

**IMMIGRANT WAGES IN THE PUBLIC AND PRIVATE SECTORS: HOW DO THESE
COMPARE TO THE WAGES OF THE CANADIAN-BORN?**

ANNABELLA AKOSUA DODUA ANSAH
Bachelor of Arts, Kwame Nkrumah University of Science and Technology, 2012

A thesis submitted
in partial fulfilment of the requirements for the degree of

MASTER OF ARTS

in

ECONOMICS

Department of Economics
University of Lethbridge
LETHBRIDGE, ALBERTA, CANADA

© Annabella Akosua Dodua Ansah, 2020

IMMIGRANT WAGES IN THE PUBLIC AND PRIVATE SECTORS: HOW DO THESE
COMPARE TO THE WAGES OF THE CANADIAN-BORN?

ANNABELLA AKOSUA DODUA ANSAH

Date of Defence: April 14, 2020

Dr. Richard E. Mueller Thesis Supervisor	Professor	Ph.D.
Dr. Duane W. Rockerbie Thesis Examination Committee Member	Professor	Ph.D.
Dr. Kien C. Tran Thesis Examination Committee Member	Professor	Ph.D.
Dr. Danny Le Roy Chair, Thesis Examination Committee	Associate Professor	Ph.D.

DEDICATION

To the blessed memory of Victoria Ama Kisiwah Tabi, who set the bar of excellence for me to follow suit, thank you. Damirifa Due!

ABSTRACT

Canada has observed wage differences between comparable immigrants and the Canadian-born across the labour market. Using the cycles of Statistics Canada's Labour Force Survey from 2006 to 2018, this thesis evaluates and decomposes the wage differences between immigrants and comparable Canadian-born workers both within and between the various levels of the public sector and the private sector. Progressing from the Ordinary Least Squares estimation method, the unconditional quantile regression method is combined with the Oaxaca-Blinder decomposition method to evaluate these differences at the 10th, 25th, 50th, 75th and 90th quantiles of the wage distribution. Within sectors, results show that the total immigrant wage gap is largest in the private sector, and the greater proportion of this gap is unexplained. Between sectors, the public-private sector wage gap is wider among the immigrant group, and most of these gaps are explained by the differences in the composition of workers in each sector.

ACKNOWLEDGEMENTS

Praise and thanks be to The Ever-Faithful God for seeing me through to a successful end of my study.

I would like to extend my deepest appreciation to Dr. Richard Mueller, my supervisor, for giving me the opportunity to work with him. I would further like to acknowledge and express my gratitude to Dr. Duane Rockerbie and Dr. Kien Tran for accepting to be on my thesis committee. Dr. Danny Le Roy, thank you for chairing my thesis examination committee. It is very fulfilling to associate with all of you. Equally important to acknowledge are all professors and staff of the Economics department, especially Merle Christie, for their unflinching support and guidance throughout my programme.

I would like to also thank the Child and Youth Refugee Research Coalition (CYRRC) for supporting this thesis research. Some of the analysis presented in this thesis was conducted at the Lethbridge Branch of the Prairie Regional Research Data Centre (RDC), a part of the Canadian Research Data Centre Network. The services provided by the Lethbridge RDC are made possible through the support of the University of Lethbridge, Canadian Foundation for Innovation, the Canadian Institutes of Health Research, the Social Science and Humanity Research Council and Statistics Canada. All views expressed in this work are my own.

Finally, I would like to express my heartfelt gratitude to my ever-supportive husband, Dr. Johnny Ahale for being with me throughout the journey and more.

TABLE OF CONTENTS

Dedication	iii
Abstract	iv
Acknowledgements	v
List of Tables.....	viii
List of Figures	ix
Chapter 1: Introduction	1
1.1 Background	2
1.2 Problem Statement	5
1.3 Thesis Objectives	6
1.4 Thesis Contribution	7
1.5 Thesis Organization.....	7
Chapter 2: Literature Review	8
2.1 Public-Private Sector Wage Differentials	8
2.2 Immigrant-Canadian-born Wage Differentials	11
2.3 Immigrant Wage Gaps across the Public and Private Sectors	15
Chapter 3: Methodology.....	23
3.1 Data and Sample Restrictions	23
3.2 Study Variables	25
3.3 Summary Statistics	26
3.4 Econometric Model.....	38
Chapter 4: Empirical Results.....	43
4.1 Immigrant Wage Gap Within Sectors	43
4.2 Public-Private Sector Wage Gap Among Immigrants and Canadian-born.....	51
Chapter 5: Conclusion.....	64
5.1 Summary of Key Findings	64
5.2 Policy Recommendations.....	69
5.3 Limitations and Delimitations.....	70
References	71

LIST OF TABLES

Table 3.3.1: Summary Statistics.....	26
Table 4.1.1: Canadian-born Real Wage Premiums Within Sectors	44
Table 4.1.2: Oaxaca-Blinder Decomposition of the Immigrant Wage Gap Within Sectors at Different Quantiles	48
Table 4.2.1-A: Public Sector Real Wage Premiums, Immigrants.....	52
Table 4.2.1-B: Public Sector Real Wage Premiums, Canadian-born.....	53
Table 4.2.3: Oaxaca-Blinder Decomposition of the Public-Private Sector Wage Gap Among Immigrants and Canadian-born at Different Quantiles	60

LIST OF FIGURES

Figure 4.1.1: Immigrant Wage Gap Within Sectors at Different Quantiles.....	46
Figure 4.2.1-A: Public Sector Real Wage Premiums with Agriculture, Forestry, Fishing & Hunting Industries Omitted.....	56
Figure 4.2.1-B: Public Sector Real Wage Premiums with Mining, Quarrying, Oil & Gas Industries Omitted.....	57
Figure 4.2.2: Public Sector Real Wage Premiums Among Immigrants and Canadian-born at Different Quantiles.....	58
Figure 5.1.1: Decomposition of the Immigrant Wage Gap Within Sectors at Different Quantiles.....	65
Figure 5.1.2: Decomposition of the Public-Private Sector Wage Gap Among Immigrants and Canadian-born at Different Quantiles.....	67

CHAPTER 1: INTRODUCTION

Nearly a quarter of Canada's total population are immigrants and this proportion will keep increasing (Statistics Canada, 2017). One challenge arising from the growing immigrant population in Canada is ensuring wage equity between the Canadian-born and the immigrant workers across all sectors of the Canadian labour market. With Canada's aging population and the growing significance of the supply of immigrant workers in the Canadian labour market, "Canada's global competitiveness in the future will be in part determined by the degree that immigrants will be able to integrate into the Canadian labour market" (King, 2009, p.2) and, as Kerr and Kerr (2011) highlight in their study, assessment of successful integration of immigrants into a host-country's labour market can primarily be ascertained through a comparison of wages (and employment rates) of immigrants versus host-country's workers at their entry and over their stay.

Empirical evidence however reveals that there are significant wage differences between the Canadian-born and immigrants in the Canadian labour market (Banerjee & Lee, 2015; Frenette & Morissette, 2003; G. Picot & Hou, 2014; Green & Worswick, 2010; Nadeau 2013). Immigrants in Canada on average earn significantly less than their Canadian-born counterparts, although the former group may have equal or higher qualifications than the latter group (Hou & Coulombe, 2010; Nadeau, 2013). These are captured in the literature as the immigrant wage gap, defined as the difference between immigrant wages and that of the Canadian-born with similar characteristics (Zheng, 2017).

Little empirical evidence to date suggests that the observed immigrant wage gap is more prevalent in the private sector than in the public sector (Nadeau, 2013; Zheng, 2017). Coulombe, Grenier & Nadeau (2014) find that Canadian employers generally assess the quality of human capital to be lower if credentials are obtained outside of Canada. But Nadeau (2013) maintains that

government employers may be in a better position to accurately evaluate foreign credentials because they are relatively large employers and so have more resources to translate foreign credentials to their exact Canadian equivalents. Also, factors such as unions' abilities to hold government accountable to its pay equity legislation (Zheng, 2017) and pro-immigration governments' vested interest in ensuring the success of immigrants on the labour market may account for the narrower immigrant wage gap in the public sector.

Despite the wage gap difference between them, what remains as a consistent thread among both the immigrant group and the Canadian-born group is that between sectors, both immigrant and Canadian-born public sector workers record a wage premium over their respective private sector counterparts (Zheng, 2017).

1.1 BACKGROUND

In this section, we present an overview of the wage differences between the public and private sectors of Canada and outline the observed wage differences between immigrants and Canadian-born, across both sectors.

Comparing the wages between workers in the Public and Private sectors

Since Gunderson's (1979) pioneering study on comparing public and private sector wage differences in Canada, all empirical work done on this subject has generally concluded that, relative to the private sector, public sector workers enjoy a wage premium (Mueller, 2000; Lammam, Palacios, Ren, & Clemens, 2016; Palacios & Clemens, 2013; Prescott & Wandschneider, 1999; Shapiro & Stelcner, 1989; Tiagi, 2010).

Earliest studies on comparing public and private sector wages by Gunderson (1979) and Shapiro & Stelcner (1989) using the Canadian Census of Population of 1971 and 1981, respectively, showed an increased public-private sector wage gap from 9.3 percent to 19.1 percent

for males, and from 22.3 percent to 27 percent for females. Using the waves of the Labour Market Activity Survey (LMAS) for the period 1988-1990, results from Mueller's (2000) fixed effect estimation of the public sector wage premium were 3.9 percent for males and 5.8 percent for females.

Tiagi (2010), using the 2008 Labour Force Survey (LFS) finds the average public-private sector wage gap to be 31 percent among males and 51 percent among females, but concludes that most of this is explained away by the higher endowment levels of public workers and so when taken into account, the pure public wage premium is 5 percent and 20 percent for males and females respectively. Using LFS data from 2011, Palacios & Clemens (2013) estimate the public sector premium to be 12 percent, but declines to 9.7 percent when unionization is accounted for. A subsequent study by Lammam et al. (2016) using the 2013 LFS also show that the public premium declines from 9.7 percent to 6.2 percent after factoring unionization into the analysis.

Even within the public sector, wage premium rates vary across respective levels of government. The premium is highest for federal government workers than for those at the provincial and local government levels (Mueller, 2000). Fairly consistent with Mueller's earlier finding, Mallet & Wong (2008) also conclude that the public sector wage premium (relative to the private sector) is highest at the federal level (17.3 percent), and second highest at the municipal level (11.2 percent) while the provincial level (7.9 percent) records the lowest premium.

Also, the public-private sector wage gaps vary significantly from province to province. For example, in 2017, the average wage premium in the public sector was 7.5 percent in British Columbia (Palacios, Jacques, & Lammam, 2018), whereas Alberta and Ontario recorded 9.6 percent and 10.6, percent respectively (Palacios, Jacques, Lammam, & Lafleur, 2018). When

unionization is factored into the respective analyses, the wage premium declines to 4.2 percent, 6.1 percent and 7.6 percent for British Columbia, Alberta and Ontario, respectively.

This observed public wage premium however varies among immigrants and the Canadian-born. Among the Canadian-born group, Zheng (2017) finds the public-private sector wage gap of 25.4 percent for females and 19.5 percent for males. Zheng (2017) observes that for females, the public-private sector wage gap is wider among the Canadian-born than immigrants, but the inverse is observed for males. Comparing immigrants to their Canadian-born counterparts, Zheng (2017) finds the public wage premium to be 3.6 percentage points higher for male immigrants, but 1.4 percentage points lower for female immigrants.

Comparing the wages between immigrants and Canadian-born workers

Canada, like many developed countries with a large immigrant population has observed wage differences between comparable immigrants and the Canadian-born across the labour market. By the tenets of the human capital theory, the reward for labour with equal human capital skills (e.g., education, experience, etc.) would be the same. It has however been empirically asserted that immigrants generally earn relatively lower wages than the Canadian-born (Chowhan, Zeytinoglu, & Cooke, 2012; Nadeau, 2013; Statistics Canada 2017). For instance, the 2016 census showed that the median wage of the Canadian-born population was 28.6 percent higher than that of the immigrant population (Statistics Canada, 2017). This has, however not always been the case.

It has been found that until the late 1970s, immigrants had earnings which was equal to or greater than the Canadian-born (Bloom, Grenier, & Gunderson, 1995; Baker & Benjamin, 1994; Wright & Maxim, 1993). However, in the subsequent years that followed, immigrant cohorts saw a decline in their earnings relative to that of the Canadian-born (Banerjee & Lee, 2015; Chowhan et al., 2012; Frenette & Morissette, 2003; Green & Worswick, 2010; Baker & Benjamin, 1994; Wright & Maxim, 1993). Both entry and post-entry wages of the average immigrant were lower

than the average Canadian-born. In 1986, immigrants arriving in Canada for the first time on average had 22 percent lower wages than their Canadian-born contemporaries (Bloom et al., 1995) and these lower entry wage rates were never balanced by post-arrival increases (Baker & Benjamin, 1994; Frenette & Morissette, 2003). Both Green & Worswick and Aydemir & Skuterud (as cited in Boudarbat & Lemieux, 2014) found that by the 1990s, the immigrant entry wage gap was about 30 percent. Unlike the trend of the 1980s, low immigrant entry earnings recorded in the 1990s were accompanied by significant increases in post-entry earnings (Green & Worswick, 2010), which to some extent eased the assimilation of immigrants in the labour force.

For the 2000s, while Picot, Hou, & Coulombe (2007) find that the relative immigrant entry wage gap had further increased, Green & Worswick (2010) maintain that the immigrant entry earnings in the 2000s was simply identical to the trend of the 1990s. Both studies however conclude on a post-arrival wage pattern like that of the 1990s.

Between 2013 and 2016, even though Statistics Canada recorded a median income growth of 16 percent for immigrants who had been in Canada for one year, this ‘increased’ standard still fell 34 percent short of the Canadian-born average income of \$34,050 (Parkinson, 2018). Even for a decade-old landed immigrant in 2016, their median income was still 7 percent lower that of the Canadian-born (Parkinson, 2018). Thus, these observed immigrant wage gaps seem to have persisted over the past few decades.

1.2 PROBLEM STATEMENT

Current studies to date do not evaluate the wage differentials between immigrants and the Canadian-born at the respective levels of the public sector. These levels include employees not involved in public administration and those involved in public administration at the federal, provincial and local levels of government. It is therefore uncertain whether the relatively smaller

immigrant wage gap observed in the public sector cuts across all levels of the public sector, or if it is just one or two levels in the sector that could be accounting for these observed differences.

Furthermore, existing empirical studies solely rely on the mean to evaluate the earning differentials between (and among) immigrants and the Canadian-born across the public and private sectors. But as Cai & Liu (2015) highlight, it has become increasingly important to additionally assess the immigrant wage gap along the entire wage distribution. There may be significant variations at different parts of the wage distribution which could be essential for policy assessment. For instance, Boudarbat & Lemieux (2014) find that limiting the immigrant wage gap assessment to the mean representation conceals a significantly large decline at the low end of the wage distribution.

More so, current studies that measure public sector wage premium differences between immigrants and the Canadian-born do not control for certain key job, industry and occupational characteristics, all of which may have confounding effects on the wage premium outcomes of groups.

1.3 THESIS OBJECTIVES

The overall objective of the study is to evaluate the wage differences between immigrants and the Canadian-born, both within and between the public sector and the private sector.

Specifically, we seek to address the following research questions:

1. Is the relative immigrant wage gap smaller at all levels of the public sector?
2. Does the observed immigrant wage gap within each sector change significantly along the different portions of the wage distribution?
3. Is the premium (or penalty) for immigrants in the public sector different from that of those the Canadian-born?

