individual not of non-Caucasian race or non-white in color¹⁹. Official language ability identifies any individual that reported knowledge of French or English and their mother tongue is either French or English²⁰.

To control for differences between the immigrant and native samples, I introduce an immigrant dummy variable (imm_{it}). The interaction of this immigrant dummy with vector x_{it} allows for differences in individual characteristics and human capital to vary between immigrants and natives. To apply the difference-in-difference (DID) methodology to equation (1), I introduce two additional controls in addition to the immigrant dummy variable. First, a cohort dummy variable (coh_{it}) separates pre and post-treatment time-periods and I adjust this variable depending on the particular

official language ability and visible minority dummy variables also capture any cultural differences.

¹⁸ Statistics Canada defines a Census Metropolitan Area as a total population of at least 100,000 of which 50,000 or more live in the core.

¹⁹ This definition of minority status comes from the Employment Equity Act of Canada and does not include Aboriginals as visible minorities. However, I include Aboriginals as visible minorities for the purposes of this analysis.

²⁰ The visible minority and official language ability dummy variables are included to capture shifts in source country of origin. I estimated the equation using region of birth dummy variables and found these were collinear with the visible minority and official language ability dummy variables. As a result, I concluded that the effect of region of birth on wages is captured by these two dummy variables.

policy of interest. For example, to estimate the effects of the 1996 policy changes on immigrant wages, I set the 1991-1995 immigrant cohort and the native sample taken from the 1996 Census to 0, representing the pre-treatment group, while the 1996-2000 immigrant cohort and the native-born sample taken from the 2001 Census is set to 1, representing the post-treatment group. Then to estimate the treatment effect, I create an interaction term ($imm_{it} \times coh_{it}$) from the immigrant dummy and the cohort dummy variables. This interaction variable is designed to capture the effects of immigration policy on immigrant earnings.

3.4 Descriptive Statistics

Before turning to my estimation results, Table 3.1 reports descriptive statistics for male landed immigrants, temporary foreign workers and native-born workers by cohort. In examining the weekly wage data, I find that natives report higher earnings in comparison to landed immigrants across all three cohorts. In comparing this wage differential between cohorts, I find an interesting trend emerged. From the 1996 to 2001 cohort, the immigrant wage differential reduced significantly despite native wages improving by approximately 5 percent over the same period. This change suggests male landed immigrants arriving after the 1996 policy changes experienced improved entry earnings in comparison to the previous entry cohort. In comparing the 2001 and 2006 cohorts, I find that male landed immigrants experienced a significant decline in earnings, which combined with an increase in male native wages, nearly returned the wage differential to 1996 levels. This sharp reversal suggests that

immigration policy introduced in 2002 may have had an adverse effect on the entry earnings of male landed immigrants.

Unlike the landed immigrant samples, the wage data shows that male temporary foreign workers receive higher wages in comparison to natives across all three cohorts. I find the wage patterns of temporary workers are comparable to landed immigrants. Between the 1996 and 2001 cohorts, the weekly wages of male temporary foreign workers increased by over 12 percent. Temporary workers in the 2001 cohort experienced the largest earnings differential, as their mean weekly wages exceed the native sample by nearly 250 dollars. In comparing the 2001 and 2006 cohorts, I find weekly wages declined by nearly 12 percent, nearly eliminating the wage differential between temporary workers and natives. Weaker earnings among the 2006 male temporary worker cohort suggest that the TFW Program expansion in 2002 had a negative impact on entry earnings.

Not surprisingly, Table 3.1 shows that the proportion of visible minorities among the immigrant cohorts is significantly higher in comparison to natives²¹. In addition, official language ability among the native samples remained consistently higher in comparison to immigrants across the three cohorts. Interestingly, all three temporary worker cohorts report a much smaller proportion of visible minorities and

²¹ See appendix A for a complete table of descriptive statistics that includes rural residence, marital status, top and bottom wage codes.

much stronger language abilities than the landed immigrant samples. These differences may help explain the significant earning differential between landed immigrants and temporary workers.

Table 3.1 also reports work experience and educational attainment in. In each of the three cohorts, natives have more years of work experience than both immigrant samples. In particular, the work experience of temporary workers is significantly lower. This is primarily a reflection of the aging demographic that currently exists among the native population in Canada, while immigrants tend to be younger and as a result, have less work experience. Table 3.1 also shows that both landed immigrants and temporary workers have much higher levels of education than the native samples. For example, within the 1996 cohort 29 percent of male landed immigrants and 54 percent of male temporary workers had a university or graduate degree. In comparison, the proportion of natives with the same level of education was only 17 percent. Over time, I find that the education levels of temporary workers and landed immigrants increase. In 2006, male landed immigrants with a university or graduate degree had nearly doubled from 2001 reaching 54 percent. By 2001, the proportion of male temporary workers with a university or graduate degree reached 63 percent. However, by 2006 this proportion had dropped to 52 percent. Overall, the data suggests that policy changes in 1996 and 2002 significantly increased the level of education of landed immigrants, but reduced education among the temporary workers.

Table 3.1 Characteristics of Male Landed Immigrants, Temporary Foreign Workers and Natives by Cohort, Canada, 1996-2001

	1996 Cohorts			2001 Cohorts			2006 Cohorts		
	Landed	Temporary	Native	Landed	Temporary	Native	Landed	Temporary	Native
Mean Weekly Wage	668.4	1118.3	965.8	813.0	1,255.6	1005.98	790.3	1121.7	1052.7
Native Wage Differential	-297.4	152.5	n/a	-193.0	249.6	n/a	-262.4	69.0	n/a
Mean Weeks Worked	48.1	48.2	49.3	48.3	48.4	49.6	48.1	48.1	49.6
Visible Minority	68.9%	42.6%	3.0%	68.1%	42.5%	4.1%	72.0%	47.8%	5.7%
Official Language Ability	21.6%	43.3%	96.3%	19.2%	46.5%	96.0%	21.1%	46.1%	95.7%
Years of Work Experience	16.0	14.3	18.5	15.9	14.4	19.0	16.3	14.8	19.5
Less Than High School	22.5%	12.8%	23.3%	15.9%	11.3%	21.5%	7.3%	8.0%	13.8%
High School Equivalent	21.3%	17.0%	25.1%	15.8%	7.9%	25.3%	15.7%	15.1%	27.2%
Some College	27.5%	16.0%	34.4%	21.9%	17.3%	35.9%	22.4%	24.7%	40.7%
University Degree	18.1%	28.4%	13.2%	27.9%	32.2%	13.5%	35.5%	25.3%	14.5%
Graduate Degree	10.6%	25.9%	3.9%	18.5%	31.4%	3.8%	19.0%	27.0%	3.9%
Observations (n)	3116	282	97300	3231	398	105707	3092	538	99774

Note: Landed and temporary immigrant characteristics represent individuals arriving in the 5 year period prior to the census; 2006 Census - 2005-2001 cohort; 2001 Census - 2000-1996 cohort; 1996 Census - 1995 - 1991 cohort. The native-born characteristics represent all native-born observations in the given census year corresponding to the cohort listed in the table. All weekly wages are adjusted to 2005 value using the Consumer Price Index.

Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

Table 3.2 reports the same descriptive statistics for female landed immigrants, temporary foreign workers and natives by cohort. Weekly wage data for females follows a similar pattern as their male counterparts. Between the 1996 and 2001 female cohorts, the weekly wages of both landed immigrants and temporary workers improved in comparison to natives. Then from 2001 to 2006, immigrants experienced a significant decline in earnings. In particular, the weekly wages of female temporary workers declined so sharply in 2006 that they fell below the comparable landed immigrant cohort. One important difference between the female and male samples is that native females have higher earnings across all three cohorts. Another important difference is the largest wage disparity between immigrants and natives occurs within the 2006 cohort. The pattern that emerges across the three cohorts suggest that, similar to the male landed immigrants, the 1996 policy changes had a positive impact on the earnings of female landed immigrants. Then the sharp decline in earnings among both landed immigrants and temporary foreign workers between 2001 and 2006 suggests that policy changes in 2002 had a negative effect. In fact, the wage data suggests that the 2002 policy changes had a much stronger negative impact on female immigrant cohorts than the comparable male cohorts.

Table 3.2 Characteristics of Female Landed Immigrants, Temporary Foreign Workers and Natives by Cohort, Canada, 1996-2001

	1996 Cohorts			2001 Cohorts			2006 Cohorts		
	Landed	Temporary	Native	Landed	Temporary	Native	Landed	Temporary	Native
Mean Weekly Wage	488.8	509.8	651.3	576.2	640.7	697.1	558.0	562.2	756.5
Native Wage Differential	-162.5	-141.5	n/a	-120.9	-56.4	n/a	-198.5	-194.3	n/a
Mean Weeks Worked	47.4	47.7	49.1	47.8	47.3	49.4	47.6	48.6	49.5
Visible Minority	74.1%	62.1%	3.1%	69.6%	59.8%	4.1%	72.9%	67.1%	5.9%
Official Language Ability	23.3%	31.1%	96.0%	20.6%	31.0%	95.7%	20.7%	35.3%	95.2%
Years of Work Experience	15.7	12.6	18.4	15.6	12.2	19.1	15.6	13.4	20.0
Less Than High School	21.4%	14.6%	17.7%	16.9%	9.2%	15.6%	7.5%	1.9%	8.7%
High School Equivalent	25.4%	21.8%	28.5%	19.5%	10.0%	26.8%	16.1%	15.5%	27.3%
Some College	29.2%	27.2%	35.7%	24.6%	26.2%	37.3%	25.6%	30.7%	41.1%
University Degree	18.5%	26.2%	15.2%	27.1%	36.7%	17.0%	36.5%	37.4%	18.8%
Graduate Degree	5.5%	10.2%	2.8%	11.9%	17.9%	3.3%	14.3%	14.5%	4.0%
Observations (n)	2328	206	80891	2293	229	89381	2214	414	87875

Note: * The landed and temporary immigrant characteristics individuals arriving in the 5 year period prior to the census; 2006 Census - 2005-2001 cohort; 2001 Census - 2000-1996 cohort; 1996 Census - 1995 - 1991 cohort. The native-born characteristics represent all native-born observations in the given census year corresponding to the cohort listed in the table. All weekly wages are adjusted to 2005 value using the Consumer Price Index.

Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

In examining the individual characteristics in Table 3.2, I find some differences between the female and male cohorts. Across the three female cohorts, the official language abilities of temporary workers are much lower than their male counterparts. In comparison, female landed immigrants and natives have similar language abilities as males. One surprising difference between the female and male cohorts is the proportion of visible minorities within the female immigrant samples. Within the female landed immigrant cohorts, the proportion of visible minorities is slightly higher than the comparable male cohorts. However, the proportion of visible minorities within the female temporary worker cohorts is much higher when compared to the male sample. For example, the proportion of visible minorities in the 2006 female cohort reached 67 percent, while the comparable male cohort was 47.8 percent visible minority. These individual characteristics suggest that female immigrants entering Canada represent a different demographic than their male counterparts.

Table 3.2 also reports human capital characteristics for the female landed immigrant, temporary worker and native cohorts. Similar to the male cohorts, I find that female immigrants have much higher levels of education in comparison to natives. Across the three cohorts, the education level of female natives remains relatively constant. However, with each successive cohort, the education level of landed immigrants and temporary workers improves. By 2006, the proportion with a university degree in each of the immigrant cohorts is double the native cohort. In comparison to the males in Table 3.1, overall female immigrants tend to have much higher levels of education. From the change in education levels between the three

cohorts, it appears that the immigration policy changes in 1996 and 2002 had a much stronger effect on the education levels of female landed immigrants than male landed immigrants. One other point worth noting is following the 2002 expansion of the TFW Program, the education levels of male temporary workers declined. Interestingly, the education levels of female temporary workers over the same period remained relatively constant. This may have resulted from a greater number of labor-intensive positions, not requiring a high level of education, primarily being filled by males, rather than females.

The descriptive statistics presented in Tables 3.1 and 3.2, provides a sense of the impact that different policy changes had on the characteristics of immigrants. In particular, changes in immigrant earnings and education levels between each cohort highlight the effects of the 1996 and 2002 policy changes. Despite these significant changes in immigrant characteristics, the comparable native cohorts report only modest improvements in earnings and education levels over the same period. From these preliminary results, we see that changes to immigration policy have an immediate effect on the labor market outcomes of new immigrants entering Canada.

3.5 Landed Immigrant Estimates

This analysis begins by estimating the effects of the 1996 and 2002 policy changes on the entry earnings of male and female immigrants in the Canadian labor market. I complete separate estimations for landed immigrants and temporary foreign workers using the same native cohorts as the control group. First, I examine the effect

of the 1996 policy changes by estimating equation (1) using the 1996 and 2001 cohorts. In this set of estimations, the 1996 cohort becomes the pre-treatment group and the 2001 cohort is the post-treatment group. To determine the effects of the 2002 policy changes on immigrant entry earnings I re-estimate equation (1) after substituting in the 2006 cohort and removing 1996 cohort. In this second set of estimations, the 2001 cohort now becomes the pre-treatment group and the 2006 cohort is the post-treatment group. In all, I complete four separate difference-in-difference estimations for each gender using equation (1).

Table 3.3 reports estimation results for male landed immigrants by cohort. Initially, I estimate a reduced form of equation (1) on the merged samples to establish a baseline. This includes the immigrant dummy variable, along with controls for individual and human capital characteristics. Estimates for the immigrant dummy variable (imm_{it}) in column 1 suggest male immigrants in the 1996-2001 cohorts earn 27 percent lower weekly wages than native-born males. I find that this negative wage differential increases slightly to 30 percent for the 2001-2006 cohorts. Overall, these results are consistent with previous literature and identify the significant wage disparity encountered by immigrant males upon entering Canada (Aydemir and Skuterud 2005; Picot and Sweetman 2005).

Full specification results for equation (1) are found in columns 2 and 4. These include coefficient estimates for the treatment group (coh_{it}) and the difference-in-difference (DID) estimation, which is the interaction of the immigrant dummy and cohort variables ($imm_{it} \times coh_{it}$). In addition, all human capital and individual

characteristics are interacted with the immigrant dummy. By relaxing the specification, I am able to identify differences in return to human capital between the immigrant and native cohorts. The estimation also includes variables to control for marital status, visible minority status, official language ability, residence in a rural area, income top code, income bottom code and the interaction of these variables with the immigrant dummy variable²².

Column 2 in Table 3.3 reports my first set of estimation results that include the 1996-2001 cohorts. Treatment period estimates indicate an overall 2 percent improvement in earnings from the 1996 to 2001 cohort. The estimate of greatest interest is the DID coefficient, which measures the change in immigrant earnings between entry cohorts relative to native cohorts. In other words, this coefficient reflects any change in immigrant entry earnings following the 1996 changes to Canadian immigration policy. The DID coefficient in column 2 suggests that the entry earnings of immigrant males improved by 7 percent between the 1996 and 2001 cohorts. Since male immigrant wages improved relative to native wages over the same time-period, the findings suggest that the 1996 policy changes had a positive effect on the entry earnings of male landed immigrants.

²² See appendix for a table of results that includes these variables.

Table 3.3 Wage Effects for Male Landed Immigrant by Cohort, Canada, 1996-2006

	1996 – 2001		2001-2006	
	(1)	(2)	(3)	(4)
Immigrant Status (imm)	-0.2744*** (0.0075)	0.1580*** (0.0289)	-0.3027*** (0.0074)	0.2306*** (0.0313)
Treatment Period (coh)	---	0.0216*** (0.0020)	---	-0.0011 (0.0020)
DID (imm x coh)	---	0.0702*** (0.0116)	---	-0.0572*** (0.0119)
High School Equivalent	0.0914*** (0.0029)	0.0928*** (0.0029)	0.0933*** (0.0031)	0.0956*** (0.0032)
Some College	0.2066*** (0.0027)	0.2065*** (0.0028)	0.2220*** (0.0030)	0.2243*** (0.0030)
University Degree	0.4310*** (0.0035)	0.4348*** (0.0036)	0.4512*** (0.0037)	0.4578*** (0.0038)
Graduate Degree	0.5608*** (0.0054)	0.5585*** (0.0056)	0.5766*** (0.0056)	0.5801*** (0.0059)
Work Experience	0.0419*** (0.0004)	0.0429*** (0.0005)	0.0406*** (0.0004)	0.0414*** (0.0005)
Work Experience ²	-0.0007*** (0.0001)	-0.0007*** (0.0001)	-0.0007*** (0.0001)	-0.0007*** (0.0001)
Imm x High School Equivalent	---	-0.0914*** (0.0186)	---	-0.0925*** (0.0227)
Imm x Some College	---	-0.0821*** (0.0177)	---	-0.1197*** (0.0216)
Imm x University Degree	---	-0.1670*** (0.0183)	---	-0.1750*** (0.0210)
Imm x Graduate Degree	---	-0.0946*** (0.0212)	---	-0.1451*** (0.0233)
Imm x Work Experience	---	-0.0235*** (0.0029)	---	-0.0180*** (0.0031)
Imm x Work Experience ²	---	0.0003*** (0.0007)	---	0.0001*** (0.0001)
Observations (N)	207608	207608	211804	211804
R ²	0.4777	0.4804	0.4666	0.4689

Notes:

1. DID references the Difference-in-Difference estimates

2. *, **, *** represents 10%, 5% and 1% significance levels and standard errors are reported below

3. Less than a high school education is the omitted education category variable

4. The model includes an intercept term, controls for rural residence, marital status, visible minority status, official language knowledge, income bottom code and income top code

Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

Column 4 in Table 3.3 reports my second set of estimations using the 2001 and 2006 cohorts. Unlike my results for the 1996-2001 cohort estimates, I find that the treatment period variable is not statistically significant for the 2001-2006 cohorts. This suggests wages remained relatively flat between 2001 and 2006 for all males in Canada. Again, of greatest interest is the DID estimate which now reflects the change in immigrant earnings following the 2002 policy changes. I find that the entry earnings of male immigrants declined by 5.7 percent relative to native males between the 2001 and 2006 cohorts. This suggests that the 2002 changes to immigration policy had a negative effect on the earnings of the most recent male landed immigrant cohort entering Canada.

Table 3.4 Returns to Human Capital for Male Landed Immigrants and Natives, Canada, 1996-2006

	Landed Immigrants			Natives		
	1996-2001 (1)	2001-2006 (2)	Change (3)	1996-2001 (4)	2001-2006 (5)	Change (6)
High School Equivalent	0.0014	0.0031	121.4%	0.0928	0.0956	3.0%
Some College	0.1244	0.1046	-15.9%	0.2065	0.2243	8.6%
University Degree	0.2678	0.2828	5.6%	0.4348	0.4578	5.3%
Graduate Degree	0.4639	0.4350	-6.2%	0.5585	0.5801	3.9%
Work Experience	0.0114	0.0114	0.0%	0.0289	0.0274	-5.2%

Notes:

1. All coefficients are significant at the 1 percent level.
2. Less than a high school education is the reference education category
3. Work experience calculations are based on 10 years of experience
4. All coefficients come from Table 3

In Table 3.4, I provide greater analysis of the returns to human capital variables reported in Table 3.3 for male landed immigrants and natives. The education estimates are categorical and I use individuals with less than a high school education as the reference group. Estimates for work experience are interpreted as returns for an additional year given 10 years of prior work experience. All education and work experience estimates for natives and landed immigrants are statistically significant at the 1 percent level.

Across all cohorts, I find that native males receive much higher returns to human capital in comparison to immigrant males. For example, the 1996-2001 cohort estimates reported in column 1 shows a university degree increases immigrant earnings by 26 percent and in comparison column 4 shows that the same level of education increases native earnings by 43 percent. I also find that natives receive much higher returns to work experience when compared to immigrant cohorts. Columns 1 and 4 show that an additional year of comparable work experience increases the earnings of native males by approximately 3 percent, while immigrant males only receive a 1 percent increase in earnings. Overall, these findings suggest that the Canadian labor market discounts the value of foreign obtained education and work experience.

Looking back at the estimates in Table 3.3, I found that entry earnings improved significantly for male landed immigrants between the 1996 and 2001 cohorts, but then entry earnings deteriorated between the 2001 and 2006 cohorts. Changes in returns to education can partially explain this shift in entry earnings for

immigrant males. Columns 3 and 6 report the percentage change in returns to human capital between the 1996-2001 and 2001-2006 cohort estimates. Column 6 shows that the value of education increased at all levels for native males between the two estimates. In comparison, column 3 shows that the value of a college education, which could consist of a business diploma, certificate or trade, and the value of a graduate degree declined for immigrant males. While I did find that the value of a high school education increased significantly for immigrant males, the point estimates are quite small and the actual change is not that large. These results show an overall pattern of increasing returns to education for native males, while immigrant males experienced flat and in some instances, declining returns to human capital between 1996 and 2006.

Table 3.5 reports my results for female landed immigrants by cohort estimates. Once again, I first estimate a reduced form of equation (1) to create a baseline for the immigrant wage differential that exists in Canada. The results for the 1996-2001 and 2001-2006 cohort estimates are reported in columns 1 and 3, respectively. I find a 26 percent wage gap between female immigrants in the 1996-2001 cohorts and the comparable native cohort. This wage differential increases with the 2001-2006 cohorts to over 31 percent. These findings suggest that female immigrants experience a similar wage disparity as their male counterparts.

Table 3.5 Female Landed Immigrant Wage Effects by Cohort, 1996-2006

	1996 - 2001		2001-2006	
	(1)	(2)	(3)	(4)
Immigrant Status (imm)	-0.2592*** (0.0085)	0.0677 (0.0337)	-0.3142*** (0.0084)	0.2107*** (0.0362)
Treatment Period (coh)	---	0.0221*** (0.0022)	---	0.0054** (0.0022)
DID (imm x coh)	---	0.0546*** (0.0134)	---	-0.0882*** (0.0142)
High School Equivalent	0.1159*** (0.0034)	0.1172*** (0.0034)	0.1391*** (0.0038)	0.1414*** (0.0038)
Some College	0.2359*** (0.0033)	0.2365*** (0.0033)	0.2663*** (0.0037)	0.2690*** (0.0037)
University Degree	0.5679*** (0.0039)	0.5740*** (0.0040)	0.6201*** (0.0042)	0.6294*** (0.0043)
Graduate Degree	0.7981*** (0.0066)	0.8021*** (0.0068)	0.8464*** (0.0065)	0.8610*** (0.0067)
Work Experience	0.0361*** (0.0004)	0.0367*** (0.0005)	0.0345*** (0.0005)	0.0350*** (0.0005)
Work Experience ²	-0.0007*** (0.0001)	-0.0007*** (0.0001)	-0.0006*** (0.0001)	-0.0006*** (0.0001)
Imm x High School Equivalent	---	-0.0707*** (0.0208)	---	-0.1123*** (0.0261)
Imm x Some College	---	-0.0861*** (0.0205)	---	-0.1490*** (0.0252)
Imm x University Degree	---	-0.2794*** (0.0215)	---	-0.3330*** (0.0249)
Imm x Graduate Degree	---	-0.2237*** (0.0287)	---	-0.3803*** (0.0297)
Imm x Work Experience	---	-0.0204*** (0.0031)	---	-0.0179*** (0.0033)
Imm x Work Experience ²	---	0.0003*** (0.0008)	---	0.0002*** (0.0001)
Observations (N)	173363	173363	181763	181763
R ²	0.4580	0.4599	0.4363	0.4384

Notes:

1. DID references the Difference-in-Difference estimates

2. *, **, *** represents 10%, 5% and 1% significance levels, respectively

3. Less than a high school education is the omitted education category variable

4. The model includes an intercept term, controls for rural residence, marital status, visible minority status, official language knowledge and income bottom code

Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

Columns 2 and 4 in Table 3.5 report full estimation results for females using equation (1). Similar to the male results discussed earlier, after relaxing equation (1) the immigrant dummy variable becomes upward bias and not of interest. The treatment period variables in columns 2 and 4 show an overall increase in female weekly wages. Between 1996 and 2001, females experienced a 2 percent increase in earnings, while from 2001 to 2006 the increase was much flatter at 0.5 percent. Once again, the difference-in-difference estimates are of greatest interest, as they represent any change in immigrant earnings relative to any change in native earnings that occurred over the same period. I find that female immigrants experienced a 5 percent increase in weekly wages between the 1996 and 2001 cohorts. This suggests the 1996 policy changes had a positive effect on the earnings of female immigrants. Then, similar to the male results, column 4 shows female immigrants experienced a decline in earnings between the 2001 and 2006 cohorts. However, the decline for females was much sharper at nearly 9 percent. This suggests the 2002 policy changes had a larger negative impact on the entry earnings of female immigrants in comparison to male immigrants.

Table 3.6 reports human capital variables for female landed immigrants and natives. All variables reported in the table are significant at the 1 percent level. I find the Canadian labor market significantly discounts the value of education across all categories for female immigrants. For example, a university degree increases the weekly wages of a female native from the 2001-2006 cohorts by over 60 percent, while the return for a comparable immigrant is less than 30 percent. I also find that

female immigrants receive no return for foreign obtained work experience. Point estimates in columns 1 and 2 suggest that an additional year of work experience for female landed immigrants is essentially worthless.

Table 3.6 Human Capital of Female Landed Immigrants and Natives, 1996-2006

	Landed Immigrants			Natives		
	1996-2001 (1)	2001-2006 (2)	Change (3)	1996-2001 (4)	2001-2006 (5)	Change (6)
High School Equivalent	0.0465	0.0291	-37.4%	0.1172	0.1414	20.6%
Some College	0.1504	0.1200	-20.2%	0.2365	0.2690	13.7%
University Degree	0.2946	0.2964	0.6%	0.5740	0.6294	9.7%
Graduate Degree	0.5784	0.4807	-16.9%	0.8021	0.8610	7.3%
Work Experience	-0.0057	-0.0029	-49.1%	0.0227	0.0230	1.3%

Notes:

1. All coefficients are significant at the 1 percent level.
2. Less than a high school education is the reference education category
3. Work experience calculations are based on 10 years of experience
4. All coefficients come from Table 3

Looking at the estimate in Table 3.5, I had found female immigrants experienced an increase in weekly wages between 1996 and 2001, then a sharp decline from 2001 to 2006. Changes in returns to education can explain a large portion of the decline in earnings experienced between the two later cohorts. With the exception of a university degree, which remained relatively flat, column 3 in Table 3.6 shows sharp declines in the value of education for female immigrants in all categories. Column 6 shows the same comparison for female natives, yet the results are much different. Across all education categories, I find that female natives experienced higher returns to education. In particular, I find a large increase in the value of lower education

levels. Another interesting finding was the increase in returns to work experience between the two cohort estimates. This finding further emphasizes that the Canadian labor market severely discounts the value of foreign work experience for females. Overall, these findings suggest that declining returns to human capital following the 2002 policy largely explain the recent deterioration in female entry earnings. This is interesting, as it shows a new trend in the value of education for female immigrants (Aydemir and Skuterud 2005).

3.6 Temporary Foreign Worker Estimates

Table 3.7 reports results for male temporary foreign worker samples using equation (1). Once again, I begin by estimating a reduced form of equation (1) to establish a baseline comparison of earnings between temporary workers and natives. I find that male temporary foreign workers experience smaller wage differentials than male landed immigrants. In column 1, the immigrant dummy variable indicates that the earnings of male temporary workers from the 1996-2001 cohorts were 9 percent lower than native males. Column 3 shows that the wage differential experienced by male temporary workers increased to 14 percent with the 2001-2006 cohorts. In comparison to my earlier results for male landed immigrants, these findings suggest that male temporary workers are able to obtain significantly higher earnings upon entering the Canadian labor market.

Table 3.7 Male Temporary Foreign Worker Wage Effects by Cohort, 1996-2006

	1996 - 2001		2001-2006	
	(1)	(2)	(3)	(4)
Immigrant Status (imm)	-0.0898*** (0.0174)	-0.0604 (0.0906)	-0.1398*** (0.0153)	-0.0010 (0.0843)
Treatment Period (coh)	---	0.0216*** (0.0020)	---	-0.0011 (0.0020)
DID (imm x coh)	---	0.0393 (0.0352)	---	-0.0907*** (0.0308)
High School Equivalent	0.0939*** (0.0029)	0.0928*** (0.0029)	0.0957*** (0.0031)	0.0956*** (0.0032)
Some College	0.2081*** (0.0028)	0.2065*** (0.0028)	0.2243*** (0.0030)	0.2243*** (0.0030)
University Degree	0.4368*** (0.0036)	0.4348*** (0.0036)	0.4583*** (0.0038)	0.4578*** (0.0038)
Graduate Degree	0.5598*** (0.0055)	0.5585*** (0.0056)	0.5826*** (0.0058)	0.5801*** (0.0059)
Work Experience	0.0427*** (0.0005)	0.0429*** (0.0005)	0.0413** (0.0005)	0.0414*** (0.0005)
Work Experience ²	-0.0007*** (0.0001)	-0.0007*** (0.0001)	-0.0007*** (0.0001)	-0.0007*** (0.0001)
Imm x High School Equivalent	---	0.1548** (0.0716)	---	0.1389** (0.0667)
Imm x Some College	---	0.0186 (0.0671)	---	-0.0083 (0.0613)
Imm x University Degree	---	0.1100* (0.0626)	---	0.0510 (0.0599)
Imm x Graduate Degree	---	0.0558 (0.0642)	---	0.0846 (0.0618)
Imm x Work Experience	---	-0.0092 (0.0085)	---	-0.0070 (0.0073)
Imm x Work Experience ²	---	0.0003 (0.0003)	---	0.0001 (0.0002)
Observations (N)	201941	201941	206417	206417
R ²	0.4770	0.4776	0.4680	0.4683

Notes:

1. DID references the Difference-in-Difference estimates

2. *, **, *** represents 10%, 5% and 1% significance levels, respectively

3. Less than a high school education is the omitted education category variable

4. The model includes an intercept term, controls for rural residence, marital status, visible minority status, official language knowledge, income bottom code and income top code.

Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

Columns 2 and 4 in Table 3.7 report 1996-2001 and 2001-2006 cohort estimates for male temporary workers, respectively. Treatment period estimates in column 1 indicate a slight, but statistically significant improvement in earnings between the 1996 and 2001 cohort. In comparison, the statistically insignificant treatment period estimate in column 3 suggests that earnings remained relatively flat between the 2001 and 2006 cohorts. The treatment period estimates reflect any change in the weekly wages of both temporary workers and natives between the two cohorts.

With this set of estimations, the DID interaction term ($imm \times coh$) identifies any change in entry earnings that occurred between temporary worker cohorts relative to any change in the native-born cohorts. Based on the results in column 2, I find no significant change in the entry earnings of male temporary foreign workers from the 1996 to the 2001 cohort. This is not surprising, since the TFW Program was unchanged between the 1996 and 2001 cohorts. However, I did find a significant change in entry earnings between the 2001 and 2006 cohorts. The DID estimates in column 4 suggest a 9 percent decrease in the entry earnings of male temporary workers. This finding suggests that the 2002 policy changes significantly reduced the entry earnings of recent foreign workers entering Canada.

Returns to human capital reported in table 3.7 show interesting comparisons between male temporary workers and natives. I find only in a small number of instances that male temporary workers receive different returns to education than natives. What is particularly interesting is that returns to education are higher for temporary workers. For example, estimates in column 2 indicate that the value of a

university degree is 11 percent higher for temporary workers than for natives. Column 2 also shows that the value of a high school degree is much higher for male temporary workers. For the 2001-2006 cohort estimates reported in column 4, I find the only difference in returns to human capital between temporary workers and natives is the value of a high school diploma. For the most part, I find that temporary workers receive the same returns to education and work experience as native males. Unlike male landed immigrants, my findings suggest that the Canadian labor market does not discount the value of human capital for male temporary foreign workers.

In Table 3.8, I report my findings for female temporary workers by cohort. I begin with the same reduce form specification of equation (1) to establish a baseline for comparison. In both cohort estimates, the immigrant dummy indicates that female temporary workers experience significant wage disparities in comparison to native females. Coefficient estimates in column 1 suggest that female temporary workers from the 1996-2001 cohorts experienced a 30 percent wage differential. Column 4 indicates that this wage differential increases to 37 percent with the 2001-2006 cohorts. Unlike the male temporary worker results, I find that female temporary workers face larger wage disparities than the comparable landed immigrant cohorts.