1.4 THESIS CONTRIBUTION

To our best of knowledge, only Nadeau (2013) and Zheng (2017) have evaluated the wage gap between immigrants and Canadian-born workers in the Canadian public and private sectors. Nadeau (2013) used the 2006 Census data and Zheng (2017) used the 2011 National Household Survey (NHS). Although very useful, both the Census and the NHS datasets lack some important explanatory variables such as the union status of workers. But as Tiagi (2010) notes, if the union status of workers is not controlled for, the wage rate results may be biased against the sector with relatively little union influence (mostly the private sector).

We therefore use the Labour Force Survey (LFS) Microdata Masterfile from 2006 through to 2018 to update existing literature, test the robustness of earlier findings and fill in identified gaps in the literature. The LFS captures the union status of workers, job, industry and occupational characteristics and facilitates the disaggregation of employment across the private sector and the disaggregated levels of the public sector. We also combine unconditional quantile regression with wage decomposition method to evaluate the explained and unexplained effect components of the wage differential at different points of the wage distribution.

1.5 THESIS ORGANIZATION

This thesis has five chapters. The remainder of this chapter introduces the topic of immigrant-Canadian-born wage comparisons in the Canadian labour market. In Chapter 2, we review the relevant literature on the wage differences between the immigrant and the Canadian-born across the public and private sectors. In Chapter 3, we describe the data and present summary statistics and subsequently highlight the econometric models and estimation methods which are employed for the study. Chapter 4 interprets the empirical results from this research. The final chapter presents a brief conclusion of key findings and offers some policy recommendations.

CHAPTER 2: LITERATURE REVIEW

In this chapter, we discuss relevant theoretical and empirical observations on Canadian public-private sector wage differentials. We also discuss Canada's immigrant wage gap differences across socio-demographic characteristics and present literature on the observed immigrant wage gap variations in the public and private sectors.

2.1 PUBLIC-PRIVATE SECTOR WAGE DIFFERENTIALS

According to economic theory, factors that determine wage differences across the broad categories of the public (i.e., government) and private sectors include compensating adjustments for nonpecuniary features of employment (e.g., job security, fringe benefits and a political spotlight), short-run adjustments (expansion or contraction) and non-competitive factors such as monopsony and unionization. Each of these factors will cause differences in the outcome of the wage gap between public and private sectors.

The public sector tends to offer relatively higher job security, fringe benefits and political visibility to its workers. Therefore, to remain competitive in the labour market, private sector employers would have to 'compensate' workers for lack (or lower levels) of such nonpecuniary features offered by the public sector. Hence, the wages of private sector workers would be higher than that of their counterparts in the public sector, *ceteris paribus*. But in practice, due to profit maximizing constraints faced in the private sector, the positive effects of these nonpecuniary factors on wages could be dissipated.

Furthermore, the public sector is characterized by other non-competitive factors such as monopsony, unionization and political constraints (Benjamin, Gunderson, Lemieux & Riddell, 2011). On one hand, the near-monopsony power of government in some specific labour markets such as teaching and nursing, gives them the leverage to pay such workers lower wages than the

private sector. Hence, holding all factors constant, the wage gap would be to the advantage of the private sector relative to the public sector under such monopsony power. Also, taxpayers' scrutiny on governments' public expenditure may lead to relatively lower wages in the public sector. On the other hand, the other non-competitive characteristics of the public sector like unionization may cause them to pay higher wages than the private sector, *ceteris paribus*.

The remaining determinants of public-private sector wage differentials tend to be relatively generic and may move in favour of workers in either sector, depending where it prevails the most. For instance, in the short run, if the demand for labour exceeds the supply for labour in a sector, it would cause the returns to labour (i.e., wages) in that sector to increase, relative to other sectors. The reverse happens if the sector moves towards a contractionary policy: a reduction in demand for labour in the short run, would cause the price of labour to fall, *ceteris paribus*. Hence the wage gap between the public and private sectors would depend on the prevalence of such short run shocks in either sector. An expansionary move by the public sector would cause the wages of public sector workers to be higher than their colleagues in the private sector, and vice versa.

Empirical studies have also suggested some reasons to explain the observed premium labour reward in the public sector and are often consistent with theoretical predictions. While others have postulated that the promotional rules in the public sector, unlike the private sector, rewards quantity (e.g., seniority, years of schooling and experience) over quality (McIvor, 2016; Nadeau, 2013), the most prominent among these reasons is the theoretically-sound argument that the public sector (unlike the private sector) is not constrained by profit-maximization condition under perfect competition and in fact most often operate under monopolistic conditions and so are able to afford rewarding labour higher wages (Mueller, 2000; Nadeau, 2013; Lammam et al., 2016). Also, political re-election considerations play a vital role in determining wages in the public sector

(Zheng, 2017). Gunderson (1979) succinctly summarizes that in the public sector “profit constraint is replaced by an ultimate political constraint” (p. 230).

Moreover, labour union coverage is more prevalent in the public sector than in the private sector. As with the trend of previous years, in 2018 the percentage of public sector employees who were recorded as members of a union and/or covered by a collective agreement was 75.1 percent, while the proportion of such coverage in the private sector was merely 15.9 percent (Statistics Canada, 2019). Consequently, employees of the public sector have a relatively stronger collective voice to bargain for higher wages, among other benefits. More so, private sector unions are cognizant of the implications of excessive wage demands on the competitiveness of their employers and its repercussions on future employment in a globalized world, and so they often tend to be less aggressive with negotiations for increased wages (Lammam et al., 2016).

Furthermore, the wage gap between both sectors is as a result of differences in endowments of workers in each sector (Tiagi, 2010). The public sector could employ the “cream of crop”, and so often have higher returns to their relatively higher skills (Tiagi, 2010). McIvor (2016) reinforces this assertion as he finds that public sector workers are on the average more educated than workers in the private sector. Thus, consistent with human capital theory, workers with a relatively higher quality of human capital skills would have higher expected wages; and so it is for the public sector.

Generally, the absorption rate of immigrant workers into the public sector (13 percent for males and 27.5 percent for females) is significantly lower than that of the Canadian-born (19.6 percent for males and 36.6 percent for females) (Nadeau, 2013). This could be because Canadian citizenship is a requirement for employment in most public sector jobs, especially in federal public administration (Zheng, 2017). Also, public sector areas like the health sector tends to be regulated

by stringent regulations (i.e., barriers to entry), which makes it more difficult for skilled immigrants to enter (Zheng, 2017). On the other hand, the Public Service Employment Act as legislative instrument for hiring priorities particularly for public sector workers, has seen to apportioning of (minimum) hiring quotas for females, immigrants and other minority groups (McIvor, 2016).

2.2 IMMIGRANT-CANADIAN-BORN WAGE DIFFERENTIALS

Observed characteristics of immigrants such as immigrant source countries, immigrant admission class, education, geographic settlement area and other factors, have been empirically found to vary the outcome of the observed immigrant wage gaps.

Variations across source countries

The source regions of Canadian immigrants have significantly changed since the 1980s. Asia has overtaken Europe to rank highest as the primary Canadian immigrant source region (Bonikowska, Hou & Picot, 2011). By 2016, Africa had displaced Europe in the second position, and Asian-born immigrants accounted for more than half of the recent immigrant population (Statistics Canada, 2017). These changes have been empirically found to have repercussions on the observed immigrant wage gaps (Aydemir & Skuterud, 2005). The timeline of the widening immigrant wage gap corresponds to the timeline of the compositional shift of immigrant sourcing towards non-traditional source countries. For example, in the 1980s as the average proportion of Northern and Western European immigrants declined by 14.5 percent (Hou & Picot, 2016), the immigrant entry wage gap disadvantage increased to about 22 percent (Bloom et al., 1995) within that same period.

Also, Nadeau & Seckin (2010) found a 22.1 percent immigrant wage gap for the year 2000. They argue that one primary reason for this observed gap in Quebec is because immigrants who settled in that province within the period of review originated from non-traditional source countries. They further strengthen their argument with results from simulating a wage gap measurement

between the Canadian-born and immigrants sourced (only) from US and UK. Their simulation results for the year 2000 showed that immigrants from US and UK earn 1.6 percent more than their Canadian-born counterparts.

A Statistics Canada (2017) report on the 2015 median wage variations between immigrants from different source regions revealed that wages of immigrants from Europe and the USA were 68.3 percent higher than those from East Asia. Thus, we can infer that the relative immigrant wage gap disadvantage was more prevalent among East Asian-sourced immigrants than those from Europe and the USA, *ceteris paribus*.

Variations across immigration class of admission

It is also worth noting that beyond the source country, the category under which immigrants are admitted into Canada also tend to be related to immigrant wage gap outcomes.

Landed immigrants are classified into three main categories: economic immigrants, immigrants sponsored by family, and refugees (Statistics Canada, 2019). While immigrants sponsored by family and refugees are primarily admitted under humanitarian grounds, and as such are often not the core target of immigration admission policies, economic migrants on the other hand, are the core target group as they are admitted on a merit-based point system, determined largely by factors which are related to success in the Canadian labour market, such as work experience, educational levels, language ability, age, etc.

Significant changes were made to immigration selection policies beginning in the late 1990s and these were aimed at attracting economic class immigrants who would not only have improved entry earnings, but would also remain resilient in the dynamic Canadian labour market to guarantee their sustainability (Hou & Picot, 2016). As such, immigrants admitted under these relatively new channels tend to do better in terms of wages. For example, since its inception in 2009, immigrants who have been admitted under the Canadian Experience Class (*i.e.*, skilled

immigrants with prior work experience in Canada) category have had the highest median wages of all categories of admission (Hou & Bonikowska, 2015; Statistics Canada, 2017). Hence by inference, Canadian Experience Class immigrants would have the narrowest observed immigrant wage gap. There are other differences among other economic class immigrants.

The introduction of the Provincial Nominee Program in 1999 improved the relative earnings of immigrants admitted under that program. This is because admission under this program is granted to immigrants who qualify to readily fill in specific demands of the labour market of the respective province (Beine, Boadway, & Coulombe, 2016). Thus, immigrants admitted under the Provincial Nominee Program (driven by labour demand ‘pull’ factors) tend to have higher wages than their counterparts admitted under the Skilled Worker category (Hou & Picot, 2016) who are granted entry on merit of their labour supply (‘push’) skills.

Variations across education

The wage gap also varies significantly by education. Some empirical studies have detailed these variations. Empirical evidence suggests that the proportion of highly educated workers are higher among immigrant groups than that of the Canadian-born, and yet immigrants on the average earn less than their Canadian-born counterparts (Hou & Coulombe, 2010; Nadeau, 2013). Holding all factors constant, this defies the prediction of human capital theory which establishes a positive relationship between education and wage earnings. In response to this, Coulombe et al. (2014) conclude that a rationale for this observed anomaly is that foreign-acquired qualifications (of immigrants) are assessed to be inferior to Canadian credentials. Their assertion is consistent with Aydemir & Skuterud’s (2008) earlier conclusion on this subject. These conclusions are hinged on the finding that the immigrant wage gap is wider among immigrants with foreign education than among those who acquired their education in Canada (Aydemir & Skuterud, 2005; Coulombe et

al., 2014; Green & Worswick, 2010; Nadeau, 2013). Additionally, there are distinctions in the measured immigrant wage gaps across the different educational levels.

Green & Worswick (2010) evaluated these educational level variations of the immigrant wage gap among males. For immigrants they used a dataset that links immigrant landing and tax records from 1981 to 2003, and for the Canadian-born used a combination of Surveys of Consumer Finance data series and the Survey of Labour and Income Dynamics across similar years. They found that the immigrant entry wage gap is larger among immigrants with post-secondary education than among those immigrants whose highest educational level is the high school level or less. This finding corroborates Li's (2001) earlier finding using the 1996 census. Li concludes that for both males and females, the wage gap disadvantage of immigrants relative to the Canadian-born is largest among immigrants with foreign postsecondary degrees.

Geographic variations

Structural changes coupled with provincial immigration and labour laws and regulations have a high probability of having different outcomes on the observed wage differences between immigrants and Canadian-born. This is potentially important because over the past decade and half the share of recent immigrants settling in the Prairie region has more than doubled. Between 2001 and 2016, the proportion of new immigrants residing in Alberta rose from 6.9 percent to 17.1 percent, while that of Ontario decreased from 55.9 percent to 39 percent (Statistics Canada, 2017).

King (2009), in analysing the performance of university-educated immigrants in the Canadian labour market according to geographic settlement areas, showed a negative relationship between the immigrant population density and immigrant earnings. Using the 2006 census, King found that Ontario, which attracts the highest number of immigrants, had the highest immigrant wage gap of 29.2 percent, while there was nothing of that sort for the same profile of immigrants

who settled in sparsely populated immigrant provinces like Newfoundland, where immigrants on the average earn more than their Canadian-born counterparts.

Also, within each province, the immigrant wage gap varies from one Census Metropolitan Area (CMA) to another. Like the provincial trend, wage gap differences across CMAs depends on the popularity (in terms of settlement) among immigrants. Therefore, in the province of Ontario, compared to other Ontario CMAs (e.g., Kingston, Sudbury, etc.), the Toronto metropolitan area, which houses the most immigrants, recorded the highest immigrant wage gap of 40 percent (King, 2009).

Additionally, results from Lyu's (2016) study, drawn from the 2006 and 2011 censuses, show that the immigrant variable has no explanatory power (at the 10 percent significance level) on wage determination in the Atlantic provinces and Saskatchewan, whereas this same variable has a negative statistically significant (at the 1 percent level) effect on immigrant wages in all other provinces. Among the provinces which had statistically significant negative coefficient of immigration, Alberta recorded the widest immigrant wage gap of 40.08 percent, and British Columbia the narrowest gap of 14.34 percent.

Nadeau & Seckin (2010) also present the immigrant wage gap trend for male workers in Quebec over the period 1980-2000. They find that throughout the entire period immigrants in Quebec had constantly recorded an immigrant wage gap disadvantage. They further debunk, with their empirical results, the probable argument that this could be attributed to the French language factor in Quebec. While their results provide insights into the Quebec region, it is uncertain how Quebec compares with other provinces.

2.3 IMMIGRANT WAGE GAPS ACROSS THE PUBLIC AND PRIVATE SECTORS

Against the backdrop of the findings on the general wage comparison between the public and private sector on one hand and immigrants and the Canadian-born on the other hand, we can

generally expect the immigrant wage gap to be larger in the private sector than in the public sector. The few empirical studies that have delved into this specific area have concluded that on average the immigrant wage gap is larger in the private sector than in the public sector (Nadeau, 2013; Zheng, 2017).

Using the 2011 National Household Survey, Zheng (2017) finds no immigrant wage gap between male immigrants and their Canadian-born counterparts in the public sector but estimates an immigrant wage gap of 4.1 percent in the private sector. For females, however, he finds an immigrant wage gap of 2.9 percent in the public sector and 2.7 percent in the private sector. Related to this is a study by McIvor (2016) which uses the 2006 census and focuses on visible minorities, a category that most immigrants may fall into. While Zheng's conclusion for males is consistent with the finding by McIvor (2016), the results for females vary. Contrary to Zheng's finding, McIvor finds no statistically significant wage differences between female visible minorities and female Caucasians in either sectors (except for Chinese women in the private sector). Both studies, however, did not control for the union status of workers as neither the National Household Survey nor the census contain a union status variable. But as Tiagi (2010) reiterates in his work, if the union status of workers is not controlled (primarily in the public sector), the wage rate results may be biased against the sector with relatively little union influence (i.e. the private sector).

Results from Nadeau's (2013) analysis using the 2006 census indicates that immigrants generally earn more than the Canadian-born in the public sector whereas the opposite exists in the private sector. He notes that male and female immigrants, respectively, earn 3.1 percent and 0.6 percent more than their Canadian-born counterparts in the public sector, whereas in the private sector, they earn 3.5 percent and 0.5 percent less than their Canadian-born counterparts. Rationalizing his striking results for the public sector, among other factors Nadeau (2013)

highlights the existence of potent union coverage in the public sector to explain the observed narrower wage gap between immigrants and the Canadian-born.

Education

Although foreign-acquired education tends to be generally discounted in the Canadian labour market (Aydemir & Skuterud, 2005), it has been found that the weighting is much heavier in the private sector than in the public sector. Despite the fact that on the average immigrants across both the public and private sectors have more years of schooling than the Canadian-born (Nadeau, 2013; Zheng, 2017) Nadeau (2013) notes that a female immigrant with the highest diploma acquired from her birth country faces a penalty of 0.8 percent in the private sector, whereas the public sector penalty hovers around 0.5 percent. Even with a Canadian-acquired postsecondary education, Zheng (2017) like Nadeau, still finds an immigrant wage gap in both sectors, though the private sector gap is 10 percentage points wider than in the public sector. This suggests that holding all other factors constant, education of female immigrants compared to the Canadian-born has lower returns (especially in the private sector), irrespective of where it is acquired. There are, however, some slight observable variations in the case of males. For example, Nadeau's (2013) results show that returns to total schooling (foreign, domestic, or a combination) for male immigrants relative to the Canadian-born is 0.2 percent higher in the public sector, although they record a negative return of 1.6 percent in the private sector. On the other hand, Banerjee & Lee (2015) find that the immigrant wage gap is more likely to narrow for both male and female recent immigrants after acquiring Canadian educational credentials.

Work experience

Work experience to some extent has an observed pattern of results like education. In comparison with the Canadian-born, both male and female immigrants earn significantly less per year of domestic work experience in the private sector than in the public sector (Nadeau, 2013). Zheng (2017) also reinforces the finding that wage returns to years of experience is higher among the Canadian-born in both sectors.

Language skills

Expanding his analysis, Nadeau (2013) notes that the net reward for language skills are higher for immigrants than the Canadian-born. While the premium to bilingualism in both sectors is enjoyed more by immigrants, very few Canadian-born bear the full repercussion of not knowing either of the official languages of Canada (more severely in the private sector). For example, in the private sector, an immigrant who can neither speak English nor French earns 17 percent less than an immigrant who can speak both languages, whereas a Canadian-born who speaks neither language recorded a penalty of 25.1 percent. Zheng's (2017) common regression results corroborate Nadeau's (2013) findings as he notes that the reward for bilingualism among the Canadian-born is 3.1 percent lower than that of immigrants. In the immigrant-specific regression (which has unique variables for immigrant workers such as source country and years since migration), however, Zheng (2017) finds that bilingual Canadian-born male workers in the private sector enjoy a 1.2 percent premium compared to their immigrant counterparts. Again, Nadeau (2013) finds that the premium for bilingualism is highest for immigrants in the private sector, whereas Zheng (2017) maintains that the public sector generally rewards more for bilingualism.

Discrimination

The role of discrimination in determining immigrant wage gaps has largely been an anecdotal subject, but it has had some empirical support in recent times. Most literature highlight that discrimination is captured in the unexplained effect component of the total wage gap (Nadeau, 2013; Zheng, 2017). But Nadeau (2013) suggests that in addition, the fixed effect of the source country (i.e., the country of birth) could potentially be a channel of measuring the explanatory power of discrimination on the immigrant wage gap. In applying this to his analysis, he generally concludes that discrimination is more of a private sector factor than a public sector one, and in fact, finds that there is no discrimination among females in the public sector. For the private sector, however, he finds that male immigrants from non-traditional source countries (i.e., Africa, Asia, etc.) earn 18.8 percent less than their Canadian-born counterparts, whereas immigrants from traditional source countries (USA, Western Europe) earn as much as 2.8 percent more wages than the comparable Canadian-born.

On the other hand, Zheng (2017) finds that the effect of an immigrant's birth country is higher in the public sector than the private sector. Comparing the coefficients of male immigrants born in Europe and those born in Africa for instance, Zheng's results shows a 20.5 percent difference (to the disadvantage of Africans) in the public sector, and similar to Nadeau (2013), records a gap of 18.6 percent in the private sector. Results for females reflect a similar pattern.

Despite the contrasting conclusion by both studies with regards to the sector weighting of the effects of 'discrimination', what remains a constant thread among both findings is that, immigrants originating from traditional source countries earn significantly more than immigrants sourced from non-traditional source countries, and so the immigrant wage gap among the former group will be

narrower (or nonexistent) compared to the latter group. This inference is consistent with Nadeau & Seckin's (2010) simulation which showed that the relative wage gap disadvantage of immigrant sourced from non-traditional countries is reversed to a wage gap advantage if immigrants are from a traditional source country.

The rationale that has been postulated to explain this observation is that the criteria for assessing the value of immigrants' foreign credentials (i.e., human capital skills) in the Canadian labour market is directly linked to the socio-economic status/rank of immigrants' source country (Banerjee and Lee, 2015). Thus, immigrants sourced from countries within the same development category as Canada have their foreign credentials assessed to be equivalent to that of the Canadian-born (Picot & Sweetman, 2005). Developing this further, Coulombe et al. (2014) propose GDP per capita of an immigrant's country of birth as a proxy for the quality of foreign-acquired human capital. Thus, holding all factors constant, immigrants from low per capita GDP countries, such as sub-Saharan African countries, would have a larger immigrant wage gap (in both public and private sectors), whereas immigrants from high per capita GDP countries such as Western European countries would be at par with their Canadian-born counterparts in both sectors.

While this rationale to a large extent explains the observed immigrant wage gaps among many groups of immigrants, it does not entirely fill in the gaps for the observed immigrant wage gap among some 'visible minorities' from parts of Asia and the Middle East with very high development indexes and GDP rates comparable with Canada. Therefore, to some extent sheer discrimination may be causing the observed immigrant wage gaps across sectors.

Unexplained effect component

Results from the empirical comparison of the immigrant-Canadian-born wages within the sectors indicate that the largest portion of the total immigrant wage gap (particularly in the private sector) is the unexplained effect component. In Nadeau's (2013) study, he finds that the (positive) value of the unexplained component for Canadian-born males in the private sector is 60 percent larger than that of the comparable immigrants. He finds a similar pattern of results for females. Consequently, the wages of Canadian-born in the private sector are larger than that of their immigrant counterparts.

Nadeau (2013) suggests that discrimination could be a part of the unexplained component. He argues that holding immigrants' source country constant, discrimination against immigrants could be wholly captured in the unexplained component. However, another variable that could be captured by the unexplained component is the status associated with a job. Prestige could be a compensating differential for a relatively lower paying job. For instance, holding all factors constant, for a higher sense of accomplishment, an immigrant university graduate may prefer to work in a reputable course-of-study-related workplace who pays relatively lower wages than to work in an unrelated institution that pays relatively higher wages.

Zheng (2017) applies the decomposition method to measure the immigrant-Canadian wage differences between sectors. He concludes that the unexplained effect accounts for the larger proportion of the total public-private sector wage gap among the immigrant group, but his results show that a similar conclusion cannot be drawn for the Canadian-born.

Without breaking down their study across the public and private sectors, Coulombe et al. (2014) also find an immigrant wage gap because of the negative unobserved component of

immigrant wage determination exceeds the positive effect of the observable skills of immigrants. This suggests that Canadian-born workers are paid more in a way that cannot be explained.

While the very little empirical work to date presents an overarching view of the existing trend of average immigrant wage gap differences within and between the public and private sectors, it is imperative from a welfare perspective, to advance beyond the mean to probe the entire distribution of wages of immigrants relative to the Canadian-born. For policy purposes, it would be useful to evaluate these wage gaps by fully capturing both the mean and other distributional differences like the median (i.e. 50th quantile), etc. We apply unconditional quantile regression in our analysis to observe how these observed immigrant wage gap within and between sectors, varies at different parts of the wage distribution, while controlling for various worker and job-related characteristics that confounds wage differences between groups.

CHAPTER 3: METHODOLOGY

This chapter describes the data and the methodology used in this analysis. Multivariate estimation methods are built for the evaluation of the immigrant-Canadian-born wage differences both within and between the levels of the public sector and the private sector. The starting point is specifying the human capital model for both immigrant and the Canadian-born; using the Ordinary Least Squares (OLS) method to measure the wage premiums across the respective sectors for both immigrants and the Canadian-born. We further apply unconditional quantile regression method (i.e., the “rifreg” command in STATA) to measure the total immigrant wage gap at different quantiles of the wage distribution. The Oaxaca (1973) and Blinder (1973) decomposition estimation technique is then applied to decompose the mean wage gap into the explained and unexplained components. The unconditional quantile regression is then combined with the Oaxaca-Blinder decomposition technique to derive the final estimation method which decomposes the immigrant wage gap within and between the private sector and the levels of the public sector at the 10th, 25th, 50th, 75th and 90th quantiles of the wage distribution.

3.1 DATA AND SAMPLE RESTRICTIONS

We use Statistics Canada’s LFS Masterfile cross-sectional data from 2006 through to 2018. Merging these monthly datasets gives a larger sample size for our analysis. Also, this period not only covers all periods under which Nadeau (2013) and Zheng (2017) have analyzed, but also covers more recent years.

The LFS sample data employs a cross-sectional design and probability sampling method that is based on a stratified multi-stage design, to collect monthly data on the labour market activities of Canada’s working-age population including wages, employment estimates by public or private sector, union status of workers, and other relevant variables. (Statistics Canada, 2019). The sample size is approximately 54,000 households per month, which translates to approximately

100,000 individual responses. Responding to the LFS survey is mandatory (with very few exceptions) and thus records an average non-response rate of only 10 percent for all eligible households (Statistics Canada, 2019).

We identify the Canadian-born group and the immigrant group respectively from the variables “CNTRYBTH” (country of birth) and “LANDIMM” (landed immigrant). The Canadian-born group are those who recorded their country of birth to be Canada. The variable “LANDIMM” has a universe of all those who indicate their country of birth not to be Canada and further indicate whether they are landed immigrants or not. The largest number of the “LANDIMM” respondents are landed immigrants (i.e. permanent residents), whereas a small number consist of (Canadian) people born to Canadian parents outside of Canada and temporary residents (i.e., those born abroad who are neither landed immigrants nor citizens). We eliminate the aforementioned groups from our immigrant group to make the estimates clearer without the confounding influences of Canadians born abroad to Canadian parents and temporary residents (including international students). As Zheng (2017) highlights, a significant proportion of temporary residents would return to their home country at the expiration of their visas. Also, most public sector jobs require citizenship or permanent residency status. Hence, the final definition of the immigrant group are people born outside of Canada and who are landed immigrants (i.e., permanent residents or citizens but not those born as citizens outside of Canada). A single variable “status” is created for the two comparison groups: Canadian-born and immigrants.

We identify private and public sector employees by the variable “COWMAIN” (class of worker). This variable also records different categories of self-employed workers, which we eliminate because there is no wage data for the self-employed. We use the “NAICS” (North American Industry Classification System) variable to further identify the levels of the public sector: federal government public administration; provincial and territorial public administration; local,

municipal and regional public administration; aboriginal public administration (very small sample fraction 0.13 percent); international and other extra-territorial public administration (also a very small sample fraction of 0.19 percent); and non-administrative public sector (i.e., a summation of all other NAICS categories owned or funded by the government). We create a variable-“publicadmin” for these public sector subgroups. Our analysis however focuses on the largest subgroups within the public sector: federal public administration; provincial public administration; local public administration; and non-administration public sector. We only use the smaller subgroups: aboriginal public administration, international and other extra-territorial public administration, as controls in our regression analyses, except when we look at the aggregated public sector.

We subsequently impose a sample restriction on the age of workers to be between 25 and 54 years, to capture the most active labour force, and eliminate workers who work less than 5 hours a week or more than 100 hours a week. We also eliminate those with real hourly wage (in 2002 dollars) of less than \$5. The final sample contains 5,333,078 observations: with a total sample of 815,435 for immigrants and 4,157,643 for the Canadian-born.

3.2 STUDY VARIABLES

Our dependant variable is log of real hourly wage (in 2002 dollars) which we will derive from the hourly earning variable “HRLYEARN”, by adjusting it with monthly consumer price index (CPI) rates, using the formula: $(HRLYEARN/CPI)*100$. The main regressors are the “COWMAIN” (a dichotomous variable for public or private sector workers) and “publicadmin” (variable for the respective levels of the public sector) variables. We control for the highest level of education. Our other control variables are categorized as demographic variables (sex, marital status, age squared, family type), job characteristics (multiple job holder status, job tenure, full-time/part-time), union status, geography (province, urban status), occupation, industry, and survey

period (year, month). Although, the years of experience has been theoretically and empirically found to be determine wages, we found the variables age and years of work experience to be strongly correlated and so we omit the years of work experience variable out of the regressions, as regression results do not change qualitatively when using either variable.

3.3 SUMMARY STATISTICS

Detailed summary statistics of immigrants and Canadian-born workers across the public and private sectors respectively, are presented in Table 3.3.1 below.

Table 3.3.1: *Summary Statistics (standard deviations for continuous variables are in parenthesis)*

	Immigrants		Canadian-born	
	Public Sector Workers	Private Sector Workers	Public Sector Workers	Private Sector Workers
Real hourly wage (in 2002\$)				
All Public Sector	24.50 (10.054)	18.44 (9.942)	25.25 (9.337)	20.22 (9.998)
Non-administrative public sector	23.80 (9.971)	N/A	24.67 (9.198)	N/A
Federal public administration	27.36 (9.772)	N/A	27.58 (9.481)	N/A
Provincial public administration	26.19 (10.088)	N/A	26.16 (9.649)	N/A
Local public administration	26.86 (10.010)	N/A	26.38 (9.376)	N/A
Proportion of total employment	17.75%	82.25%	28.48%	71.52%
Non-administrative public sector	76.30%	N/A	72.09%	N/A
Federal public administration	9.82%	N/A	10.66%	N/A
Provincial public administration	7.07%	N/A	7.99%	N/A
Local public administration	6.38%	N/A	9.05%	N/A
Aboriginal public administration	0.06%	N/A	0.19%	N/A
International public administration	0.37%	N/A	0.01%	N/A

	Immigrants		Canadian-born	
	Public Sector Workers	Private Sector Workers	Public Sector Workers	Private Sector Workers
Highest level of education				
Grade 8 or less	0.40%	2.67%	0.23%	1.23%
Grade 9-10	0.65%	2.64%	0.85%	4.13%
Grade 11-13, non-graduate	0.55%	1.86%	0.90%	3.55%
Grade 11-13, graduate	7.90%	17.61%	10.33%	21.92%
Some post-secondary education	2.70%	4.13%	3.69%	6.27%
Trades certificate/diploma	4.45%	6.68%	8.14%	15.28%
Community college, CEGEP, etc.	22.23%	20.96%	27.82%	25.39%
University certificate below Bachelor's	3.05%	2.56%	3.62%	2.49%
Bachelor's degree	32.67%	27.75%	30.50%	15.35%
Above Bachelor's degree	25.42%	13.14%	13.93%	4.40%
Age	41.79	40.34	40.58	39.03
	(7.923)	(8.234)	(8.541)	(8.820)
Sex				
Male	38.44%	52.25%	36.18%	56.32%
Female	61.56%	47.75%	63.82%	43.68%
Marital Status				
Married	68.76%	68.77%	53.67%	44.95%
Common-law	7.04%	6.36%	19.49%	21.58%
Widow or widower	0.55%	0.61%	0.53%	0.48%
Separated	3.23%	2.92%	3.18%	3.35%
Divorced	4.86%	4.20%	4.70%	4.28%
Single, never married	15.56%	17.14%	18.44%	25.36%
Economic family type				
Unattached individual	10.75%	11.42%	14.48%	17.98%
Husband-wife, dual earner couple, no children or none under 25	14.18%	14.02%	19.72%	20.28%
Husband-wife, dual earner couple, youngest child 0 to 17	40.95%	36.00%	38.94%	31.39%
Husband-wife, dual earner couple, youngest child 18 to 24	7.01%	6.27%	6.54%	5.66%
Husband-wife, single earner couple, husband employed, youngest child 0 to 17	5.25%	8.58%	2.12%	4.39%
Other families	6.43%	8.89%	3.99%	5.85%