I report full estimation results for equation (1) in columns 2 and 4 of Table 3.8 for female temporary workers. Treatment period estimates in column 2 indicate an overall 2 percent improvement in weekly wages for both temporary workers and natives from 1996 to 2001. The similar estimate in column 4 suggests a very slight increase in weekly wages between the 2001 and 2006 cohorts. These findings are

comparable with results for males in Table 3.7 suggesting that males and females experience similar earnings growth between 1996 and 2006.

Turning to the DID estimates for female temporary workers, I find some interesting results. In fact, what is interesting is the absence of any statistically significant estimates in either cohort estimate. Columns 2 and 4 shows that female temporary workers experienced no change in earnings relative to natives between 1996 to 2001 and 2001 to 2006. This suggests that changes to the TFW Program in 2002 had no effect on females. It appears that the large wage disparity experienced by female temporary workers continued following the 2002 policy changes, but there was no significant change in wages relative to natives.

The results in Table 3.8 show there was a large degree of deterioration in returns to education between the female temporary worker cohort estimates. Column 2 shows that female temporary workers in the 1996-2001 cohorts received the same value for college education as natives. However, the value of college education declines by 24 percent for temporary workers in the 2001-2006 cohorts. I also find that between the two cohort estimates, the value of a university degree declined by 40 percent, while the value of a graduate degree declined by 80 percent. This represents a significant deterioration in the value of education for female temporary workers, which was much greater than the deterioration experienced by female landed immigrants over the same period.

Table 3.8 Female Temporary Foreign Worker Wage Effects by Cohort, 1996-2006

	1996 - 2001		2001-2006	
	(1)	(2)	(3)	(4)
Immigrant Status (imm)	-0.3086*** (0.0218)	0.0404 (0.1062)	-0.3722*** (0.0187)	0.2510** (0.1114)
Treatment Period (coh)	---	0.0221*** (0.0022)	---	0.0054** (0.0022)
DID (imm x coh)	---	0.0362 (0.0442)	---	-0.0480 (0.0392)
High School Equivalent	0.1178*** (0.0034)	0.1172*** (0.0034)	0.1421*** (0.0038)	0.1414*** (0.0038)
Some College	0.2378*** (0.0033)	0.2365*** (0.0033)	0.2697*** (0.0037)	0.2690*** (0.0037)
University Degree	0.5755*** (0.0040)	0.5740*** (0.0040)	0.6291*** (0.0043)	0.6294*** (0.0043)
Graduate Degree	0.8043*** (0.0068)	0.8021*** (0.0068)	0.8623*** (0.0067)	0.8606*** (0.0067)
Work Experience	0.0366*** (0.0005)	0.0367*** (0.0005)	0.0349*** (0.0005)	0.0350*** (0.0005)
Work Experience ²	-0.0007*** (0.0001)	-0.0007*** (0.0001)	-0.0006*** (0.0001)	-0.0006*** (0.0001)
Imm x High School Equivalent	---	-0.0696 (0.0830)	---	-0.1106 (0.1010)
Imm x Some College	---	-0.1154 (0.0768)	---	-0.2471*** (0.0946)
Imm x University Degree	---	-0.2548*** (0.0776)	---	-0.4413*** (0.0944)
Imm x Graduate Degree	---	-0.3504*** (0.0903)	---	-0.4455*** (0.1027)
Imm x Work Experience	---	-0.0113 (0.0089)	---	-0.0112 (0.0081)
Imm x Work Experience ²	---	0.0001 (0.0003)	---	0.0001 (0.0002)
Observations (N)	169178	169178	177899	177899
R ²	0.4577	0.4585	0.4365	0.4372

Notes:

1. DID references the Difference-in-Difference estimates

2. *, **, *** represents 10%, 5% and 1% significance levels, respectively

3. Less than a high school education is the omitted education category variable

4. The model includes an intercept term, controls for rural residence, marital status, visible minority status, official language knowledge and income bottom code

Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

Results from the temporary worker estimates highlight some important differences between genders and between temporary workers and landed immigrants. In particular, I find that male and female temporary workers experience very different returns in the Canadian labor market. While both, male and female temporary workers earn less when compared to natives, the overall wage differential is much larger for females. In fact, my results show that the weekly wages of female temporary workers are much lower in comparison to landed immigrants. When I compared the male temporary worker results to landed immigrants, I found that male temporary workers experience a significantly lower wage differential with natives across all cohorts.

In addition, my results indicate that changes to the TFW Program in 2002 only had an effect on males. Estimates for female temporary workers indicate no change in entry earnings between any of the cohorts. This lack of any change for females may partially be the result of the expansion of the program having limited effect on the characteristics of applicants entering the program. In other words, prior to the expansion many of the female applicants were already in the lower bounds of the income distribution. Despite the lack of findings for females, I did find the program had an adverse impact on male temporary workers. The 2001-2006 cohort estimates indicate that entry earnings declined between the two cohorts. This suggests that the expansion of the program increased the overall wage differential for males. Overall, these results show gender and cohort specific differences in the earning profiles of temporary workers and landed immigrants.

3.7 Estimation Results with Provincial Fixed Effects

One potential issue with equation (1) is the absence of any control variables for province of residence. As a result, my initial estimates do not allow for differences between provincial labor markets to influence wage returns. In particular, it assumes that immigrants and natives experience similar labor market conditions across all provinces in Canada. Given the different entry requirements of landed immigrants and temporary workers, provincial labor market difference may have a large effect on entry earnings.

For the most part, the TFW program requires applicants to have pre-arranged employment to maintain legal status in Canada. Demand for new labor will ultimately determine the ability of potential applicants to obtain an offer of employment. In comparison, landed immigrant applicants do not have the same employment requirements²³. As a result, many landed immigrants choose to locate close to family or in regions of the country with cultural similarities (Warman 2005). Despite the draw of these ethnic enclaves, the need to obtain employment still exists. Different demands for labor across regional labor markets will affect employment opportunities and ultimately, directly influence the earnings of new landed immigrants entering Canada. All these factors suggest the entry earnings of both landed immigrants and temporary workers should be sensitive to the settlement patterns.

²³ The only exception is some smaller entry streams for landed immigrants that require qualified jobs offers prior to immigration and Quebec, which has some control over then entry of new immigrants to the province.

Table 3.9 Provincial Settlement Patterns of Immigrant and Native Cohorts, 1996-2006

	1996 Cohort		2001 Cohort		2006 Cohort	
	Males	Females	Males	Females	Males	Females
<i>Landed Immigrants:</i>						
British Columbia	18.9%	21.1%	18.0%	19.8%	15.9%	17.6%
Alberta	7.5%	9.1%	7.4%	8.2%	9.8%	9.4%
Saskatchewan	0.5%	0.8%	0.6%	0.7%	0.1%	0.3%
Manitoba	2.4%	2.0%	1.8%	2.1%	2.2%	2.4%
Ontario	56.6%	55.4%	58.5%	57.2%	55.4%	55.0%
Quebec	12.6%	10.8%	12.8%	11.1%	16.4%	15.2%
Atlantic Provinces	1.4%	0.8%	0.8%	0.9%	0.0%	0.1%
<i>Temporary Workers:</i>						
British Columbia	19.2%	29.9%	15.9%	21.7%	16.6%	20.4%
Alberta	9.6%	11.5%	9.3%	16.0%	12.4%	12.8%
Saskatchewan	1.4%	2.9%	1.8%	0.7%	2.2%	2.4%
Manitoba	2.8%	0.8%	1.6%	2.1%	2.8%	1.1%
Ontario	39.4%	36.1%	46.7%	34.8%	47.3%	47.4%
Quebec	23.1%	17.6%	22.4%	22.1%	17.5%	14.7%
Atlantic Provinces	4.5%	1.2%	2.2%	2.5%	1.1%	1.1%
<i>Natives:</i>						
British Columbia	12.0%	11.9%	11.5%	11.4%	11.6%	11.4%
Alberta	10.6%	10.2%	11.7%	10.9%	12.6%	11.4%
Saskatchewan	3.6%	3.8%	3.4%	3.6%	3.4%	3.5%
Manitoba	4.1%	4.1%	3.9%	4.1%	3.8%	3.9%
Ontario	34.3%	35.2%	34.5%	35.1%	33.7%	34.5%
Quebec	27.4%	26.7%	27.2%	26.8%	27.2%	27.1%
Atlantic Provinces	8.1%	8.1%	7.9%	8.1%	7.7%	8.1%

Note: Temporary Foreign Worker and Landed Immigrant cohorts represent individuals arriving in the 5 year period prior to the cohort date. Native cohorts include all individuals from the Census file of the given year; e.g. 2006 Cohorts come from the 2006 Census.

Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

Table 3.9 shows the different settlement patterns of landed immigrants, temporary workers and natives by province, across the 1996, 2001 and 2006 cohorts. I find that landed immigrants and temporary workers tend to cluster in the three provinces of Ontario, Quebec and British Columbia at a much higher rate than the native cohorts. This pattern is consistent with prior research, which found that the majority of immigrants entering Canada have historically settled in these three provinces (A. Green and Green 2004). Across all three cohorts, the proportion of landed immigrants residing in Ontario never falls below 50 percent, while the proportion of temporary workers remains well above 30 percent. I find only small gender variations in the distribution of natives and immigrants. The only exception is the temporary worker population in British Columbia has much higher proportion of females than males in all three cohorts.

In addition to different settlement patterns between the immigrant and native cohorts, I find changes to the settlement patterns occurred within the landed immigrant and temporary worker cohorts over time. For landed immigrants, I find small changes occurred over time in the proportion of female and males residing in Ontario. I also find small overall declines in the proportion of landed immigrants residing in British Columbia between 1996 and 2006. However, the greatest variation in settlement patterns occurred between the three temporary worker cohorts. From 1996 to 2006, I find the proportion of males in the province of British Columbia decline by 3 percent, while the female proportion fell by 9 percent. I also find an overall 6 percent decline in the proportion of males and 6 percent drop in females, residing in the province of

Quebec. The Atlantic Provinces also experienced an overall 3 percent decline in the proportion of male temporary workers residing in the region between 1996 and 2006. At the same time the number of temporary workers in these provinces was declining, the proportion of temporary workers entering Ontario increased. Overall, the decline in the number of temporary workers entering Quebec, British Columbia and the Atlantic provinces was offset by the increase in Ontario.

To allow differences between regional labor markets and different settlement patterns between natives and immigrants to influence entry earnings, I relax my initial specification into equation (2):

$$\begin{aligned} \log(w_{it}) = & X_{it}\beta + \delta imm_{it} + \theta coh_{it} + \partial_{it} + \sigma_1(imm_{it} \times X_{it}) + \sigma_2(imm_{it} \times coh_{it}) \\ & + \sigma_3(imm_{it} \times \partial_{it}) + \sigma_4(coh_{it} \times \partial_{it}) + \sigma_5(imm_{it} \times coh_{it} \times \partial_{it}) + u_{it} \end{aligned}$$

In equation (2), I introduce provincial fixed effects (∂_{it}) and interact the immigrant dummy variable (imm_{it}) with the provincial fixed effects to allow differences between the provinces to affect immigrants and natives separately²⁴. I also interact the set of provincial variables with the time period variable (coh_{it}) to control

²⁴ This includes a set of dummy variables for British Columbia, Alberta, Saskatchewan, Manitoba, Quebec and the Atlantic Provinces with Ontario as the reference variable (Omitted from the equation). Due to small sample sizes in Prince Edward Island, Newfoundland and Labrador, Nova Scotia and New Brunswick, I classified these four provinces as the Atlantic Provinces. This is consistent with much of literature on immigrant earnings.

for any changes that occurred within each of the provinces between the two cohort periods. Finally, I apply the difference-in-difference methodology from equation (1) on a provincial level by interacting the immigrant dummy and time period dummy with the provincial fixed effects ($imm_{it} \times coh_{it} \times \partial_{it}$).

Table 3.10 Impact of Province of Residence on the Entry Earnings of Landed Immigrants, 1996-2006

	Males		Females	
	1996-2001 (1)	2001-2006 (2)	1996-2001 (3)	2001-2006 (4)
DID (imm x coh)	0.0996*** (0.0151)	-0.0719*** (0.0156)	0.0776*** (0.0178)	-0.1141*** (0.0187)
Provincial DID Estimates ($imm_{it} \times coh_{it} \times \partial_{it}$)				
British Columbia	-0.0919*** (0.0305)	0.0899*** (0.0325)	-0.0541 (0.0341)	0.0762** (0.0372)
Alberta	-0.0095 (0.0440)	0.0776* (0.0429)	-0.0407 (0.0477)	0.0874* (0.0507)
Saskatchewan	-0.1257 (0.1483)	-0.1587 (0.2270)	-0.1960 (0.1505)	0.1639 (0.2061)
Manitoba	-0.0777 (0.0814)	0.0927 (0.0871)	0.1146 (0.0923)	-0.0205 (0.0947)
Quebec	-0.0907** (0.0346)	0.0216 (0.0340)	-0.0728* (0.0435)	0.0917** (0.0428)
Atlantic Provinces	0.0068 (0.1165)	-0.3786 (0.4630)	0.0001 (0.1351)	-0.0351 (0.2510)
Observations (N)	207608	211804	173363	181763
R ²	0.4911	0.4822	0.4689	0.4474

Notes:

1. DID references the Difference-in-Difference estimate
 2. *, **, *** represents 10%, 5% and 1% significance levels, respectively.
 3. Ontario is the reference province for the provincial wage effect estimates
 4. The model includes an intercept term, controls for rural residence, marital status, visible minority status, official language knowledge, income bottom code, provincial fixed effects and the interaction of the provincial fixed effects with the treatment period dummy variable.
- Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

Table 3.10 reports the results from equation (2) for male and female landed immigrants by cohort. The table only includes the DID coefficient estimate and all provincial DID estimates ²⁵. These identify any change in immigrant entry earnings between cohorts within a given province. Since the provincial estimates come from three-way interactions involving a set of provincial fixed effects, the individual provincial results are in reference to the omitted province of Ontario. Now, the DID estimate resulting from the interaction of the immigrant dummy variable and the treatment period dummy variable reflect any change in immigrant earnings relative to natives in the province of Ontario. To interpret the individual provincial estimates, the DID estimate that reflects the province of Ontario is used as the reference. In other words, a significant change in the British Columbia estimate is relative to the DID coefficient estimate.

Outside of Ontario, British Columbia and Quebec, sample sizes tend to be much smaller since the majority of landed immigrants cluster in these three provinces. For this reason, I combined Prince Edward Island, Newfoundland and Labrador, New Brunswick and Nova Scotia into the Atlantic Provinces. This practice is consistent with much of the previous literature that includes provincial fixed effects into their estimations (Ferrer and Riddell 2008; Bloom, Grenier, and Gunderson 1995). Despite this adjustment, the provincial DID coefficient estimates should be interpreted with

²⁵ Complete results for equation (2) are in appendix A.

caution due to the smaller sample sizes and the potential impact of a small number of outliers on results.

The DID estimates in column 1 indicate that the entry earnings of male landed immigrants in Ontario improved by nearly 10 percent between the 1996 and 2001 cohorts. Over this same period, I find significant results for the provinces of British Columbia and Quebec. Both estimates indicate that the wages of male landed immigrants remained flat relative to native wages. Coefficient estimates in all other provinces are not statistically different from the DID estimate for Ontario. Overall, these results suggest that outside of the provinces of British Columbia and Quebec, male landed immigrants experienced an increase in entry earnings following the 1996 policy changes.

Column 3 reports results for female landed immigrants over the same 1996-2001 time-period. The DID estimate indicates that entry earnings increased by nearly 8 percent for female landed immigrants in the province of Ontario. In contrast to the male findings, I only find significance in the province of Quebec for females. The Quebec coefficient estimate suggests that wages for female landed immigrants remained flat between 1996 and 2001. My results for females suggest that landed immigrants outside of the province of Quebec experienced improve entry earnings following the 1996 policy changes.

Columns 2 and 4 in Table 3.10 report 2001-2006 estimates for male and female landed immigrants, respectively. The DID estimates show an overall decline in entry earnings for both, male and female landed immigrants between the 2001 and

2006 cohorts in the province of Ontario. I find entry earnings fell by nearly 8 percent for males and 11 percent for females. For both males and females, I find significant results in the provincial DID estimates for the provinces of British Columbia and Alberta. Column 3 shows that male entry earnings in British Columbia increased by nearly 2 percent between 2001 and 2006, while entry earnings in Alberta increased by approximately half a percent over the same period. In column 4, I find that female entry earnings declined in British Columbia and Alberta, but the effect was much smaller in comparison to female landed immigrants in Ontario. Additionally, I find that females in Quebec experienced a 2 percent decline in entry earnings over the same period. Results from my 2001-2006 estimates suggest that landed immigrants in the provinces of British Columbia and Alberta experienced stronger entry earnings, despite an overall decline in entry earnings across the other provinces.

Table 3.11 reports results from equation (2) for male and female temporary workers by cohort. Again, these estimates come from three-way interactions involving the provincial fixed effects with the immigrant dummy and treatment period variable. The DID estimate reflects the change in entry earnings for temporary workers in Ontario and remains the reference category. Note that the sample sizes by province become even smaller for temporary workers, so again, these estimates should be interpreted with caution. Looking at the temporary worker estimates for the 1996-2001 cohorts in columns 1 and 3, I find no significant results for any of the provinces except for males in Alberta and Quebec. The coefficient estimate for Alberta indicates that entry earnings for male temporary workers declined by 23 percent between 1996 and

2001. In contrast, the estimate for males in Quebec suggests that entry earnings increased by 28 percent over the same period. Overall, my findings from the 1996-2001 estimates are not surprising since the government did not make any changes to the TFW Program over this period.

Table 3.11 Impact of Province of Residence on the Entry Earnings of Temporary Foreign Workers, 1996-2006

	Males		Females	
	1996-2001 (1)	2001-2006 (2)	1996-2001 (3)	2001-2006 (4)
DID (imm x coh)	-0.0031 (0.0534)	-0.1572*** (0.0442)	0.0405 (0.0732)	-0.0858 (0.0627)
Provincial DID Estimates ($imm_{it} \times coh_{it} \times \partial_{it}$)				
British Columbia	0.0833 (0.0990)	0.1339 (0.0875)	0.1756 (0.1108)	0.0162 (0.1031)
Alberta	-0.2347* (0.1279)	0.0998 (0.1055)	-0.1746 (0.1335)	0.1283 (0.1130)
Saskatchewan	-0.4321 (0.2631)	0.4625** (0.2271)	-0.4266 (0.4863)	-0.1145 (0.4837)
Manitoba	0.1080 (0.2269)	-0.2521 (0.2181)	0.3097 (0.3701)	0.1984 (0.3037)
Quebec	0.2766*** (0.0891)	0.1673** (0.0798)	-0.0902 (0.1211)	0.0160 (0.1102)
Atlantic Provinces	-0.2057 (0.1976)	0.0581 (0.3028)	0.0022 (0.4993)	0.0818 (0.2985)
Observations (N)	201941	206417	169178	177899
R ²	0.4885	0.4816	0.4676	0.4463

Notes:

1. DID references the Difference-in-Difference estimate
2. *, **, *** represents 10%, 5% and 1% significance levels, respectively.
3. Ontario is the reference province for the provincial wage effect estimates
4. The model includes an intercept term, controls for rural residence, marital status, visible minority status, official language knowledge, income bottom code, provincial fixed effects and the interaction of the provincial fixed effects with the treatment period dummy variable.

Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

Turning to the 2001-2006 estimates, I find that male temporary workers experienced a significant decline in entry earnings between the two cohort periods. Column 2 shows that the weekly wages of temporary workers in Ontario declined by nearly 16 percent. The DID estimate for Saskatchewan indicates that temporary workers experienced a 30 percent increase in weekly wages from 2001 to 2006. I interpret this estimate with caution, since the sample size of male temporary workers in this province is small and may be influenced by a few outliers. The DID estimate for Quebec indicates that the entry earnings of male temporary workers remained relatively flat in Quebec between 2001 and 2006. A larger sample size for Quebec gives me more confidence in the accuracy of this point estimate. Overall, my findings suggest that after controlling for province of residence male temporary workers continued to experience a decline in entry earnings following the expansion of the program in 2002.

Column 4 reports results for female temporary workers from the 2001-2006 cohort estimates. I find no evidence of a province specific change in the entry earnings of for females. After controlling for province of residence, all DID estimations remain non-significant. These findings align with my results from equation (1) reported earlier. This suggests that the 2002 expansion of the TFW Program had no impact on female applicants.

Overall, the wage effect estimates from equation (2) emphasize my earlier findings regarding the impact of immigration policy on immigrant entry earnings. Once again, the 1996-2001 DID estimates suggest that the 1996 changes to Canadian

immigration policy had an overall positive impact on the entry earnings of landed immigrants and no significant effect on temporary workers. The 2001-2006 cohort estimates show an overall decline in entry earnings for both landed immigrants and temporary workers, with the exception of female temporary workers. These estimates further support my initial findings that suggested the 2002 policy changes had an overall negative effect on immigrant entry earnings. In addition, the results from equation (2) show that province of residence does influence immigrant entry earnings. For landed immigrants in particular, I found some significant variation between provinces in Canada. In comparison, I found limited evidence of a province specific change in the entry earnings for temporary workers.

3.8 Conclusion

In this chapter, I focused the entry earnings of landed immigrants and temporary foreign workers following significant policy changes to the Canadian immigration system. In an effort to eliminate any unobservable factors, I attempted to replicate a natural experiment by using native-born Canadians as the control group and immigrant cohorts as the treatment group. While it was not possible to identify which policy regime the immigrants entered under, the approach gives us a reasonable indication of the impact that these policy changes had on the entry earning profiles of immigrants over time.

My findings suggest that efforts to improve the human capital characteristics of landed immigrants entering in the second half of the 1990s had a positive effect on

entry earnings. From the 1996 to 2001 cohorts, the earnings of male landed immigrants improved by 7 percent, while females experienced a 5 percent increase in earnings. For the most part, this improvement in earnings occurred across all provinces in Canada, suggesting that regional labor market differences had only small effects on immigrant earnings.

The main addition of this research to the immigration literature comes from my analysis of the 2001-2006 cohorts. In 2002, the Canadian government implemented a series of changes to the country's immigration system that once again altered the characteristics of landed immigrants and significantly expanded the TFW program. I find that these policy changes had a negative effect on the entry earnings of, both male and female, landed immigrants. In fact, the decline between the 2001 and 2006 cohorts effectively eliminated the gains made between the 1996 and 2001 cohorts. Landed immigrants were not the only immigrant group impacted by these policy changes. The entry earnings of male temporary foreign workers decline by 9 percent. I also find that the decline in entry earnings following the 2002 policy changes were more sensitive to regional labor market differences. However, small samples sizes in some provinces create potential estimation issues. Despite these issues, the results suggest that province of residence did influence the entry earnings of these immigrant cohorts.

Overall, the results in this chapter raise two important policy considerations. First, changes to the selection criteria can have a significant impact on the economic outcomes of immigrants once they enter Canada. Second and more importantly, any efforts to improve the skill levels of new immigrant cohorts is only effective if total

immigration levels are controlled. The policy changes introduced in 2002 by the Canadian government effectively eliminated the economic improvements of immigrant cohorts in the decade prior.

Of course, entry earnings only reveal a part of the entire immigrant economic picture. Further research is needed to determine the long-term economic outcomes of immigrants that entered following the 2002 policy changes. Did these weak entry earnings delay their assimilation into the Canadian labor market? Outside of these recent cohorts, did increasing immigration levels impact the labor market outcomes of earlier immigrant cohorts and native-born Canadians? In addition, can the decline in entry earnings be entirely associated with increased levels of immigration? Regardless of my efforts to eliminate any potential omitted variable bias, it is entirely possible that changes in entry earnings could be the result of other unobserved factors that exist between the immigrant cohorts. Despite these unanswered questions and potential issues, this analysis provides valuable insight into the earning profiles of immigrants entering Canada under different policy regimes.

Chapter 4

IMMIGRANT ADJUSTMENT INTO THE LABOR MARKET

4.1 Employment Outcomes of Canadian Immigrants

Obtaining employment is the first step towards successfully adjusting into any labor market. For immigrants in Canada, this requires first obtaining and then maintaining employment within a short period after arrival in the country. Persistent levels of unemployment among recent immigrant cohorts can deteriorate the value of their human capital and can lead to lower participation rates over the long-run (Aydemir, 2003). Immigrant cohorts that experience high rates of employment upon arrival assimilate faster into the labor market and achieve employment outcomes comparable with native-born Canadians within a shorter period of time (Aydemir 2003; McDonald and Worswick 1997).

Since the Canadian economy heavily relies on immigrants to fill labor shortages and increase economic productivity, ensuring immigrants can successfully assimilate into the Canadian labor market has become an important aspect of the country's immigration policy. Despite the importance employment outcomes have on immigrant assimilation, the majority of academic literature has primarily focused on the earnings deterioration among recent immigrant cohorts (Aydemir and Skuterud 2005; Abbott and Beach 1993; Morissette and Frenette 2005). In this chapter, I

attempt to fill this gap in the Canadian immigration literature by examining immigrant employment outcomes over the last 2 decades. I empirically explore three specific research questions. What are the employment patterns of recent immigrant cohorts in comparison to native-born Canadians? What effect do differences in human capital characteristics have on the employment outcomes of recent immigrant cohorts? What effect do macro-economic changes have on the short and long-run employment outcomes of landed immigrants?

Over the last 20 years, the Canadian government has introduced significant changes to the country's immigration policy. In particular, adjustments to the selection process have increased the level of human capital among recent immigrant cohorts. The immigration literature has extensively examined how increasing human capital effects immigrant earnings in comparison to native-born Canadians (Aydemir and Skuterud 2008; Goldmann, Sweetman, and Warman 2011; Beach, Green, and Worswick 2006). However, there have been few attempts to apply the same human capital theory to immigrant employment outcomes (Inglis and Stromback 1986). In addition, by focusing on individuals with employment earnings, the research has excluded the examination of unemployment among immigrants. I apply the same human capital theory used to explain immigrant earnings and find that that the source of human capital is an important factor that influences immigrant employment outcomes. In addition to human capital characteristics, I also find that other observable and potentially unobservable differences have a significant effect on the employment differentials experienced by immigrants in Canada.

An important change in the last two decades to Canadian immigration policy was the government's decision to eliminate the absorptive capacity. In eliminating the absorptive capacity, the government no longer adjusted annual immigration levels with short-term fluctuations in macro-economic conditions. Prior to this policy change, immigrant employment outcomes were more sensitive to changes in labor demand relative to native-born Canadians (Aydemir 2003; McDonald and Worswick 1997). Given that the absorptive capacity linked immigration inflows to changing macro-economic conditions, eliminating this policy raises important question regarding the sensitivity of the employment outcomes of recent immigrant cohorts to changing labor market conditions. Despite this major policy change and increases in labor supply caused by greater levels of immigration, I find no negative long-term effects on the employment outcomes of immigrants in Canada. However, I find that immigrants remain more sensitive to short-run fluctuations in the economy, but given time, these negative effects disappear.

The chapter proceeds in two sections. Section 4.2 reviews the immigration literature in relation to employment outcomes and macro-economic effects. Section 4.3 describes the proposed data and methodology. In Section 4.4, I introduce my baseline specification. Then Section 4.5 separates human capital by source. In Section 4.6, I introduce control variables to capture the effects of observable and non-observable changes in the composition of immigrants entering Canada. The model in Section 4.7 estimates the effects that changing economic conditions have on

employment outcomes over the short and long-run. Finally, Section 4.8 provides concluding remarks.

4.2 Immigrant Unemployment and the Canadian Labor Market

Throughout the 1980s, immigrants were able to achieve high levels of employment upon arrival in Canada. Using Census data to examine unemployment trends among recent immigrant cohorts, Reitz (2001) found 86.3 percent of males entering the country between 1975 and 1980 were able to obtain employment by 1981. During this period, immigrants were also able to achieve employment rates comparable with native-born Canadian after only a short period in the country (Reitz 2001; Aydemir 2003). However, this began to change by 1996 as the employment rates of recent immigrant arrivals began to decline significantly. Among immigrant males arriving between 1990 and 1995, the employment rate had fallen to 68.3 percent. This change represents an 18 percent decline in the employment rate of entry cohorts over a 20-year period. Over the same period, the employment rate of native-born males only declined 5.6 percent. This research reveals the emergence of a significant differential in the employment rates of natives and immigrants over the last two decades.

The decline in employment rates among recent immigrant cohorts follows a similar trend found in prior research examining the decline in immigrant entry earnings (Bloom, Grenier, and Gunderson 1995; Morissette and Frenette 2005). This prior research has attempted to explain the deterioration in earnings by examining

differences in human capital characteristics. Overall, many of the findings in this research suggests that lower returns to foreign work experience and weak language abilities account for most of the decline in immigrant earnings over the last four decades (Aydemir and Skuterud 2005; D. Green and Worswick 2010). Since a worker must first obtain employment before receiving earnings, differences in human capital characteristics may also help to explain the growing differential between native and immigrant employment outcomes.

Much like Canada, Australia is heavily dependent on immigration to fill labor market needs, leading to the country becoming a primary destination for many immigrants. As a result, much of the research completed on immigrants in the Australian labor market can provide valuable insight. For example, Inglis and Stromback (1986) use 1981 Australian Census data to examine the impact differences in human capital have on immigrant employment outcomes. They find that recent immigrant cohorts with weak English language abilities, arriving from non-European countries experience higher levels of unemployment upon arrival to the country. Inglis and Stromback (1986) also find that region of birth and years of residence in the host country explain differences in the unemployment rates between immigrants and natives. For example, immigrants from the United Kingdom and Europe experience employment rate comparable with native-born Australians within the first five years of arrival in the country. They find that immigrants from any other region are not able to achieve unemployment rates comparable with natives, regardless of time spent living

in the country. Their results suggest that region of birth and the length of residence in the country have a significant effect on immigrant employment outcomes in Australia.

Thomas and Rappack (1998) provide evidence from Canada regarding the factors influencing how immigrants adjust into the labor market. Using data from the 1993 Survey of Labor and Income Dynamics (SLID), they find that recent immigrants to Canada experience a much higher probability of being unemployed than natives and this unemployment differential converges after approximately 24 years. They focus on the source of education and work experience as a potential cause for the higher unemployment probabilities experienced by recent immigrants. Their results suggest that foreign and Canadian education is largely interchangeable as an additional year of education, reduces the probability of unemployment among recent immigrants by 4 to 5.5 percent, regardless of the source. However, unlike education, their results suggest that an additional year of Canadian obtained work experience reduces the probability of unemployment by 1 percent, while foreign work experience has essentially no impact on immigrant unemployment. After accounting for differences in individual human capital, Thomas and Rappack (1998) find that the immigrant unemployment differential converges after 15 years. These results suggest that employment outcomes of recent immigrants improve with higher levels of human capital and increased time in Canada.

A noteworthy similarity between the research of Thomas and Rappack (1998) and Inglis and Stromback (1986) is the use of a single cross-sectional dataset to estimate the effect time in the host country has on immigrant employment outcomes.

Both studies interpret the number of years since migration as the time it will take the estimated immigrant unemployment differential to converge with native-born Canadians. Examining immigrant assimilation using a single-cross section dataset provides a single point-in-time estimate, which only reflects the effect that years in the country have on unemployment outcomes given current labor market conditions. As a result, this approach is unable to determine if the rate that immigrant employment outcomes assimilate with natives is sensitive to changes in macro-economic conditions (Borjas 1985).

By merging four cross-section datasets, Chiswick et al. (1997) estimate the effect that changing macro-economic conditions have on immigrant employment patterns in the United States labor market. In addition to years since migration, they introduce the unemployment rate in each of the four survey years. They find that an increase in the unemployment rate has a larger negative effect on the employment patterns of immigrants in the given survey year. After controlling for changes in the unemployment rate, they find immigrants achieve comparable employment probabilities as natives after 10 years of residence in the country. Overall, their research suggests immigrants in the U.S. are more sensitive to short-term macro-economic changes in the economy.

Using data from the Survey of Consumer Finance, McDonald and Worswick (1997) examine the effect of changing macro-economic conditions on immigrant employment outcomes in Canada. They examine the unemployment probability of immigrant cohorts entering prior to 1981 in comparison to native-born Canadians from

1982 to 1993. The research suggests that changes in immigrant unemployment probabilities move in a short-run counter-cyclical pattern. During recessionary periods immigrants experience higher levels of unemployment, but in expansionary periods immigrants are able to achieve comparable levels of employment with native-born Canadians. After controlling for years of residence in the country, they find that any unemployment differential between immigrants and natives disappears. Overall, their results indicate that recent immigrants are more sensitive to short-term macro-economic changes, but there is no evidence to suggest that these differentials persist over the long-run.

For almost 50 years, the Canadian government implemented the absorptive capacity policy, which actively adjusted the inflow of immigrants based on short-term changes in labor demand (A. Green and Green 2004; Veugelers and Klassen 1994). The policy reduced the supply of new labor entering the country during periods of high unemployment, which limited the downward pressure put on the existing labor force. In addition, limiting the inflow of new immigrants allowed the demand for labor to catch-up with current supply much faster once the economy improved. By managing the inflow of new immigrant, the Canadian government was able to smooth the negative effects of changing demand for labor and reduce any long-term effects on immigrant employment outcomes (Aydemir 2003; McDonald and Worswick 1997; McDonald and Worswick 1998). In the early 1990s, the Canadian government ended the absorptive capacity policy and began to set annual immigration levels with less consideration given to current labor demand.

Aydemir (2003) provides evidence on the effects changing macro-economic conditions have on immigrant employment outcomes following the end of the absorptive capacity policy. Using annual data from the Survey of Consumer Finance between 1979 and 1997, Aydemir (2003) finds that immigrant unemployment rates remained more sensitive to short-term fluctuation in the labor market. A one percent increase in the unemployment rate in a given survey year reduced the probability that an immigrant would participate in the labor force and obtain employment by half a percentage point in comparison to native-born Canadians. Interestingly, Aydemir (2003) finds that the employment probability decreased a higher rate among immigrant cohorts entering the country after 1986 and that the effects of weak macro-economic conditions did not seem to disappear with increasing years of residence (p.11). The findings from this research suggest that the elimination of the absorptive capacity policy may have increased the effect that changing macro-economic conditions have on the employment outcomes of recent immigrants arriving in Canada.

The elimination of the absorptive capacity policy and the continued decline in immigrant employment outcomes raises important questions regarding the ability of new immigrants to assimilate into the Canadian labor market. In particular, what effect did the elimination of this policy have on the long-term employment patterns of immigrants arriving in Canada during periods of high unemployment? Findings from McDonald and Worswick (1997) suggest that any negative effects immigrants experience from entering the labor market during periods of high unemployment are

only short-term. However, the dataset used in their analysis does not provide information on immigrant cohorts that entered after 1981. As a result, their estimations only include immigrants entering under during a period when the absorptive capacity policy was in effect. Aydemir (2003) provides some evidence that includes immigrants that entered under both policy regimes. While the results appear to suggest that recent cohorts are having greater difficulties obtaining employment following the elimination of the absorptive capacity, the sample only includes a small number of immigrants entering under the new policy regime.

Currently, the long-term implications of eliminating the absorptive capacity policy remain unclear. In the early 1990s, the annual number of landed immigrants entering Canada began to increase steadily. Over the last 15 years, the number of landed immigrants has remained relatively constant, but policy changes in 2002 have led to a significant increase in the number of temporary foreign workers entering the country. Today, a larger number of temporary workers arrive in Canada annually in comparison to landed immigrants. At the same time immigration levels have been increasing, the Canadian government has adjusted the skill composition of immigrants entering the country. This policy change has led to an increase in the level of education, amount of work experience and quality of language skills among recent immigrant cohorts (Ferrer, Riddell, and Picot 2012). The implications of all these policy changes on immigrant employment outcomes and assimilation patterns over the last 15 years remain largely unknown.

4.3 Data and Methodology

The empirical analysis in this chapter applies a modification of the model used by Aydemir and Skuterud (2005) in the immigrant earnings literature. First, I establish a baseline specification that identifies the unemployment differential experienced by immigrants in comparison to native-born Canadians. Once these unemployment patterns are established, the remainder of the analysis focuses on explaining the differential between immigrants and natives. I begin by modifying the baseline specification to control for differences between foreign and Canadian obtained education and work experience. Then I introduce variables to control for the shift in the source of immigrants to Canada over the last 2 decades. Finally, I introduce variables to capture changes in macro-economic conditions over the short and long-run.

The data used in this analysis comes from the annual Survey of Labor and Income Dynamics (SLID). This survey is an annual cross-section sample constructed by Statistics Canada from the Labor Force Survey (LFS). The SLID has a significant amount of detail on the employment activities of landed immigrants and native-born Canadians. Non-permanent residents include temporary foreign workers, foreign students, refugee claimants, holders of a minister's permit and all accompanying family members. The regulations attached to this status typically restrict the

individual's mobility in the labor market, reducing the probability of being unemployed for any length of time²⁶.

I pool annual SLID surveys from 1993 through to 2011 to create a sample containing immigrants that entered Canada under the policy regime following the end of the absorptive capacity policy. The sample is restricted to landed immigrants and native-born Canadians aged 18 to 54 that participated in the labor force at least part of the year and were not in school. Participation in the labor force refers to any individual that was working or looking for work. This removes any individuals identified as homemakers, students, retired, not in the labor force due to a long-term disability or illness, or any individuals that chose not to participate in the labor force. The intent of these restrictions is to capture individuals active in the labor market that have completed their education and not yet reached retirement²⁷.

One of the challenges with estimating the employment differentials between immigrants and natives is identifying the proper employment measure to use as the dependent variable. Official labor force data in Canada comes from the monthly LFS. This survey estimates the labor force activity for all Canadian residents by collecting

²⁶ The status of temporary foreign workers is typically contingent on maintaining an employed status, while foreign students are restricted to working on campus. Between 60 and 70 percent refugee claimants authorized to work do not receive wages or salaries (Schellenberg, 2001). Individuals on a ministers' permit are typically authorized entry into Canada for short periods of time.

²⁷ I estimate each equation separately for males and females to reduce potential selection bias caused by including females in the pooled samples. In the interest of space, I only discuss results from the male estimates.

data from a rotating panel sample in a given reference week²⁸. Statistics Canada uses a seasonally adjusted average of the monthly LFS estimates to determine the annual unemployment rate. While the SLID contains information on annual labor force activity for individuals, the data is not directly comparable with the annual labor force data just described. To overcome this issue, prior research has identified the employment status of individuals by selecting a reference week or month (McDonald and Worswick 1997). In fact, the Canadian Census that is conducted every five years uses one week in May as the reference period to determine overall labor force activity for an individual. However, by selecting a single reference period, we only get a ‘snapshot’ in time of the labor force activity and employment status of individuals in Canada. As a result, any estimation results are sensitive to the chosen reference period.

To create a more fluid representation of labor force activity in a given year, I use monthly labor activity data from the SLID and define employment status into the following four categories; 12 months employed, 7-11 months employed, 1-6 months employed and 0 months employed²⁹. Individuals in the 7-11 months employed and 1-6 months employed categories may have fallen in and out of employed status over the

²⁸ The reference week is typically the week that contains the 15th day of the month.

²⁹ The SLID considers an individual employed if they were with paid work or received self-employment income in the given month. In addition, employment does not include individuals on a temporary layoff with an expectation to return to their previous position. Unlike the Labor Force Survey, the SLID uses the entire month as the reference period to calculate employment activity.

course of the year, they may have just entered the labor market or they may have just exited the labor market. Regardless of the reason, the individuals in these two categories represent two different levels of periodic employment in a given survey year. By classifying employment status in this manner, I am able to identify the factors that influence both, periodic and long-term unemployment differentials between immigrants and natives over time.

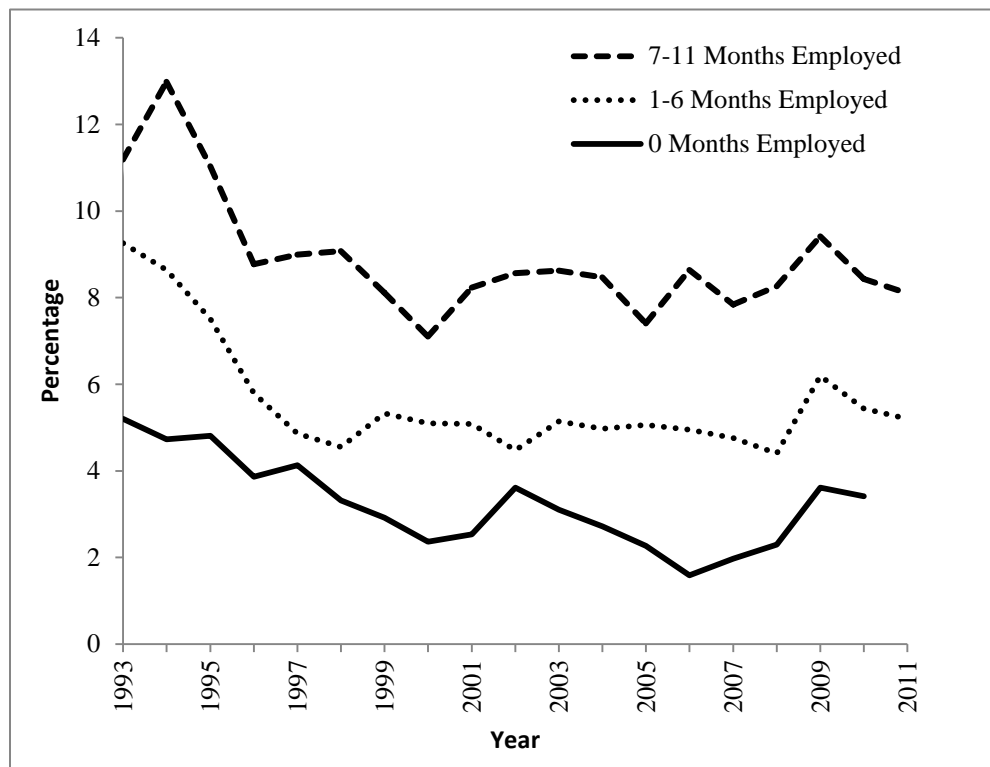


Figure 4.1 Employment Status of Male Natives and Immigrants in Canada, 1993-2011

Table 4.1 Characteristics of Native Born and Immigrant Males in Canada, 1993-2011

	Native Born	Immigrants
Age	36.9	39.7
Years Since Migration	n/a	17.7
Rural Resident	0.298	0.089
Married or Common Law	0.601	0.748
Visible Minority	0.037	0.591
Canadian Work Experience	16.9	13.2
Foreign Work Experience	n/a	6.3
High School Dropout	0.133	0.123
High School Equivalent	0.170	0.147
Some College	0.490	0.417
Bachelor Degree	0.139	0.187
Graduate Degree	0.068	0.126
Foreign Obtained Education	n/a	0.606
English Mother Tongue	0.680	0.239
French Mother Tongue	0.260	0.028
Other Mother Tongue	0.060	0.733
Atlantic Province Resident	0.064	0.001
Quebec Resident	0.259	0.131
Ontario Resident	0.373	0.561
Manitoba Resident	0.035	0.022
Saskatchewan Resident	0.029	0.007
Alberta Resident	0.110	0.093
British Columbia Resident	0.130	0.176
Observations (n)	140134	18498
Source: 1993-2011 Survey of Labour and Income Dynamics, Statistics Canada		

Figure 4.1 displays the employment patterns of all males aged 18 to 54 from 1993 to 2011 by category. The figure identifies the rate for each of the three employment categories by year. I find a steep decline in the annual employment rate of all categories between 1994 and 1999. Following this steep decline, two interesting

patterns emerge. First, the rates of all three categories appear to fluctuate independently. With the exception of 2009, at no point between 2000 and 2011 do the rates of all three employment categories follow a similar pattern. Second, the 1-6 month and 7-11 month employed rates remain relatively stable over a 10-year period. After falling to a low of approximately 7.5 percent in 2000, the 7-11 month employment rate does not exceed 10 percent, remaining around 8.5 to 9 percent in the last decade. These two patterns represent a change in the employment trends of males in Canada. Rather than experiencing periods of long-term unemployment (unemployed full year), a greater proportion of males appear to experience greater levels of periodic unemployment.

Table 4.1 reports the descriptive statistics for native-born and immigrant males from the 1993-2011 pooled sample. On average, immigrants in Canada are slightly older, tend to have a foreign mother tongue, are more likely to be married or in a common law relationship and more likely to be a visible minority than native-born Canadians. The human capital variables show that immigrants tend to have higher levels of education. For example, just over 20 percent of natives had a bachelor or graduate degree, while over 30 percent of immigrants had obtained the same level of education. Not surprisingly, 60 percent of immigrants obtained their highest level of education outside of Canada and since immigrants are slightly older, they tend to have more work experience. However, on average nearly one third of immigrant work experience was obtained prior to arrival in Canada. Geographic variables reveal that immigrants tend to live in urban centers in Quebec, Ontario and British Columbia.

Overall, the descriptive statistics presented in Table 4.1 reveal some distinct differences in human capital and demographic characteristics between native-born and immigrant males in Canada.

4.4 Primary Specification

Throughout the chapter, I use a multinomial logistic model to estimate the effect of various factors on the employment outcomes of immigrants and natives. Using the pooled sample of landed immigrants and native-born Canadians, I use the following model to estimate employment differentials:

$$(1) \ln \left(\frac{E_{it}}{\sum E_{it}} \right) = x_{it}\beta + \delta imm_{it} + \theta_1 ysm_{it} + \theta_2 ysm_{it}^2 + \partial imm_{it} x(x_{it}) + u_{it}$$

where the dependent variable $\ln \left(\frac{E_{it}}{\sum E_{it}} \right)$ identifies the employment category of individual i in time period t . In creating the four categories, I assume a descending order of magnitude, with 1 indicating the individual is 12 months employed (reference category), 2 indicates the individual is employed 7-11 months, 3 indicates the individual is employed 1-6 months and 4 indicates 0 months of employment.

Vector x_{it} contains variables for education, work experience and the quadratic of work experience. I calculate work experience using the standard format of age minus years of schooling minus six. The SLID provides information on the total years of schooling obtained by the individuals, which includes high school and all forms of

post-secondary education. I measure education using a set of dummy variables indicating the highest level of educational attainment obtained by the individual. The categories include less than high school (omitted category), high school, college/trade/diploma, university degree and graduate degree. Typically, models that estimate returns to education use total years of schooling. However, Ferrer and Riddell (2008) find that immigrants in Canada receive lower returns to years of schooling, but higher returns for educational attainment. They find the relationship between education and earnings is non-linear and as a result, using years of schooling to estimate returns discounts the value of an additional year of education (Ferrer and Riddell, 2008). Their findings suggest that the Canadian labor market recognizes educational attainment rather than years spent in school for immigrants.

I introduce an immigrant dummy (*imm*) to capture the employment differential between landed immigrants and native-born Canadians. This dummy variable is set at 1 for landed immigrants and 0 for native-born Canadians. This variable captures any difference in the employment patterns of immigrants and natives. I also interact this dummy variable with the education and work experience variables contained in Vector x_{it} , to allow the effects of education and work experience to vary between immigrants and natives.

I also introduce variables into Equation (1) to estimate immigrant assimilation into the Canadian labor market. Prior immigration literature has measured assimilation by using the number of years it takes an immigrant to achieve comparable earnings or employment outcomes with native-born Canadians, *ceteris paribus* (Bloom, Grenier,

and Gunderson 1995; Morissette and Frenette 2005). Using information on the year an immigrant arrived in Canada, I include years since migration (ysm) to measure immigrant assimilation into the labor market. Similar to work experience, the assimilation profile is non-linear, as immigrants adjust faster in the first few years after arrival, resulting in an assimilation profile that flattens with time of residence in the country. To capture this reduction in the assimilation rate over time, I include the quadratic of ysm . For both ysm and ysm^2 , the values for native-born Canadians are set to zero.

In addition to these standard human capital and assimilation variables, I include a basic set of demographic control variables, which include dummy variables for marital status, residence in a rural area and a set of dummy variables to control for province of residence with Ontario being the reference category. These variables remain constant throughout all estimations.

The multinomial logit equation used in this chapter estimates k-1 models, where k represents the number of groups. This model requires that one of the employment categories become the omitted referent group and in this case I use 12 months employed. As a result, I interpret all results throughout the chapter in reference to being 12 months employed. In Table 4.2, I report both, the coefficients and odds ratios from the primary estimation for each of the three employment

categories³⁰. The odds ratios for the immigrant dummy variable reveal that immigrant males are more likely to experience periods of unemployment than native-born males. For example, the odds of an immigrant being 0 months employed instead of 12 months employed are nearly 2.5 times greater than native-born males. I also find that immigrants are more likely to experience periodic unemployment in comparison to natives. Results from the 1-6 month and 7-11 month employment categories indicated the odds for an immigrant are 38 and 26 percent higher, respectively.

In Table 4.2, I also report the effects of education on employment outcomes. Not surprisingly, I find that an individual's level of education has a significant impact on the odds of being 12 months employed for both immigrants and natives. However, the size of this effect varies significantly between immigrants and natives. For example, I find the odds of being 0 months employed are essentially the same between native-born males with a bachelor and graduate degree. Yet in comparison, an immigrant male with a bachelor degree is nearly twice as likely to experience 0 months of employment than an immigrant male with a graduate degree³¹. This result is

³⁰Throughout the chapter, I only discuss the odds ratios reported in the results tables. The coefficient estimates identify a change in the log odds of being in one of the three employment categories instead of the referent group given a unit change in the independent variable. In comparison the odds ratios report the change in probability between one of the three employment categories and the referent group the creating a more intuitive way to discuss the results.

³¹ To determine the impact of each education group on the employment outcomes of immigrants, I report the sum of the education coefficient and the interaction of the coefficient with the immigrant dummy variable in the table.

consistent with the immigrant earnings literature, which found that the Canadian labor market discounts the value of immigrant education in comparison to native-born Canadians (Ferrer and Riddell 2008; Aydemir and Skuterud 2005). Moving between categories, I also begin to find significant changes in the effect of education levels on employment. For both natives and immigrants, I find that the effect of a high school education and college education converges in the 7-11 month employed category. I also find that the effect of a bachelor and graduate degree becomes more distinct in the 1-6 month and 7-11 month categories. The change in education effects between employment categories suggests that higher levels of education have a larger influence on periodic unemployment.

My results for work experience in Table 4.2 indicate that the effect on employment varies between immigrants and natives and between categories. I find that work experience has a limited effect on the odds of, both natives and immigrants, being 0 months employed rather than 12 months employed. However, moving between employment categories, work experience begins to have a larger effect. For example, an additional year of work experience reduces the odds of a native being 1-6 months or 7-11 months employed by 14 and 12 percent, respectively. While the effect is not as large for immigrant males, work experience does reduce the odds of being both, 1-6 and 7-11 months employed.

Table 4.2 Employment Differentials between Native-born and Immigrant Males in Canada, 1993-2011

	7-11 Months Employed		1-6 Months Employed		0 Months Employed	
	$x\beta$	exp $x\beta$	$x\beta$	exp $x\beta$	$x\beta$	exp $x\beta$
Immigrant Status (<i>imm</i>)	0.2327* (0.0950)	1.2620	0.3276* (0.1177)	1.3876	0.8852* (0.1532)	2.4235
High School Equivalent	-0.5228* (0.0341)	0.5929	-0.6217* (0.0435)	0.5370	-0.9304* (0.0578)	0.3944
Some College	-0.5508* (0.0292)	0.5765	-0.6307* (0.0358)	0.5322	-1.2121* (0.0491)	0.2976
University Degree	-0.9649* (0.0390)	0.3810	-1.0597* (0.0512)	0.3466	-2.0131* (0.0925)	0.1336
Graduate Degree	-1.4208* (0.0609)	0.2415	-1.0256* (0.0691)	0.3586	-2.0901* (0.1329)	0.1237
<i>imm</i> x High School Equivalent	0.1100*** (0.0828)	0.6618	0.3669* (0.1100)	0.7751	0.4406* (0.1243)	0.6127
<i>imm</i> x Some College	0.1268** (0.0706)	0.6544	0.4986* (0.0921)	0.8763	0.6040* (0.1069)	0.5444
<i>imm</i> x University Degree	0.4241* (0.0852)	0.5823	0.5430* (0.1126)	0.5965	1.2313* (0.1474)	0.4576
<i>imm</i> x Graduate Degree	0.4810* (0.1072)	0.3907	0.3237* (0.1331)	0.4956	0.7632* (0.2023)	0.2653
Work Experience	-0.1306* (0.0024)	0.8776	-0.1615* (0.0051)	0.8509	-0.0518* (0.0058)	0.9495
Work Experience ²	0.0025 (0.0024)	1.0025	0.0033 (0.0026)	1.0033	0.0011 (0.0029)	1.0011
<i>imm</i> x Work Experience	0.0584* (0.0073)	0.9303	0.0535* (0.0128)	0.8976	0.0405* (0.0145)	0.9888
<i>imm</i> x Work Experience ²	-0.0010 (0.0024)	1.0015	-0.0010 (0.0026)	1.0023	0.0004 (0.0029)	1.0015
Years Since Migration (<i>ysm</i>)	-0.0663* (0.0049)	0.9359	-0.0676* (0.0077)	0.9346	-0.1017* (0.0087)	0.9033
Years Since Migration ² (<i>ysm</i> ²)	0.0009 (0.0024)	1.0009	0.0008 (0.0026)	1.0008	0.0012 (0.0029)	1.0012
Observations (N)	14814		8475		3854	

Note: *, **, *** represents significance at the 1%, 5% and 10% level, respectively. 12 months employed is the reference category. Model includes variables for rural resident, marital status, and province of residence. High school dropout is the education reference category. All odds ratios reported for the terms interacted with the immigrant dummy variable reflect the exponential form of the sum of the interacted term and the un-interacted term.

Source: 1993 to 2011 Survey of Labour and Income Dynamics, Statistics Canada

Specific only to immigrants, results for years since migration estimate the effects that the number of years living in Canada has on employment outcomes. I find that across all three categories years since migration has a positive impact on immigrant employment outcomes. The last column shows that every additional year of residence in Canada reduces the odds of an immigrant being 0 months employed by almost 10 percent. I find in the other two employment categories that the effect of years since migration is slightly less, at just over 6 percent. These results suggest that length of residence in Canada has a larger effect on the ability of immigrants to obtain employment initially, but has a smaller impact on the ability of immigrants to gain steady, full-year employment.

Overall, this primary specification reveals that immigrants experience greater difficulty obtaining and maintaining full-time employment than native-born Canadians. While human capital has a significant effect on employment outcomes in Canada, the size of this effect varies between immigrants and natives. Of greater interest is how the effects of different levels of education change between employment categories. These results may suggest that initially education, regardless of level, is an important factor in obtaining employment for both immigrants and natives. However, higher levels of education become a more important predictor of obtaining steady employment.

4.5 Returns to Foreign Education and Labor Market Experience

One weakness of equation (1) is the assumption that the source of human capital is irrelevant in the hiring decisions of employers in the Canadian labor market. An established immigrant earnings literature has found that native-born Canadians receive higher returns to human capital when compared to immigrants (Picot and Sweetman 2005). In particular, immigrants receive significantly less return for labor market experience obtained prior to migrating to Canada. Aydemir and Skuterud (2005) find that declining returns to foreign work experience account for one-quarter to one-half of all immigrant wage deterioration over the last two decades. This raises important questions regarding the consideration that immigrant human capital receives in the employment process.

To allow for differences in human capital, I relax the baseline equation (1) into the following equation (2):

$$(2) \ln \left(\frac{E_{it}}{\sum E_{it}} \right) = \beta_1 expc_{it} + \beta_2 expf_{it} + \beta_3 (expc_{it} \times expf_{it}) + \partial_1 edu_{it} + \partial_2 eduf_{it} + \partial_3 (educ_{it} \times eduf_{it}) + \delta_1 imm_{it} + \delta_2 (imm_{it} \times expc_{it}) + \theta_1 ysm_{it} + \mu_{it}$$

where the dependent variable $\ln \left(\frac{E_{it}}{\sum E_{it}} \right)$ continues to identify the employment category of individual i in time period t . The primary change made in equation (2) is the separation of work experience by source. I now define the total labor market experience of individual i in time period t as the sum of Canadian and foreign

experience. Since the SLID collects information on the year an immigrant landed in Canada, it is possible to differentiate labor market experience by source. Subtracting years in Canada from total labor market experience yields the amount of estimated experience an immigrant gained in Canada. The residual value of this calculation reflects the estimated amount of foreign work experience. The result is two variables defined as Canadian ($exp_{c_{it}}$) and foreign ($exp_{f_{it}}$) obtained work experience with their corresponding quadratic form. I interact the two work experience terms ($exp_{c_{it}} \times exp_{f_{it}}$), to allow for different return profiles over time for an individual that has both Canadian and foreign work experience.

In the interest of space, I condense all the education dummy variables into the vector edu_{it} . To control for the source of education, I introduce another education term into equation (2). Typically, the source of education is identified in a similar manner as potential labor market experience. However, since this model specifies education by the highest level of educational attainment, I include a dummy variable ($edu_{f_{it}}$) to identify the source of education. To define this variable, I subtract years of schooling, years since migration and six from age for all landed immigrants. A positive result indicates that the immigrant received their highest level of education in Canada, while a negative result indicates the source is foreign.

In all cases, I assume that native-born Canadians obtain their highest level of education and work experience within Canada. To allow for different returns to Canadian obtained work experience between immigrants and natives, I interact the Canadian work experience term with the immigrant dummy variable. Instead of

introducing interaction terms that involve the immigrant dummy variable with the education variables, I use the foreign education dummy variable. This set of interaction terms allow for different returns to education based on source, rather than based on immigrant status.

Table 4.3 Effect of Human Capital by Source on the Employment Outcomes of Native and Immigrant Males in Canada, 1993-2011

	7-11 Months Employed		1-6 Months Employed		0 Months Employed	
	$x\beta$	$\exp x\beta$	$x\beta$	$\exp x\beta$	$x\beta$	$\exp x\beta$
Immigrant Status (<i>imm</i>)	0.0485 (0.1108)	1.0497	0.4622* (0.1267)	1.5876	0.7555* (0.1905)	2.1287
Foreign Work Experience	-0.0005 (0.0142)	0.9995	-0.0085 (0.0184)	0.9915	0.0344** (0.0206)	1.0350
Foreign Work Experience ²	0.0000 (0.0004)	1.0000	-0.0003 (0.0006)	0.9997	0.0007 (0.0006)	1.0007
Canadian Work Experience	-0.1306* (0.0034)	0.8776	-0.1617* (0.0043)	0.8507	-0.0519* (0.0064)	0.9494
Canadian Work Experience ²	0.00245* (0.0000)	1.0025	0.0033* (0.0001)	1.0033	0.0012* (0.0002)	1.0012
Foreign x Canadian Work Experience	0.0002 (0.0005)	1.0002	0.0025* (0.0007)	1.0025	-0.0028* (0.0009)	0.9972
<i>imm</i> x Canadian Work Experience	0.0048 (0.0115)	0.8818	-0.0017 (0.0137)	0.8493	-0.0258 (0.0203)	0.9252
<i>imm</i> x Canadian Work Experience ²	0.0006** (0.0003)	1.0031	0.0007** (0.0004)	1.0040	0.0012** (0.0005)	1.0023
High School Equivalent	-0.5222* (0.0329)	0.5932	-0.5782* (0.0424)	0.5609	-0.9192* (0.0564)	0.3988
Some College	-0.5598* (0.0272)	0.5713	-0.6144* (0.0351)	0.5410	-1.194* (0.0460)	0.3030
University Degree	-0.9297* (0.0370)	0.3947	-1.039* (0.0489)	0.3538	-1.8301* (0.0798)	0.1604
Graduate Degree	-1.4199* (0.0572)	0.2417	-1.0184* (0.0652)	0.3612	-1.9702* (0.1171)	0.1394

Table 4.3 continued

Foreign Education (<i>eduf</i>)	-0.3128*	0.7314	-0.6591*	0.5173	-0.3108**	0.7329
	(0.01157)		(0.1479)		(0.1763)	
<i>eduf</i> x High School Equivalent	0.1366***	0.6800	0.1224	0.6339	0.4531*	0.6274
	(0.0969)		(0.1323)		(0.1373)	
<i>eduf</i> x Some College	0.2051*	0.7014	0.5634*	0.9503	0.6113*	0.5584
	(0.0850)		(0.1100)		(0.1217)	
<i>eduf</i> x University Degree	0.3638*	0.5678	0.5480*	0.6120	0.9438*	0.4122
	(0.1025)		(0.1367)		(0.1633)	
<i>eduf</i> x Graduate Degree	0.6257*	0.4519	0.3192**	0.4970	0.5622*	0.2446
	(0.1191)		(0.1538)		(0.2112)	
Observations (N)	14814		8475		3854	

Note: Full year employed (12) months is the reference category. *, **, *** indicates significance at the 1%, 5% and 10% level, respectively. The model also includes variables for rural resident, marital status, years since migration and province of residence. High school dropout is the education reference category. All odds ratios reported for the terms interacted with the immigrant dummy and foreign education dummy variables reflect the sum of the interacted term and the un-interacted term.

Source: 1993 to 2011 Survey of Labour and Income Dynamics, Statistics Canada

Table 4.3 reports estimates for education and work experience by source for immigrant and native males. Again, I interpret all results in the table in reference to 12 months employed. I find that foreign work experience has essentially no effect on the employment outcomes of immigrant males across all three categories. In fact, all estimates for foreign work experience are not significant across all three employment categories. In comparison, the estimates for Canadian work experience suggest a much different effect on employment outcomes, for both immigrants and natives. Odds ratios in columns 2 and 4 indicate that an additional year of Canadian work experience reduces the odds of a native being 7-11 months and 1-6 months employed by 12 and 14 percent, respectively. For immigrant males, I find that Canadian work experience has a comparable effect in the same two employment categories. Results in column 6

indicate an additional year of Canadian work experience reduces the likelihood of a native being 0 months employed by 5 percent. Again, I find that Canadian work experience in the 0 month employed category has a comparable effect on immigrants.

In Table 4.3, I also report the effects of education on employment outcomes after separating education by source. Similar to my earlier findings, the odds of being 12 months employed increase with the level of education across all employment categories. Overall, I find that results for foreign obtained education are very similar to the immigrant education results reported in Table 4.2. The only exception was in the 1-6 month employment category, where I find that foreign college is essentially worthless. With exception of some subtle differences, the similarity of the education results in Tables 4.2 and 4.3 suggest that the source of education does not have a distinct effect on employment patterns. A primary reason for this similarity is the interaction of education variables with the immigrant and foreign education dummy variables is capturing some of the same effect, since 60 percent of immigrants in this sample obtained their education outside of Canada.

After separating work experience and education by source, I find some similarities between my results for employment outcomes and the immigrant earnings literature. In particular, foreign work experience is essentially worthless for immigrants in the employment process. In contrast, I find that Canadian work experience has a large positive effect on the employment outcomes of immigrant males. This effect is clearly more evident in the 7-11 month and 1-6 month categories, suggesting that Canadian work experience reduces the odds of periodic

unemployment. Another interesting finding is the large effect Canadian work experience has on the odds of an immigrant being 0 months employed. The significant reduction in the odds ratios suggests that immigrants re-entering the labor market with Canadian work experience will have greater success than those entering the labor market upon arriving in the country.

4.6 Compositional Shifts In Immigrant Source Countries

Following major changes to Canadian immigration policy in the 1960s, a greater proportion of immigrants arriving in Canada came from non-traditional source countries³². This shift significantly altered the composition of new immigrants arriving in Canada. In particular, immigrants from non-traditional source countries tend to have weaker English and French language abilities (Beach, Green, and Worswick 2006). Strong language skills create an easier transition into the Canadian labor market and allow immigrants to achieve earnings that reflect the value of their human capital (Goldmann, Sweetman, and Warman 2011). In addition to changes in language abilities, immigrants from non-traditional source countries are more likely to be visible minorities. While the underlying causes behind the differences in the labor market outcomes of visible and non-visible minority immigrants remains unclear, prior research suggests discrimination is a potential factor influencing these

³² Immigrants from non-traditional source countries mainly include individuals arriving from Asia and Latin America. See chapter 2 for a detailed description on the shift from traditional to non-traditional source countries.

differences (Aydemir and Skuterud 2008; Bloom, Grenier, and Gunderson 1995; Ferrer and Riddell 2008).