	Immigrants		Canadian-born	
	Public Sector Workers	Private Sector Workers	Public Sector Workers	Private Sector Workers
Husband-wife, single earner couple, husband employed, youngest child 18 to 24	0.57%	0.86%	0.41%	0.66%
Husband-wife, single earner couple, wife employed, no children or none under 25	1.62%	1.45%	2.11%	1.88%
Husband-wife, single earner couple, wife employed, youngest child 0 to 17	2.80%	2.18%	1.63%	1.18%
Husband-wife, non-earner couple, no children or none under 25	0.79%	1.00%	0.74%	1.11%
Husband-wife, non-earner couple, youngest child 0 to 17	0.04%	0.10%	0.01%	0.02%
Husband-wife, non-earner couple, youngest child 18 to 24	0.06%	0.13%	0.05%	0.06%
Single-parent family, parent employed, youngest child 0 to 17	5.46%	4.36%	5.71%	5.11%
Single-parent family, parent employed, youngest child 18 to 24	1.72%	1.43%	1.59%	1.38%
Single-parent family, parent not employed, youngest child 0 to 17	0.08%	0.16%	0.04%	0.09%
Single-parent family, parent not employed, youngest child 18 to 24	0.04%	0.09%	0.04%	0.07%
Province				
Newfoundland	0.27%	0.09%	2.24%	1.68%
Prince Edward Island	0.11%	0.07%	0.63%	0.43%
Nova Scotia	0.95%	0.46%	3.50%	3.13%
New Brunswick	0.59%	0.33%	2.88%	2.58%
Quebec	16.82%	14.53%	26.61%	26.37%
Ontario	47.76%	53.39%	34.23%	35.36%
Manitoba	4.24%	2.98%	4.54%	3.19%
Saskatchewan	2.07%	1.29%	4.09%	3.02%
Alberta	11.81%	11.34%	10.30%	12.76%

	Immigrants		Canadian-born	
	Public Sector Workers	Private Sector Workers	Public Sector Workers	Private Sector Workers
British Columbia	15.39%	15.52%	10.98%	11.48%
Survey year				
2006	6.15%	6.96%	7.52%	7.84%
2007	6.34%	7.06%	7.69%	7.86%
2008	6.57%	7.03%	7.72%	7.90%
2009	6.60%	6.77%	7.69%	7.67%
2010	6.96%	6.95%	7.78%	7.73%
2011	7.64%	7.25%	7.65%	7.78%
2012	7.66%	7.54%	7.63%	7.78%
2013	7.84%	7.77%	7.74%	7.66%
2014	8.23%	7.90%	7.64%	7.66%
2015	8.58%	8.09%	7.74%	7.60%
2016	8.88%	8.67%	7.63%	7.48%
2017	8.92%	8.81%	7.77%	7.57%
2018	9.63%	9.21%	7.80%	7.47%
Job holds				
Single job holder, not a job changer	92.79%	94.90%	94.07%	95.41%
Single job holder, job changer	0.05%	0.04%	0.03%	0.07%
Multiple job holder	7.17%	5.06%	5.90%	4.52%
Job status				
Permanent or temporary job status				
Permanent	84.47%	91.37%	87.88%	92.66%
Not permanent, seasonal job	0.62%	1.12%	0.87%	2.47%
Not permanent, temporary, term or contract job	11.55%	5.64%	8.53%	3.73%
Not permanent, temporary, casual job or work done through a temporary help agency *	3.17%	1.83%	2.56%	1.08%
Not permanent, other	0.19%	0.05%	0.16%	0.04%
Work Schedule				
Full-time (30+ hours/week)	87.92%	90.14%	88.79%	90.69%
Part-time work (<30 hours/week)	12.08%	9.86%	11.21%	9.31%
Union status				
Union member	69.99%	14.17%	75.85%	17.71%
Not a union member but covered by a collective agreement (CA)	3.09%	1.54%	3.37%	1.73%
Not a union member and not covered by a collective agreement (CA)	26.93%	84.29%	20.78%	80.56%

	Immigrants		Canadian-born	
	Public Sector Workers	Private Sector Workers	Public Sector Workers	Private Sector Workers
Tenure at current job (months)	96.17	69.84	129.41	89.71
Firm size				
<20 employees	3.50%	20.76%	3.14%	22.45%
20-99 employees	7.04%	18.18%	6.53%	19.49%
100-500 employees	11.43%	16.48%	12.81%	15.40%
>500 employees	78.03%	44.58%	77.53%	42.66%
Occupation				
Legislators and senior management	0.23%	0.29%	0.41%	0.44%
Specialized middle manager occupations (1)	0.93%	2.02%	1.22%	2.47%
Specialized middle manager occupations (2)	0.51%	0.94%	0.44%	0.75%
Specialized middle manager occupations (3)	0.45%	0.09%	0.52%	0.13%
Specialized middle manager occupations (4)	1.65%	0.18%	2.58%	0.34%
Specialized middle manager occupations (5)	0.07%	0.04%	0.12%	0.12%
Middle management occupations in wholesale and retail trade and customer service	0.13%	2.18%	0.23%	3.22%
Middle management occupations in trades, transportation, production and utilities (1 & 2) *	0.27%	0.67%	0.37%	1.25%
Middle management occupations in trades, transportation, production and utilities (3)	0.13%	0.58%	0.18%	0.73%
Professional occupations in business and finance	4.01%	4.99%	3.34%	4.08%
Administrative and financial supervisors and administrative occupations	6.35%	4.28%	7.70%	5.55%
Technical occupations related to natural and applied sciences	3.52%	4.38%	3.57%	4.12%

	Immigrants		Canadian-born	
	Public Sector Workers	Private Sector Workers	Public Sector Workers	Private Sector Workers
Finance, insurance and related business administrative occupations	0.41%	1.20%	0.51%	1.35%
Office support occupations	6.65%	4.91%	6.51%	5.01%
Distribution, tracking and scheduling co-ordination occupations	2.17%	2.26%	2.38%	2.15%
Professional occupations in natural and applied sciences	7.20%	8.79%	3.53%	4.42%
Professional occupations in nursing	9.38%	0.48%	7.22%	0.41%
Technical occupations in health	5.01%	1.36%	4.16%	1.44%
Assisting occupations in support of health services	5.70%	2.29%	2.96%	1.42%
Professional occupations in education services	15.43%	0.51%	18.55%	0.55%
Professional occupations in law and social, community and government services	5.23%	1.42%	6.08%	1.80%
Paraprofessional occupations in law and social, community and government services	2.22%	2.21%	2.52%	2.19%
Occupations in front-line public protection services	1.57%	0.01%	4.01%	0.03%
Care providers in education, legal, and public protection support occupations	3.45%	1.13%	3.75%	0.42%
Professional occupations in art and culture	0.58%	0.39%	0.67%	0.64%
Technical occupations in art and culture	0.52%	1.08%	0.94%	1.39%
Service supervisors and specialized service occupations	0.93%	4.75%	0.96%	3.46%

	Immigrants		Canadian-born	
	Public Sector Workers	Private Sector Workers	Public Sector Workers	Private Sector Workers
Retail sales supervisors and specialized sales occupations	0.13%	3.20%	0.19%	4.53%
Sales representatives and salespersons - wholesale and retail trade	0.21%	3.97%	0.27%	5.33%
Service representatives and other customer and personal services occupations	1.76%	5.75%	1.56%	5.39%
Service support and other occupations, nec	5.09%	5.48%	3.28%	2.94%
Industrial, electrical and construction trades	0.52%	4.44%	1.37%	7.27%
Maintenance and equipment operation trades	0.76%	2.60%	1.15%	5.03%
Other installers, repairers and services and material handlers	0.29%	2.15%	0.27%	2.00%
Transport and heavy equipment operation and related maintenance occupations	2.38%	2.82%	2.00%	4.33%
Trades helpers, construction labourers and related occupations	0.31%	0.81%	0.65%	1.02%
Supervisors and technical occupations in natural resources, agriculture and related production	0.03%	0.23%	0.08%	1.15%
Workers in natural resources, agriculture and related production	0.02%	0.44%	0.06%	0.78%
Harvesting, landscaping and natural resources labourers	0.10%	0.29%	0.25%	0.52%
Labourers in processing, manufacturing and utilities	0.01%	2.29%	0.02%	1.08%

	Immigrants		Canadian-born	
	Public Sector Workers	Private Sector Workers	Public Sector Workers	Private Sector Workers
Processing, manufacturing and utilities supervisors and central control operations	0.52%	1.17%	0.89%	1.56%
Processing and manufacturing machine operators and related production workers	0.01%	4.69%	0.02%	2.64%
Industry				
Agriculture, forestry, fishing and hunting	0.07%	0.72%	0.28%	1.38%
Mining, quarrying, and oil and gas extraction	0.03%	1.16%	0.08%	3.12%
Utilities	2.62%	0.14%	3.68%	0.29%
Construction	0.26%	5.32%	0.57%	9.65%
Manufacturing	0.15%	20.03%	0.08%	16.30%
Wholesale trade	0.02%	4.79%	0.03%	5.79%
Retail trade	0.41%	11.21%	0.61%	13.57%
Transportation and warehousing	6.03%	4.96%	4.61%	5.42%
Information and cultural industries	0.85%	3.05%	0.92%	3.24%
Finance and insurance	1.23%	7.94%	1.23%	6.74%
Real estate and rental and leasing	0.43%	1.66%	0.27%	1.55%
Professional, scientific and technical services & *Management of companies and enterprises	0.25%	10.43%	0.25%	8.35%
Administrative and support, waste management and remediation services	0.23%	5.64%	0.26%	4.33%
Educational services	27.39%	0.85%	29.62%	0.78%
Health care and social assistance	34.82%	8.26%	27.83%	7.90%
Arts, entertainment and recreation	1.28%	0.93%	1.64%	1.49%
Accommodation and food services	0.21%	8.20%	0.14%	5.54%
Other services (except public administration)	0.03%	4.71%	0.01%	4.56%
Public administration	23.70%	N/A	27.91%	N/A

IMMIGRANT-SPECIFIC VARIABLES	Immigrants		Canadian-born	
	Public Sector Workers	Private Sector Workers	Public Sector Workers	Private Sector Workers
<i>Region of birth</i>				
North America (Excl. Canada)	4.60%	2.44%	N/A	N/A
Central America	2.20%	3.04%	N/A	N/A
Caribbean and Bermuda	7.41%	5.54%	N/A	N/A
Western Europe	5.43%	3.45%	N/A	N/A
Eastern Europe	8.00%	7.71%	N/A	N/A
Northern Europe	8.64%	5.22%	N/A	N/A
Southern Europe	5.82%	5.97%	N/A	N/A
Western Africa	2.14%	1.39%	N/A	N/A
Eastern Africa	3.49%	2.39%	N/A	N/A
Northern Africa	4.19%	2.98%	N/A	N/A
Central Africa	0.99%	0.62%	N/A	N/A
Southern Africa	0.76%	0.62%	N/A	N/A
West Central Asia and Middle East	5.31%	6.29%	N/A	N/A
Eastern Asia	10.85%	13.86%	N/A	N/A
South-East Asia	13.55%	15.84%	N/A	N/A
Southern Asia	10.84%	16.24%	N/A	N/A
Europe (Not specified), Africa (not specified), Asia (Not specified) *	0.21%	0.20%	N/A	N/A
<i>Country/region obtained highest level of education*</i>				
Canada	58.19%	43.82%	N/A	N/A
North America (Excl. Canada)	3.51%	2.59%	N/A	N/A
Central America	0.58%	0.93%	N/A	N/A
Caribbean and Bermuda	1.13%	1.21%	N/A	N/A
South America	1.49%	2.24%	N/A	N/A
Western Europe	3.47%	3.26%	N/A	N/A
Eastern Europe	3.36%	4.34%	N/A	N/A
Northern Europe	2.53%	2.96%	N/A	N/A
Southern Europe	0.93%	1.29%	N/A	N/A
Western Africa	0.96%	0.65%	N/A	N/A
Eastern Africa	0.41%	0.66%	N/A	N/A
Northern Africa	3.20%	2.34%	N/A	N/A
Central Africa	0.27%	0.31%	N/A	N/A
Southern Africa	0.15%	0.32%	N/A	N/A
West Central Asia and Middle East	2.13%	3.31%	N/A	N/A
Eastern Asia	3.13%	6.49%	N/A	N/A

	Immigrants		Canadian-born	
	Public Sector Workers	Private Sector Workers	Public Sector Workers	Private Sector Workers
South-East Asia	7.79%	11.39%	N/A	N/A
Southern Asia	6.10%	11.34%	N/A	N/A
Oceania	0.67%	0.55%	N/A	N/A
<i>Years since became landed immigrant</i>				
Landed for a year or less	0.28%	0.66%	N/A	N/A
Landed for less than 5 years (but more than 1year)	4.54%	10.24%	N/A	N/A
Landed for 5-10 years	17.79%	22.19%	N/A	N/A
Landed for more than 10years	77.39%	66.90%	N/A	N/A
Weighted Sample	60,641,954	280,942,331	330,899,875	830,782,228
Unweighted Sample	167,056	648,379	1,379,449	3,138,194

Source: Statistics Canada

Notes: * indicates two or three categories were combined to meet Statistics Canada's microdata release guidelines. We record no Canadian-born who received their highest level of education outside of Canada because the universe of that variable excludes all those who were born in Canada (which is our definition of the Canadian-born group).

From the statistics presented between the sectors, both immigrants and Canadian-born public sector workers generally have a higher average real wage than their respective private sector counterparts. Within the respective sectors however, the average real wage differential between the immigrant and the Canadian-born is highest in the private sector. The average real wage of the Canadian-born in the private sector is 9.6 percent higher than for immigrants. Also, the Canadian-born comparatively record a higher average real wage in the non-administrative public and federal public administration sectors respectively. On the other hand, the average real wage of immigrants exceeds that of the Canadian-born by 1.9 percent within the local public administration sector. There is, however, close to real wage equity between the immigrants and Canadian-born workers within the federal and provincial public administration sectors.

About three-quarters (76.3 percent of immigrants and 72.1 percent of the Canadian-born) of public sector employment is held in the non-administrative public sector. Also, among both

immigrants and Canadian-born, the federal public administration is the second highest public sector employer, with the Canadian-born recording a slightly higher percentage than 9.8 percentage recorded among immigrants. While the provincial public administration is the third-highest public sector employer among immigrants (7.1 percent), it ranks as the fourth highest public sector employer among Canadian-born (8.0 percent). Conversely, the local public administration ranks as the fourth highest public sector employer among immigrants (6.4 percent) but ranks third highest among Canadian-born (9.1 percent).

Consistent with Nadeau (2013), immigrants record higher levels of education than the Canadian-born, with immigrants in the public sector recording the largest proportion of workers with the highest level of education: 58.1 percent of immigrants employed in the public sector hold a minimum of a bachelor's degree, whereas the equivalent fraction for the Canadian-born is 44.4 percent. The proportional difference between the immigrant and the Canadian-born workers in the private sector is even much larger: Within the private sector, the fraction of immigrant workers with a bachelor's degree or higher is about twice that of the Canadian-born.