The shift away from non-traditional source countries also resulted in changes to many unobservable characteristics of new immigrant cohorts. After controlling for language ability and visible minority status, Aydemir and Skuterud (2005) use country of birth as a control variable to capture unobservable differences. They find that changes in the source composition of recent immigrant cohorts, accounts for one quarter to one third of the growing income gap between immigrants and native-born Canadians. This suggests that potential cultural differences have an effect on immigrant earnings.

To control for compositional shifts in immigrant cohorts caused by changes in source countries of origin, I adjust Equation (2) to include variables for language ability and visible minority status³³. To estimate the effects of language ability on employment outcomes, I use variables in the SLID that provide information on mother tongue. Despite the fact that French and English are the official languages of Canada, the majority of individuals are English speaking and as a result, I assume the two languages are not transferrable in the labor market. I measure language ability using three dummy variables; English (reference category), French and Other. I interact the

³³ Unfortunately, after separating the immigrant sample from the SLID into broad country of birth categories, the number of observations within the employment categories was too small to obtain any meaningful estimates. As a result, I exclude country of birth control variables from my estimations.

set of language dummy variables with the immigrant dummy to allow language abilities to effect employment outcomes of immigrants and natives separately.

I introduce a dummy variable to identify individuals with visible minority status and interact it with the immigrant dummy variable. I define visible minority status using a variable in the SLID that identifies if an individual is part of a visible minority group. Statistics Canada defines visible minorities as individuals, other than Aboriginal peoples, who are non-Caucasian in race or non-white in color. Since I removed Aboriginals from the sample, the only non-immigrant visible minorities in the sample are second or later generation immigrants. By defining visible minority status in this manner and then introducing the interaction term, I have in effect created four groups; non-visible minority natives, visible minority natives, non-visible minority immigrants and visible minority immigrants. Since the majority of visible minority immigrants come from non-traditional source countries, I capture some of the unobservable differences in this interaction term.

In Table 4.4, I report estimation results after including language and visible minority status. Since English is the dominant language in Canada, I would have expected that having French or another mother tongue would have a negative impact on employment outcomes. However, in some instances I find that that having a mother tongue other than English actually increases the odds of being 12 months employed for native-born Canadians. In particular, having a French mother tongue increases the probability of a native being 12 months employed across all three employment categories. For example, a native male with a French mother tongue is 50 percent less

likely than a native with an English mother tongue to be 0 months employed. In comparison, I find contradicting results for immigrant males with a French mother tongue across the three employment categories. A French mother tongue increases the probability of an immigrant male being 7-11 months employed by 12 percent. Yet, a French mother tongue actually decreases the probability of an immigrant male being 0 months employed by 13 percent.

The results for immigrants with a mother tongue other than English or French are more in line with expectations. I find that not having a French or English mother tongue increases the probability of an immigrant male being 1-6 months and 7-11 months employed by 15 and 22 percent, respectively. For native males, I find the only significant result in the 1-6 month employment category. This result suggests that having a mother tongue other than English or French reduces the probability of a native male being 1-6 month employed by 8 percent.

Language ability estimates provide contradicting evidence regarding the effect language has on the employment outcomes of immigrants and natives. Since English and French are official languages in Canada, one possible explanation for the French language results is that French is simply more valuable than English in the Canadian labor market. Another and more probable explanation is that mother tongue does not necessarily measure language ability. Many natives and immigrants may not have an English mother tongue, but they are still fluent in English. In any event, I interpret the language results with caution.

Table 4.4 Effect of Mother Tongue and Visible Minority Status on the Employment Outcomes of Native and Immigrant Males in Canada, 1993-2011

	7-11 Months Employed		1-6 Months Employed		0 Months Employed	
	x β	exp x β	x β	exp x β	x β	exp x β
Immigrant Status (imm)	-0.1182 (0.1264)	0.8885	0.0969 (0.1477)	1.1018	0.1781 (0.2179)	1.1949
Mother Tongue French	-0.0642** (0.0370)	0.9378	-0.1788* (0.0484)	0.8363	-0.7123* (0.0642)	0.4905
Mother Tongue Other	0.00311 (0.0443)	1.0031	-0.0838*** (0.0581)	0.9196	-0.0672 (0.0830)	0.9350
Visible Minority Status	0.1021** (0.0502)	1.1075	0.2872* (0.0594)	1.3327	0.5855* (0.0876)	1.7959
imm x Mother Tongue French	0.1803*** (0.1315)	1.1231	-0.2291 (0.2011)	0.6650	0.5730* (0.1971)	0.8700
imm x Mother Tongue Other	0.2021* (0.0711)	1.2278	0.2313* (0.0898)	1.1589	-0.0487 (0.1223)	0.8906
imm x Visible Minority Status	-0.1387** (0.0689)	0.9641	-0.0046 (0.0852)	1.3266	0.1426 (0.1237)	2.0711
Observations (N)	14814		8475		3854	

Note: Full year employed (12) months is the reference category. *, **, *** indicates significance at the 1%, 5% and 10% level, respectively. The model also includes variables for rural resident, marital status, years since migration and province of residence. High school dropout is the education reference category. All odds ratios reported for the terms interacted with the immigrant dummy and foreign education dummy variables reflect the sum of the interacted term and the un-interacted term.

Source: 1993 to 2011 Survey of Labour and Income Dynamics, Statistics Canada

My results in Table 4.4 indicate that visible minorities have greater difficulties in obtaining employment in the Canadian labor market. For example, the odds of a native being 0 months employed increases by nearly 80 percent if they are a visible minority. In the other two employment categories, visible minority status continues to have negative effects on employment outcomes. However, this negative effect reduces significantly between each of the employment categories. For immigrant males, the visible minority results are not statistically significant in the 0 month and 1-6 month

employment categories, suggesting immigrant visible minorities experience similar effects as native visible minorities. Interestingly, I find that results for immigrant visible minorities in the 7-11 month employment category are statistically significant and show visible minority status for immigrants reduces their probability of falling in the 7-11 month employment category. Overall, my results suggest that being a visible minority has a larger effect on the probability of being unemployed rather than experiencing periodic unemployment. Since the interaction terms might capture cultural differences in addition to visible differences, the true source of any potential discrimination remains unknown. Despite this difficulty, it remains clear that visible minorities experience more difficulty in the Canadian labor market.

Of greatest interest in Table 4.4 are the immigrant dummy variables, which reflect the employment differentials between immigrants and natives after controlling for language and visible minority status. I find that across all three employment categories, the immigrant dummy variable is no longer statistically significant. This result suggests no difference in the employment patterns of immigrants and natives exists, *ceteris paribus*. Overall, my results indicate that language and visible minority status explain a significant portion of the employment differential between immigrants and natives that exists in Canada.

4.7 Short and Long-term Effects of Weak Macro-Economic Conditions

The final change to the model in this chapter examines how cyclical changes in the economy effect immigrant employment outcomes. Prior research has found

immigrants are more sensitive to changing macro-economic conditions in the short-run than native-born Canadians (Aydemir 2003; McDonald and Worswick 1997). During recessionary periods immigrants experience greater difficulty obtaining employment, but it remains unclear whether weak macro-economic conditions have any long-term effects on immigrant employment opportunities (Aydemir 2003).

To determine the effect that macro-economic changes have on immigrant employment outcomes, I relax Equation (2) into the following form;

$$(3) \ln\left(\frac{E_{it}}{\Sigma E_{it}}\right) = \beta_1 expc_{it} + \beta_2 expf_{it} + \beta_3 (expc_{it} \times expf_{it}) + \partial_1 edu_{it} + \partial_2 educf_{it} + \partial_3 (edu_{it} \times educf_{it}) + \delta_1 imm_{it} + \delta_2 (imm_{it} \times expc_{it}) + \theta_1 ysm_{it} + \gamma_1 UE_{it} + \gamma_2 (UE_{it} \times imm_{it}) + \gamma_3 (UE_{it} \times ysm_{it}) + \mu_{it}$$

where the dependent variable continues to identify the employment category of individual i in time period t . To control for changing macro-economic conditions over time, I introduce a variable that represents the unemployment rate of the province of residence for individual i in year t (UE_{it}). Given the significant differences between provincial labor markets in Canada, I use the unadjusted provincial unemployment rate to capture changing macro-economic conditions. The SLID provides information on the region of residence at the time of the survey for each individual, allowing for identification of the provincial unemployment rates in each of the 19 survey years. To allow for changing macro-economic conditions to effect immigrants and natives

separately, I interact the unemployment rate (UE_{it}) with the immigrant dummy variable (imm). In earlier research, Aydemir (2003) finds that higher unemployment rates upon entry and over time have small, but negative effects on the ability of immigrants to assimilate into the Canadian labor market. To capture any effect that changes in the unemployment rate have on assimilation, I also interact the unemployment rate (UE_{it}) with YSM .

Table 4.5 Effects of Changing Macro-Economic Conditions on Immigrant and Native Male Employment Outcomes in Canada, 1993-2011

	7-11 Months Employed		1-6 Months Employed		0 Months Employed	
	$x\beta$	$\exp x\beta$	$x\beta$	$\exp x\beta$	$x\beta$	$\exp x\beta$
Immigrant Status (imm)	-0.2162 (0.2016)	0.8056	0.4304** (0.2452)	1.5379	-2.100* (0.3642)	0.1224
Unemployment Rate	0.0841* (0.0059)	1.0877	0.1339* (0.0076)	1.1433	0.1953* (0.0112)	1.2157
$imm \times$ Unemployment Rate	0.0090 (0.0199)	1.0975	-0.0495** (0.0249)	1.0881	0.2472* (0.0324)	1.5566
Years Since Migration	-0.0069 (0.0136)	0.9932	-0.0494* (0.0163)	0.9518	0.0676* (0.0256)	1.0699
Years Since Migration ²	-0.0003 (0.0002)	0.9997	-0.0002 (0.0003)	0.9998	-0.0005 (0.0004)	0.9995
Unemployment Rate \times Years Since Migration	0.0009 (0.0010)	0.9941	0.0053* (0.0013)	0.9569	-0.0070* (0.0017)	1.0625
Observations (N)	14814		8475		3854	

Note: Full year employed (12) months is the reference category. *, **, *** indicates significance at the 1%, 5% and 10% level, respectively. The model also includes variables for rural resident, marital status, years since migration and province of residence. High school dropout is the education reference category. All odds ratios reported for the terms interacted with the immigrant dummy and foreign education dummy variables reflect the sum of the interacted term and the un-interacted term.

Source: 1993 to 2011 Survey of Labour and Income Dynamics, Statistics Canada

Not surprisingly, my results in Table 4.5 suggest that weak macro-economic conditions have a negative effect on the employment outcomes of both natives and immigrants. I find that a 1 percent increase in the provincial unemployment rate increases the odds of a native being 0 months employed by 21 percent. In comparison, the odds of an immigrant being 0 months employed increases by over 55 percent for the same 1 percent unemployment rate increase. However, I find that immigrants and natives in the other two employment categories are not as sensitive to changing macro-economic conditions. In fact, the odds ratios indicate that immigrants in the 1-6 month category are less sensitive to changing economic conditions in comparison to natives. In the 7-11 month employment category, I find that immigrants and natives experience the same sensitivity to changes in the unemployment rate.

Results from the interaction term $UE_{it}x ysm_{it}$ in Table 4.5, indicates that macro-economic conditions have no significant impact on the assimilation of immigrants into the labor market. The interaction term $(UE_{it}x ysm_{it})$ estimates the effect that a change in the unemployment rate has on the number of years it takes an immigrant to assimilate into the Canadian labor market. In this case, I am defining assimilation as the number of years it takes an immigrant to achieve the same odds of experiencing a particular level of employment as a native. I find that rising unemployment rates have no effect on the assimilation rate of immigrants in Canada. Across all employment categories, the coefficient of this term remains around zero and the corresponding odds ratios for ysm_{it} and $UE_{it}x ysm_{it}$ are nearly identical. My

findings suggest that immigrants remain more sensitive to short-run changes in macro-economic conditions, but over the long-run these negative effects disappear.

4.8 Conclusion

Over the last three decades, the Canadian government has implemented significant changes to the country's immigration policy, which ultimately adjusted the composition and inflow of new immigrants. Despite the development of well-established literature documenting the deterioration of immigrant earnings over this period, there has been very little research conducted on the employment patterns of immigrants. The analysis in this chapter presents evidence on the employment differential experienced by immigrants. By identifying employment in a non-traditional manner, I am able to explain what factors influence employment patterns of immigrants and native-born Canadians.

My initial results indicate that immigrants are much more likely to experience full-year unemployment. I also find that immigrants are more likely to experience periodic employment patterns when compared to native-born Canadians. Similar to the immigrant earnings literature, I find that immigrants receive less recognition for their education and work experience in the Canadian labor market. In particular, foreign work experience appears to have no value for immigrants in the hiring process. After separating human capital by source, I find Canadian work experience reduces the full-year unemployment differential between immigrants and natives. These results

suggest that foreign obtained education and work experience does not receive similar levels of recognition in the hiring process in Canada.

I find that language abilities and visible minority status have the greatest effect on the employment patterns of immigrants. After including these variables, I find no difference in the employment patterns of immigrants and native-born Canadians. Not surprisingly, my results indicate that the strength of language skills improve the likelihood of gaining full-year employment. However, given the imprecise manner in which I had to measure language ability, I interpret these results with a high level of caution. Of greater interest are the findings pertaining to visible minorities. My results suggest that some degree of discrimination exists in the hiring process in Canada. In particular, I find that visible minority immigrants experience more difficulty obtaining full-year employment. While it is not possible to determine the cause of the discrimination, the fact that immigrant visible minorities experience more difficulty obtaining employment than visible minority natives suggest that cultural differences may have an effect.

One of the more surprising findings in my analysis was the absence of any evidence that weak economic conditions have long-run effects on immigrant employment outcomes. Given the changes to Canadian immigration policy, which significantly increased the supply of immigrant labor in Canada, I expected to find weak economic conditions caused slower assimilation rates. However, I only find that immigrants are more sensitive to short-run down-turns in the economy, but over the long-run this sensitivity has no lasting effect.

This analysis provides some insight into a largely ignored area of immigration research. My results suggest that one of the largest factors influencing immigrant unemployment is observable human capital characteristics. This presents difficulties for new immigrants arriving in Canada without pre-arranged employment, as the interview process is a requirement of obtaining employment. Recent changes to immigration policy have made efforts to match new immigrants with employment opportunities prior to arrival in Canada. However, further research is needed to determine if this change in policy was able to reduce the possible discrimination that immigrants experience in the employment process.

Chapter 5

THE IMPACT OF IMMIGRATION ON THE CANADIAN LABOR MARKET

5.1 Measuring the Effects of Immigrant Labor Supply

Classical economic theory states that labor demand curves slope down. In other words, an increase in the supply of labor puts downward pressure on wages. Following with this theory, increasing the supply of labor through immigration will have an adverse effect on the wages of the existing workforce. However, not all labor markets respond in the same manner to immigrant induced supply shifts. Both, the supply of capital and the characteristics of the incoming immigrants influence the effect immigration has on wages (Card 2012). Since labor markets are not closed systems, the distribution of immigrants across regional labor markets and the mobility of the native workforce may alter potential wage effects. As a result, attempting to control for exogenous supply shocks on any labor market can prove difficult.

In this final empirical chapter, I develop a more complete understanding of the long-run effects immigration has on the general equilibrium of the Canadian labor market. Earlier research examining labor markets in the United States and Canada has found that higher levels of immigration put downward pressure on the wages and employment rates of natives (Borjas 2003; Aydemir and Borjas 2007). This model assumes that different levels of education and work experience constitute separate

factors of production in the labor market. In addition, the model assumes that immigrants and natives with comparable skill levels are perfect substitutes and compete in a national labor market. However, recent research into the effects immigrants have on the native wage structure question these assumptions (Card 2009; Ottaviano and Peri 2012).

Changes to Canadian immigration policy beginning in the mid-1990s have altered the composition and inflow of immigrants entering the country³⁴. This shift in immigrant labor has raised concerns regarding the potential impact of new policies on the domestic workforce. In particular, the expansion of the Temporary Foreign Worker program to include low-skilled applicants has come under criticism for suppressing the employment opportunities of low-skilled domestic workers. In this chapter, I analyze the effects of an immigrant induced supply shock on the employment outcomes of the existing Canadian workforce. There are three primary research questions of interest. What education groups constitute separate factors of production in the Canadian labor market? What impact did shifts in the supply of immigrant labor have on the employment outcomes of the existing domestic labor force in Canada? Given the differences between regional labor markets in Canada, do the effects of labor supply shifts vary between regions?

Over the past two decades, the inflow of immigrants to Canada has increased the size of the labor force by approximately 23 percent. Prior estimates have found

³⁴ See Chapter 2 for a full discussion of the policy changes.

that an immigrant supply shock has a negative effect on native wages (Aydemir and Borjas 2007). This chapter revisits these earlier findings and contributes to the literature by examining some of the critical assumptions. I first test the assumption that different levels of education constitute separate factors of production in the Canadian labor market. Elasticity estimates suggest there are three separate factors of production; (1) high school dropouts, (2) high school graduates, college graduates and skilled trades, (3) and bachelor and graduate degrees. Given the decline in university wages and the improvement in wages among individuals with lower levels of education (Morissette, Picot, and Lu 2013; Boudarbat, Lemieux, and Riddell 2010), I find that identifying three factors of production fit much better with the Canadian data.

Using the three education groups, I estimate the effects of an immigrant induced supply shock at the regional and national levels. Results from the regional model suggest that an increase in immigrant labor had a negative, but very small effect on the wages of native males. However, after adjusting the education-experience classification and modifying the assumption that immigrants and natives compete in a national labor market, the negative effect found in the previous research disappears. In fact, elasticity estimates using females and the entire workforce suggest a positive correlation between increases in immigrant labor and native employment outcomes. Overall, my results offer a different explanation regarding the effects of immigration on the domestic workforce.

The remainder of this chapter is organized as follows. I first review the literature that examined the effect of immigration on native employment outcomes. In the next section, I discuss the data, present some descriptive statistics and examine the substitution effects between education groups in the Canadian labor market. In the third section, I examine the effects of an immigrant induced supply shock on the native workforce. The fourth section examines the effect of new immigrants on the employment outcomes of the existing immigrants in the Canadian labor market. Finally, I summarize the findings and offer concluding remarks.

5.2 Literature Review

One of the main issues in determining the effects of immigration on the labor market is the inability to first observe employment outcomes for a given labor market absent of any exogenous labor supply shocks. Since this counterfactual approach is not available, the literature has attempted to construct plausible estimates given these restrictions (Dustmann and Preston 2012). Some earlier research has taken advantage of the fact that immigrants tend to cluster in specific geographic areas (Borjas 2003). One advantage of this methodology is that clustering patterns create a large amount of variation between labor markets, which allows for comparisons of correlations between native employment outcomes and changes in immigrant labor supply.

A prominent study by Card (1990) uses the Mariel Boatlift to observe cross labor market comparisons in the United States. This study measures the effects of an immigrant supply shock on low-skilled natives in Miami. Between May and

September 1980, Miami experienced an influx of 125,000 Cuban immigrants, representing a 7 percent increase in the size of the labor force. The majority of these new Cuban immigrants were concentrated in low-skilled occupations. Using a difference-in-difference methodology, Card (1990) compares the change in wages and unemployment rates of low-skilled natives in Miami with four demographically and economically similar cities between 1979 and 1980. Despite increasing the size of the labor force in Miami over a short time period, the Mariel immigrants had no significant impact on the employment outcomes of low-skilled natives. This suggests that the Mariel immigrants were absorbed rapidly into the Miami labor market, without any short-term negative effects on native-born Americans (Card, 1990, p.256).

Following Card's (1990) influential research, two major criticisms emerged regarding cross labour market studies. First, the approach assumes a random distribution of immigrants across labor markets. However, if immigrants cluster in stronger labor markets, a spurious correlation between wages and immigrant labor supply would be captured in the estimates (Borjas, 2003, p.1338). The second major criticism was that cross labor market comparisons assume a closed labor market. Yet, native labor and capital has the ability to relocate in response to the inflow of immigration in a given labor market. The movement of these factors of production could eliminate any negative impact on wages and employment caused by immigrants, since the effects are no longer isolated in a single geographic labor market (Borjas, 2003, p.1338). That said, the extent to which the flow of labor and capital within and

between labor markets reduces any negative wage effects remains an empirical question.

Card and DiNardo (2000) examine the relationship between immigrant inflows and native outflows in major American cities. In particular, their study addresses the outflow of native-born workers and the skill distribution across local labor markets in relation to immigrant induced labor supply shifts. Their findings suggest that immigrant inflows have no effect on the outflow patterns of the native population. However, they do find immigrant inflows have a significant impact on the skill distribution across American cities. In particular, the clustering of immigrants within certain regions tends to lower the overall skill level of workforce. These findings suggest that the effects of immigration on native populations are potentially mitigated by endogenous shifts in the labor market (Card & DiNardo, 2000, p.366).

Over the last decade, the research examining the labor market effects of immigration has shifted away from cross labor market comparisons to focus on a national approach. Borjas, Freeman and Katz (1997) introduced a two-skilled constant elasticity of substitution (CES) production function to estimate the effects of immigration on native wages. This approach adjusts the unit of analysis to the national level and assumes perfect substitution between immigrants and natives of similar skill levels. Adjusting the focus of the analysis to the national level removes many of the previously discussed endogeneity issues present in cross labor market comparisons using smaller geographic areas. In particular, this approach attempts to eliminate the effects immigrants have on the distribution of skills across regional labor markets.

Borjas (2003) expands on the two-skill CES approach, by aggregating natives and immigrants into skills groups defined by education and work experience. This CES model assumes natives and immigrants with similar education and work experience compete in a national labor market and are perfect substitutes (Borjas, 2003, p.1336). The education categories consist of high school dropouts, high school graduates, some college and college graduates. Work experience is defined in 5-year intervals from 1 to 40 years, creating 32 education-work experience categories. Using U.S. Census data and data from the Current Population Survey (CPS), Borjas (2003) estimates the effects of immigration on native wages by skill group over time. The findings suggest that between 1980 and 2000 immigration increased the supply of labor by 11 percent, causing a 3 percent reduction in native wages (Borjas, 2003, p.1370). The degree and significance of the impact varied across education groups. For example, estimates for high school dropouts suggest a 9 percent decrease in native wages, while those with some college experienced no negative effects at all.

Borjas and Aydemir (2007) apply a similar CES structure and estimate the effects of immigration on the Canadian labor market. They adjust the education categories to include a fifth category for individuals with a graduate degree or higher. Using Census Data from 1971 to 2001, they estimate the effects that increasing levels of landed immigrants in the labor force have on native weekly wages. Overall, the findings suggest all education groups experienced a decline in wages over the time-period examined. However, they have difficulty isolating the effects of immigration from the many other factors that influence wages that the fixed effects model

absorbed. Despite this difficulty, Aydemir and Borjas (2007) argue immigration prevented the wages of highly educated workers in Canada from increasing more dramatically.

The nested CES production function makes some critical assumptions when estimating immigrant induced effects on the structure of native wages. One primary assumption is that the education-experience groups represent separate factors of production in a given labor market. By aggregating natives and immigrants into four education categories, the model introduced by Borjas (2003) departs from the traditional two-category approach used by earlier research on wage inequality between education groups in the United States (see Katz & Murphy, 1992). The major criticism of this aggregation method is the assumption that high school dropouts and high school equivalents compete separately in the labor market. However, since immigrants represent a much larger fraction of high school dropouts, Card (2012) argues that a four-education CES model distorts the overall number of dropouts in the U.S. economy and lowers the wages of native dropouts relative to other education groups.

A similar argument can be made of the five-education category model used by Aydemir and Borjas (2007) to estimate the effects of immigration on the wages of native-born Canadians. Over the last two decades, immigrants entering the country tended to have higher levels of education in comparison to natives. Unlike in the U.S. labor market, this creates an overrepresentation of immigrant labor within the higher education groups. As a result, it is not surprising that Aydemir and Borjas (2007)

found the inflow of immigrants put downward pressure on native wages within higher education groups in Canada.

Another critical assumption implied in the CES model is that immigrants and natives of similar education and experience are perfect substitutes within the labor market. This implies that immigrants receive full recognition for their human capital acquired prior to immigrating. However, the earnings literature has found immigrants experience difficulties obtaining comparable wage returns for foreign human capital (Ferrer and Riddell 2008; Aydemir 2003; Chiswick 1978; Borjas 1985). Given that the transfer of human capital between the country of origin and host country is not perfect, it becomes more probable that immigrants compete with natives in different parts of the skill distribution (Dustmann and Preston 2012). In fact, it is even more likely that existing immigrants may experience substitution effects since the source of their human capital is comparable with the new immigrant cohorts arriving in the country.

Recent changes to Canadian immigration policy have raised concerns over the effects of new immigrants on the domestic labor market. In particular, many are concerned with the rapid growth of the Temporary Foreign Worker program, as the number of annual applicants admitted under this program now exceeds the landed immigrant entry streams. In this chapter, I attempt to address some of the gaps in the current Canadian research. First, I examine the extent to which five education categories are separate factors of production in the Canadian labor market. Then I proceed to the primary model, which examines the effects of immigration over the last

two decades on the labor market outcomes of native-born Canadians and existing immigrants.

5.3 Data, Descriptive Statistics and Substitution Effects

The data used in this chapter comes from the 1991, 1996, 2001, 2006 and 2011 Public Use Microdata Files (PUMF) from the Canadian Census. Statistics Canada creates the PUMFs by drawing a one-fifth sample from the Master Census files. The result is a Microdata file that represents 2.7 percent of the entire Canadian population.

I merge the five census files and restrict the sample to immigrant and native-born males aged 18 to 64 years old that participated in the labor force in the survey year. This excludes homemakers, students, retirees, seasonal workers in an off-season not currently looking for work, or any individuals not participating in the labor force due to a long-term disability. I further restrict the sample to individuals that worked for wages or salaries, eliminating all self-employed individuals. The immigrant classification in this sample includes both landed immigrants and Temporary Foreign Workers. The intent of these restrictions is to capture active individuals in the labor market that have completed their education, earn income and have not yet reached retirement.

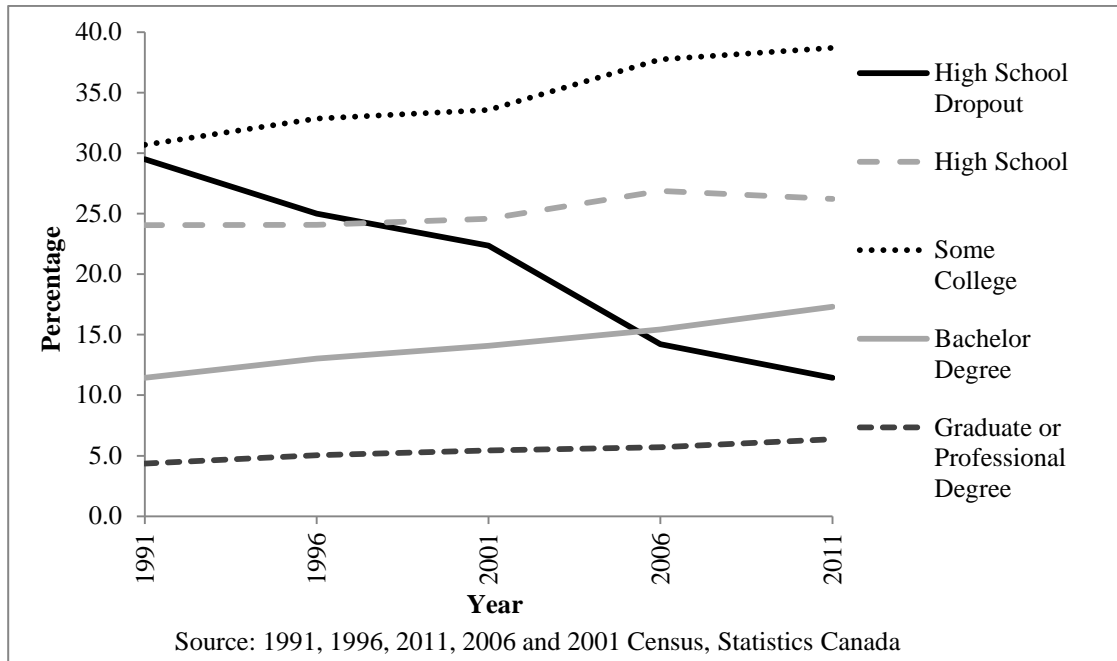


Figure 5.1 Proportion of the Labor Force by Education Category, Canada, 1991-2011

To estimate the substitution effects, I follow earlier models used in the literature that have adapted Katz and Murphy (1992) research on wage inequality between education groups in the United States (Card 2009; Borjas, Grogger, and Hanson 2011). Initially, I aggregate the natives and immigrants from the sample into five education categories; high school dropouts (individuals without a high school diploma), high school equivalents, college or trade (individuals with post-secondary education below a bachelor degree, including skilled trades), bachelor degree and graduate or professional degree (lawyers, accounts, and engineers are examples of a professional degree). Figure 5.1 displays the five education groups as a proportion of

the entire sample between 1991 and 2011. Not surprisingly, the proportion of individuals that did not complete high school decreased significantly over the last two decades. Offsetting this decrease was a large increase in the proportion of individuals with a college diploma or trade. I also find that the proportion of individuals with a bachelor or graduate degree also increases slightly over the last two decades. Overall, Figure 5.1 shows significant changes in the education levels of the Canadian workforce over the last 20 years, which provides the needed variation to estimate the substitution effects between education groups.

One of the challenges in estimating substitution effects between education groups is creating a large enough sample to properly estimate the empirical model. If I use a national level approach similar to Borjas and Katz (2007), I would only have one observation per census year for a total of five observations. To address this issue, I aggregate the education groups by regional labor markets. The Census contains information on Census Metropolitan Areas (CMAs), which are municipalities in Canada with a population of 100,000 or more. To maintain consistency across the five Census years in the sample, I aggregate the regions according to the CMA classifications in the 1991 Census. For all individuals in the sample that reside outside of a CMA, I aggregate them into additional rural regions defined by province of

residence³⁵. The result of this aggregation method is 19 observations per year for a total of 95 observations.

Table 5.1 Distribution of Native and Immigrant Males by Region, Canada, 1991-2011

Region	1991	1996	2001	2006	2011
Halifax	1.3	1.3	1.3	1.3	1.3
Quebec City	2.5	2.6	2.5	2.5	2.6
Montreal-Sherbrooke-Trois Rivières	12.7	12.8	12.9	13.0	13.0
Ottawa	3.7	3.8	3.9	3.7	3.8
Toronto-Oshawa	16.3	16.3	17.4	18.1	18.4
Hamilton-St.Catherines-Kitchner-London-Windsor	7.6	7.4	7.7	7.2	6.9
Greater Sudbury-Thunderbay	1.1	1.0	0.9	0.9	0.8
Winnipeg	2.5	2.4	2.2	2.1	2.2
Regina-Saskatoon	1.5	1.4	1.4	1.4	1.5
Calgary	3.1	3.3	3.7	4.0	4.3
Edmonton	3.4	3.2	3.4	3.6	4.0
Vancouver-Victoria	7.1	7.5	7.5	7.7	8.0
British Columbia Rural Resident	4.7	5.1	4.8	4.7	4.4
Alberta Rural Resident	3.1	3.2	3.4	3.6	3.8
Saskatchewan Rural Resident	1.4	1.4	1.3	1.2	1.2
Manitoba Rural Resident	1.3	1.1	1.1	1.0	0.9
Ontario Rural Resident	10.6	10.4	9.9	9.8	9.3
Quebec Rural Resident	9.1	9.0	8.5	8.3	7.9
Atlantic Province Rural Resident	7.1	6.8	6.3	6.0	5.8
Source: 1991, 1996, 2001, 2006 and 2011 Canadian Census Public Use Microdata Files, Statistics Canada					

³⁵ Due to their small size and suppression of data in the earlier Census years, I combine the provinces of Prince Edward Island, Nova Scotia, New Brunswick and Newfoundland and Labrador in the Atlantic Province region. In addition, I exclude all individuals that live in the northern territories of Canada.

Table 5.1 identifies the distribution of the labor force in Canada across the 19 regions used in the analysis. I find that the majority of the labor force is concentrated in the larger centers of Toronto, Montreal and Vancouver. In addition, I find that the proportion of the labor force is quite high in the rural areas of Quebec, Ontario and the Atlantic Provinces. Since the majority of Canada's population resides in Ontario and Quebec it is not surprising to see a large proportion of the labor force concentrated in the rural areas outside the larger CMAs in those provinces. The large proportion of the labor force in the less populated Atlantic region is a function of the small number of CMAs in the region. In fact, Halifax is the only metropolitan area with a population above 100,000 in all five Census years.

To test the substitution effects between education groups, I begin with the five education categories defined earlier and adjust the basic model of wage inequality introduced by Katz and Murphy (1992) into the following Equation (1);

$$(1) \log \left(\frac{W_{2t}}{W_{1t}} \right) = \beta_0 - \frac{1}{\partial_N} \log \left(\frac{L_{2t}}{L_{1t}} \right) + \emptyset tt + \delta reg + u$$

where the dependent variable $\left(\frac{W_{2t}}{W_{1t}} \right)$ is a ratio of annual income between all individuals (both immigrants and natives) in education groups 1 and 2 in year t . The independent variable $\left(\frac{L_{2t}}{L_{1t}} \right)$ is the ratio of total weeks worked by all individuals in education groups 1 and 2 in the corresponding year. To capture the effects of changing

demand for labor and productivity over-time and between regions, I also include a linear time trend (*tt*) (Katz and Murphy 1992) and regional fixed effects (*reg*). By relating the wages and total weeks worked, I can determine if a correlation exists between the price and the supply for labor of two education groups. A large value for $\frac{-1}{\partial_N}$ would indicate that relative wages are uncorrelated with relative labor supply, suggesting that the two groups display some level of substitutability.

Table 5.2 Substitution Effects Between Education Groups in Canada, Immigrant and Native Males, 1991-2011

Education Categories	(1)	(2)
High School Graduates / High School Dropouts	0.0906* 0.0277	-11.04
College and Trades / High School Graduates	0.0084 0.0286	-119.05
Bachelor Degree / College and Trades	0.0242 0.0630	-41.36
Graduate Degree / Bachelor Degree	0.0953 0.0644	-10.49
College, Trades and High School Graduates / High School Dropouts	0.1317* 0.0322	-7.59
Graduate and Bachelor Degree / College, Trades and High School Graduates	0.1042** 0.0467	-9.60
Observations (n)	95	
Note: *, **, *** represents significance at the 1%, 5% and 10% level. Source: 1991, 1996, 2001, 2006 and 2011 Canadian Census Public Use Microdata Files, Statistics Canada		

Before discussing the coefficient estimates in Table 5.2, I address some issues I encountered. First, there is a limited amount of research examining wage inequality between education groups in Canada to use as a benchmark for comparison. As a result, I must rely on the established literature in the United States. The seminal work by Katz and Murphy (1992) uses time series data from 1964 to 1988 to estimate an elasticity of substitution between high school equivalents and college graduates. After the inclusion of a linear time trend to account for skill-biased technological change, they find an elasticity of 1.41. With the inclusion of additional data points, Ottaviano and Peri (2008) elasticities that range between 1.41 and 3.33. These estimates have now become the benchmark for comparison in the American wage literature.

By relying on benchmark estimates reported using US data, I come across another issue. The American literature has largely explained the increase in college wage premiums as a shift in demand caused by technological changes. However, applying the same theory to the Canadian labor market presents some complications. In particular, the demand for high skilled workers appears stronger in the United States. Over the last decade wage differentials between education groups in Canada have narrowed, while the demand for lower levels of education increased over the same period (Morissette, Picot, and Lu 2013; Boudarbat, Lemieux, and Riddell 2010). The supply of college and university graduates relative to high school graduates grew more rapidly in Canada than in the United States. As a result, Morissette et al. (2013) suggests that this increase in supply reduced any wage premiums received by university and college graduates. In addition, Lemieux and Riddell (2014) suggest that

low-skilled workers have benefited more from the economic expansion associated with the growth in the natural resource industry over the last two decades. This may partially explain the declining wage differential between high school graduates and college and university graduates between 2000 and 2011 in Canada (Morissette, Picot, and Lu 2013).

Table 5.2 reports results for Equation (1) by education category. Column 1 reports estimates for the inverse of the elasticity of substitution, while column 2 reports estimates for the elasticity of substitution. Results in the first four rows display the estimates between each of the five initial education categories. The only significant result was between high school graduates and high school dropouts. The coefficient estimate for high school graduates/high school dropouts of 0.0906 suggests an elasticity of substitution of -11.04. Unlike the American literature, the elasticity estimate is higher and negative. This suggests that a decline in the relative supply of high school dropouts has a negative effect on the wage gap between high school graduate and dropouts. Given the narrowing of the wage gap between education groups and the declining number of high school dropouts, this estimate appears reasonable.

In an effort to improve the precision of the estimates, I reclassify the education categories into (1) high school dropouts, (2) high school graduates, college and trades and (3) bachelor and graduate degrees. In column 1, I find a statistically significant coefficient estimate of 0.1317 between the reclassified lower education categories. This estimate suggests an -7.59 elasticity of substitution between high school

graduates, college and trades and high school dropouts. Once again, I find that the relative wages of less educated workers remain negatively correlated with relative labor supply. Since I maintained high school dropouts as the less educated worker category, this estimate continues to appear reasonable. In row 6, I find a significant coefficient estimate of 0.1042 suggesting an elasticity of substitution of -9.60 between graduate and bachelor degrees and high school graduates, college and trades. While this elasticity estimate is slightly higher, it reflects the improvement in the wages of high school equivalents, college graduates and trades and the decrease in university wage premium over the last two decades.

Based on my findings in Table 5.2, grouping the observations into three education classifications provides the most reasonable fit for the Canadian Census data. While the elasticity estimates are higher than the benchmark estimates in the American literature, they appear within reason and suggest distinct factors of production within the Canadian labor market. In addition, the correlations between relative wages and relative supply align with results reported in earlier research on wage inequality and growth in Canada (Morissette, Picot, and Lu 2013; Boudarbat, Lemieux, and Riddell 2010).

5.4 Immigrant Supply Shock on Native Workers

Following Borjas (2003) and Borjas and Aydemir (2007), I aggregate the sample of immigrant and native males into separate skill groups defined by education

and work experience within each regional labor market in the given Census year³⁶.

Based on my findings in the previous section, I use three education categories consisting of high school dropouts (N_{hs}), high school graduates, college and trade school (N_{sc}), and bachelor and Graduate degree (N_d). Next, I create eight work experience categories in five-year increments from 1 to 40 years of experience. This aggregation method creates 2280 observations consisting of 24 (3 x 8) education-work experience skill groups for each of the 19 regions across five Census years.

I estimate the effects of an immigrant supply shock on native employment outcomes using a nested CES production function. Based on the development of literature that began with Borjas (2003), I use the following model;

$$(2) Y_{esrt} = \beta_0 + \phi_{esrt} + s + e + r + t + (s \times e) + (s \times r) + (s \times t) + (e \times r) + (e \times t) + (r \times t) + \mu_{esrt}$$

where the dependent variable Y_{esrt} is the mean labor market outcome for natives with education s and experience e in region r in Census year t . I estimate this equation using both, the mean annual wages and mean employment rate for natives in skill group $esrt$ as the dependent variable. The variables e , s , r and t represent fixed effects for work experience group, education group, region, and Census year, respectively.

³⁶ My initial estimates only include males aged 18 to 64, but I alter this specification to estimate the effects on females and the entire workforce aged 18 to 64.

The interactions $(s \times r)$ and $(e \times r)$ control for the possibility that the effects of education and experience may vary between regions, while $(s \times e)$ controls for the fact that there are different experience profiles within each education group. In addition, I create interaction terms with all education, work experience and region fixed effects with the Census year fixed effects (t) to control for changes to education, experience and regions over time.

The variable of interest in this equation is ϕ_{esrt} , which reflects the immigrant supply shock within the native skill group $esrt$. This variable represents the following simple proportion calculation;

$$\phi_{esrt} = I_{esrt} / (I_{esrt} + N_{esrt})$$

The value I_{esrt} represents the total number of immigrants with experience e , education s , in region r in year t . The value N_{esrt} represents the corresponding education-experience group for natives in region r in year t . This variable is a ratio of the number of immigrants within each skill group, representing the immigrant supply shock to that specific skill group in the Canadian labor market. A negative correlation between ϕ_{est} and the employment outcome Y_{est} can be interpreted as an increase in immigrant labor supply having a negative effect on native employment outcomes.

Table 5.3 Effect of Regional Immigrant Supply Shocks on Native Employment Outcomes, Canada, 1991-2011

	24 Education-Experience Groups		12 Education-Experience Groups	
	Log Annual Wages	Log Employment Rate	Log Annual Wages	Log Employment Rate
Males	-0.1545* (0.0471)	0.0210 (0.0168)	-0.0746 (0.0642)	0.0297 (0.0199)
Females	-0.0916 (0.0574)	0.0351** (0.0163)	0.3084* (0.0770)	0.0509** (0.0217)
All	-0.0330 (0.0516)	0.0208 (0.0150)	0.0676 (0.0694)	0.0306*** (0.0185)
Observations (n)	2280	2280	1140	1140

Note: *, **, *** represents significance at the 1%, 5% and 10% level. Each model includes the full set of fixed effects described in Equation (2)
Source: 1991, 1996, 2001, 2006 and 2011 Canadian Census Public Use Microdata Files, Statistics Canada.

Table 5.3 reports results from the immigrant supply shock on native employment outcomes. I report the effects of the supply shock (\emptyset_{esrt}) on males, females and all native workers. In addition, I adjust the initial aggregation method from 24 education-experience groups to 12 education-experience groups by classifying work experience into four 10-year categories (1 to 10, 11-20, 21-30, and 31-40) from eight 5-year categories and report the employment outcomes for males, females and all native workers.

To make the interpretation of the results in Table 5.3 easier, I convert the coefficients into elasticities that represents the percent change in employment

outcomes associated with a percentage change in the immigrant labor supply (Aydemir and Borjas 2007, p.681).

$$(3) \quad \frac{\partial \log Y_{esrt}}{\partial imm_{esrt}} = \frac{\phi_{esrt}}{(1+imm_{esrt})^2}$$

Equation (3) evaluates the impact of an immigrant caused increase in the labor supply of group *esrt* on the employment outcomes of natives in the same group.

Unlike the proportional immigrant supply shock (ϕ_{esrt}), the immigrant increase in labor supply (imm_{esrt}) represents the percentage increase in the labor supply caused by immigration. As a result, I evaluate the immigrant supply shock using the mean value of the immigrant caused supply increase. Between 1991 and 2011, immigration increased the labor supply in Canada by approximately 23 percent. This increase was essentially the same for males, females and the workforce as a whole.

In row 1 of Table 5.3, I find that an immigrant induced supply shock has a negative effect on the annual wages of native males. The first coefficient estimate for annual wages of -0.1545 represents an elasticity of -0.1021. In other words, a 10 percent increase in the immigrant labor supply reduces the annual wages of native males by 1 percent. After reducing the work education-experience categories to 12, I find no correlation between an increase in immigrant labor and native employment outcomes.

I report results for females and the entire workforce in rows 2 and 3 of Table 5.3, respectively. In comparison to the male results, I find immigration has the opposite effect on native employment outcomes. For example, I find a coefficient of 0.3048 for females in the 12 education-experience results, implying an elasticity of 0.2038. This elasticity suggests that a 10 percent increase in female immigrant labor supply increased the wages of native females by just over 2 percent. I also find that an increase in female immigrant labor supply has very small, but positive effects on the employment rate of female natives. In both the 24 and 12 education-experience estimates, I find a 10 percent increase in female labor supply improves native employment rates by 0.2 and 0.3 percent, respectively. When I estimate the model using the entire workforce (males and females), I find very little correlation between immigrant labor and native employment outcomes. The only exception is the last estimate in the 12 education-experience category, which suggests an increase in immigrant labor supply has a small (0.2 percent) positive effect on the native employment.

The regional model suggests that an increase in immigrant labor has some negative effects on native males. However, once I broaden the education-experience cells this negative effect disappears. In comparison, I find that an increase in immigrant labor has small, but positive effects on the employment outcomes of native females and the native workforce as a whole. Interestingly, these positive effects are visible after broadening the education-experience classification. Overall, these estimates suggest that the effect of regional immigrant supply shocks on native

employment outcomes is sensitive to the classification of education-experience groups.

Table 5.4 Effect of National Immigrant Supply Shocks on Native Employment Outcomes, Canada, 1991-2011

	24 Education-Experience Groups		12 Education-Experience Groups	
	Log Annual Wages	Log Employment Rate	Log Annual Wages	Log Employment Rate
Males	0.0542 (0.2205)	-0.0959** (0.0470)	0.1071 (0.2732)	-0.1338*** (0.0759)
Females	0.0107 (0.1707)	-0.0373 (0.0435)	0.0846 (0.2762)	-0.0386 (0.0658)
All	0.1716 (0.2084)	-0.0929** (0.0403)	0.2241 (0.2487)	-0.1156*** (0.0659)
Observations (n)	120	120	60	60
Note: *, **, *** represents significance at the 1%, 5% and 10% level. Each model includes the full set of fixed effects described in Equation (2). Source: 1991, 1996, 2001, 2006 and 2011 Canadian Census Public Use Microdata Files, Statistics Canada.				

To provide some context for comparison of the results from the regional model, I adjust Equation (2) to estimate the effect of an immigrant supply shock at the national level. Table 5.4 reports coefficient estimates for the immigrant shock (\emptyset_{esrt}) at the national level for males, females and the entire workforce using both, the 24 and 12 education-experience group classifications. In contrast to the regional model, I find no correlation between immigrant labor supply and native wages across all samples for both education-experience classifications. However, I do find that native

employment rates are sensitive to an immigrant supply shock. The estimates suggest that a 10 percent increase in male immigrant labor reduces native employment rates by less than 1 percent in both education-experience classifications. Not surprisingly, I find similar results for the entire native workforce. Since an increase in immigrant labor adversely affects the employment rates of male natives, I attribute the negative estimates for the entire workforce to the males contained in the sample.

After adjusting Equation (2) to reflect a national model, I find much different results in comparison to the regional model. Estimates from the national model suggest that immigration has no effect on native wages and a small, but negative impact on the employment rates of male natives. In comparison, the regional model finds some small, negative effects on native male wages. At the regional level an increase in immigrant labor improves female employment outcomes and wages. From these results, I find that adjusting the labor market definition alters the effects of immigration on the native workforce in Canada.

The results from both, the regional and national models contradict some of the earlier findings. Aydemir and Borjas (2007) estimate a CES production function at the national level using five education and eight work experience groups. They find that a 10 percent increase in immigrant labor supply reduces native male wages by 3.2 percent. In comparison, results in table 5.2 remain negative, but are much smaller for native males. These differences suggest two important distinctions when estimating the effects of an immigrant induced labor shock. First, the definition of education-experience groups into separate factors of production in the Canadian labor market has

a direct effect on the impact of any immigrant supply shock. Second, defining the labor market from a national or regional level affects the sensitivity and relationship between an immigrant supply shock and native employment outcomes.

5.5 Supply Shock of New Immigrants on Existing Immigrant Workers

Since new and existing immigrants have comparable human capital, it is more likely that an immigrant induced supply shock in the Canadian labor market has a larger effect on the employment outcomes of existing immigrants than on natives. Ottaviano and Peri (2012) found evidence to this effect in the U.S. labor market. Specifically, they found that the inflow of new immigrants between 1960 and 2000 had a negative effect on wages of existing immigrants, while natives experienced an increase in wages during the same period.

To examine the potential substitution effects among new and existing immigrants, I create a new sample consisting of only immigrants (landed immigrants and temporary foreign workers). Again, I restrict this sample to individuals aged 18-64, that participated in the labor force and worked for wages or salaries (excludes self-employed individuals). Since the assimilation rate of landed immigrants into the Canadian labor market is typically 10 to 15 years (Morissette and Frenette 2005; Bloom, Grenier, and Gunderson 1995), I consider immigrants that entered Canada more than 10 years before the survey year (t) as ‘existing’ landed immigrants. As the survey year increases, I reclassify new immigrants into the ‘existing’ status. For example, a new immigrant that arrived 10 years ago in 2000 becomes an ‘existing’

immigrant in 2001. Temporary foreign workers are included in the new immigrant classification, but excluded from all ‘existing’ immigrant classification³⁷.

Table 5.5 Effect of New Immigrant Supply Shocks on the Employment Outcomes of Existing Immigrants, Canada, 1991-2011

	24 Education-Experience Groups		12 Education-Experience Groups	
	Log Annual Wages	Log Employment Rate	Log Annual Wages	Log Employment Rate
Males	0.1254 (0.2351)	-0.2002* (0.0736)	0.3025 (0.2947)	-0.2003* (0.0359)
Females	0.1034 (0.2387)	-0.1108 (0.1112)	0.3066 (0.4393)	-0.0398 (0.1081)
All	0.0569 (0.2116)	-0.1419*** (0.0765)	0.2241 (0.3195)	-0.1320 (0.0891)
Observations (n)	120	120	60	60
Note: *, **, *** represents significance at the 1%, 5% and 10% level. Each model includes the full set of fixed effects described in Equation (2). Source: 1991, 1996, 2001, 2006 and 2011 Canadian Census Public Use Microdata Files, Statistics Canada.				

By limiting the sample to immigrants, I significantly reduce the total sample size. As a result, I am unable to estimate Equation (1) with these new restrictions at the regional level. Instead, I initially aggregate the sample into 24 education-experience skill groups (3 education x 8 experience) at the national level. Then I reduce the number of experience groups to 4 and aggregate the sample into 12

³⁷ Regulations attached to the temporary foreign worker status restrict the length of time an individual can legally work and reside in Canada.

education-experience groups (3 education x 4 experience). The dependent variable (Y_{est}) now reflects the mean labor market outcome for ‘existing’ landed immigrants with education s and experience e in year t . Again, I evaluate the supply on the mean wages and mean employment rate for existing immigrants. The immigrant supply shock variable (ϕ_{est}) now reflects the proportion of ‘new’ immigrants (both landed immigrants and temporary workers) to ‘existing’ immigrants within skill group est . All other control and interaction variables introduced in Equation (1) remain the same.

Table 5.5 reports estimates for the supply of shock of new immigrants on the employment outcomes of existing immigrants in Canada. Between 1991 and 2001, the inflow of new immigrants account for a 70 percent increase in the size of the immigrant labor force. I find that this increase in new immigrants had an adverse effect on the employment rates of existing immigrants. Coefficient estimates for employment rate of -0.2002 and -0.2003 for the 24 and 12 education-experience groups represent an elasticity of -0.37. This suggests that a 10 percent increase in new immigrants reduces the employment rate of existing immigrants by 3.7 percent³⁸. For the 24 education-experience category estimates, I also find that the inflow of immigrants had an adverse effect on the employment rate of existing immigrants. However, the coefficient estimate of -0.1419 represents an elasticity estimate of -0.26, which is a full percentage point lower than the corresponding estimate in the male

³⁸ The elasticity is calculated using the mean increase in population of 74 percent and the same formula discussed earlier.

sample. After reducing the experience categories to create 12 education-experience groups, the negative effects disappear.

Interestingly, I find the inflow of new immigrants had no effect on the wages of existing immigrants in the labor force. Unlike the native experience, the results suggest that the inflow of new immigrants has a small, but negative effect on the employment rate of existing male immigrants. This suggests that the inflow of new immigrants may have some short-term effects on the employment rate of existing immigrants, but no lasting effects on their earning ability. In addition, I find significant results for the male samples, but a lack of statistical significance for the female samples. I attribute this to the lower participation rate among immigrant females in the Canadian labor market. Overall, the effects of an immigrant supply shock on employment outcomes varies between natives and existing immigrants.

5.6 Conclusion

Since the mid-1990s, the Canadian government has introduced a series of changes to immigration policy, which have altered the composition and supply of the labor within the country. For many immigrant-receiving countries like Canada, the effects of an immigrant induced supply shift raises concerns over the potential negative effects on the domestic workforce. The cause for concern in Canada surrounds the expansion of the Temporary Foreign Worker program and increasing numbers of landed immigrants admitted annually into the country. Despite a decline in the wage gap between low and high-skilled workers over the last decade (Morissette,

Picot, and Lu 2013), changes to the immigration system continue to come under intense scrutiny in Canada.

This chapter examines the effects of an immigrant induced supply shock on the employment outcomes of native-born Canadians. Prior research has examined the effects of immigration using a national approach and a five-education classification model (Aydemir and Borjas 2007). I depart from this method and test the assumption that five-education categories constitute separate factors of production in the Canadian labor market. I find perfect substitution between individuals with a bachelor and graduate degree, as well, between high school graduates, college graduates and skilled trades. As a result, I find that the following three-education categories fit the data in Canada much better; (1) high school dropouts, (2) high school graduates, college graduates and skilled trades and (3) bachelor and graduate degrees.

The three-education model aligns more closely with the two-category model that has become the benchmark in the American wage inequality literature (Katz and Murphy 1992; Card 2009). However, the wage gap between low and high skilled workers in Canada has not expanded at the same rate as in the United States. In fact, the wages of low-skilled workers have increased relative to high-skilled workers over the last decade (Morissette, Picot, and Lu 2013; Boudarbat, Lemieux, and Riddell 2010). I find elasticity estimates that appear to be much different in comparison to the benchmark rates found in the American literature. Despite these differences, the estimates provide support for the use of a three-education classification.

In this chapter, I introduced alternate versions of a CES production function to estimate the effects that shifts in immigrant labor have on native wages and employment rates. I again depart from the previous literature and test the assumption that immigrants and natives compete in a national labor market. Instead, I create 19 regional labor markets and initially estimate the effects across 24 education-experience groups (3 education x 8 experience) in each region. I find that increases in immigrant labor puts a small amount of downward pressure on native male wages. However, after broadening the experience classification, the downward pressure on native male wages disappears. Interestingly, I find increases in immigrant labor improve the employment outcomes of female natives at the regional level. From these results, it appears natives are more sensitive to increases in immigrant labor within narrowly defined skill groupings. In other words, the effects of an immigrant supply shock are concentrated within specific skill groups and regional labor markets.

As a comparison, I estimated a national model using 24 education-experience groups. In addition, I depart from the traditional model and estimate the effects that new immigrant labor had on the employment outcomes of existing immigrants. In contrast to earlier research, I find no downward pressure on native wages. However, I do find that an increase in immigrant labor has very small, but negative effects on the employment rates of native males. I also find that new immigrants put downward pressure on the employment rates of existing male immigrants, but the negative effect is much larger in comparison to natives. Overall, my results suggest that an immigrant

induced supply shock has small, but negative effects on the employment rates of males in Canada.

Contrary to earlier research and public opinion, the effects of immigration on the existing domestic workforce are quite small or non-existent. In fact, in some cases I find that increasing levels of immigrant labor had small positive effects on native employment outcomes. Further research is needed to identify if specific labor markets or unique skill groups experience different effects in comparison to the broader labor market. Given that immigrants to Canada have tended to cluster in specific metropolitan areas, the idea that any negative effects might be concentrated in specific regions of the country is quite plausible. Overall, this research shows that the inflow of new immigrants has a limited impact on the wage levels in the Canadian labor market. However, there is evidence to support the notion that existing immigrants experience negative effects from an increase in new immigrant labor. In fact, my results indicate that new and existing immigrants appear to have some level of substitution in the Canadian labor market.

Chapter 6

SUMMARY DISCUSSION AND CONCLUSION

For well over a century, the Canadian government has used immigration as an economic policy lever to meet national economic objectives. In particular, the government used immigration policy to improve the skill composition of the workforce of the Canadian workforce and to meet short-term demand for labor. As a result, many of the new immigrants entering Canada have high levels of human capital. Despite this focus, by the late 1970s and into the early 1980s, the economic outcomes of new immigrants began to deteriorate. In response, the Canadian government introduced a series of comprehensive changes to the country's immigration policy.

Starting in the mid-1990s and into the early 2000s, the Canadian government introduced new legislation to improve the skill composition of new immigrants and increase annual immigration levels. Applicants with greater English proficiency, higher levels of education and more work experience received preferential treatment under the landed immigrant selection process. At the same time, changes to the Temporary Foreign Worker (TFW) program focused on addressing short-term labor market needs by expanding the program to include low-skilled applicants. Overall,

these policy changes altered the size and composition of the immigrant workforce in Canada.

A well-established literature has documented the significant decline in immigrant earnings that began with cohorts entering in the 1980s (Bloom, Grenier, and Gunderson 1995; Abbott and Beach 1993; Baker and Benjamin 1994). This early research focused primarily on identifying the growing wage gap between landed immigrants and native-born Canadians. Recent research has put greater emphasis on examining the causes behind the growing wage gap (Warman 2005; Sweetman and Warman 2013; Aydemir and Skuterud 2008; Aydemir and Skuterud 2005). In particular, the research has focused on declining returns to foreign work experience and the effects of weak English language abilities on immigrant earnings.

Despite the well-established immigrant literature in Canada, there has been limited research linking policy changes to economic outcomes. In addition, the literature has primarily focused on examining immigrant earning differentials. However, policy changes introduced in the 1990s and early 2000s have much wider implications. Unlike prior research, this dissertation first attempts to link changes in Canadian immigration policy with immigrant earnings. Next, I expand on the literature on immigrant earnings by examining employment differentials between immigrants and native-born Canadians over the last 20 years. Finally, this dissertation examines the effects of immigration on the domestic labor market in Canada, a largely ignored question in the current literature.

In chapter 3, I examined the entry earnings of landed immigrants and temporary foreign workers following major changes in immigration policy between the mid-1990s and 2002. To examine changes in earnings between policy regimes, I replicated a natural experiment using a Difference-in-Difference technique. By using landed immigrants and temporary workers as the experiment group and native-born workers as the control group, I attempted to remove any unobservable factors that could influence earnings. In addition, I aggregated these two groups into separate cohorts that precede and follow the mid-1990s and 2002 policy changes, in order to identify the impact of these policy changes on immigrant entry earnings.

I first examine changes in earnings between the 1996 and 2001 cohorts. I find that earnings increase for both male and female landed immigrants, relative to a change in native earnings. In comparison, I find no change in the entry earnings for temporary foreign workers over the same time period. This result is not surprising given that the policy changes of the mid-1990s increased entry requirements for landed immigrants. These initial results suggest that changes in Canadian immigration policy in the mid-1990s had a positive effect on the entry earnings of landed immigrants.

Of greater interest are the results between the 2001 and 2006 cohorts. In 2002, the Canadian government altered the selection process for landed immigrants and expanded the Temporary Foreign Worker (TFW) program to allow the entry of low-skilled applicants. These policy changes significantly altered the skill composition and the level of immigrants annually admitted into the country. I found a significant

decline in the entry earnings for both, male and female landed immigrants. In fact, the decline between the 2001 and 2006 cohorts effectively eliminated any gains made between the 1996 and 2001 cohorts. For the sample of Temporary Foreign Workers, I found a slightly steeper decline in the entry earnings between the 2001 and 2006 cohorts.

Comparing results from the two cohort estimates reveals that altering the selection criteria can have a significant influence on entry earnings. Policy changes in the mid-1990s improved the human capital of new immigrants and ultimately the entry earnings of this new cohort. Results from the 2001 and 2006 cohort estimates shows that altering the human capital criteria of the selection process can also be effective in reducing entry earnings. However, it is important to remember that the 2002 policy changes also increased annual immigration levels. In fact, the expansion of the TFW program created an entry stream for low-skilled applicants that exceeded the annual inflow from landed immigrant entry streams. Taken together, the results suggest that changes to the selection criteria can have a significant impact on the economic outcomes of immigrants, but any efforts to improve the skill composition is only effective if total immigration levels are controlled. This has important policy considerations, given that the Canadian government has done little to adjust the inflow of immigration over the last two decades.

While examining earning differentials between immigrants and natives provides valuable insight into the economic outcomes of recent arrivals to Canada, it does not tell the whole story. The ability of new immigrants to obtain employment in

Canada has a direct impact on their earnings. The analysis in chapter 4 presents evidence on the employment differentials between landed immigrants and native-born Canadians over the last 20 years. To examine these employment differentials, I create four employment categories; (1) 12 months employed, (2) 7-11 months employed, (3) 1-6 months employed and (4) 0 months employed. By identifying employment in this non-traditional manner, I am able to explain the factors that influence differences in employment patterns between immigrants and natives. Overall, the results suggest that on average immigrants are more likely to experience 12 months of unemployment in comparison to natives. Of greater interest, is that immigrants are even more likely to experience periodic patterns of unemployment. In other words, immigrants are more likely to move from job to job in comparison to natives.

Similar to the immigrant earnings literature, I find that differences in human capital influence the employment patterns between immigrants and natives. However, the effect of human capital varies by source and between employment categories. For example, foreign work experience has essentially no effect on immigrant employment outcomes. Yet, Canadian work experience reduces the odds of an immigrant experiencing periodic unemployment. I also find that education has a significant effect on employment patterns, but the size of this effect fluctuates across education categories between immigrants and natives. Overall, the results suggest that once an immigrant shows employment history, the source of human capital seems to have less of an impact.

Among the immigrant sample, I find that being a visible minority has a significant influence on employment patterns. After including variables for visible minority status, the employment differential between immigrants and natives essentially disappears. This suggests that visible minority immigrants experience a greater level of discrimination in the hiring process. However, data limitations make it difficult to disentangle the cause of this discrimination. While many immigrants arriving in Canada are visible minorities, they also bring very different cultural practices that may influence their employment opportunities. Despite the limitations, these results have important policy implications since the majority of new immigrants are arriving from non-traditional source countries. These immigrants are predominantly visible minorities that may have cultural norms that differ from native-born Canadians, which may result in discrimination in the hiring process.

In Chapter 4 I also examine the effects of changing macro-economic conditions on employment patterns. Interestingly, I find that fluctuations in the national unemployment rate have short-term effects on immigrant employment patterns. Given the significant increase in immigration levels over the last 20 years, it is surprising immigrants do not experience greater difficulties obtaining employment during periods of weak economic growth. However, limitations of the model require further research into whether macro-economic changes influence cohorts differently over time.

Changes to Canadian immigration policy over the last 20 years have significantly altered the composition and increased the supply of new immigrant labor

in the country. Recently, the TFW program has come under criticism for providing an unrestricted source of low wage labor, resulting in reduced employment opportunities for native workers. In response, policy makers have begun to introduce changes to the TFW program and other immigrant entry streams in an effort to reduce concerns among the native workforce over the inflow of new immigrant labor.

In chapter 5, I attempt to fill a gap in the existing Canadian literature by examining the impact of immigration on the domestic workforce over the last 20 years. I begin my analysis by testing the assumption that different levels of education constitute separate factors of production in the labor market. Prior research has assumed that five education categories, (1) high school dropout, (2) high school graduate (3) college graduate or skilled trade, (4) bachelor degree and (5) graduate degree, form separate factors of production in the Canadian labor market (Aydemir and Borjas 2007). However, estimates from my model suggests that three education classifications fits the Canadian data much better; (1) high school dropouts, (2) high school graduates, college graduates and skilled trades and (3) bachelor and graduate degrees.

After establishing these factors of production, I estimate different forms of a CES production function to determine the effects of an immigrant induced supply shock on the domestic labor force. I depart from the previous literature by testing the effects of this supply shock across regional labor markets in Canada. I find that the increase in immigrant labor has small, but negative effect on native male wages. However, after broadening the experience profiles of immigrants and native-born

Canadians, I find that these negative effects largely disappear. In fact, I find that the inflow of immigrant labor has small positive effect on the economic outcomes of females. These results suggest that the effects of an immigrant supply shock in the Canadian labor market are concentrated within narrowly defined skill groups.