Comparing demographics, immigrant workers across the public and private sectors on the average, are about one year older than the Canadian-born. Also, 68.8 percent of immigrants in both the public and private sectors are married, whilst the equivalent proportions among the Canadian-born is 53.7 percent and 45.0 percent, respectively. Among both immigrants and the Canadian-born, females make up more than 60.0 percent of public sector employee population, leaving the private sector to be the relatively male-dominated sector.

More than half of private sector employment (53.4 percent) among immigrants is concentrated in Ontario. Ontario together with Quebec, Alberta and British Columbia account for 94.8 percent of the total private sector employment among immigrants. This total percentage is 3 percentage points higher than the equivalent in the public sector. Among the Canadian-born

however, these four provinces collectively account for 86.0 percent and 82.1 percent of employment in the private and public sectors, respectively.

With respect to job characteristics, the average job tenure is higher among public sector workers (especially the Canadian-born), suggesting higher job security in the public sector. Lamnam et al. (2016) made a similar observation. Also, in both the public and private sectors the fraction of single job holders (and not job changers) is relatively higher among the Canadian-born group, suggesting a relatively higher level of job satisfaction compared to the immigrant group, *ceteris paribus*.

Among both immigrants and Canadian-born workers alike, the proportion of permanent and full-time workers in the private sector is relatively higher than those in the public sector, and this, similar to Lamnam et al.'s (2016) observation in their study, is due to a relatively larger proportion of term/contract job holders in the public sector. Again, both immigrant and Canadian-born public sector workers are employed in larger firms (i.e., 100-500 or >500 employees) than private sector workers.

About three-quarters of public sector workers are union members or covered by a collective agreement (73.1 percent for immigrants, 79.2 percent for Canadian-born), whereas less than one-fifth of private sector workers are union members or covered by a collective agreement (15.7 percent for immigrants, 19.4 percent for Canadian-born). This may indicate that both immigrants and Canadian-born workers in the public sector have a stronger voice to bargain for higher wages.

Both immigrant and Canadian-born public sector workers dominate professional occupations in nursing and educational services. In addition to the public administration industry (which is exclusive to the public sector), the health care and social assistance industry is dominated by the public sector, with immigrant public sector workers recording a relatively larger proportion (34.8

percent) than Canadian-born public sector workers (27.8 percent). Private sector workers on the other hand have their highest concentration within the manufacturing and retail trade, respectively.

With regards to the immigrant-specific variables, most immigrants originate from non-traditional source countries; with more than half of the total immigrant population being born in the regions of Africa, Asia and the Middle East. The respective proportions in the public and private sectors are 52.1 percent and 60.2 percent. While immigrants originating from traditional source regions like North America, Western Europe, Eastern Europe, Northern Europe, and Caribbean and Bermuda are mainly employed in the public sector, immigrants originating from non-traditional source regions (like various parts of Asia and the Middle East) dominate the private sector, accounting for more than half of the total immigrant employment in the private sector.

Interestingly, a significant proportion of immigrants obtained their highest level of education in Canada, with public sector workers recording a relatively higher fraction (58.2 percent) than their private sector counterparts (43.8 percent). Also, 95.2 percent of immigrants employed in the public sector are landed immigrants of between 5-10 years or 10 years or more, compared to a proportion of 89.1 percent in the private sector. This may imply that immigrants in the public sector are more likely to have acquired more Canadian job experience than those in the private sector and therefore would not require translation of their foreign credentials as they have acquired relevant Canadian credentials.

3.4 ECONOMETRIC MODEL

Our starting point is the human capital model for both immigrants and the Canadian-born, using pooled OLS method:

$$\ln(w_{it})^z = x^z_{it,1}\beta^z_1 + x^z_{it,2}\beta^z_2 + \varepsilon^z_{it} \quad \text{-----} \quad (3.1)$$

where:

z denotes whether worker i is an immigrant (IM) or Canadian-born (CA);

$\ln(w_i)$ is the natural log of real hourly wages for IM or CA;

x_{i1} is a vector of characteristics for individual i at time t ;

x_{i2} is the sector variable (COWMAIN) i at time t ;

β_1 is a vector of coefficients of x_{i1} ;

β_2 is the coefficient of x_{i2} ; and

ε_{it} is the error term i at time t , which we assume has a zero mean and a constant (and finite) variance.

Expanding the model further to capture the different levels of the public sector, we adopt the model used by Mueller (2019):

$$\ln(w_{it})^z = x_{it,1}\beta_1^z + NPA_{it}\delta_1^z + FED_{it}\delta_2^z + PRO_{it}\delta_3^z + LOC_{it}\delta_4^z + \varepsilon_{it}^z \text{ ----- (3.2)}$$

where:

NPA_{it} , FED_{it} , PRO_{it} and LOC_{it} are mutually-exclusive variables which denote that a public sector worker i is employed in the non-administrative public sector, federal public administration, provincial public administration and local public administration sectors, respectively at time t ,

δ_1 is the relative weighted-average premium of being a non-administrative public sector worker relative to private sector workers;

δ_2 is the premium for being a federal administration public sector worker relative to the omitted industry category;

δ_3 is the premium for being a provincial administration public sector worker relative to the omitted industry category;

δ_4 is the premium for being a local administration public sector worker relative to the omitted industry category; and

the interpretations for z , $x_{it,1}$, and β_1 remain the same as before.

Again, we assume that the error term ε_i is the error term which we assume has a zero mean and a constant (and finite) variance.

With this model, we can observe how both the immigrant-Canadian-born wage differences within and between sectors vary as the various covariates are controlled for. But as Mueller (2019) highlights in his analysis, the key limitation of this model is that it does not allow us to ascertain the explained (or composition effect) and unexplained (or wage structure effect) portions of the total wage differentials. It is thus uncertain what part of the total wage differential is attributable to sectoral differences in labour market characteristics (i.e. individual worker characteristics) and what is attributable to the different rates of labour market returns in each respective sector (i.e. how the characteristics of labour are rewarded in each respective sector). The OLS method of estimation assumes that all sectors have the same rate of return for attributes of workers.

To address this challenge, we apply the ubiquitous Oaxaca-Blinder (1973) decomposition technique to evaluate the average immigrant wage difference across the public and private sectors with the assumption that “the wage setting model is assumed to be linear and separable in observable and unobservable characteristics” (Firpo, Fortin and Lemieux, 2009, p. 37). The equation is given as:

$$\overline{\ln(w_G)^z} - \overline{\ln(w_P)^z} = \sum \beta_G^z (\bar{x}_G^z - \bar{x}_P^z) + \sum (\beta_G^z - \beta_P^z) \bar{x}_P^z + \varepsilon^z \text{ ----- (3.3)}$$

where:

z = immigrant (IM) or a Canadian-born (CA)

The subscripts G and P respectively indicates if an employee is employed in the public sector or private sector

Again:

$\overline{\ln(w)^z}$ is the sample mean natural log of real hourly wage in the respective sector for immigrants or the Canadian-born;

\bar{x} is a row vector of the sample mean values of the determinants in each respective sector; and

β is a vector of coefficients of the determinants in each respective sector.

The explained component of the total wage differential is the first term on the right-hand-side of the equation $\sum \beta_G^z (\bar{x}_G^z - \bar{x}_P^z)$. This component represents the part of the wage gap due to differences in the average worker characteristics in each respective sector. The second term on the right-hand-side of equation $\sum (\beta_G^z - \beta_P^z) \bar{x}_P^z$ is the unexplained component. This is the part of the wage gap due to differences in the wage structure (i.e. how worker characteristics are rewarded) in each respective sector and is often regarded as a measure of discrimination.

Following Mueller's (2019) approach, we introduce a preferred weight using the relative size of each group, which varies with the definition of the level of the public sector being analyzed (for the immigrant and the Canadian-born respectively). This preferred weight gives estimates between the bounds of the wage differentials between groups that are explained and unexplained.

In applying this method to estimate and compare the mean immigrant wage gap within and between the private sector against each respective level of the public sector, we are still however unable to determine how the wage gap varies at different levels of the wage distribution. But the literature (Mueller, 1998, 2019) has shown that wage differentials vary at different parts of the wage distribution.

To overcome this limitation, we will apply the unconditional quantile (Recentered Influence Function) RIF-regression method, credited to Firpo, Fortin and Lemieux (2009), along with the Oaxaca-Blinder decomposition technique to estimate the public-private sector wage

differential at the 10th, 25th, 50th, 75th and 90th quantiles of the log of real hourly wage distribution between immigrants and the Canadian-born.

Specifying first, the unconditional RIF-regression model, we have:

$$\ln(w_{it}^q)^z = (x_{it,1}\beta_1^z)^q + (NPA_{it}\delta_1^z)^q + (FED_{it}\delta_2^z)^q + (PRO_{it}\delta_3^z)^q + (LOC_{it}\delta_4^z)^q + (\varepsilon_{it}^z)^q \text{ -----}$$

----- (3.4)

where $\ln(w_i^q)^z$ is the recentered influence function of the qth quantile of the natural log of real hourly wage.

The interpretation for all other variables is like those from equation (3.2), except for the variables δ_1 to δ_4 which are now interpreted as the relative public sector wage premium at the unconditional qth quantile of the natural log of real hourly wage distribution.

Eliminating the public sector dummy variables from equation (3.3) and combining it with equation (3.4), we derive our final detailed Oaxaca-Blinder model for both IM and CA respectively:

$$\overline{\ln(w_G)^q} - \overline{\ln(w_P)^q} = \sum \beta_G^q (\bar{x}_G - \bar{x}_P)^q + \sum (\beta_G^q - \beta_P^q) \bar{x}_P^q \text{ ----- (3.5)}$$

With this final model, we can compare the decomposed immigrant wage gap within each respective sector at different quantiles. To extend our analysis even further, we can additionally, measure the decomposed total public-private sector wage differential (i.e., between the private sector and the entire public sector, non-administrative public sector, federal public administration, provincial public administration, and the local public administration) at different quantiles, within the immigrant group and the Canadian-born group.

CHAPTER 4: EMPIRICAL RESULTS

This chapter presents and discusses the results of the multivariate regressions that address the research objectives. The results will be presented in two main parts. Section 4.1 primarily addresses the question of whether the relative immigrant wage gap is smaller within all levels of the public sector (compared to the private sector), and whether there are significant variations in observed immigrant wage gap within each sector along the different points of the wage distribution. Section 4.2 assesses the differences in the public-private sector wage gap of the immigrant group and the Canadian-born at all levels of the public sector, and how these public premiums (or penalties) change along the different points of the wage distribution. Additionally, the two parts presented are extended to show a decomposition of the total wage gap into the portion that is due to differences in worker endowments (i.e., the explained effect) and the other portion that is due to the differences in the wage structure (i.e., the unexplained effect), and how these components change along the wage distribution.

For each estimation method used, we run two sets of regressions: one for all public sector, i.e., the aggregated public sector and another for the disaggregated public sector, i.e., non-administrative public sector and the respective levels of public administration.

4.1 IMMIGRANT WAGE GAP WITHIN SECTORS

Ordinary Least Squares (OLS) Regression

Using the human capital model in equations (3.1) and (3.2) outlined in Chapter 3, we estimate the coefficients of the dummy variable CA in Table 4.1.1 below. The coefficient on CA measures how much more the Canadian-born earn compared to that of the immigrant with similar characteristics (i.e., the estimated immigrant wage gap).

From the results presented, the premium for being a Canadian-born worker is largest within the private sector, with the Canadian-born earning 11.9 percent more than immigrants with similar

characteristics in the private sector. This value of the immigrant wage gap in the private sector is 5.4 percentage points higher than the equivalent gap measured in the aggregated public sector. This larger observed immigrant wage gap in the private sector relative to the public sector is consistent with the literature (Nadeau, 2013; Zheng, 2017).

Within the disaggregated public sector, while the estimates of the immigrant wage gap within the non administration public sector (6.3 percent) and federal public administration (6.6 percent) sectors closely lie within the estimate of the aggregated public sector, the estimates for the provincial and local public administration sectors position them as extremes within the public sector. Within the public sector, the provincial public administration records the highest immigrant wage gap of 7.8 percent. On the other hand, the immigrant wage gap is narrowest within the local public administration sector (4.5 percent). In fact, the value of the observed premium for the Canadian-born in the local public administration sector is less than half of the observed equivalent in the private sector.

Table 4.1.1: *Canadian-born Real Wage Premiums Within Sectors*

	CA born		SE	R²	Sample size
Private Sector	0.119	***	0.0000	0.5090	3,786,573
All public sector	0.065	***	0.0000	0.4460	1,546,505
Non admin public sector	0.063	***	0.0001	0.4537	1,132,690
Federal public admin	0.066	***	0.0001	0.4027	166,515
Provincial public admin	0.078	***	0.0002	0.4426	127,095
Local public admin	0.045	***	0.0002	0.4500	115,355

Notes: Separate regressions were run for each respective sector and the following controls were used in each regression: highest level of education, age and its square, sex, marital status, economic family type, province, urban status, survey period, multiple job holder, full/part-time job status, job type, firm size, job tenure, union status, occupation and industry. The coefficient

estimates for aboriginal and international public administration sectors are excluded here since there are few observations and the estimates are not reliable, but they are included as controls in all public sector regressions. The coefficient of the dummy variables are approximations of the true marginal effects (ME) which can be calculated as $ME = 100 \cdot [\exp(\hat{\beta}_1) - 1]$, and the closer the coefficient estimates are to zero, the closer the estimate and the ME transformation will be.

*, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

All standard errors are robust.

Unconditional Quantile Regression

Evident in Figure 4.1.1 below are variations in the immigrant wage gap along the different points of the wage distribution which cannot be captured by OLS. Using the unconditional RIF-regression equation (3.4) specified in Chapter 3, it can be observed from the quantile results presented below that the immigrant wage gap within the respective levels of the public sector falls between the 10th and the 25th quantiles, and then peaks at the 50th quantile and falls continuously afterwards. For all levels of the public sector, the wage gap is lowest at the 90th quantile of the distribution and highest at the 50th quantile (i.e., the median). The gap within the private sector on the other hand is lowest at the 10th quantile, but rises sharply at the 25th quantile, and continues to rise steadily through to plateau at the 50th and 75th quantiles and then marginally declines at the 90th quantile.

Also, the immigrant wage gap at 25th, 50th, 75th and 90th quantiles are significantly smaller within all levels of the public sector compared to that of the private sector. At the 10th quantile however, the immigrant wage gap is widest within the federal public administration, measuring 10.3 percent, whereas the private sector's estimate at that fraction sits relatively lower at 9.5 percent. The local public administration sector distinctively records the lowest immigrant wage gap at all quantiles of the wage distribution.

Within the sectors, the lowest estimated immigrant wage gap of 2.2 percent is recorded at the 75th and 90th quantiles of the local public administration sector. Conversely, the highest

immigrant wage gap of 12.9 percent lies at the 50th and 75th quantiles of the private sector’s wage distribution.