For comparison with the regional model, I estimate a CES production function that assumes immigrants and natives compete in a national labor market. Unlike the earlier research conducted by Aydemir and Borjas (2007), I found that increasing levels of immigrant labor had no effect on native wages over the last 20 years. Yet, I do find evidence suggesting that the inflow of immigrant labor adversely affects the employment rates of native males. However, this negative effect is quite small. I also use a national model to determine the effects of new immigrant labor on the existing immigrant workforce. Similar to the results for native males, the inflow of new immigrants puts a small amount of downward pressure on the employment rates of existing immigrants in the labor market. Overall, my results suggest that the inflow of new immigrants into the Canadian labor market has some small short-term effects on the employment rates of the existing workforce.

In comparing results from the regional and national models, it appears that any wage effects are concentrated within specific skill groups and sensitive to differences between regional labor markets. However, the results show that an immigrant induced supply shock has a small effect on employment outcomes. This suggests that the inflow of new immigrants may have negative short-term effects, but long-run shifts in labor supply have no impact on the native wage structure. The evidence in this chapter

runs contrary to much of the current criticism surrounding the expansion of the TFW program and other entry streams. This is not to say that some individuals were not displaced by the inflow of new immigrants, but the evidence suggests the effects were small.

The focus of this dissertation has two primary goals. First, to examine the effects that major changes to Canadian immigration policy have on the economic outcomes of immigrants and native-born workers. Second, to expand the immigration literature through presenting evidence that other measures besides a comparison of earnings are required to assess the economic impact of changes in immigration policy. This second goal is of particular importance to inform future policy decisions.

Over the last 5 years, the Canadian government has implemented a series of new comprehensive changes to the country's immigration system. One of the major changes was the creation of the Canadian Experience Class (CEC) to retain skilled temporary foreign workers. Applications are restricted to highly skilled temporary foreign workers that have at least 12 months of work experience in Canada and pass a minimum language ability test in French or English. In addition, the Canadian government has expanded the role of the Provinces in the immigration process through the expansion of the Provincial Nominee Program (PNP). Individual provinces have established their own assessment criteria to sponsor new immigrants or transition temporary foreign workers into permanent residency. Both, the CEC and PNP entry streams focuses on observable characteristics (such as previous work experience in

Canada) as a predictor of an applicant's ability to succeed in the Canadian labor market.

The Canadian government has also implemented new policies to manage annual immigration levels. In particular, the government announced their intention to adjust the inflow temporary foreign workers based on the national unemployment rate. This policy is similar to the absorptive capacity policy, which the government used to manage immigration levels in Canada for nearly 50 years. Yet, unlike the earlier absorptive capacity policy, this new policy does not manage the inflow of landed immigrants. The government has introduced restrictions on certain landed immigrant entry stream over the last 5 years. However, these were only temporary measures used to reduce the large backlog of applications.

Based on the evidence presented in this dissertation, my results support some of these recent policy changes. Applicants under the CEC and PNP entry streams will have stronger language abilities and some level of Canadian work experience. In addition, efforts to manage the inflow of temporary workers based on macro-economic changes will reduce the supply of new labor during higher periods of unemployment. As a result, the entry earnings of temporary workers should improve and potentially have some positive spill-over effects for landed immigrants. In particular, higher levels of human capital improves entry earnings and reduces the probability of an immigrant becoming unemployed. However, the overall impact of this policy change is limited by the lack of any new policy levers to control the inflow of the landed immigrant entry streams. Ultimately, any policy changes to improve human capital of

new immigrant cohorts will be less effective without any policy levers to manage the overall level of immigration.

Another recent development in Canadian immigration policy focuses on the matching skilled immigrants with current needs in the labor market. The Express Entry program creates a pool of potential immigrants ranked according to skill level. The government invites applicants from the pool to apply for permanent residency based their ranking within the pool. The ranking system awards points to applicants with an employment offer, nomination from a Provincial government and skills. All applicants are enrolled in a national job bank designed to connect them with eligible employers.

The current labor market assessment process associated with the TFW program only identifies need for immigrant labor by determining an eligible permanent resident is not available to fill the need. However, the evidence in this dissertation reveals that immigrants encounter greater difficulties receiving comparable recognition for their human capital in the hiring process. The Express Entry process allows immigrants to have their credentials assessed prior to arrival in the country and then attempts to match applicants with potential employers. Ultimately, this process should improve the ability of applicants to receive higher entry earnings and reduce the probability of unemployment upon arrival in Canada. While this policy may improve the economic outcomes of higher skilled immigrants, it does nothing to assist lower skilled immigrants in the employment process.

Overall, there is little evidence in my results to suggest that new immigrants have large scale negative effects on the domestic workforce in Canada. In instances where immigrants adversely impact native employment outcomes, the effects are concentrated in narrow skill groups within regional labor markets. Recent policy changes to manage the inflow of temporary workers and match immigrants with employment opportunities, should reduce any negative effects associated with the inflow of new immigrant labor. In particular, the creation of the CEC and the expansion of the PNP will reduce the supply of new immigrant labor as applicants are already part of the workforce. These recent policy changes have focused the selection process on matching the inflow of new immigrants with current needs in the labor market. Ultimately, these policy changes should improve immigrant employment outcomes and reduce any negative spillover effects associated with the inflow of new labor into Canada.

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Appendix A

FULL DESCRIPTIVE STATISTICS AND ESTIMATION RESULTS FROM CHAPTER 3

Table A.1 Temporary Foreign Worker Characteristics by Gender and Cohort,
Canada, 1996-2006

	Male Cohorts			Female Cohorts		
	1996	2001	2006	1996	2001	2006
Weekly Wage	1118.3	1,255.6	1121.7	509.8	640.7	562.2
Weeks Worked	48.2	48.4	48.1	47.7	47.3	48.6
Visible Minority	42.6%	42.5%	47.8%	62.1%	59.8%	67.1%
Official Language Ability	43.3%	46.5%	46.1%	31.1%	31.0%	35.3%
Reside in Rural Area	13.5%	14.8%	14.1%	11.7%	10.9%	10.9%
Marital Status	58.9%	63.1%	59.1%	42.7%	44.1%	44.7%
Income Top Code	6.7%	7.0%	7.1%	n/a	n/a	n/a
Income Bottom Code	11.0%	7.3%	5.9%	23.8%	10.0%	13.5%
Years of Work Experience	14.3	14.4	14.8	12.6	12.2	13.4
Less Than High School	12.8%	11.3%	8.0%	14.6%	9.2%	1.9%
High School Equivalent	17.0%	7.9%	15.1%	21.8%	10.0%	15.5%
Some College	16.0%	17.3%	24.7%	27.2%	26.2%	30.7%
University Degree	28.4%	32.2%	25.3%	26.2%	36.7%	37.4%
Graduate Degree	25.9%	31.4%	27.0%	10.2%	17.9%	14.5%
British Columbia	19.1%	14.6%	17.7%	30.6%	22.7%	19.3%
Alberta	8.9%	8.8%	12.0%	12.6%	17.5%	14.3%
Saskatchewan	1.8%	1.8%	2.0%	2.4%	0.4%	2.2%
Manitoba	3.5%	1.8%	2.4%	0.9%	2.6%	1.0%
Ontario	39.0%	48.0%	47.2%	34.5%	34.1%	48.3%
Quebec	23.4%	22.6%	18.2%	18.4%	20.5%	13.8%
Atlantic Provinces	4.3%	2.5%	1.0%	0.5%	2.2%	1.2%
Observations (n)	282	398	538	206	229	414
Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada						

Table A.2 Landed Immigrant Characteristics by Gender and Cohort, 1996-2006

	Male Cohorts			Female Cohorts		
	1996	2001	2006	1996	2001	2006
Weekly Wage	668.4	813.0	790.3	488.8	576.2	558.0
Weeks Worked	48.1	48.3	48.1	47.4	47.8	47.6
Visible Minority	68.9%	68.1%	72.0%	74.1%	69.6%	72.9%
Official Language Ability	21.6%	19.2%	21.1%	23.3%	20.6%	20.7%
Reside in Rural Area	8.0%	5.9%	3.4%	7.9%	6.8%	3.0%
Marital Status	70.7%	75.0%	76.7%	65.7%	72.5%	73.4%
Income Top Code	0.4%	0.8%	0.7%	n/a	n/a	n/a
Income Bottom Code	10.5%	7.6%	6.7%	13.9%	13.2%	11.7%
Years of Work Experience	16.0	15.9	16.3	15.7	15.6	15.6
Less Than High School	22.5%	15.9%	7.3%	21.4%	16.9%	7.5%
High School Equivalent	21.3%	15.8%	15.7%	25.4%	19.5%	16.1%
Some College	27.5%	21.9%	22.4%	29.2%	24.6%	25.6%
University Degree	18.1%	27.9%	35.5%	18.5%	27.1%	36.5%
Graduate Degree	10.6%	18.5%	19.0%	5.5%	11.9%	14.3%
British Columbia	18.5%	17.6%	15.8%	21.1%	19.6%	18.1%
Alberta	7.5%	7.0%	10.1%	9.4%	8.0%	9.2%
Saskatchewan	0.5%	0.6%	0.2%	0.7%	0.7%	0.3%
Manitoba	2.4%	1.6%	2.0%	2.0%	2.1%	2.3%
Ontario	57.1%	59.7%	55.7%	55.7%	57.5%	55.3%
Quebec	12.6%	12.8%	16.2%	10.2%	11.1%	14.6%
Atlantic Provinces	1.4%	0.7%	0.03%	0.9%	0.9%	0.2%
Observations (n)	3116	3231	3092	2328	2293	2214
Note: The cohorts represent those arriving in the 5 year period prior to the census; 2006 Census - 2005-2001 cohort; 2001 Census - 2000-1996 cohort; 1996 Census - 1995 - 1991 cohort. All weekly wages are adjusted to 2005 values using the Consumer Price Index.						
Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada						

Table A.3 Native-Born Characteristics by Gender and Cohort, 1996-2006

	Male Cohorts			Female Cohorts		
	1996	2001	2006	1996	2001	2006
Weekly Wage	965.8	1005.98	1052.7	651.3	697.1	756.5
Weeks Worked	49.3	49.6	49.6	49.1	49.4	49.5
Visible Minority	3.0%	4.1%	5.7%	3.1%	4.1%	5.9%
Official Language Ability	96.3%	96.0%	95.7%	96.0%	95.7%	95.2%
Reside in Rural Area	42.3%	41.1%	36.4%	40.6%	40.0%	35.6%
Marital Status	58.3%	51.9%	47.9%	57.0%	52.2%	48.5%
Income Top Code	0.1%	0.4%	2.1%	n/a	n/a	n/a
Income Bottom Code	4.7%	2.8%	3.3%	9.9%	8.5%	6.7%
Years of Work Experience	18.5	19.0	19.5	18.4	19.1	20.0
Less Than High School	23.3%	21.5%	13.8%	17.7%	15.6%	8.7%
High School Equivalent	25.1%	25.3%	27.2%	28.5%	26.8%	27.3%
Some College	34.4%	35.9%	40.7%	35.7%	37.3%	41.1%
University Degree	13.2%	13.5%	14.5%	15.2%	17.0%	18.8%
Graduate Degree	3.9%	3.8%	3.9%	2.8%	3.3%	4.0%
British Columbia	12.0%	11.2%	11.3%	11.9%	11.1%	11.1%
Alberta	10.5%	11.7%	12.7%	10.4%	10.8%	11.5%
Saskatchewan	3.5%	3.3%	3.2%	3.9%	3.6%	3.5%
Manitoba	4.0%	3.9%	3.7%	4.1%	4.0%	3.9%
Ontario	33.9%	34.5%	34.2%	34.4%	35.0%	34.6%
Quebec	27.6%	27.2%	27.0%	26.7%	26.8%	26.9%
Atlantic Provinces	8.4%	8.1%	7.9%	8.7%	8.6%	8.6%
Observations (n)	97300	105707	99774	80891	89381	87875
Note: The cohorts represent those arriving in the 5 year period prior to the census; 2006 Census - 2005-2001 cohort; 2001 Census - 2000-1996 cohort; 1996 Census - 1995 - 1991 cohort. All weekly wages are adjusted to 2005 values using the Consumer Price Index.						
Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada						

Table A.4 Complete OLS Results for Equation (1): Male Landed Immigrants

	1996 - 2001		2001-2006	
	Baseline	Full Equation	Baseline	Full Equation
Intercept	6.0575*** (0.0063)	6.0482*** (0.0067)	6.0632*** (0.0065)	6.0633*** (0.0068)
Immigrant Status (imm)	-0.2744*** (0.0075)	0.1580*** (0.0289)	-0.3027*** (0.0074)	0.2306*** (0.0313)
Treatment Period (coh)	---	0.0216*** (0.0020)	---	-0.0011 (0.0020)
DID (imm x coh)	---	0.0702*** (0.0116)	---	-0.0572*** (0.0119)
Residence in Rural Area	-0.0679*** (0.0020)	-0.0683*** (0.0021)	-0.0700*** (0.0021)	-0.0702*** (0.0021)
Married	0.1572*** (0.0022)	0.1619*** (0.0022)	0.1767*** (0.0022)	0.1800*** (0.0022)
Visible Minority	-0.0909*** (0.0055)	-0.0674*** (0.0061)	-0.0880*** (0.0045)	-0.0697*** (0.0047)
Official Language Ability	0.0177*** (0.0049)	0.0010 (0.0052)	0.0166*** (0.0048)	0.0020 (0.0051)
High School Equivalent	0.0914*** (0.0029)	0.0928*** (0.0029)	0.0933*** (0.0031)	0.0956*** (0.0032)
Some College	0.2066*** (0.0027)	0.2065*** (0.0028)	0.2220*** (0.0030)	0.2243*** (0.0030)
University Degree	0.4310*** (0.0035)	0.4348*** (0.0036)	0.4512*** (0.0037)	0.4578*** (0.0038)
Graduate Degree	0.5608*** (0.0054)	0.5585*** (0.0056)	0.5766*** (0.0056)	0.5801*** (0.0059)
Work Experience	0.0419*** (0.0004)	0.0429*** (0.0005)	0.0406*** (0.0004)	0.0414*** (0.0005)
Work Experience ²	-0.0007*** (0.0001)	-0.0007*** (0.0001)	-0.0007*** (0.0001)	-0.0007*** (0.0001)
Income Top Code	1.0959*** (0.0094)	1.0857*** (0.0095)	1.0705*** (0.0079)	1.0630*** (0.0079)
Income Bottom Code	-1.2818*** (0.0047)	-1.2884*** (0.0048)	-1.2272*** (0.0052)	-1.2795*** (0.0053)
Imm x Residence in Rural Area	---	0.0745*** (0.0224)	---	0.0634** (0.0280)
Imm x Married	---	-0.1225*** (0.0140)	---	-0.1527*** (0.0151)
Imm x Visible Minority	---	-0.1152*** (0.0140)	---	-0.1177*** (0.0140)
Imm x Official Language Ability	---	0.1075*** (0.0153)	---	0.1128*** (0.0158)
Imm x High School Equivalent	---	-0.0914*** (0.0186)	---	-0.0925*** (0.0227)

Table A.4 continued

Imm x Some College	---	-0.0821*** (0.0177)	---	-0.1197*** (0.0216)
Imm x University Degree	---	-0.1670*** (0.0183)	---	-0.1750*** (0.0210)
Imm x Graduate Degree	---	-0.0946*** (0.0212)	---	-0.1451*** (0.0233)
Imm x Work Experience	---	-0.0235*** (0.0029)	---	-0.0180*** (0.0031)
Imm x Work Experience ²	---	0.0003*** (0.0007)	---	0.0001*** (0.0001)
Imm x Income Top Code		0.2779*** (0.0707)		0.3198*** (0.0667)
Imm x Income Bottom Code		0.1710*** (0.0202)		0.0830*** (0.0231)
Observations (N)	207608	207608	211804	211804
R ²	0.4777	0.4804	0.4666	0.4689

Notes. *, **, *** represents 10%, 5% and 1% significance levels, respectively. Less than a high school education is the omitted education category variable. The model includes an intercept term, controls for rural residence, marital status, visible minority status, official language knowledge, income bottom code and income top code.

Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

Table A.5 Complete OLS Results for Equation (1): Female Landed Immigrants

	1996 - 2001		2001-2006	
	Baseline	Full Equation	Baseline	Full Equation
Intercept	5.8331*** (0.0068)	5.8795*** (0.0071)	5.8633*** (0.0071)	5.8628*** (0.0074)
Immigrant Status (imm)	-0.2592*** (0.0085)	0.0677 (0.0337)	-0.3142*** (0.0084)	0.2107*** (0.0362)
Treatment Period (coh)	---	0.0221*** (0.0022)	---	0.0054** (0.0022)
DID (imm x coh)	---	0.0546*** (0.0134)	---	-0.0882*** (0.0142)
Residence in Rural Area	-0.1349*** (0.0022)	-0.1346*** (0.0022)	-0.1450*** (0.0023)	-0.1442*** (0.0023)
Married	-0.0156*** (0.0023)	0.0157*** (0.0023)	0.0067*** (0.0023)	0.0076*** (0.0023)

Table A.5 continued

Visible Minority	-0.0081 (0.0060)	-0.0021 (0.0066)	-0.0167*** (0.0049)	-0.0068 (0.0051)
Official Language Ability	-0.0050 (0.0051)	-0.0224*** (0.0054)	-0.0085* (0.0051)	-0.0229 (0.0053)
High School Equivalent	0.1159*** (0.0034)	0.1172*** (0.0034)	0.1391*** (0.0038)	0.1414*** (0.0038)
Some College	0.2359*** (0.0033)	0.2365*** (0.0033)	0.2663*** (0.0037)	0.2690*** (0.0037)
University Degree	0.5679*** (0.0039)	0.5740*** (0.0040)	0.6201*** (0.0042)	0.6294*** (0.0043)
Graduate Degree	0.7981*** (0.0066)	0.8021*** (0.0068)	0.8464*** (0.0065)	0.8610*** (0.0067)
Work Experience	0.0361*** (0.0004)	0.0367*** (0.0005)	0.0345*** (0.0005)	0.0350*** (0.0005)
Work Experience ²	-0.0007*** (0.0001)	-0.0007*** (0.0001)	-0.0006*** (0.0001)	-0.0006*** (0.0001)
Income Bottom Code	-1.0026*** (0.0037)	-1.0054*** (0.0038)	-1.0200*** (0.0041)	-1.0220*** (0.0042)
Imm x Residence in Rural Area	---	0.0474* (0.0256)	---	0.0350 (0.0324)
Imm x Married	---	0.0206 (0.0146)	---	-0.0501*** (0.0162)
Imm x Visible Minority	---	-0.0751*** (0.0166)	---	-0.1022*** (0.0167)
Imm x Official Language Ability	---	0.1576*** (0.0171)	---	0.1623*** (0.0183)
Imm x High School Equivalent	---	-0.0707*** (0.0208)	---	-0.1123*** (0.0261)
Imm x Some College	---	-0.0861*** (0.0205)	---	-0.1490*** (0.0252)
Imm x University Degree	---	-0.2794*** (0.0215)	---	-0.3330*** (0.0249)
Imm x Graduate Degree	---	-0.2237*** (0.0287)	---	-0.3803*** (0.0297)
Imm x Work Experience	---	-0.0204*** (0.0031)	---	-0.0179*** (0.0033)
Imm x Work Experience ²	---	0.0003*** (0.0008)	---	0.0002*** (0.0001)
Imm x Income Bottom Code		0.1221*** (0.0194)		0.0927*** (0.0214)
Observations (N)	173363	173363	181763	181763
R ²	0.4580	0.4599	0.4363	0.4384

Notes: *, **, *** represents 10%, 5% and 1% significance levels, respectively. Less than a high school education is the omitted education category variable

Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

Table A.6 Complete OLS Results for Equation (1): Male Temporary Foreign Workers

	1996 - 2001		2001-2006	
	Baseline	Full Equation	Baseline	Full Equation
Intercept	6.0540*** (0.0065)	6.0482*** (0.0067)	6.0576*** (0.0067)	6.0633*** (0.0068)
Immigrant Status (imm)	-0.0898*** (0.0174)	-0.0604 (0.0906)	-0.1398*** (0.0153)	-0.0010 (0.0843)
Treatment Period (coh)	---	0.0216*** (0.0020)	---	-0.0011 (0.0020)
DID (imm x coh)	---	0.0393 (0.0352)	---	-0.0907*** (0.0308)
Residence in Rural Area	-0.0683*** (0.0021)	-0.0683*** (0.0021)	-0.0705*** (0.0021)	-0.0702*** (0.0021)
Married	0.1593*** (0.0022)	0.1619*** (0.0022)	0.1795*** (0.0022)	0.1800*** (0.0022)
Visible Minority	-0.0695 (0.0060)	-0.0674 (0.0061)	-0.0757*** (0.0047)	-0.0697*** (0.0047)
Official Language Ability	0.0074 (0.0051)	0.0010 (0.0052)	0.0089* (0.0051)	0.0020 (0.0051)
High School Equivalent	0.0939*** (0.0029)	0.0928*** (0.0029)	0.0957*** (0.0031)	0.0956*** (0.0032)
Some College	0.2081*** (0.0028)	0.2065*** (0.0028)	0.2243*** (0.0030)	0.2243*** (0.0030)
University Degree	0.4368*** (0.0036)	0.4348*** (0.0036)	0.4583*** (0.0038)	0.4578*** (0.0038)
Graduate Degree	0.5598*** (0.0055)	0.5585*** (0.0056)	0.5826*** (0.0058)	0.5801*** (0.0059)
Work Experience	0.0427*** (0.0005)	0.0429*** (0.0005)	0.04132*** (0.0005)	0.0414*** (0.0005)
Work Experience ²	-0.0007*** (0.0001)	-0.0007*** (0.0001)	-0.0007*** (0.0001)	-0.0007*** (0.0001)
Income Top Code	1.0888*** (0.0094)	1.0857*** (0.0095)	1.0631*** (0.0078)	1.0630*** (0.0079)
Income Bottom Code	-1.2895*** (0.0048)	-1.2885*** (0.0048)	-1.2798*** (0.0053)	-1.2795*** (0.0053)
Imm x Residence in Rural Area	---	-0.0246 (0.0501)	---	-0.1136** (0.0442)
Imm x Married	---	-0.1758 (0.0371)	---	-0.0946*** (0.0334)
Imm x Visible Minority	---	-0.1699*** (0.0408)	---	-0.1858*** (0.0356)
Imm x Official Language Ability	---	0.2271*** (0.0402)	---	0.1923*** (0.0353)

Table A.6 continued

Imm x High School Equivalent	---	0.1548** (0.0716)	---	0.1389** (0.0667)
Imm x Some College	---	0.0186 (0.0671)	---	-0.0083 (0.0613)
Imm x University Degree	---	0.1100* (0.0626)	---	0.0510 (0.0599)
Imm x Graduate Degree	---	0.0558 (0.0642)	---	0.0846 (0.0618)
Imm x Work Experience	---	-0.0092 (0.0085)	---	-0.0070 (0.0073)
Imm x Work Experience ²	---	0.0003 (0.0003)	---	0.0001 (0.0002)
Imm x Income Top Code	---	-0.0634 (0.0712)	---	-0.0056 (0.0631)
Imm x Income Bottom Code	---	-0.0504 (0.0615)	---	-0.0432 (0.0614)
Observations (N)	201941	201941	206417	206417
R ²	0.4770	0.4776	0.4680	0.4683

Notes: Notes: *, **, *** represents 10%, 5% and 1% significance levels, respectively. Less than a high school education is the omitted education category variable

Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

Table A.7 Complete OLS Results for Equation (1): Female Temporary Foreign Workers

	1996 - 2001		2001-2006	
	Baseline	Full Equation	Baseline	Full Equation
Intercept	5.8864*** (0.0070)	5.8795*** (0.0071)	5.8613*** (0.0073)	5.8628*** (0.0074)
Immigrant Status (imm)	-0.3086*** (0.0218)	0.0404 (0.1062)	-0.3722*** (0.0187)	0.2510** (0.1114)
Treatment Period (coh)	---	0.0221*** (0.0022)	---	0.0054** (0.0022)
DID (imm x coh)	---	0.0362 (0.0442)	---	-0.0480 (0.0392)
Residence in Rural Area	-0.1345*** (0.0022)	-0.1346*** (0.0022)	-0.1442*** (0.0023)	-0.1442*** (0.0023)
Married	0.0171*** (0.0023)	-0.0157*** (0.0023)	0.0074*** (0.0023)	0.0075*** (0.0023)

Table A7 continued

Visible Minority	-0.0006 (0.0007)	0.0021 (0.0066)	-0.0136*** (0.0051)	-0.0068 (0.0051)
Official Language Ability	-0.0168*** (0.0054)	-0.0224*** (0.0054)	-0.0174*** (0.0053)	-0.0229*** (0.0053)
High School Equivalent	0.1178*** (0.0034)	0.1172*** (0.0034)	0.1421*** (0.0038)	0.1414*** (0.0038)
Some College	0.2378*** (0.0033)	0.2365*** (0.0033)	0.2697*** (0.0037)	0.2690*** (0.0037)
University Degree	0.5755*** (0.0040)	0.5740*** (0.0040)	0.6291*** (0.0043)	0.6294*** (0.0043)
Graduate Degree	0.8043*** (0.0068)	0.8021*** (0.0068)	0.8623*** (0.0067)	0.8606*** (0.0067)
Work Experience	0.0366*** (0.0005)	0.0367*** (0.0005)	0.0349*** (0.0005)	0.0350*** (0.0005)
Work Experience ²	-0.0007*** (0.0001)	-0.0007*** (0.0001)	-0.0006*** (0.0001)	-0.0006*** (0.0001)
Income Bottom Code	-1.0053*** (0.0038)	-1.0054*** (0.0038)	-1.0215*** (0.0042)	-1.0220*** (0.0042)
Imm x Residence in Rural Area	---	-0.0837 (0.0692)	---	0.1395** (0.0606)
Imm x Married	---	-0.0703 (0.0442)	---	-0.0056 (0.0387)
Imm x Visible Minority	---	-0.2894*** (0.0549)	---	-0.3646*** (0.0481)
Imm x Official Language Ability	---	0.3294*** (0.0561)	---	0.1739*** (0.0466)
Imm x High School Equivalent	---	-0.0696 (0.0830)	---	-0.1106 (0.1010)
Imm x Some College	---	-0.1154 (0.0768)	---	-0.2471*** (0.0946)
Imm x University Degree	---	-0.2548*** (0.0776)	---	-0.4413*** (0.0944)
Imm x Graduate Degree	---	-0.3504*** (0.0903)	---	-0.4455*** (0.1027)
Imm x Work Experience	---	-0.0113 (0.0089)	---	-0.0112 (0.0081)
Imm x Work Experience ²	---	0.0001 (0.0003)	---	0.0001 (0.0002)
Imm x Income Bottom Code	---	0.2389*** (0.0600)	---	0.0778 (0.0565)
Observations (N)	169178	169178	177899	177899
R ²	0.4577	0.4585	0.4365	0.4372

Notes: *, **, *** represents 10%, 5% and 1% significance levels, respectively. Less than a high school education is the omitted education category variable

Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

Table A.8 Complete OLS Results for Equation (2): Landed Immigrants

	Males		Females	
	1996-2001 (1)	2001-2006 (2)	1996-2001 (3)	2001-2006 (4)
Intercept	6.0682*** (0.0068)	6.0902*** (0.0069)	5.9144*** (0.0073)	5.8933*** (0.0075)
Immigrant Status	0.1617*** (0.0295)	0.2739*** (0.0317)	0.0218 (0.0345)	0.2386*** (0.0372)
Treatment Period	0.0307*** (0.0034)	-0.0113*** (0.0034)	0.0216*** (0.0036)	0.0137*** (0.0037)
DID (imm x coh)	0.0996*** (0.0151)	-0.0719*** (0.0156)	0.0776*** (0.0178)	-0.1141*** (0.0187)
High School Equivalent	0.0906*** (0.0029)	0.0917*** (0.0031)	0.1133*** (0.0034)	0.1369*** (0.0038)
Some College	0.2079*** (0.0027)	0.2283*** (0.0030)	0.2383*** (0.0033)	0.2732*** (0.0037)
University Degree	0.4372*** (0.0035)	0.4625*** (0.0038)	0.5735*** (0.0039)	0.6318*** (0.0043)
Graduate Degree	0.5607*** (0.0055)	0.5858*** (0.0058)	0.7989*** (0.0067)	0.8620*** (0.0067)
Work Experience	0.0432*** (0.0004)	0.0421*** (0.0005)	0.0371*** (0.0005)	0.0356*** (0.0005)
Work Experience ²	-0.0008*** (0.0001)	-0.0007*** (0.0001)	-0.0007*** (0.0001)	-0.0006*** (0.0001)
Residence in Rural Area	-0.0492*** (0.0021)	-0.0476*** (0.0022)	-0.1196*** (0.0023)	-0.1251*** (0.0024)
Married	0.1544*** (0.0022)	0.1671*** (0.0022)	-0.0234*** (0.0023)	-0.0046** (0.0023)
Visible Minority	-0.0832*** (0.0061)	-0.0842*** (0.0047)	-0.0097 (0.0066)	-0.0183*** (0.0051)
Official Language	0.0175*** (0.0052)	0.0161*** (0.0051)	-0.0050 (0.0054)	-0.0066 (0.0038)
British Columbia	0.0407*** (0.0048)	-0.0058 (0.0048)	0.0131** (0.0053)	-0.0011 (0.0053)
Alberta	-0.0261*** (0.0051)	0.0110*** (0.0047)	-0.0891*** (0.0056)	-0.0503*** (0.0053)
Saskatchewan	-0.1030*** (0.0081)	-0.1249*** (0.0080)	-0.1400*** (0.0085)	-0.1405*** (0.0084)
Manitoba	-0.1338*** (0.0078)	-0.1474*** (0.0074)	-0.1285*** (0.0084)	-0.1256*** (0.0081)
Quebec	-0.0945*** (0.0038)	-0.1095*** (0.0040)	-0.1043** (0.0040)	-0.1056*** (0.0040)
Atlantic Provinces	-0.1549*** (0.0056)	-0.1902*** (0.0055)	-0.1372*** (0.0060)	-0.1414*** (0.0059)

Table A.8 continued

Income Top Code	1.0633*** (0.0094)	1.0437*** (0.0078)	N/A	N/A
Income Bottom Code	-1.2846*** (0.0048)	-1.2753*** (0.0053)	-1.0021*** (0.0038)	-1.0209*** (0.0042)
Imm * High School Equivalent	-0.0881*** (0.0184)	-0.0951*** (0.0225)	-0.0713*** (0.0206)	-0.1156*** (0.0260)
Imm * Some College	-0.0803*** (0.0175)	-0.1174*** (0.0214)	-0.0922*** (0.0204)	-0.1566*** (0.0251)
Imm* University Degree	-0.1721*** (0.0181)	-0.1818*** (0.0208)	-0.2853*** (0.0214)	-0.3413*** (0.0248)
Imm * Graduate Degree	-0.1014*** (0.0210)	-0.1567*** (0.0231)	-0.2226*** (0.0285)	-0.3863*** (0.0296)
Imm * Work Experience	-0.0232*** (0.0029)	-0.0174*** (0.0031)	-0.0209*** (0.0030)	-0.0186*** (0.0033)
Imm * Work Experience ²	0.0003*** (0.0008)	0.0001*** (0.0001)	0.0003*** (0.0001)	0.0002** (0.0009)
Imm * Residence in Rural Area	0.0675*** (0.0230)	0.0417** (0.0285)	0.0367 (0.0265)	0.0194 (0.0339)
Imm * Married	-0.1203*** (0.0139)	-0.1517*** (0.0150)	0.0216 (0.0145)	-0.0467*** (0.0161)
Imm * Visible Minority	-0.1049*** (0.0140)	-0.1176*** (0.0140)	-0.0745*** (0.0166)	-0.1058*** (0.0168)
Imm * Official Language	0.0935*** (0.0153)	0.1042*** (0.0156)	0.1479*** (0.0171)	0.1541*** (0.0182)
Imm * Income Top Code	0.3118* (0.0703)	0.3232*** (0.0661)	N/A	N/A
Imm * Income Bottom Code	0.1765*** (0.0201)	0.0883*** (0.0228)	0.1223** (0.0193)	0.0939*** (0.0212)
Imm * British Columbia	-0.0323 (0.0218)	-0.1215*** (0.0222)	0.0305 (0.0241)	-0.0249 (0.0258)
Imm * Alberta	-0.0730** (0.0313)	-0.0770** (0.0324)	-0.0176 (0.0328)	-0.0585 (0.0369)
Imm* Saskatchewan	0.0582 (0.1118)	-0.0551 (0.1019)	0.2269** (0.1080)	0.0399 (0.1112)
Imm * Manitoba	-0.0676 (0.0525)	-0.1476** (0.0646)	-0.0727 (0.0666)	0.0444 (0.0676)
Imm * Quebec	0.0046 (0.0250)	-0.0916*** (0.0249)	0.0110 (0.0315)	-0.0790** (0.0318)
Imm * Atlantic Provinces	0.1660** (0.0707)	0.1906* (0.0980)	0.0981 (0.0986)	0.1006 (0.1019)
Treatment Period * British Columbia	-0.0468*** (0.0067)	-0.0016** (0.0067)	-0.0161** (0.0073)	-0.0612*** (0.0075)
Treatment Period * Alberta	0.0368*** (0.0068)	0.0786*** (0.0067)	0.0357*** (0.0075)	0.0453*** (0.0075)

Table A.8 continued

Treatment Period *	-0.0222**	0.0415***	-0.0028	0.0387***
Saskatchewan	(0.0112)	(0.0116)	(0.0116)	(0.0120)
Treatment Period * Manitoba	-0.0148	0.0109	0.0001	0.0188
	(0.0106)	(0.0108)	(0.0114)	(0.0116)
Treatment Period * Quebec	-0.0169***	-0.0007	-0.0031	-0.0225***
	(0.0005)	(0.005)	(0.0055)	(0.0056)
Treatment Period * Atlantic Provinces	-0.0332***	-0.0021	-0.0068	-0.0297***
	(0.0076)	(0.0078)	(0.0081)	(0.0083)
DID British Columbia	-0.0919***	0.0899***	-0.0541	0.0762**
	(0.0305)	(0.0325)	(0.0341)	(0.0372)
DID Alberta	-0.0095	0.0776*	-0.0407	0.0874*
	(0.0440)	(0.0429)	(0.0477)	(0.0507)
DID Saskatchewan	-0.1257	-0.1587	-0.1960	0.1639
	(0.1483)	(0.2270)	(0.1505)	(0.2061)
DID Manitoba	-0.0777	0.0927	0.1146	-0.0205
	(0.0814)	(0.0871)	(0.0923)	(0.0947)
DID Quebec	-0.0907**	0.0216	-0.0728*	0.0917**
	(0.0346)	(0.0340)	(0.0435)	(0.0428)
DID Atlantic Provinces	0.0068	-0.0379	0.0001	-0.0351
	(0.1165)	(0.4630)	(0.1351)	(0.2510)
Observations (N)	207608	211804	173363	181763
R ²	0.4911	0.4822	0.4689	0.4474

Notes: *, **, *** represents 10%, 5% and 1% significance levels, respectively. Less than a high school education is the omitted education category variable. Ontario is the reference province.

Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

Table A.9 Complete OLS Results for Equation (2): Temporary Foreign Workers

	Males		Females	
	1996-2001 (1)	2001-2006 (2)	1996-2001 (3)	2001-2006 (4)
Intercept	6.0682*** (0.0068)	6.0902*** (0.0069)	5.9144*** (0.0073)	5.8933*** (0.0075)
Immigrant Status	0.0263 (0.0987)	0.0014 (0.0866)	0.0149 (0.1106)	0.2386** (0.0372)
Treatment Period	0.0307*** (0.0034)	-0.0113*** (0.0034)	0.0216*** (0.0036)	0.0137*** (0.0037)

Table A.9 continued

DID (imm x coh)	-0.0031 (0.0534)	-0.1572*** (0.0442)	0.0405 (0.0732)	-0.0858 (0.0627)
High School Equivalent	0.0906*** (0.0029)	0.0917*** (0.0031)	0.1133*** (0.0034)	0.1369*** (0.0038)
Some College	0.2079*** (0.0027)	0.2283*** (0.0030)	0.2383*** (0.0033)	0.2732*** (0.0037)
University Degree	0.4372*** (0.0035)	0.4625*** (0.0038)	0.5735*** (0.0039)	0.6318*** (0.0043)
Graduate Degree	0.5607*** (0.0055)	0.5858*** (0.0058)	0.7989*** (0.0067)	0.8620*** (0.0067)
Work Experience	0.0432*** (0.0004)	0.0421*** (0.0005)	0.0371*** (0.0005)	0.0356*** (0.0005)
Work Experience ²	-0.0008*** (0.0001)	-0.0007*** (0.0001)	-0.0007*** (0.0001)	-0.0006*** (0.0001)
Residence in Rural Area	-0.0492*** (0.0021)	-0.0476*** (0.0022)	-0.1196*** (0.0023)	-0.1251*** (0.0024)
Married	0.1544*** (0.0022)	0.1671*** (0.0022)	-0.0234*** (0.0023)	-0.0046** (0.0023)
Visible Minority	-0.0832*** (0.0061)	-0.0842*** (0.0047)	-0.0097 (0.0066)	-0.0183*** (0.0051)
Official Language	0.0175*** (0.0052)	0.0161*** (0.0051)	-0.0050 (0.0054)	-0.0066 (0.0038)
British Columbia	0.0407*** (0.0048)	-0.0058 (0.0048)	0.0131** (0.0053)	-0.0011 (0.0053)
Alberta	-0.0261*** (0.0051)	0.0110*** (0.0047)	-0.0891*** (0.0056)	-0.0503*** (0.0053)
Saskatchewan	-0.1030*** (0.0081)	-0.1249*** (0.0080)	-0.1400*** (0.0085)	-0.1405*** (0.0084)
Manitoba	-0.1338*** (0.0078)	-0.1474*** (0.0074)	-0.1285*** (0.0084)	-0.1256*** (0.0081)
Quebec	-0.0945*** (0.0038)	-0.1095*** (0.0040)	-0.1043** (0.0040)	-0.1056*** (0.0040)
Atlantic Provinces	-0.1549*** (0.0056)	-0.1902*** (0.0055)	-0.1372*** (0.0060)	-0.1414*** (0.0059)
Income Top Code	1.0633*** (0.0094)	1.0437*** (0.0078)	N/A	N/A
Income Bottom Code	-1.2846*** (0.0048)	-1.2753*** (0.0053)	-1.0021*** (0.0038)	-1.0209*** (0.0042)
Imm * High School Equivalent	0.1355* (0.0722)	0.1449** (0.0662)	-0.0511 (0.0833)	-0.1176 (0.1010)
Imm * Some College	-0.0325 (0.0677)	-0.0173 (0.0609)	-0.1004 (0.0770)	-0.2530*** (0.0943)
Imm* University Degree	0.0690 (0.0637)	0.0321 (0.0601)	-0.2255*** (0.0782)	-0.4466*** (0.0944)

Table A.9 continued

Imm * Graduate Degree	0.0249 (0.0655)	0.0794 (0.0620)	-0.3094*** (0.0914)	-0.4150*** (0.1033)
Imm * Work Experience	-0.0066 (0.0085)	-0.0051 (0.0073)	-0.0094 (0.0089)	-0.0093 (0.0082)
Imm * Work Experience ²	0.0002 (0.0003)	0.0004 (0.0002)	0.0003 (0.0003)	0.0002 (0.0002)
Imm * Residence in Rural Area	0.1261** (0.0528)	-0.1525*** (0.0446)	-0.0802 (0.0727)	0.1526** (0.0630)
Imm * Married	-0.1668*** (0.0369)	-0.0764** (0.0332)	-0.0727 (0.0446)	0.0021 (0.0390)
Imm * Visible Minority	-0.1507*** (0.0411)	-0.1656*** (0.0358)	-0.2743*** (0.0556)	- 0.3474*** (0.0485)
Imm * Official Language	0.2061*** (0.0407)	0.1716*** (0.0354)	0.3164*** (0.0573)	0.1582*** (0.0471)
Imm * Income Top Code	-0.0044 (0.0715)	-0.0258 (0.0630)	N/A	N/A
Imm * Income Bottom Code	-0.0673 (0.0612)	-0.0526 (0.0608)	0.2237*** (0.0609)	0.0728 (0.0567)
Imm * British Columbia	-0.1395* (0.0218)	-0.0420 (0.0688)	-0.1365* (0.0775)	0.0882 (0.0831)
Imm * Alberta	0.1997** (0.0990)	-0.0259 (0.0840)	0.0859 (0.1049)	-0.0980 (0.0911)
Imm * Saskatchewan	0.0781 (0.2042)	-0.4125** (0.1752)	0.2696 (0.2092)	0.0334 (0.4567)
Imm * Manitoba	0.0920 (0.1506)	0.1601 (0.1754)	-0.4866 (0.3193)	-0.2557 (0.1959)
Imm * Quebec	-0.2724*** (0.0695)	-0.0102 (0.0584)	0.0738 (0.0897)	0.0332 (0.0862)
Imm * Atlantic Provinces	0.5608** (0.1429)	0.3837** (0.1492)	-0.0828 (0.4534)	-0.1887 (0.2155)
Treatment Period * British Columbia	-0.0468*** (0.0067)	-0.0016** (0.0067)	-0.0161** (0.0073)	-0.0612*** (0.0075)
Treatment Period * Alberta	0.0368*** (0.0068)	0.0786*** (0.0067)	0.0357*** (0.0075)	0.0453*** (0.0075)
Treatment Period * Saskatchewan	-0.0222** (0.0112)	0.0415*** (0.0116)	-0.0028 (0.0116)	0.0387*** (0.0120)
Treatment Period * Manitoba	-0.0148 (0.0106)	0.0109 (0.0108)	0.0001 (0.0114)	0.0188 (0.0116)
Treatment Period * Quebec	-0.0169*** (0.0005)	-0.0007 (0.005)	-0.0031 (0.0055)	-0.0225*** (0.0056)
Treatment Period * Atlantic Provinces	-0.0332*** (0.0076)	-0.0021 (0.0078)	-0.0068 (0.0081)	-0.0297*** (0.0083)
DID British Columbia	0.0833 (0.0990)	0.1339 (0.0875)	0.1746 (0.1335)	0.0162 (0.1031)

Table A.9 continued

DID Alberta	-0.2347* (0.1279)	0.0998 (0.1055)	-0.1746 (0.1335)	0.1283 (0.1130)
DID Saskatchewan	-0.4321 (0.2631)	0.4625** (0.2271)	-0.4266 (0.4863)	-0.1145 (0.4837)
DID Manitoba	0.1080 (0.2269)	-0.2521 (0.2181)	0.3097 (0.3702)	0.1984 (0.3037)
DID Quebec	0.2057*** (0.0891)	0.1673** (0.0798)	-0.0902 (0.1211)	0.0160 (0.1102)
DID Atlantic Provinces	-0.2766 (0.1976)	0.0581 (0.3028)	-0.0022 (0.4993)	0.0818 (0.2985)
Observations (N)	201941	206417	169178	177899
R ²	0.4885	0.4816	0.4676	0.4463

Notes: *, **, *** represents 10%, 5% and 1% significance levels, respectively. Less than a high school education is the omitted education category variable. Ontario is the reference province.

Source: 2006, 2001 and 1996 Census Public Use Microdata Files, Statistics Canada

Appendix B

CHAPTER 3 GOODNESS OF FIT

After completing all estimations, I ran the Breusch-Pagan test to determine if any heteroscedasticity existed in my results. In all estimations of equation (1) and equation (2), I find the overall models are heteroskedastic, but not all variables within the model are heteroskedastic. In an effort to address this issue, I began by removing the work experience variables, since they are the only continuous independent variables contained in the model. After this failed to address the issue, I ran two forms of weighted least squares (WLS) using the squared and absolute residuals. Despite these efforts, WLS failed to address the issue of heteroscedasticity. I further examined the functional form of the model by weighting the estimations with different computations of residuals. These also failed to address the issue.

I then examined the dependent variable and found that the distribution was significantly different between the cohorts over time. To normalize these distribution patterns, I took the natural log and top and bottom coded the dependent variable. Again despite these efforts, the issue of heteroscedasticity continued to persist. However, I find that in most instances the interaction of the immigrant dummy with the treatment period (imm x coh) variable is not heteroskedastic. Since this interaction term is of greatest interest, the issue appears to be second or third order. As a result, I interpret some of the variables with caution as they might be downward bias.

Appendix C

CHAPTER 3 ALTERNATE NATIVE SAMPLE SPECIFICATION

One potential issue with the control group used in my estimations is that the sample includes all native-born individuals aged 18-54 with positive earnings regardless of when they entered the labor market. Using this sample as the comparison group assumes that the labor market conditions encountered by the immigrant cohorts had no impact on earnings. However, prior research has determined that immigrant earnings are sensitive to changes in the labor market within the first few years of entry into Canada (Aydemir & Skuterud, 2005; Green & Worswick, 2010). Green and Worswick (2010) suggest that native-born individuals entering the labor market at the same time as the immigrant cohorts provides a better comparison group that can account for macro movements in the Canadian labor market.

To address this potential issue, I created an alternative native-born sample for each of the three cohort years. I use work experience and mobility data to restrict the native-born sample to individuals that entered the labor market within the same five year period used to create the three immigrant cohorts. For example, I create a 1996 native cohort that includes individuals that entered the labor market between 1990 and 1995. If age minus years of schooling minus six is five or less then the individual entered the labor market within the last 5 years and is included in the 1996 cohort. I

also assume that all individuals that moved between provinces within this five-year period changed labor markets and include them in the 1996 cohort.

For the most part, the dependent and all independent variables remain the same, including the interaction terms. The only change was that I removed the quadratic of work experience. Since the new native cohorts primarily consist of individuals with 5 years or less of work experience, I assume a linear relationship between earnings and work experience. I also assume the same relationship exists for landed immigrants and temporary workers given that prior research has found immigrant work experience obtained prior to arrival in Canada is essentially worthless (Warman, 2005; Warman, 2007; Aydemir & Skuterud, 2005). As a result, any work experience gained by immigrants or natives in the first five years does not have any diminishing return in value.

I re-estimated equation (1) for both temporary workers and landed immigrants by gender. My results from the 1996-2001 cohorts show no significant change in entry earnings for either group. I also found no significant change in entry earnings for the 2001-2006 cohorts. The absence of any significant estimates suggests that the policy changes introduced by the government in 1996 and 2002 had no effect on immigrant entry earnings in comparison to natives entering the labor market at the same time. However, I did find that the treatment period variable was significant in all my re-estimations. This suggests that a change in earnings occurred between the two cohorts (or time periods), and that the change was similar for both natives and immigrants.

Appendix D

FULL ESTIMATION RESULTS FROM CHAPTER 4

Table D.1 Employment Differentials between Native-born and Immigrant Males in Canada, 1993-2011

Response Profiles				
Order	Employment Status	Observations		
1	1	131489		
2	2	14814		
3	3	8475		
4	4	3854		

Parameter	Response Profile	Coefficient Estimate	Standard Error	Odds Ratio
Intercept	2	-0.4591	0.0014	n/a
Intercept	3	-0.5422	0.0016	n/a
Intercept	4	-1.4601	0.0022	n/a
Immigrant Status	2	0.2327	0.0039	1.262
Immigrant Status	3	0.3276	0.0046	1.388
Immigrant Status	4	0.8852	0.0053	2.424
Work Experience	2	-0.1306	0.0001	0.878
Work Experience	3	-0.1615	0.0002	0.851
Work Experience	4	-0.0518	0.0002	0.949
Work Experience2	2	0.0025	0.0000	1.002
Work Experience2	3	0.0033	0.0000	1.003
Work Experience2	4	0.0011	0.0000	1.001
High School Equivalent	2	-0.5228	0.0014	0.593
High School Equivalent	3	-0.6217	0.0017	0.537
High School Equivalent	4	-0.9304	0.0020	0.394
Some College	2	-0.5508	0.0012	0.577
Some College	3	-0.6307	0.0014	0.532
Some College	4	-1.2121	0.0017	0.298
Bachelor Degree	2	-0.9649	0.0016	0.381
Bachelor Degree	3	-1.0597	0.0020	0.347
Bachelor Degree	4	-2.0130	0.0032	0.134
Graduate Degree	2	-1.4208	0.0025	0.242

Table D.1 continued

Graduate Degree	3	-1.0256	0.0027	0.359
Graduate Degree	4	-2.0901	0.0046	0.124
Years Since Migration	2	-0.0663	0.0002	0.936
Years Since Migration	3	-0.0676	0.0003	0.935
Years Since Migration	4	-0.1017	0.0003	0.903
Years Since Migration2	2	0.0009	0.0000	1.001
Years Since Migration2	3	0.0008	0.0000	1.001
Years Since Migration2	4	0.0012	0.0000	1.001
imm x Work Experience	2	0.0584	0.0003	1.060
imm x Work Experience	3	0.0535	0.0004	1.055
imm x Work Experience	4	0.0405	0.0005	1.041
imm x Work Experience2	2	-0.0010	0.0000	0.999
imm x Work Experience2	3	-0.0010	0.0000	0.999
imm x Work Experience2	4	-0.0004	0.0000	1.000
imm x High School Equivalent	2	0.1100	0.0034	1.116
imm x High School Equivalent	3	0.3669	0.0043	1.443
imm x High School Equivalent	4	0.4406	0.0043	1.554
imm x Some College	2	0.1268	0.0029	1.135
imm x Some College	3	0.4986	0.0036	1.646
imm x Some College	4	0.6040	0.0037	1.829
imm x Bachelor Degree	2	0.4241	0.0035	1.528
imm x Bachelor Degree	3	0.5430	0.0044	1.721
imm x Bachelor Degree	4	1.2313	0.0051	3.426
imm x Graduate Degree	2	0.4810	0.0044	1.618
imm x Graduate Degree	3	0.3237	0.0052	1.382
imm x Graduate Degree	4	0.7632	0.0069	2.145
Marital Status	2	-0.4560	0.0009	0.634
Marital Status	3	-0.7697	0.0011	0.463
Marital Status	4	-1.1967	0.0014	0.302
Rural Resident	2	0.2441	0.0009	1.277
Rural Resident	3	0.2311	0.0011	1.260
Rural Resident	4	0.1769	0.0014	1.194
Atlantic Provinces	2	0.3864	0.0016	1.472
Atlantic Provinces	3	0.4290	0.0019	1.536
Atlantic Provinces	4	0.3260	0.0027	1.385
Quebec	2	0.2617	0.0010	1.299
Quebec	3	0.1226	0.0012	1.130
Quebec	4	0.5618	0.0014	1.754
Manitoba	2	0.0463	0.0022	1.047
Manitoba	3	-0.1070	0.0028	0.899
Manitoba	4	-0.4979	0.0043	0.608
Saskatchewan	2	0.0378	0.0024	1.039
Saskatchewan	3	-0.0992	0.0031	0.906
Saskatchewan	4	-0.3752	0.0047	0.687

Table D.1 continued

Alberta	2	0.1846	0.0012	1.203
Alberta	3	-0.0482	0.0016	0.953
Alberta	4	-0.9424	0.0030	0.390
British Columbia	2	0.1535	0.0011	1.166
British Columbia	3	0.0589	0.0014	1.061
British Columbia	4	0.0146	0.0018	1.015

Note: Category 1 represents 12 months employed and is the reference category.

Source: 1993 to 2011 Survey of Labour and Income Dynamics, Statistics Canada

Table D.2 Effect of Human Capital by Source on the Employment Outcomes of Native and Immigrant Males in Canada, 1993-2011

Response Profiles				
Order	Employment Status	Observations		
1	1	131489		
2	2	14814		
3	3	8475		
4	4	3854		
Parameter	Employment Status	Coefficient Estimate	Standard Error	Odds Ratio
Intercept	2	-0.4603	0.0014	n/a
Intercept	3	-0.5624	0.0016	n/a
Intercept	4	-1.4930	0.0021	n/a
Immigrant Status	2	0.0485	0.0046	1.050
Immigrant Status	3	0.4622	0.0050	1.588
Immigrant Status	4	0.7555	0.0066	2.129
Foreign Work Experience	2	-0.0005	0.0006	0.999
Foreign Work Experience	3	-0.0085	0.0007	0.992
Foreign Work Experience	4	0.0344	0.0007	1.035
Foreign Work Experience2	2	0.0000	0.0000	1.000
Foreign Work Experience2	3	-0.0003	0.0000	1.000
Foreign Work Experience2	4	0.0007	0.0000	1.001
Canadian Work Experience	2	-0.1306	0.0001	0.878
Canadian Work Experience	3	-0.1617	0.0002	0.851
Canadian Work Experience	4	-0.0519	0.0002	0.949
Canadian Work Experience2	2	0.0025	0.0000	1.002
Canadian Work Experience2	3	0.0033	0.0000	1.003
Canadian Work Experience2	4	0.0012	0.0000	1.001
imm x Canadian Work Experience	2	0.0048	0.0005	1.005

Table D.2 continued

imm x Canadian Work Experience	3	-0.0017	0.0005	0.998
imm x Canadian Work Experience	4	-0.0258	0.0007	0.975
imm x Canadian Work Experience2	2	0.0006	0.0000	1.001
imm x Canadian Work Experience2	3	0.0007	0.0000	1.001
imm x Canadian Work Experience2	4	0.0012	0.0000	1.001
Canadian x Foreign Work Experience	2	0.0002	0.0000	1.000
Canadian x Foreign Work Experience	3	0.0025	0.0000	1.002
Canadian x Foreign Work Experience	4	-0.0028	0.0000	0.997
High School Equivalent	2	-0.5222	0.0014	0.593
High School Equivalent	3	-0.5782	0.0017	0.561
High School Equivalent	4	-0.9192	0.0020	0.399
Some College	2	-0.5598	0.0011	0.571
Some College	3	-0.6144	0.0014	0.541
Some College	4	-1.1940	0.0016	0.303
Bachelor Degree	2	-0.9297	0.0015	0.395
Bachelor Degree	3	-1.0390	0.0019	0.354
Bachelor Degree	4	-1.8301	0.0028	0.160
Graduate Degree	2	-1.4199	0.0024	0.242
Graduate Degree	3	-1.0184	0.0026	0.361
Graduate Degree	4	-1.9702	0.0041	0.139
Foreign Education	2	-0.3128	0.0048	0.731
Foreign Education	3	-0.6591	0.0058	0.517
Foreign Education	4	-0.3108	0.0061	0.733
Foreign Education x High School Equivalent	2	0.1366	0.0040	1.146
Foreign Education x High School Equivalent	3	0.1224	0.0052	1.130
Foreign Education x High School Equivalent	4	0.4531	0.0048	1.573
Foreign Education x Some College	2	0.2051	0.0035	1.228
Foreign Education x Some College	3	0.5634	0.0043	1.757
Foreign Education x Some College	4	0.6113	0.0042	1.843
Foreign Education x Bachelor Degree	2	0.3638	0.0042	1.439
Foreign Education x Bachelor Degree	3	0.5480	0.0053	1.730
Foreign Education x Bachelor Degree	4	0.9438	0.0057	2.570
Foreign Education x Graduate Degree	2	0.6257	0.0049	1.870
Foreign Education x Graduate Degree	3	0.3192	0.0060	1.376
Foreign Education x Graduate Degree	4	0.5622	0.0073	1.754
Years Since Migration	2	-0.0026	0.0005	0.997
Years Since Migration	3	-0.0108	0.0005	0.989
Years Since Migration	4	0.0029	0.0007	1.003
Years Since Migration2	2	-0.0003	0.0000	1.000
Years Since Migration2	3	-0.0003	0.0000	1.000
Years Since Migration2	4	-0.0006	0.0000	0.999
Marital Status	2	-0.4552	0.0009	0.634
Marital Status	3	-0.7686	0.0011	0.464
Marital Status	4	-1.2047	0.0014	0.300

Table D.2 continued

Rural Resident	2	0.2454	0.0009	1.278
Rural Resident	3	0.2313	0.0011	1.260
Rural Resident	4	0.1819	0.0014	1.199
Atlantic Provinces	2	0.3860	0.0016	1.471
Atlantic Provinces	3	0.4295	0.0019	1.536
Atlantic Provinces	4	0.3285	0.0027	1.389
Quebec	2	0.2602	0.0010	1.297
Quebec	3	0.1237	0.0012	1.132
Quebec	4	0.5656	0.0014	1.760
Manitoba	2	0.0450	0.0022	1.046
Manitoba	3	-0.1063	0.0028	0.899
Manitoba	4	-0.4985	0.0043	0.607
Saskatchewan	2	0.0382	0.0024	1.039
Saskatchewan	3	-0.0987	0.0031	0.906
Saskatchewan	4	-0.3739	0.0047	0.688
Alberta	2	0.1855	0.0012	1.204
Alberta	3	-0.0500	0.0016	0.951
Alberta	4	-0.9377	0.0030	0.392
British Columbia	2	0.1556	0.0011	1.168
British Columbia	3	0.0636	0.0014	1.066
British Columbia	4	0.0228	0.0019	1.023

Note: Category 1 represents 12 months employed and is the reference category.

Source: 1993 to 2011 Survey of Labour and Income Dynamics, Statistics Canada

Table D.3 Effect of Mother Tongue and Visible Minority Status on the Employment Outcomes of Native and Immigrant Males in Canada, 1993-2011

Response Profile				
Order	Employment Status	Observations		
1	1	131489		
2	2	14814		
3	3	8475		
4	4	3854		
Parameter	Employment Status	Coefficient Estimate	Standard Error	Odds Ratio
Intercept	2	-0.4654	0.0014	n/a
Intercept	3	-0.5714	0.0017	n/a
Intercept	4	-1.4891	0.0022	n/a
Immigrant Status	2	-0.1182	0.0052	0.889

Table D.3 continued

Immigrant Status	3	0.0969	0.0058	1.102
Immigrant Status	4	0.1781	0.0075	1.195
Foreign Work Experience	2	-0.0005	0.0006	1.000
Foreign Work Experience	3	-0.0062	0.0007	0.994
Foreign Work Experience	4	0.0335	0.0007	1.034
Foreign Work Experience2	2	0.0000	0.0000	1.000
Foreign Work Experience2	3	-0.0004	0.0000	1.000
Foreign Work Experience2	4	0.0008	0.0000	1.001
Canadian Work Experience	2	-0.1302	0.0001	0.878
Canadian Work Experience	3	-0.1605	0.0002	0.852
Canadian Work Experience	4	-0.0487	0.0002	0.952
Canadian Work Experience2	2	0.0025	0.0000	1.002
Canadian Work Experience2	3	0.0033	0.0000	1.003
Canadian Work Experience2	4	0.0012	0.0000	1.001
imm x Canadian Work Experience	2	0.0034	0.0005	1.003
imm x Canadian Work Experience	3	-0.0041	0.0005	0.996
imm x Canadian Work Experience	4	-0.0288	0.0007	0.972
imm x Canadian Work Experience2	2	0.0006	0.0000	1.001
imm x Canadian Work Experience2	3	0.0007	0.0000	1.001
imm x Canadian Work Experience2	4	0.0012	0.0000	1.001
Canadian x Foreign Work Experience	2	0.0001	0.0000	1.000
Canadian x Foreign Work Experience	3	0.0023	0.0000	1.002
Canadian x Foreign Work Experience	4	-0.0028	0.0000	0.997
High School Equivalent	2	-0.5226	0.0014	0.593
High School Equivalent	3	-0.5824	0.0017	0.559
High School Equivalent	4	-0.9402	0.0020	0.391
Some College	2	-0.5602	0.0011	0.571
Some College	3	-0.6211	0.0014	0.537
Some College	4	-1.2186	0.0016	0.296
Bachelor Degree	2	-0.9367	0.0015	0.392
Bachelor Degree	3	-1.0671	0.0019	0.344
Bachelor Degree	4	-1.9043	0.0028	0.149
Graduate Degree	2	-1.4224	0.0024	0.241
Graduate Degree	3	-1.0298	0.0026	0.357
Graduate Degree	4	-2.0204	0.0041	0.133
Foreign Education	2	-0.3173	0.0048	0.728
Foreign Education	3	-0.6971	0.0058	0.498
Foreign Education	4	-0.4208	0.0062	0.657
Foreign Education x High School Equivalent	2	0.1405	0.0040	1.151
Foreign Education x High School Equivalent	3	0.1291	0.0052	1.138
Foreign Education x High School Equivalent	4	0.4712	0.0048	1.602
Foreign Education x Some College	2	0.2216	0.0035	1.248
Foreign Education x Some College	3	0.6083	0.0043	1.837
Foreign Education x Some College	4	0.6930	0.0043	2.000

Table D.3 continued

Foreign Education x Bachelor Degree	2	0.3806	0.0042	1.463
Foreign Education x Bachelor Degree	3	0.5823	0.0053	1.790
Foreign Education x Bachelor Degree	4	1.0752	0.0057	2.931
Foreign Education x Graduate Degree	2	0.6317	0.0049	1.881
Foreign Education x Graduate Degree	3	0.3947	0.0060	1.484
Foreign Education x Graduate Degree	4	0.6866	0.0074	1.987
French Mother Tongue	2	-0.0642	0.0015	0.938
French Mother Tongue	3	-0.1788	0.0019	0.836
French Mother Tongue	4	-0.7123	0.0022	0.490
Other Mother Tongue	2	0.0031	0.0018	1.003
Other Mother Tongue	3	-0.0838	0.0023	0.920
Other Mother Tongue	4	-0.0672	0.0029	0.935
imm x French Mother Tongue	2	0.1803	0.0054	1.198
imm x French Mother Tongue	3	-0.2291	0.0079	0.795
imm x French Mother Tongue	4	0.5730	0.0068	1.774
imm x Other Mother Tongue	2	0.2021	0.0029	1.224
imm x Other Mother Tongue	3	0.2313	0.0035	1.260
imm x Other Mother Tongue	4	-0.0487	0.0042	0.952
Visible Minority	2	0.1021	0.0021	1.108
Visible Minority	3	0.2872	0.0023	1.333
Visible Minority	4	0.5855	0.0030	1.796
imm x Visible Minority	2	-0.1387	0.0028	0.871
imm x Visible Minority	3	-0.0046	0.0033	0.995
imm x Visible Minority	4	0.1426	0.0043	1.153
Years Since Migration	2	0.0013	0.0005	1.001
Years Since Migration	3	-0.0058	0.0005	0.994
Years Since Migration	4	0.0048	0.0007	1.005
Years Since Migration2	2	-0.0003	0.0000	1.000
Years Since Migration2	3	-0.0002	0.0000	1.000
Years Since Migration2	4	-0.0004	0.0000	1.000
Marital Status	2	-0.4550	0.0009	0.634
Marital Status	3	-0.7639	0.0011	0.466
Marital Status	4	-1.1877	0.0014	0.305
Rural Resident	2	0.2526	0.0009	1.287
Rural Resident	3	0.2543	0.0011	1.290
Rural Resident	4	0.2551	0.0014	1.291
Atlantic Provinces	2	0.3879	0.0016	1.474
Atlantic Provinces	3	0.4330	0.0019	1.542
Atlantic Provinces	4	0.2972	0.0027	1.346
Quebec	2	0.3060	0.0015	1.358
Quebec	3	0.2607	0.0018	1.298
Quebec	4	1.0205	0.0019	2.775
Manitoba	2	0.0444	0.0022	1.045
Manitoba	3	-0.1047	0.0028	0.901

Table D.3 continued

Manitoba	4	-0.5089	0.0043	0.601
Saskatchewan	2	0.0354	0.0024	1.036
Saskatchewan	3	-0.1058	0.0031	0.900
Saskatchewan	4	-0.4328	0.0047	0.649
Alberta	2	0.1832	0.0012	1.201
Alberta	3	-0.0527	0.0016	0.949
Alberta	4	-0.9549	0.0030	0.385
British Columbia	2	0.1511	0.0011	1.163
British Columbia	3	0.0456	0.0014	1.047
British Columbia	4	-0.0202	0.0019	0.980

Note: Category 1 represents 12 months employed and is the reference category.