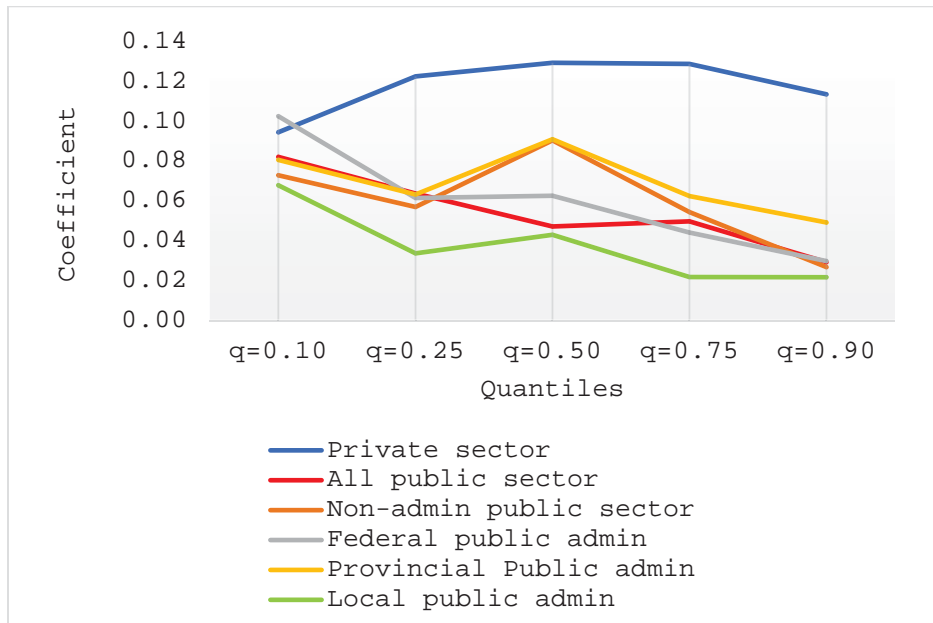


Figure 4.1.1: *Immigrant Wage Gap Within Sectors at Different Quantiles*

Notes: Refer to notes under Table 4.1.1. All results are significant at 1% significance level. See table of results in Table A.1 in Appendix.

Oaxaca-Blinder decomposition of the total wage gap at different quantiles within sectors

Both the OLS and quantile approaches evaluate the wage differentials under the assumption that the wage specification parameters are homogenous across sectors. This however does not always hold, as evidenced in the decomposition results below. Using equations (3.3) and (3.5) from Chapter 3 to estimate the decomposition results at the mean and the different quantiles of the wage distribution respectively, it is observed that there are significant variations in the rewards for comparable workers across the respective sectors.

As seen in Table 4.1.2 below, although the within-sectors pattern of the total immigrant wage gap results are fairly consistent with the pattern of finding from the OLS and quantile regression results, the decomposition results presented show that at the mean and at all quantiles

of the private sector, the unexplained effect component (i.e., the wage structure effect) accounts for about three-quarters of the total wage differential while a quarter of the total wage gap is attributed to the explained effect (i.e., composition effect). In fact at the 75th and 90th quantiles, total immigrant wage gap in the private sector is observed because the wage structure effect in the private sector which rewards the Canadian-born relatively more, outweighs the composition effect (which is observed to be to the advantage of the immigrant for being relatively more endowed).

Within the local public administration sector however, the explained effect component (i.e., the composition effect) explains a great deal of the total immigrant wage gap observed at the mean and all quantile levels (except the 10th quantile). This means that the relatively lower wages observed among immigrants within the local public administration can be explained away by the differences in endowment between the two groups of workers. This observation also holds within the upper quantiles of the federal and provincial public administration sectors.

Results from the respective administration levels of the public sector suggests that the unexplained effect component (i.e., the wage structure effect) within the sectors favour immigrants more than the Canadian-born. This is consistent at the 75th and 90th quantiles within the federal, provincial and local public administration sectors. For both the provincial and local public administration sectors, it is additionally observed for the 50th quantile. This also uniquely also holds true at the mean and 25th quantile of the local public administration sector. This means that immigrants at those levels are paid more in way that cannot be explained. The negative coefficient values that reflect this could be attributed to unobservable factors such as such work effort, talent, etc.

Table 4.1.2: Oaxaca-Blinder Decomposition of the Immigrant Wage Gap Within Sectors at Different Quantiles

	Total difference			Explained Effect			Unexplained Effect		
	Effect	***	SE	Effect	***	SE	Effect	***	SE
Private sector (W=0.1712)									
Mean (Standard decomposition)	0.105	***	0.0000	0.020	***	0.0000	0.085	***	0.0000
q=0.10	0.105	***	0.0000	0.028	***	0.0000	0.077	***	0.0000
q=0.25	0.141	***	0.0000	0.053	***	0.0000	0.088	***	0.0001
q=0.50	0.136	***	0.0000	0.030	***	0.0000	0.106	***	0.0000
q=0.75	0.099	***	0.0001	-0.009	***	0.0001	0.107	***	0.0001
q=0.90	0.040	***	0.0001	-0.054	***	0.0001	0.094	***	0.0001
All Public sector (W=0.1080)									
Mean (Standard decomposition)	0.044	***	0.0001	0.004	***	0.0001	0.040	***	0.0001
q=0.10	0.080	***	0.0001	0.019	***	0.0001	0.062	***	0.0001
q=0.25	0.062	***	0.0001	0.014	***	0.0001	0.048	***	0.0001
q=0.50	0.065	***	0.0001	0.011	***	0.0001	0.054	***	0.0001
q=0.75	0.008	***	0.0001	-0.013	***	0.0001	0.021	***	0.0001
q=0.90	0.014	***	0.0001	0.044	***	0.0000	-0.031	***	0.0001
Non admin public sector (W=0.1147)									
Mean (Standard decomposition)	0.050	***	0.0001	0.012	***	0.0001	0.039	***	0.0001
q=0.10	0.079	***	0.0001	0.028	***	0.0001	0.050	***	0.0002
q=0.25	0.063	***	0.0001	0.018	***	0.0001	0.045	***	0.0001
q=0.50	0.078	***	0.0001	0.019	***	0.0001	0.058	***	0.0001
q=0.75	0.019	***	0.0001	-0.001	***	0.0001	0.020	***	0.0001
q=0.90	0.008	***	0.0001	0.033	***	0.0000	-0.024	***	0.0001
Federal public admin (W=0.0968)									
Mean (Standard decomposition)	0.016	***	0.0002	-0.025	***	0.0002	0.041	***	0.0002
q=0.10	0.055	***	0.0004	-0.027	***	0.0005	0.083	***	0.0006
q=0.25	0.028	***	0.0002	-0.013	***	0.0002	0.041	***	0.0003
q=0.50	0.007	***	0.0002	-0.036	***	0.0002	0.044	***	0.0003

q=0.75	0.016	***	0.0002	0.058	***	0.0001	-0.042	***	0.0002
q=0.90	0.018	***	0.0002	0.051	***	0.0001	-0.033	***	0.0002
Provincial public admin (W=0.0887)									
Mean (Standard decomposition)	0.009	***	0.0002	-0.055	***	0.0003	0.064	***	0.0003
q=0.10	0.062	***	0.0003	-0.019	***	0.0004	0.081	***	0.0005
q=0.25	0.028	***	0.0003	-0.015	***	0.0004	0.043	***	0.0004
q=0.50	0.000	**	0.0003	0.095	***	0.0002	-0.094	***	0.0003
q=0.75	0.032	***	0.0003	0.092	***	0.0002	-0.060	***	0.0002
q=0.90	0.028	***	0.0002	0.086	***	0.0002	-0.058	***	0.0003
Local public admin (W=0.0795)									
Mean (Standard decomposition)	0.011	***	0.0002	0.057	***	0.0001	-0.046	***	0.0002
q=0.10	0.024	***	0.0006	-0.029	***	0.0007	0.053	***	0.0009
q=0.25	0.007	***	0.0002	0.042	***	0.0002	-0.035	***	0.0002
q=0.50	0.015	***	0.0003	0.059	***	0.0002	-0.045	***	0.0003
q=0.75	0.034	***	0.0002	0.058	***	0.0002	-0.025	***	0.0002
q=0.90	0.040	***	0.0003	0.063	***	0.0002	-0.023	***	0.0003

Notes: Separate regressions were run for each respective sector and the following controls were used in each regression: highest level of education, age and its square, sex, marital status, economic family type, province, urban status, survey period, multiple job holder, full/part-time job status, job type, firm size, job tenure, union status and occupation. The coefficient estimates for aboriginal and international public administration sectors are excluded here since there are few observations and the estimates are not reliable, but they are included as controls in the all public sector regression.

*, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. All standard errors are robust.

W is the respective immigrant weight in each sector.

The multivariate estimation results presented for the immigrant wage gap within sectors show that the total immigrant wage gap at all levels of the public sector are consistently smaller than that of the private sector, although there is some heterogeneity in these differences at various points of the wage distribution. For instance, at the 50th quantile of the decomposition results, while the results show that there is no immigrant wage gap within the provincial public administration, there are 0.7 percent and 1.5 percent gaps in the federal and local public administration sectors, respectively. This smaller observed gap within the levels of the public sector may be attributable to sectorial differences in the acquisition of Canadian credentials. The summary statistics in Table 3.3.1 (in Chapter 3) show that the proportion of immigrants employed in the public sector who attained their highest level of education in Canada and have been landed for more years (suggesting more Canadian-acquired work experience) is relatively higher than those employed in the private sector. Consequently, public sector immigrant workers may face a lower penalty for credentials relative to their private counterparts because of this Canadian experience and education.

Also, similar to Nadeau's (2013) finding, it is evident from the decomposition results that a major reason for the larger immigrant wage gap in the private sector is that the unexplained effect component which constitutes the largest fraction of the total wage difference is consistently to the advantage of the Canadian-born both at the mean and at all quantile levels. This could be due to positive unobservable factors of the Canadian-born such as talent, motivation and work effort or may be due to negative unobservable factors of immigrants such as discrimination and the problem of foreign qualification recognition that has been highlighted in previous literature. Federal and provincial governments' focus on enabling foreign qualification recognition (FQR) is currently limited to regulated occupations, i.e. occupations where certifications or licenses are required to work. This leaves all other foreign qualification translation at the discretion of employers (Government of Canada, 2016).

4.2 PUBLIC-PRIVATE SECTOR WAGE GAP AMONG IMMIGRANTS AND CANADIAN-BORN

Ordinary Least Squares (OLS) Regression

Using equations (3.1) and (3.2) from Chapter 3, we present a progressive model that measures the public sector wage premium among the immigrants and the Canadian-born, respectively. These results are shown in Tables 4.2.1-A and 4.2.1-B below. It is observed that public wage premium (i.e., the public-private wage gap) is relatively higher among the immigrant group. This is consistent with Zheng's (2017) finding. The public premium for each respective group however tends to decline as additional control variables are added to the model.

The education variable across each respective level of the public sector has a relatively larger effect on the observed premium among the Canadian-born than that of the immigrant group. When education is controlled for (column 2), all public sector premium among the immigrant declines by 6.4 percentage points, whereas that of the Canadian-born declines by 9.5 percentage points.

The effect of the union status variable also has a similar effect like the education variable. Adding on the union status as a control variable (column 8) reduces the respective premiums in the non-public administration, provincial and local public administration levels by about 1 percentage point each for immigrants, while the equivalent among the Canadian-born across those respective sectors is about 2 percent each. The decline in the premium after controlling for union status in the federal public administration is 1.3 percentage point for the immigrant and 2.4 percentage points for the Canadian-born.

Table 4.2.1-A: *Public Sector Real Wage Premiums, Immigrants (robust standard errors are in italics)*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
All public sector	0.322	0.258	0.274	0.281	0.295	0.252	0.224	0.212	0.095	0.088	0.088
	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>
Non admin public sector	0.292	0.233	0.256	0.264	0.284	0.241	0.213	0.202	0.089	0.088	0.088
	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>
Federal public admin	0.447	0.351	0.351	0.352	0.345	0.295	0.267	0.254	0.106	0.242	-0.127
	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0002</i>	<i>.0001</i>	<i>.0004</i>	<i>.0003</i>
Provincial public admin	0.396	0.309	0.306	0.321	0.316	0.273	0.249	0.238	0.088	0.224	-0.145
	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0004</i>	<i>.0003</i>
Local public admin	0.424	0.379	0.355	0.346	0.346	0.304	0.269	0.258	0.152	0.284	-0.085
	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0002</i>	<i>.0004</i>	<i>.0003</i>
Education variable	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Demographic variables	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Province, urban status and year	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y
Multiple job holder, part-time job and job type	N	N	N	N	Y	Y	Y	Y	Y	Y	Y
Firm size	N	N	N	N	N	Y	Y	Y	Y	Y	Y
Job tenure	N	N	N	N	N	N	Y	Y	Y	Y	Y
Union status	N	N	N	N	N	N	N	Y	Y	Y	Y
Occupation	N	N	N	N	N	N	N	N	Y	Y	Y
Industry 1	N	N	N	N	N	N	N	N	N	Y	N
Industry 2	N	N	N	N	N	N	N	N	N	N	Y

R ² (All public sector only)	0.0653	0.1479	0.2041	0.2256	0.2561	0.2742	0.3030	0.3032	0.5183	0.5346	0.5346
R ² (Disaggregated public sector)	0.0682	0.1501	0.2055	0.2267	0.2568	0.2748	0.3035	0.3037	0.5185	0.5348	0.5348

Notes: Separate regressions were run for each respective column. The sample size for each regression is 815,435.

The coefficient estimates for aboriginal and international public administration sectors are excluded here since there are few observations and the estimates are not reliable, but they are included as controls in the all public sector regressions.

The demographic variables include age, age squared, sex, marital status, and economic family type.

Industry 1 omits the agriculture, forestry, fishing & hunting industry was from the category of industries.

Industry 2 omits the mining, quarrying, oil & gas industry was from the category of industries.

Y denotes the variable specified is being controlled for; N denotes the variable specified is not being controlled for.

Disaggregated public sector comprises of non-admin public sector, federal public admin, provincial public admin and local public admin.

All results are statistically significant at 1% significance level.

Table 4.2.1-B: *Public Sector Real Wage Premiums, Canadian-born (robust standard errors are in italics)*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
All public sector	0.261	0.166	0.182	0.190	0.195	0.156	0.134	0.110	0.056	0.051	0.051
	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>
Non admin public sector	0.237	0.137	0.165	0.173	0.184	0.144	0.121	0.096	0.041	0.051	0.051
	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>	<i>.0000</i>
Federal public admin	0.358	0.257	0.250	0.264	0.251	0.205	0.188	0.164	0.102	0.188	-0.112
	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>
Provincial public admin	0.299	0.202	0.201	0.215	0.204	0.165	0.146	0.122	0.069	0.153	-0.148
	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>	<i>.0001</i>
Local public admin	0.308	0.260	0.222	0.213	0.209	0.181	0.158	0.136	0.090	0.179	-0.122

	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
Education variable	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Demographic variables	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Province, urban status and year	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y
Multiple job holder, part-time job and job type	N	N	N	N	Y	Y	Y	Y	Y	Y	Y
Firm size	N	N	N	N	N	Y	Y	Y	Y	Y	Y
Job tenure	N	N	N	N	N	N	Y	Y	Y	Y	Y
Union status	N	N	N	N	N	N	N	Y	Y	Y	Y
Occupation	N	N	N	N	N	N	N	N	Y	Y	Y
Industry 1	N	N	N	N	N	N	N	N	N	Y	N
Industry 2	N	N	N	N	N	N	N	N	N	N	Y
R ² (All public sector only)	0.0685	0.1683	0.2673	0.3046	0.3279	0.3419	0.3591	0.3605	0.4996	0.5229	0.5229
R ² (Disaggregated public sector)	0.0709	0.1717	0.2686	0.3057	0.3284	0.3424	0.3597	0.3611	0.5002	0.5231	0.5231

Notes: The sample size for each respective regression is 4,517,643. Refer to other notes under Table 4.2.1-A.

The confounding effect of all other worker, job and occupational characteristics on the public wage premium for each group is evident as the public premium continually declines as these variables are progressively added in as controls. In adding the final control variable: industry, there are some interesting outcomes, depending on which industry is omitted. These results are illustrated in Fig 4.2.1-A and Fig 4.2.2-B below. We see from the results that the choice of comparator industry is important with administration workers at all levels.

Figure 4.2.1-A illustrates the public wage premium relative to private sector workers in agriculture, forestry, fishing and hunting industry. With these results, both immigrants and the Canadian-born public workers across all levels enjoy a wage premium over their private sector counterparts. These results are consistent with the public-private sector wage differential literature.

Among the Canadian-born group, the public wage premium is highest at the federal public administration level (18.8 percent), followed by the local public administration (17.9 percent) and subsequently the provincial public administration level (15.3 percent). This order of the highest premium within levels of public administration among the Canadian-born group is consistent with the general finding of Mallet & Wong (2008). Among the immigrant group however, local public administration sector workers enjoy the highest wage premium (28.4 percent), followed by the federal public administration (24.2 percent) and then the provincial public administration (22.4 percent). The non-administrative public sector records the lowest relative public premium among both the immigrant (8.8 percent) and Canadian-born (5.1 percent) groups. But these premiums in the non-administrative public sector may be arguably considered as the pure public premium, as public workers in this sector are employed in observationally equivalent industries as private sector workers, while those at the various levels of public administration are not. Recall that the public administration industry is exclusive to the public sector.

Figure 4.2.1-B presents the public wage premium relative to private sector workers employed in mining, quarrying, oil and gas industries. Non-administrative public workers of both the immigrant and the Canadian-born groups still enjoy a wage premium over their private sector counterparts, identical to those seen in Fig 4.2.1-A. Within the various levels of public administration however, it is observed that federal, provincial and local public administration sectors all face a public wage penalty, but it is largest in the provincial public administration sector. Immigrants and Canadian-born workers in the provincial public administration sector face penalties of 14.5 percent and 14.8 percent, respectively.

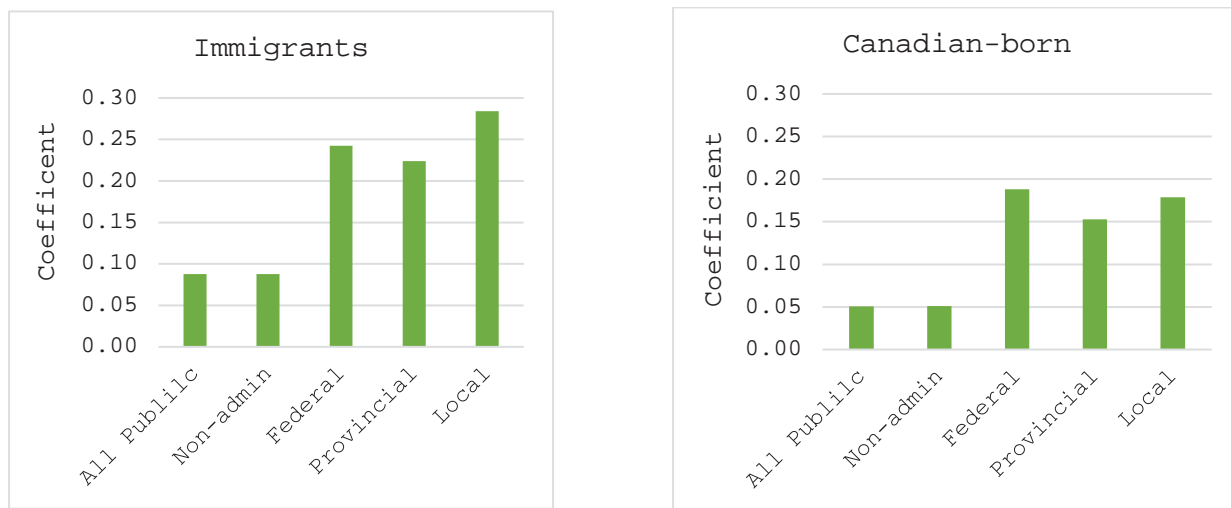


Figure 4.2.1-A: *Public Sector Real Wage Premiums with Agriculture, Forestry, Fishing & Hunting Industries Omitted*

Notes: Figures sourced from column (10) in Tables 4.2.1-A and 4.2.1-B, respectively.

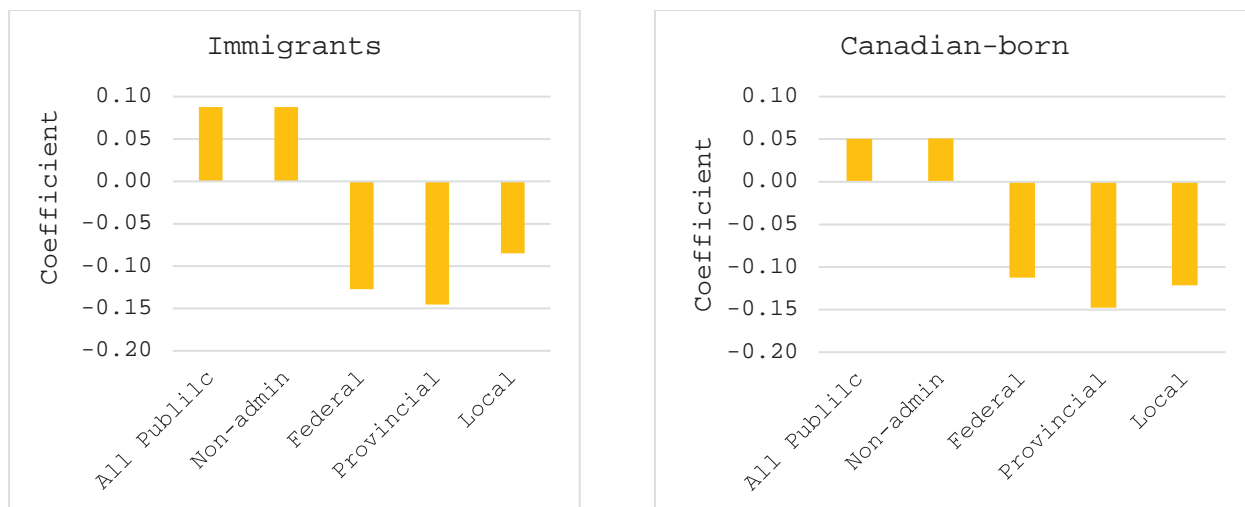


Figure 4.2.1-B: Public Sector Real Wage Premiums with Mining, Quarrying, Oil & Gas Industries Omitted

Notes: Figures sourced from column (11) in Tables 4.2.1-A and 4.2.1-B, respectively.

Unconditional Quantile Regressions

Consistent with the OLS results, the unconditional quantile regression results presented in Figure 4.2.2 below shows that the public sector premium is larger among the immigrants. Additionally, some common sectorial trends can be observed for the immigrant group. Among the immigrant group, the highest public premium for each respective level of the public sector is recorded at the 50th quantile of the wage distribution, but no such common trend can be generalized for the Canadian-born group. For the Canadian-born group, the premium is highest at the 50th quantile for only the federal and local public administration sectors. The non-administrative and provincial public administration sectors of the Canadian-born group record their highest premiums at the 25th quantile of the wage distribution.

Again, among the immigrant group, the local public administration sector records the highest public wage premium across all quantile levels. Within the Canadian-born group however, the local public administration sector has the highest premiums only at the 10th and 25th quantiles

of the wage distribution, and then moving up to the higher levels of the wage distribution, the federal public administration sector leads with the highest premiums at the 50th, 75th and 90th quantiles.

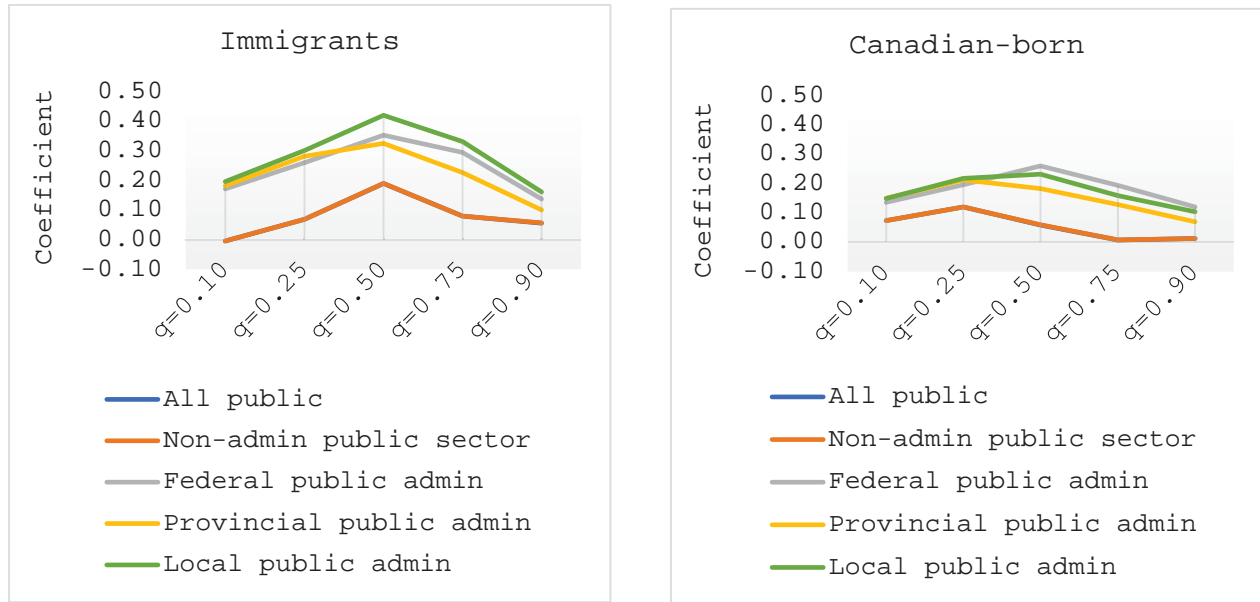


Figure 4.2.2: Public Sector Real Wage Premiums Among Immigrants and Canadian-born at Different Quantiles

Notes: Same controls as listed under Table 4.1.1. See table of results in Tables A.2-A and A.2-B in the Appendix.

All public sector lines are identical to that of the non-admin public sector and are not visible in these figures.

Oaxaca-Blinder decomposition of the public-private sector wage gap at different quantiles

Table 4.2.3 below presents a decomposition of the public-private sector wage differential at the mean and at different quantiles for immigrants and Canadian-born, respectively. The pattern of the total public-private sector wage gap results for both immigrants and Canadian-born are consistent with the pattern of findings from the unconditional quantile regression results.

From the decomposition results for both the immigrant and Canadian-born groups (see Table 4.2.3 below), we observe that for all levels of the public sector, the explained effect (i.e. the composition effect) is the more dominant component of the total wage gap at the mean and at all

quantiles. It is only at the 10th quantile within the immigrant group that we observe that the unexplained effect dominates the total observed public premium. This larger effect of the explained component corroborates most literature which suggests that the public sector tends to employ the most endowed workers and so have higher wage returns (Lammam et al., 2016; Tiagi, 2010).

The results for the immigrant group is however contrary to Zheng's (2017) finding. Zheng concludes that the total mean public-private sector wage gap observed among the immigrant group is attributable to the dominant component of the unexplained effect (i.e., the wage structure effect) instead.

Within the public administration, the empirical finding that the public sector employs the most endowed workers is reinforced in the results presented at the upper quantiles of the wage distribution of the federal and provincial public administration. At the 75th and 90th quantiles of the wage distribution for both immigrant and Canadian-born, the observed total public premium in the federal and provincial public administration is due to the offsetting effect of the larger positive value of the composition/explained effect on the negative value of the wage structure/unexplained effect. The dominance of the composition effect in those sectors is however larger among the immigrant group.

A reason why the wage structure effect works in favour of the private sector workers at these higher quantiles of federal and provincial public administration could be that at the high quantiles of the wage distribution (which can be associated with people relatively high up in the professional ladder), the only way that private employers can compete with public employers who tend to have a relatively higher worker retention rate and have been theoretically and empirically proven to offer higher fringe benefits among others, is to construct their wage structure to reward these highly endowed workers more for being employed in the sector and not merely by their level of endowment.

Table 4.2.3: Oaxaca-Blinder Decomposition of the Public-Private Sector Wage Gap Among Immigrants and Canadian-born at Different Quantiles

	Total difference			Explained Effect		Unexplained Effect			
	Effect		SE	Effect	SE	Effect		SE	
All Public Sector vs. Private sector									
<i>Immigrants (W=0.2049)</i>									
Mean (Standard decomposition)	0.322	***	0.0001	0.211	***	0.0001	0.111	***	0.0001
q=0.10	0.420	***	0.0001	0.167	***	0.0001	0.253	***	0.0002
q=0.25	0.410	***	0.0001	0.259	***	0.0001	0.151	***	0.0001
q=0.50	0.362	***	0.0001	0.233	***	0.0001	0.130	***	0.0001
q=0.75	0.314	***	0.0001	0.228	***	0.0002	0.086	***	0.0002
q=0.90	0.169	***	0.0001	0.134	***	0.0002	0.036	***	0.0002
<i>Canadian-born (W=0.3053)</i>									
Mean (Standard decomposition)	0.261	***	0.0000	0.204	***	0.0000	0.057	***	0.0000
q=0.10	0.395	***	0.0000	0.209	***	0.0001	0.186	***	0.0001
q=0.25	0.331	***	0.0000	0.215	***	0.0001	0.116	***	0.0001
q=0.50	0.292	***	0.0000	0.253	***	0.0001	0.039	***	0.0001
q=0.75	0.223	***	0.0000	0.208	***	0.0001	0.015	***	0.0001
q=0.90	0.116	***	0.0000	0.105	***	0.0001	0.011	***	0.0001
Non admin public sector vs. Private sector									
<i>Immigrants (W=0.1669)</i>									
Mean (Standard decomposition)	0.292	***	0.0001	0.193	***	0.0001	0.099	***	0.0001
q=0.10	0.402	***	0.0001	0.171	***	0.0002	0.231	***	0.0002
q=0.25	0.376	***	0.0001	0.266	***	0.0002	0.110	***	0.0002
q=0.50	0.318	***	0.0001	0.207	***	0.0002	0.111	***	0.0002
q=0.75	0.286	***	0.0001	0.189	***	0.0002	0.098	***	0.0002
q=0.90	0.145	***	0.0001	0.103	***	0.0002	0.042	***	0.0002
<i>Canadian-born (W=0.2422)</i>									
Mean (Standard decomposition)	0.237	***	0.0000	0.191	***	0.0001	0.047	***	0.0001

q=0.10	0.375	***	0.0000	0.215	***	0.0001	0.160	***	0.0001
q=0.25	0.297	***	0.0000	0.211	***	0.0001	0.086	***	0.0001
q=0.50	0.260	***	0.0000	0.245	***	0.0001	0.015	***	0.0001
q=0.75	0.207	***	0.0000	0.198	***	0.0001	0.008	***	0.0001
q=0.90	0.097	***	0.0000	0.076	***	0.0001	0.020	***	0.0001

Federal public admin vs. Private sector

Immigrants (W=0.0243)

Mean (Standard decomposition)	0.447	***	0.0002	0.335	***	0.0002	0.112	***	0.0002
q=0.10	0.587	***	0.0004	0.174	***	0.0001	0.413	***	0.0004
q=0.25	0.588	***	0.0002	0.370	***	0.0001	0.219	***	0.0002
q=0.50	0.515	***	0.0002	0.345	***	0.0002	0.169	***	0.0002
q=0.75	0.397	***	0.0002	0.430	***	0.0003	-0.033	***	0.0003
q=0.90	0.246	***	0.0002	0.306	***	0.0003	-0.059	***	0.0003

Canadian-born (W=0.0457)

Mean (Standard decomposition)	0.358	***	0.0001	0.265	***	0.0001	0.093	***	0.0001
q=0.10	0.537	***	0.0001	0.250	***	0.0001	0.287	***	0.0002
q=0.25	0.476	***	0.0001	0.258	***	0.0001	0.218	***	0.0001
q=0.50	0.386	***	0.0001	0.308	***	0.0001	0.078	***	0.0001
q=0.75	0.282	***	0.0001	0.287	***	0.0001	-0.005	***	0.0001
q=0.90	0.189	***	0.0001	0.207	***	0.0002	-0.018	***	0.0002