Source: 1993 to 2011 Survey of Labour and Income Dynamics, Statistics Canada

Table D.4 Effects of Changing Macro-Economic Conditions on Immigrant and Native Male Employment Outcomes in Canada, 1993-2011

Response Profile				
Ordered	Employment Status	Observations		
1	1	131489		
2	2	14814		
3	3	8475		
4	4	3854		
Parameter	Employment Status	Coefficient Estimate	Standard Error	Odds Ratios
Intercept	2	-1.1371	0.0024	n/a
Intercept	3	-1.6469	0.0029	n/a
Intercept	4	-3.0635	0.0039	n/a
Immigrant Status	2	-0.2162	0.0083	0.806
Immigrant Status	3	0.4304	0.0096	1.538
Immigrant Status	4	-2.1002	0.0126	0.122
Foreign Work Experience	2	0.0041	0.0006	1.004
Foreign Work Experience	3	0.0001	0.0007	1.000
Foreign Work Experience	4	0.0609	0.0007	1.063
Foreign Work Experience2	2	-0.0001	0.0000	1.000
Foreign Work Experience2	3	-0.0006	0.0000	0.999
Foreign Work Experience2	4	0.0003	0.0000	1.000
Canadian Work Experience	2	-0.1284	0.0001	0.880
Canadian Work Experience	3	-0.1568	0.0002	0.855

Table D.4 continued

Canadian Work Experience	4	-0.0435	0.0002	0.957
Canadian Work Experience2	2	0.0024	0.0000	1.002
Canadian Work Experience2	3	0.0033	0.0000	1.003
Canadian Work Experience2	4	0.0011	0.0000	1.001
imm x Canadian Work Experience	2	0.0033	0.0005	1.003
imm x Canadian Work Experience	3	-0.0026	0.0005	0.997
imm x Canadian Work Experience	4	-0.0236	0.0007	0.977
imm x Canadian Work Experience2	2	0.0006	0.0000	1.001
imm x Canadian Work Experience2	3	0.0006	0.0000	1.001
imm x Canadian Work Experience2	4	0.0013	0.0000	1.001
Canadian x Foreign Work Experience	2	0.0001	0.0000	1.000
Canadian x Foreign Work Experience	3	0.0024	0.0000	1.002
Canadian x Foreign Work Experience	4	-0.0031	0.0000	0.997
High School Equivalent	2	-0.5071	0.0014	0.602
High School Equivalent	3	-0.5579	0.0017	0.572
High School Equivalent	4	-0.9143	0.0020	0.401
Some College	2	-0.5502	0.0011	0.577
Some College	3	-0.6105	0.0014	0.543
Some College	4	-1.1996	0.0016	0.301
Bachelor Degree	2	-0.9178	0.0015	0.399
Bachelor Degree	3	-1.0422	0.0019	0.353
Bachelor Degree	4	-1.8534	0.0028	0.157
Graduate Degree	2	-1.4082	0.0024	0.245
Graduate Degree	3	-1.0084	0.0026	0.365
Graduate Degree	4	-1.9813	0.0041	0.138
Foreign Education	2	-0.3495	0.0048	0.705
Foreign Education	3	-0.7398	0.0058	0.477
Foreign Education	4	-0.6826	0.0063	0.505
Foreign Education x High School Equivalent	2	0.1533	0.0040	1.166
Foreign Education x High School Equivalent	3	0.1430	0.0052	1.154
Foreign Education x High School Equivalent	4	0.5419	0.0049	1.719
Foreign Education x Some College	2	0.2431	0.0035	1.275
Foreign Education x Some College	3	0.6384	0.0043	1.894
Foreign Education x Some College	4	0.8301	0.0044	2.293
Foreign Education x Bachelor Degree	2	0.4119	0.0042	1.510
Foreign Education x Bachelor Degree	3	0.6091	0.0054	1.839
Foreign Education x Bachelor Degree	4	1.3424	0.0058	3.828
Foreign Education x Graduate Degree	2	0.6745	0.0049	1.963
Foreign Education x Graduate Degree	3	0.4432	0.0060	1.558
Foreign Education x Graduate Degree	4	0.9850	0.0074	2.678
French Mother Tongue	2	-0.0621	0.0015	0.940
French Mother Tongue	3	-0.1781	0.0019	0.837
French Mother Tongue	4	-0.6147	0.0023	0.541
Other Mother Tongue	2	0.0110	0.0018	1.011

Table D.4 continued

Other Mother Tongue	3	-0.0734	0.0023	0.929
Other Mother Tongue	4	-0.0116	0.0029	0.988
imm x French Mother Tongue	2	0.1835	0.0054	1.201
imm x French Mother Tongue	3	-0.2280	0.0079	0.796
imm x French Mother Tongue	4	0.5920	0.0069	1.808
imm x Other Mother Tongue	2	0.2126	0.0029	1.237
imm x Other Mother Tongue	3	0.2499	0.0035	1.284
imm x Other Mother Tongue	4	-0.0501	0.0043	0.951
Visible Minority	2	0.1287	0.0021	1.137
Visible Minority	3	0.3303	0.0023	1.391
Visible Minority	4	0.6431	0.0030	1.902
imm x Visible Minority	2	-0.1343	0.0028	0.874
imm x Visible Minority	3	0.0110	0.0034	1.011
imm x Visible Minority	4	0.1815	0.0044	1.199
Unemployment Rate	2	0.0841	0.0002	1.088
Unemployment Rate	3	0.1339	0.0003	1.143
Unemployment Rate	4	0.1953	0.0004	1.216
imm x Unemployment Rate	2	0.0090	0.0008	1.009
imm x Unemployment Rate	3	-0.0495	0.0010	0.952
imm x Unemployment Rate	4	0.2472	0.0011	1.280
Years Since Migration x Unemployment Rate	2	0.0009	0.0000	1.001
Years Since Migration x Unemployment Rate	3	0.0053	0.0001	1.005
Years Since Migration x Unemployment Rate	4	-0.0070	0.0001	0.993
Years Since Migration	2	-0.0069	0.0006	0.993
Years Since Migration	3	-0.0494	0.0006	0.952
Years Since Migration	4	0.0676	0.0009	1.070
Years Since Migration2	2	-0.0003	0.0000	1.000
Years Since Migration2	3	-0.0002	0.0000	1.000
Years Since Migration2	4	-0.0005	0.0000	1.000
Marital Status	2	-0.4736	0.0009	0.623
Marital Status	3	-0.7952	0.0011	0.451
Marital Status	4	-1.2457	0.0014	0.288
Rural Resident	2	0.2409	0.0009	1.272
Rural Resident	3	0.2323	0.0011	1.262
Rural Resident	4	0.2190	0.0014	1.245
Atlantic Provinces	2	-0.0198	0.0020	0.980
Atlantic Provinces	3	-0.2207	0.0024	0.802
Atlantic Provinces	4	-0.6908	0.0033	0.501
Quebec	2	0.1464	0.0015	1.158
Quebec	3	0.0069	0.0019	1.007
Quebec	4	0.5380	0.0021	1.713
Manitoba	2	0.2049	0.0022	1.227
Manitoba	3	0.1463	0.0028	1.158
Manitoba	4	-0.0990	0.0044	0.906

Table D.4 continued

Saskatchewan	2	0.2050	0.0024	1.227
Saskatchewan	3	0.1675	0.0031	1.182
Saskatchewan	4	-0.0187	0.0048	0.981
Alberta	2	0.3588	0.0013	1.432
Alberta	3	0.2199	0.0017	1.246
Alberta	4	-0.5246	0.0031	0.592
British Columbia	2	0.1607	0.0011	1.174
British Columbia	3	0.0645	0.0014	1.067
British Columbia	4	0.0098	0.0019	1.010

Note: Category 1 represents 12 months employed and is the reference category.

Source: 1993 to 2011 Survey of Labour and Income Dynamics, Statistics Canada

Table D.5 Employment Differentials between Native-born and Immigrant Females in Canada, 1993-2011

Response Profiles				
Order	Employment Status	Observations		
1	1	124418		
2	2	13862		
3	3	10844		
4	4	4921		
Parameter	Response Profile	Coefficient Estimate	Standard Error	Odds Ratio
Intercept	2	-0.5727	0.0017	n/a
Intercept	3	-0.5429	0.0017	n/a
Intercept	4	-1.5197	0.0023	n/a
Immigrant Status	2	0.6639	0.0041	1.942
Immigrant Status	3	0.4446	0.0044	1.560
Immigrant Status	4	1.5057	0.0048	4.507
Work Experience	2	-0.1199	0.0001	0.887
Work Experience	3	-0.1117	0.0002	0.894
Work Experience	4	0.0084	0.0002	1.008
Work Experience ²	2	0.0023	0.0000	1.002
Work Experience ²	3	0.0020	0.0000	1.002
Work Experience ²	4	-0.0006	0.0000	0.999
High School Equivalent	2	-0.4474	0.0017	0.639
High School Equivalent	3	-0.6162	0.0017	0.540
High School Equivalent	4	-1.0661	0.0020	0.344

Table D.5 continued

Some College	2	-0.4733	0.0015	0.623
Some College	3	-0.8384	0.0015	0.432
Some College	4	-1.4639	0.0017	0.231
Bachelor Degree	2	-0.8965	0.0018	0.408
Bachelor Degree	3	-1.4703	0.0019	0.230
Bachelor Degree	4	-2.4577	0.0030	0.086
Graduate Degree	2	-1.0816	0.0024	0.339
Graduate Degree	3	-1.6524	0.0028	0.192
Graduate Degree	4	-2.7106	0.0050	0.066
Years Since Migration	2	-0.0680	0.0002	0.934
Years Since Migration	3	-0.0790	0.0002	0.924
Years Since Migration	4	-0.1152	0.0003	0.891
Years Since Migration2	2	0.0010	0.0000	1.001
Years Since Migration2	3	0.0012	0.0000	1.001
Years Since Migration2	4	0.0017	0.0000	1.002
imm x Work Experience	2	0.0019	0.0003	1.002
imm x Work Experience	3	-0.0016	0.0003	0.998
imm x Work Experience	4	-0.0488	0.0004	0.952
imm x Work Experience2	2	0.0000	0.0000	1.000
imm x Work Experience2	3	0.0002	0.0000	1.000
imm x Work Experience2	4	0.0015	0.0000	1.001
imm x High School Equivalent	2	0.2508	0.0037	1.285
imm x High School Equivalent	3	0.8174	0.0038	2.265
imm x High School Equivalent	4	0.8895	0.0038	2.434
imm x Some College	2	0.3267	0.0033	1.386
imm x Some College	3	0.7085	0.0035	2.031
imm x Some College	4	0.9305	0.0034	2.536
imm x Bachelor Degree	2	0.2943	0.0039	1.342
imm x Bachelor Degree	3	0.9279	0.0041	2.529
imm x Bachelor Degree	4	1.6319	0.0047	5.114
imm x Graduate Degree	2	0.3182	0.0048	1.375
imm x Graduate Degree	3	0.6875	0.0055	1.989
imm x Graduate Degree	4	1.6435	0.0067	5.173
Marital Status	2	-0.2235	0.0008	0.800
Marital Status	3	-0.0773	0.0009	0.926
Marital Status	4	-0.4572	0.0012	0.633
Rural Resident	2	0.1534	0.0009	1.166
Rural Resident	3	0.2141	0.0010	1.239
Rural Resident	4	0.2644	0.0013	1.303
Atlantic Provinces	2	0.0658	0.0018	1.068
Atlantic Provinces	3	0.1781	0.0018	1.195
Atlantic Provinces	4	0.0076	0.0026	1.008
Quebec	2	0.0731	0.0010	1.076
Quebec	3	0.0514	0.0011	1.053

Table D.5 continued

Quebec	4	0.2181	0.0014	1.244
Manitoba	2	-0.0334	0.0022	0.967
Manitoba	3	-0.0907	0.0025	0.913
Manitoba	4	-0.4971	0.0039	0.608
Saskatchewan	2	-0.1394	0.0026	0.870
Saskatchewan	3	-0.1370	0.0028	0.872
Saskatchewan	4	-0.4884	0.0043	0.614
Alberta	2	0.1111	0.0013	1.117
Alberta	3	0.0776	0.0014	1.081
Alberta	4	-0.6030	0.0024	0.547
British Columbia	2	0.1430	0.0012	1.154
British Columbia	3	0.1186	0.0013	1.126
British Columbia	4	-0.1256	0.0017	0.882

Note: Category 1 represents 12 months employed and is the reference category.

Source: 1993 to 2011 Survey of Labour and Income Dynamics, Statistics Canada

Table D.6 Effect of Human Capital by Source on the Employment Outcomes of Native and Immigrant Females in Canada, 1993-2011

Response Profiles				
Order	Employment Status	Observations		
1	1	124418		
2	2	13862		
3	3	10844		
4	4	4921		
Parameter	Employment Status	Coefficient Estimate	Standard Error	Odds Ratio
Intercept	2	-0.5945	0.0016	n/a
Intercept	3	-0.5846	0.0017	n/a
Intercept	4	-1.5975	0.0023	n/a
Immigrant Status	2	0.6297	0.0043	1.877
Immigrant Status	3	0.7992	0.0046	2.224
Immigrant Status	4	2.5619	0.0053	12.961
Foreign Work Experience	2	-0.0878	0.0005	0.916
Foreign Work Experience	3	-0.0237	0.0006	0.977
Foreign Work Experience	4	0.0045	0.0006	1.005
Foreign Work Experience2	2	0.0022	0.0000	1.002
Foreign Work Experience2	3	0.0001	0.0000	1.000

Table D.6 continued

Foreign Work Experience2	4	-0.0003	0.0000	1.000
Canadian Work Experience	2	-0.1205	0.0001	0.887
Canadian Work Experience	3	-0.1129	0.0002	0.893
Canadian Work Experience	4	0.0075	0.0002	1.008
Canadian Work Experience2	2	0.0023	0.0000	1.002
Canadian Work Experience2	3	0.0020	0.0000	1.002
Canadian Work Experience2	4	-0.0005	0.0000	1.000
imm x Canadian Work Experience	2	-0.0329	0.0005	0.968
imm x Canadian Work Experience	3	-0.0604	0.0005	0.941
imm x Canadian Work Experience	4	-0.0453	0.0007	0.956
imm x Canadian Work Experience2	2	0.0010	0.0000	1.001
imm x Canadian Work Experience2	3	0.0018	0.0000	1.002
imm x Canadian Work Experience2	4	0.0009	0.0000	1.001
Canadian x Foreign Work Experience	2	0.0020	0.0000	1.002
Canadian x Foreign Work Experience	3	0.0016	0.0000	1.002
Canadian x Foreign Work Experience	4	0.0022	0.0000	1.002
High School Equivalent	2	-0.4356	0.0017	0.647
High School Equivalent	3	-0.5856	0.0016	0.557
High School Equivalent	4	-1.0214	0.0019	0.360
Some College	2	-0.4448	0.0014	0.641
Some College	3	-0.7917	0.0014	0.453
Some College	4	-1.3986	0.0016	0.247
Bachelor Degree	2	-0.8806	0.0017	0.415
Bachelor Degree	3	-1.4294	0.0018	0.239
Bachelor Degree	4	-2.2040	0.0026	0.110
Graduate Degree	2	-1.0587	0.0023	0.347
Graduate Degree	3	-1.5685	0.0026	0.208
Graduate Degree	4	-2.6433	0.0045	0.071
Foreign Education	2	-0.1082	0.0047	0.897
Foreign Education	3	-0.7504	0.0051	0.472
Foreign Education	4	-1.3115	0.0054	0.269
Foreign Education x High School Equivalent	2	0.2143	0.0041	1.239
Foreign Education x High School Equivalent	3	0.7947	0.0041	2.214
Foreign Education x High School Equivalent	4	0.8782	0.0041	2.407
Foreign Education x Some College	2	0.2038	0.0036	1.226
Foreign Education x Some College	3	0.5333	0.0038	1.705
Foreign Education x Some College	4	0.8089	0.0038	2.246
Foreign Education x Bachelor Degree	2	0.2322	0.0044	1.261
Foreign Education x Bachelor Degree	3	0.8960	0.0046	2.450
Foreign Education x Bachelor Degree	4	1.2904	0.0049	3.634
Foreign Education x Graduate Degree	2	0.2317	0.0055	1.261
Foreign Education x Graduate Degree	3	0.2836	0.0066	1.328
Foreign Education x Graduate Degree	4	1.7296	0.0067	5.638
Years Since Migration	2	-0.0188	0.0004	0.981

Table D.6 continued

Years Since Migration	3	-0.0129	0.0005	0.987
Years Since Migration	4	-0.1121	0.0006	0.894
Years Since Migration2	2	0.0001	0.0000	1.000
Years Since Migration2	3	0.0000	0.0000	1.000
Years Since Migration2	4	0.0018	0.0000	1.002
Marital Status	2	-0.2174	0.0008	0.805
Marital Status	3	-0.0652	0.0009	0.937
Marital Status	4	-0.4494	0.0012	0.638
Rural Resident	2	0.1532	0.0009	1.166
Rural Resident	3	0.2161	0.0010	1.241
Rural Resident	4	0.2709	0.0013	1.311
Atlantic Provinces	2	0.0649	0.0018	1.067
Atlantic Provinces	3	0.1767	0.0018	1.193
Atlantic Provinces	4	0.0082	0.0026	1.008
Quebec	2	0.0724	0.0010	1.075
Quebec	3	0.0479	0.0011	1.049
Quebec	4	0.2231	0.0014	1.250
Manitoba	2	-0.0338	0.0022	0.967
Manitoba	3	-0.0904	0.0025	0.914
Manitoba	4	-0.4927	0.0039	0.611
Saskatchewan	2	-0.1412	0.0026	0.868
Saskatchewan	3	-0.1384	0.0028	0.871
Saskatchewan	4	-0.4869	0.0043	0.615
Alberta	2	0.1093	0.0013	1.116
Alberta	3	0.0787	0.0014	1.082
Alberta	4	-0.5950	0.0024	0.552
British Columbia	2	0.1411	0.0012	1.152
British Columbia	3	0.1176	0.0013	1.125
British Columbia	4	-0.1182	0.0017	0.889

Note: Category 1 represents 12 months employed and is the reference category.

Source: 1993 to 2011 Survey of Labour and Income Dynamics, Statistics Canada

Table D.7 Effect of Mother Tongue and Visible Minority Status on the Employment Outcomes of Native and Immigrant Females in Canada, 1993-2011

Response Profile		
Order	Employment Status	Observations
1	1	124418
2	2	13862

Table D.7 continued

	3	3	10844	
	4	4	4921	
Parameter	Employment Status	Coefficient Estimate	Standard Error	Odds Ratio
Intercept	2	-0.6019	0.0017	n/a
Intercept	3	-0.5819	0.0017	n/a
Intercept	4	-1.5935	0.0024	n/a
Immigrant Status	2	0.4953	0.0050	1.641
Immigrant Status	3	0.5682	0.0053	1.765
Immigrant Status	4	1.5699	0.0063	4.806
Foreign Work Experience	2	-0.0883	0.0005	0.916
Foreign Work Experience	3	-0.0258	0.0006	0.974
Foreign Work Experience	4	0.0049	0.0006	1.005
Foreign Work Experience2	2	0.0022	0.0000	1.002
Foreign Work Experience2	3	0.0002	0.0000	1.000
Foreign Work Experience2	4	-0.0002	0.0000	1.000
Canadian Work Experience	2	-0.1194	0.0001	0.887
Canadian Work Experience	3	-0.1119	0.0002	0.894
Canadian Work Experience	4	0.0090	0.0002	1.009
Canadian Work Experience2	2	0.0023	0.0000	1.002
Canadian Work Experience2	3	0.0020	0.0000	1.002
Canadian Work Experience2	4	-0.0005	0.0000	0.999
imm x Canadian Work Experience	2	-0.0331	0.0005	0.967
imm x Canadian Work Experience	3	-0.0618	0.0005	0.940
imm x Canadian Work Experience	4	-0.0489	0.0007	0.952
imm x Canadian Work Experience2	2	0.0010	0.0000	1.001
imm x Canadian Work Experience2	3	0.0018	0.0000	1.002
imm x Canadian Work Experience2	4	0.0008	0.0000	1.001
Canadian x Foreign Work Experience	2	0.0019	0.0000	1.002
Canadian x Foreign Work Experience	3	0.0016	0.0000	1.002
Canadian x Foreign Work Experience	4	0.0019	0.0000	1.002
High School Equivalent	2	-0.4413	0.0017	0.643
High School Equivalent	3	-0.5942	0.0016	0.552
High School Equivalent	4	-1.0281	0.0019	0.358
Some College	2	-0.4491	0.0014	0.638
Some College	3	-0.7996	0.0014	0.450
Some College	4	-1.4056	0.0017	0.245
Bachelor Degree	2	-0.8913	0.0017	0.410
Bachelor Degree	3	-1.4433	0.0019	0.236
Bachelor Degree	4	-2.2277	0.0026	0.108
Graduate Degree	2	-1.0691	0.0023	0.343
Graduate Degree	3	-1.5798	0.0026	0.206
Graduate Degree	4	-2.6486	0.0045	0.071
Foreign Education	2	-0.1303	0.0047	0.878

Table D.7 continued

Foreign Education	3	-0.7775	0.0051	0.460
Foreign Education	4	-1.3370	0.0054	0.263
Foreign Education x High School Equivalent	2	0.2406	0.0041	1.272
Foreign Education x High School Equivalent	3	0.8365	0.0041	2.308
Foreign Education x High School Equivalent	4	0.9566	0.0041	2.603
Foreign Education x Some College	2	0.2330	0.0036	1.262
Foreign Education x Some College	3	0.5835	0.0039	1.792
Foreign Education x Some College	4	0.8890	0.0038	2.433
Foreign Education x Bachelor Degree	2	0.2586	0.0044	1.295
Foreign Education x Bachelor Degree	3	0.9479	0.0046	2.580
Foreign Education x Bachelor Degree	4	1.3717	0.0049	3.942
Foreign Education x Graduate Degree	2	0.2716	0.0056	1.312
Foreign Education x Graduate Degree	3	0.3891	0.0067	1.476
Foreign Education x Graduate Degree	4	1.8593	0.0067	6.419
French Mother Tongue	2	-0.2007	0.0016	0.818
French Mother Tongue	3	-0.2297	0.0017	0.795
French Mother Tongue	4	-0.1786	0.0022	0.836
Other Mother Tongue	2	0.0074	0.0018	1.007
Other Mother Tongue	3	-0.1458	0.0021	0.864
Other Mother Tongue	4	-0.1052	0.0031	0.900
imm x French Mother Tongue	2	0.3119	0.0054	1.366
imm x French Mother Tongue	3	-0.3452	0.0072	0.708
imm x French Mother Tongue	4	0.6435	0.0063	1.903
imm x Other Mother Tongue	2	0.0499	0.0028	1.051
imm x Other Mother Tongue	3	0.0817	0.0031	1.085
imm x Other Mother Tongue	4	0.6381	0.0042	1.893
Visible Minority	2	0.1886	0.0020	1.208
Visible Minority	3	0.2472	0.0023	1.280
Visible Minority	4	0.2854	0.0037	1.330
imm x Visible Minority	2	-0.1196	0.0028	0.887
imm x Visible Minority	3	0.0727	0.0031	1.075
imm x Visible Minority	4	0.2094	0.0044	1.233
Years Since Migration	2	-0.0162	0.0004	0.984
Years Since Migration	3	-0.0102	0.0005	0.990
Years Since Migration	4	-0.0968	0.0006	0.908
Years Since Migration2	2	0.0001	0.0000	1.000
Years Since Migration2	3	0.0001	0.0000	1.000
Years Since Migration2	4	0.0018	0.0000	1.002
Marital Status	2	-0.2115	0.0008	0.809
Marital Status	3	-0.0553	0.0009	0.946
Marital Status	4	-0.4459	0.0012	0.640
Rural Resident	2	0.1714	0.0009	1.187
Rural Resident	3	0.2358	0.0010	1.266
Rural Resident	4	0.3052	0.0013	1.357

Table D.7 continued

Atlantic Provinces	2	0.0679	0.0018	1.070
Atlantic Provinces	3	0.1745	0.0018	1.191
Atlantic Provinces	4	-0.0085	0.0026	0.992
Quebec	2	0.2152	0.0015	1.240
Quebec	3	0.2184	0.0016	1.244
Quebec	4	0.3213	0.0019	1.379
Manitoba	2	-0.0325	0.0022	0.968
Manitoba	3	-0.0912	0.0025	0.913
Manitoba	4	-0.5133	0.0039	0.599
Saskatchewan	2	-0.1505	0.0026	0.860
Saskatchewan	3	-0.1527	0.0028	0.858
Saskatchewan	4	-0.5123	0.0043	0.599
Alberta	2	0.1051	0.0013	1.111
Alberta	3	0.0707	0.0014	1.073
Alberta	4	-0.6082	0.0024	0.544
British Columbia	2	0.1285	0.0012	1.137
British Columbia	3	0.0983	0.0013	1.103
British Columbia	4	-0.1543	0.0017	0.857

Note: Category 1 represents 12 months employed and is the reference category.

Source: 1993 to 2011 Survey of Labour and Income Dynamics, Statistics Canada

Table D.8 Effects of Changing Macro-Economic Conditions on Immigrant and Native Female Employment Outcomes in Canada, 1993-2011

Response Profile				
Ordered	Employment Status	Observations		
1	1	124418		
2	2	13862		
3	3	10844		
4	4	4921		
Parameter	Employment Status	Coefficient Estimate	Standard Error	Odds Ratios
Intercept	2	-1.0585	0.0027	n/a
Intercept	3	-1.5528	0.0028	n/a
Intercept	4	-3.2432	0.0040	n/a

Table D.8 continued

Immigrant Status	2	0.9166	0.0082	2.501
Immigrant Status	3	0.6763	0.0086	1.967
Immigrant Status	4	2.0484	0.0099	7.755
Foreign Work Experience	2	-0.0888	0.0005	0.915
Foreign Work Experience	3	-0.0292	0.0006	0.971
Foreign Work Experience	4	-0.0011	0.0006	0.999
Foreign Work Experience2	2	0.0022	0.0000	1.002
Foreign Work Experience2	3	0.0003	0.0000	1.000
Foreign Work Experience2	4	0.0000	0.0000	1.000
Canadian Work Experience	2	-0.1179	0.0001	0.889
Canadian Work Experience	3	-0.1085	0.0002	0.897
Canadian Work Experience	4	0.0136	0.0002	1.014
Canadian Work Experience2	2	0.0023	0.0000	1.002
Canadian Work Experience2	3	0.0019	0.0000	1.002
Canadian Work Experience2	4	-0.0006	0.0000	0.999
imm x Canadian Work Experience	2	-0.0317	0.0005	0.969
imm x Canadian Work Experience	3	-0.0569	0.0005	0.945
imm x Canadian Work Experience	4	-0.0416	0.0007	0.959
imm x Canadian Work Experience2	2	0.0010	0.0000	1.001
imm x Canadian Work Experience2	3	0.0017	0.0000	1.002
imm x Canadian Work Experience2	4	0.0006	0.0000	1.001
Canadian x Foreign Work Experience	2	0.0020	0.0000	1.002
Canadian x Foreign Work Experience	3	0.0018	0.0000	1.002
Canadian x Foreign Work Experience	4	0.0022	0.0000	1.002
High School Equivalent	2	-0.4300	0.0017	0.650
High School Equivalent	3	-0.5755	0.0016	0.562
High School Equivalent	4	-0.9946	0.0020	0.370
Some College	2	-0.4396	0.0014	0.644
Some College	3	-0.7853	0.0014	0.456
Some College	4	-1.3740	0.0017	0.253
Bachelor Degree	2	-0.8669	0.0017	0.420
Bachelor Degree	3	-1.3930	0.0019	0.248
Bachelor Degree	4	-2.1372	0.0026	0.118
Graduate Degree	2	-1.0487	0.0023	0.350
Graduate Degree	3	-1.5379	0.0026	0.215
Graduate Degree	4	-2.5784	0.0045	0.076
Foreign Education	2	-0.1401	0.0048	0.869
Foreign Education	3	-0.8014	0.0051	0.449
Foreign Education	4	-1.3449	0.0054	0.261
Foreign Education x High School Equivalent	2	0.2390	0.0041	1.270
Foreign Education x High School Equivalent	3	0.8571	0.0041	2.356
Foreign Education x High School Equivalent	4	0.9679	0.0041	2.632
Foreign Education x Some College	2	0.2239	0.0036	1.251
Foreign Education x Some College	3	0.5937	0.0039	1.811

Table D.8 continued

Foreign Education x Some College	4	0.8842	0.0038	2.421
Foreign Education x Bachelor Degree	2	0.2445	0.0044	1.277
Foreign Education x Bachelor Degree	3	0.9710	0.0046	2.641
Foreign Education x Bachelor Degree	4	1.3819	0.0050	3.982
Foreign Education x Graduate Degree	2	0.2634	0.0056	1.301
Foreign Education x Graduate Degree	3	0.4057	0.0067	1.500
Foreign Education x Graduate Degree	4	1.8722	0.0067	6.503
French Mother Tongue	2	-0.2059	0.0016	0.814
French Mother Tongue	3	-0.2142	0.0018	0.807
French Mother Tongue	4	-0.2087	0.0022	0.812
Other Mother Tongue	2	0.0134	0.0018	1.013
Other Mother Tongue	3	-0.1303	0.0021	0.878
Other Mother Tongue	4	-0.0697	0.0031	0.933
imm x French Mother Tongue	2	0.3557	0.0054	1.427
imm x French Mother Tongue	3	-0.3196	0.0072	0.726
imm x French Mother Tongue	4	0.7537	0.0064	2.125
imm x Other Mother Tongue	2	0.0463	0.0028	1.047
imm x Other Mother Tongue	3	0.0742	0.0031	1.077
imm x Other Mother Tongue	4	0.6132	0.0042	1.846
Visible Minority	2	0.2043	0.0020	1.227
Visible Minority	3	0.2794	0.0023	1.322
Visible Minority	4	0.3378	0.0037	1.402
imm x Visible Minority	2	-0.1158	0.0028	0.891
imm x Visible Minority	3	0.0875	0.0031	1.091
imm x Visible Minority	4	0.2125	0.0044	1.237
Unemployment Rate	2	0.0560	0.0003	1.058
Unemployment Rate	3	0.1182	0.0003	1.126
Unemployment Rate	4	0.1992	0.0004	1.220
imm x Unemployment Rate	2	-0.0511	0.0008	0.950
imm x Unemployment Rate	3	-0.0078	0.0009	0.992
imm x Unemployment Rate	4	-0.0506	0.0009	0.951
Years Since Migration x Unemployment Rate	2	0.0025	0.0000	1.002
Years Since Migration x Unemployment Rate	3	0.0024	0.0000	1.002
Years Since Migration x Unemployment Rate	4	0.0032	0.0000	1.003
Years Since Migration	2	-0.0397	0.0005	0.961
Years Since Migration	3	-0.0399	0.0006	0.961
Years Since Migration	4	-0.1371	0.0007	0.872
Years Since Migration2	2	0.0002	0.0000	1.000
Years Since Migration2	3	0.0003	0.0000	1.000
Years Since Migration2	4	0.0021	0.0000	1.002
Marital Status	2	-0.2176	0.0008	0.804
Marital Status	3	-0.0676	0.0009	0.935
Marital Status	4	-0.4649	0.0012	0.628
Rural Resident	2	0.1650	0.0009	1.179

Table D.8 continued

Rural Resident	3	0.2214	0.0010	1.248
Rural Resident	4	0.2801	0.0013	1.323
Atlantic Provinces	2	-0.1977	0.0021	0.821
Atlantic Provinces	3	-0.4009	0.0022	0.670
Atlantic Provinces	4	-0.9774	0.0032	0.376
Quebec	2	0.1175	0.0016	1.125
Quebec	3	-0.0232	0.0017	0.977
Quebec	4	-0.0373	0.0020	0.963
Manitoba	2	0.0681	0.0023	1.070
Manitoba	3	0.1367	0.0025	1.146
Manitoba	4	-0.1498	0.0040	0.861
Saskatchewan	2	-0.0430	0.0026	0.958
Saskatchewan	3	0.0864	0.0028	1.090
Saskatchewan	4	-0.1214	0.0044	0.886
Alberta	2	0.2120	0.0014	1.236
Alberta	3	0.3172	0.0015	1.373
Alberta	4	-0.2271	0.0025	0.797
British Columbia	2	0.1358	0.0012	1.145
British Columbia	3	0.1163	0.0013	1.123
British Columbia	4	-0.1290	0.0017	0.879

Note: Category 1 represents 12 months employed and is the reference category.

Source: 1993 to 2011 Survey of Labour and Income Dynamics, Statistics Canada