Provincial public admin vs. Private sector

Immigrants (W=0.0171)

Mean (Standard decomposition)	0.396	***	0.0002	0.301	***	0.0002	0.095	***	0.0002
q=0.10	0.504	***	0.0003	0.152	***	0.0001	0.353	***	0.0003
q=0.25	0.494	***	0.0003	0.340	***	0.0001	0.154	***	0.0003
q=0.50	0.456	***	0.0003	0.312	***	0.0002	0.145	***	0.0003
q=0.75	0.369	***	0.0003	0.382	***	0.0003	-0.013	***	0.0003
q=0.90	0.219	***	0.0002	0.272	***	0.0003	-0.052	***	0.0003

Canadian-born (W=0.0356)

Mean (Standard decomposition)	0.299	***	0.0001	0.235	***	0.0001	0.064	***	0.0001
q=0.10	0.461	***	0.0001	0.220	***	0.0001	0.240	***	0.0001
q=0.25	0.381	***	0.0001	0.231	***	0.0001	0.150	***	0.0001
q=0.50	0.320	***	0.0001	0.273	***	0.0001	0.047	***	0.0001
q=0.75	0.239	***	0.0001	0.256	***	0.0001	-0.017	***	0.0002
q=0.90	0.151	***	0.0001	0.182	***	0.0002	-0.031	***	0.0002

Local public admin vs. Private sector

Immigrants (W=0.0139)

Mean (Standard decomposition)	0.424	***	0.0002	0.232	***	0.0005	0.192	***	0.0005
q=0.10	0.527	***	0.0006	0.159	***	0.0001	0.368	***	0.0006
q=0.25	0.553	***	0.0002	0.330	***	0.0002	0.222	***	0.0003
q=0.50	0.502	***	0.0003	0.245	***	0.0007	0.257	***	0.0007
q=0.75	0.386	***	0.0002	0.249	***	0.0008	0.137	***	0.0008
q=0.90	0.224	***	0.0003	0.162	***	0.0009	0.062	***	0.0009

Canadian-born (W=0.0327)

Mean (Standard decomposition)	0.308	***	0.0001	0.228	***	0.0002	0.079	***	0.0002
q=0.10	0.446	***	0.0001	0.206	***	0.0003	0.239	***	0.0003
q=0.25	0.405	***	0.0001	0.217	***	0.0003	0.188	***	0.0003
q=0.50	0.351	***	0.0001	0.277	***	0.0003	0.074	***	0.0003
q=0.75	0.254	***	0.0001	0.265	***	0.0005	-0.012	***	0.0005
q=0.90	0.145	***	0.0001	0.166	***	0.0006	-0.022	***	0.0006

Notes: The following controls were used in each regression: highest level of education, age and its square, sex, marital status, economic family type, province, urban status, survey period, multiple job holder, full/part-time job status, job type, firm size, job tenure, union status, occupation and industry.

*, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

W is the respective public sector weight.

All standard errors are robust.

Among immigrant workers in local public administration however, the unexplained effect works in favour of public workers at the mean and all quantile levels. Relative to other levels of the public sector, we observe that in addition to the 10th quantile, the unexplained component also outweighs the explained effect at the 50th quantile of the immigrant group's wage distribution. Again, relative to other public sector levels, we observe a narrower difference between the proportion of contribution of the explained and unexplained effect to the total public premium among the immigrant group. With the Canadian-born group however, we observe a similar pattern of results as seen in the other levels of public administration sectors discussed above.

CHAPTER 5: CONCLUSION

Using the cycles of the Labour Force Survey from 2006 through to 2018, this thesis evaluates the wage differences between immigrants and the Canadian-born, both within and between the various levels of the public sector and the private sector. The empirical results show that the observed trend of the wage gap in all public sector (i.e., the aggregated public sector) is almost identical to the non-administrative public sector but significantly different from results of the various levels of public administration. This is not surprising as it can be seen from the summary statistics that about three-quarters of the entire public sector employment is held in the non-administrative public sector. Conversely, the results presented show that there are significant variations between the observed immigrant wage within the aggregated public sector and the various levels of public administration. This may suggest that previous empirical studies that do not disaggregate the public sector may likely reflect public sector results that are strongly skewed towards the non-administrative public sector and may not entirely be applicable to the distinct levels of public administration.

This final chapter contains three main parts. It begins with a highlight of key findings, suggests proceeds to make policy recommendations for consideration by key stakeholders and concludes with some significant limitations and delimitations of this study.

5.1 SUMMARY OF KEY FINDINGS

Immigrant wage gap within sectors

The empirical analysis presented in Chapter 4 shows that after controlling for worker, job and industry characteristics, the average immigrant wage gap in the respective sub-levels of the public sector are significantly smaller than that of the private sector. The multivariate regression results show that overall, the local public administration consistently records the lowest average

immigrant wage gap. Figure 5.1.1 below shows a decomposition of the respective within-sector immigrant wage gaps observed at the various points of the wage distribution.

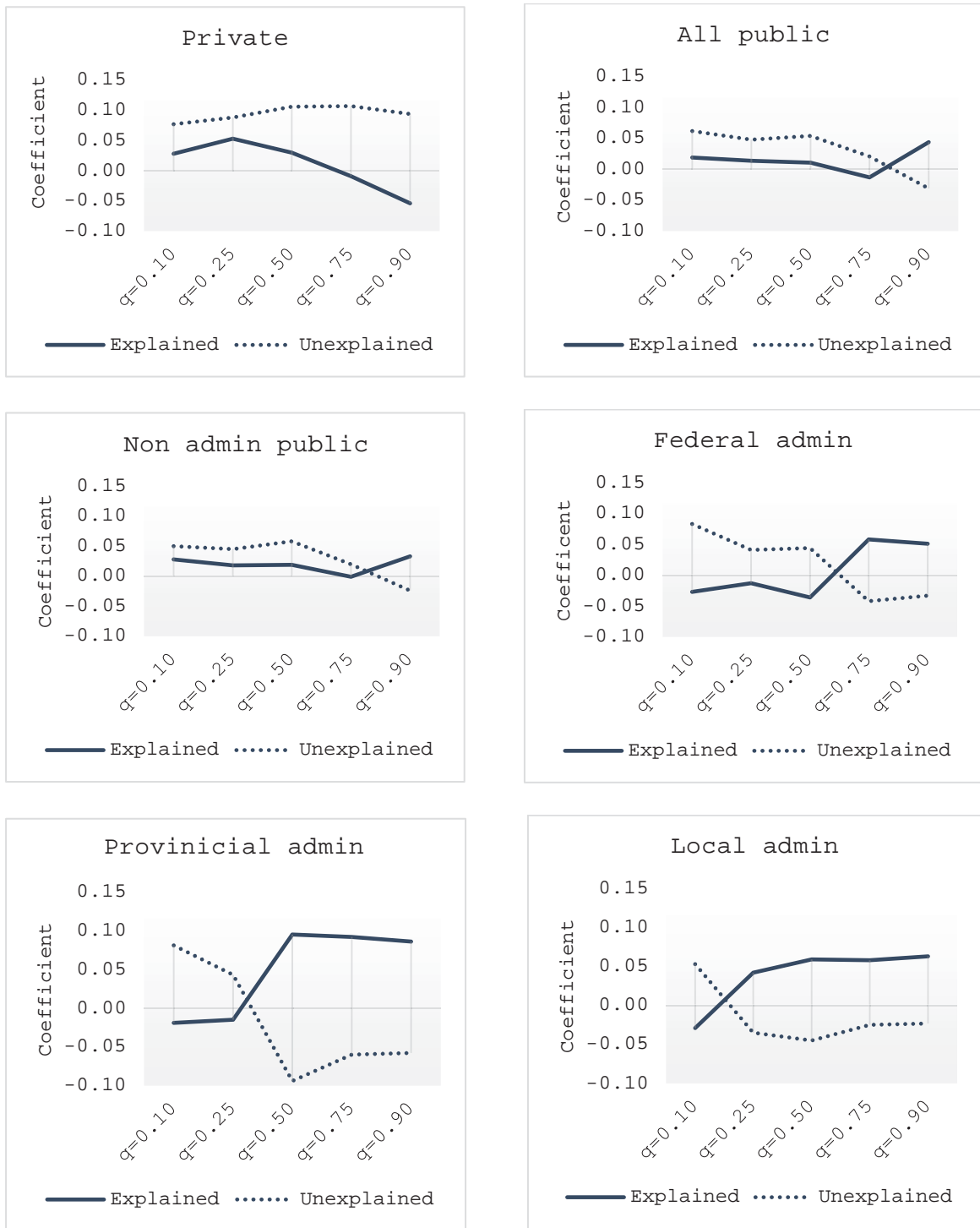


Figure 5.1.1: Decomposition of the Immigrant Wage Gap Within Sectors at Different Quantiles

Source: Table 4.1.2 in Chapter 4.

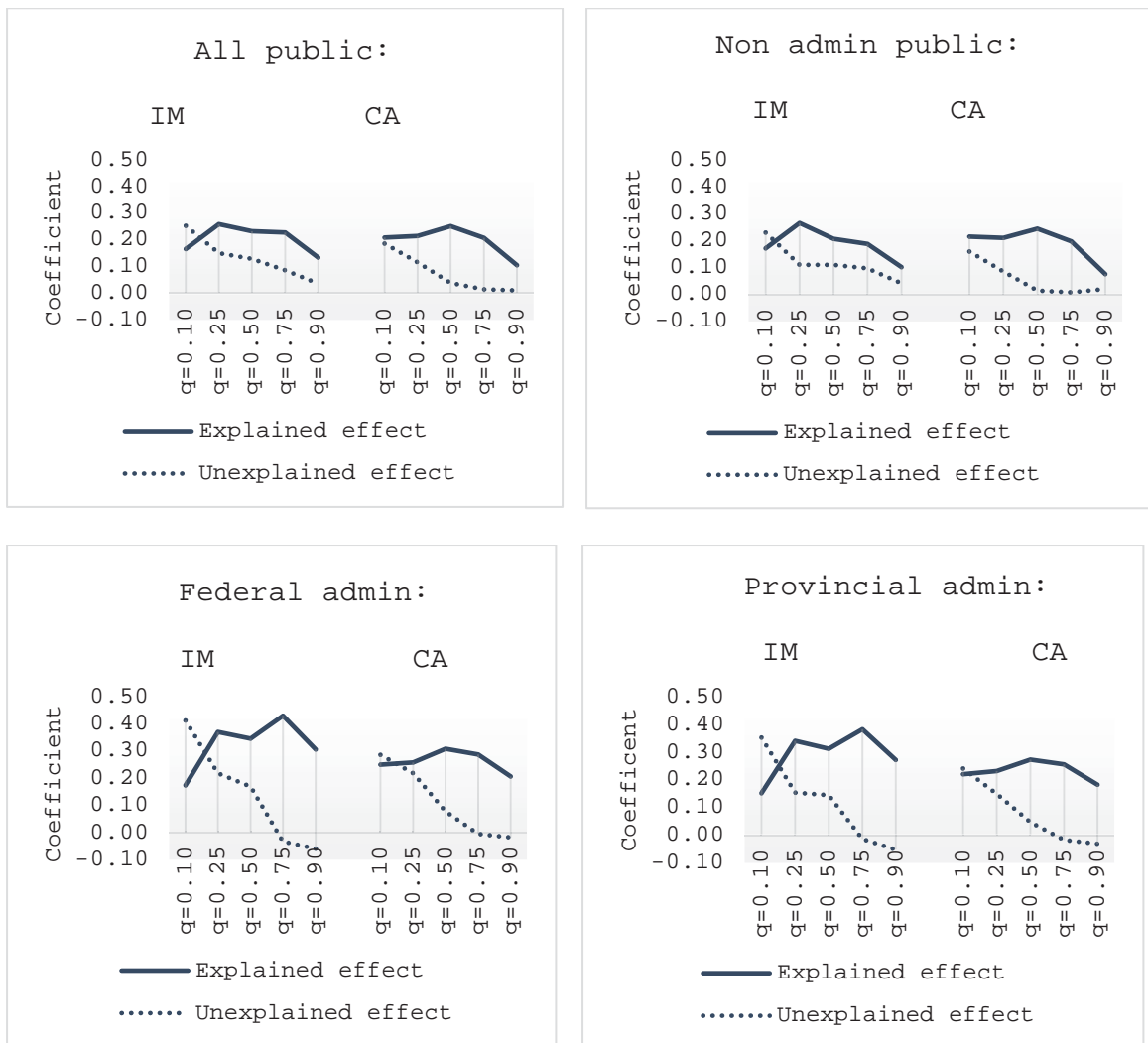
Within the private sector where the immigrant wage gap is largest, the decomposition results show that most of the total gap is due to a larger component of the unexplained effect at all points of the wage distribution. This signals that most of the gap is not due to differences in worker endowments but rather unobserved factors that cause the wage structure in the private sector to reward immigrant workers less than the Canadian-born. These results reinforce the assertion that the immigrant wage gap may be attributed to factors such as discrimination and the problem of foreign credential recognition that has been highlighted in previous literature. Other unobserved factors that may cause the unexplained effect to be larger in the private sector could be talent, motivation, work effort and prestige associated with a job.

On the other hand, within the levels of the public sector, the unexplained effect favours immigrants at the higher quantiles of the wage distribution. This may reflect governments' pro-immigration policies and efforts to attract and integrate highly skilled immigrants, as pro-immigration governments may have vested interest in the success of immigrants in the Canadian labour market.

Public-private sector wage gap among Immigrants and Canadian-born

The multivariate regression results show that between groups, the public wage premium is generally larger among the immigrant group (except for those at the 10th quantile in non-administrative who suffer a wage penalty). The higher percentage of public wage premium among immigrants does not imply that the absolute value of real hourly wage received by immigrants in the public sector is larger than those received by the Canadian-born in the same sector. It rather can be seen as a reinforcement to the observation that immigrants in the private sector suffer a

higher immigrant wage penalty than those in the public sector, as evidenced in the wider margin of wage differences between immigrants in the public sector and immigrants in the private sector.



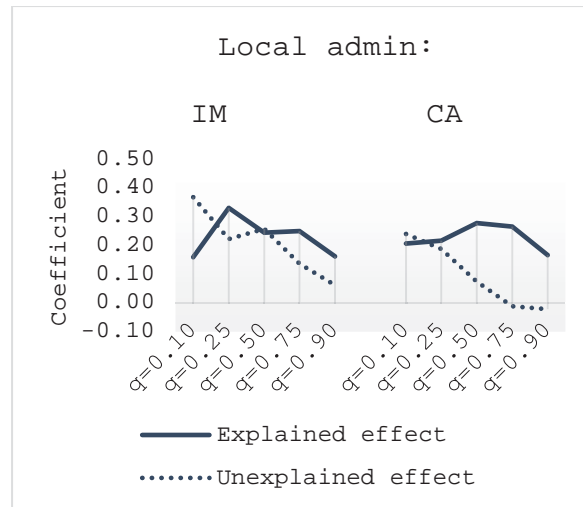


Figure 5.1.2: *Decomposition of the Public-Private Sector Wage Gap Among Immigrants and Canadian-born at Different Quantiles*

Source: Table 4.2.3 in Chapter 4.

Note: IM and CA respectively refer to immigrants and Canadian-born.

Also, except for those at the lowest tail of the wage distribution, the explained (i.e., composition) effect accounts for most of the observed total public-private sector wage differences among both immigrants and Canadian-born, as shown in the respective sector trends in Fig 5.1.2 above.

These decomposition results support the empirical finding that that “individuals who join the public sector tend to be positively selected on observables” (Tiagi, 2010, p.471). In fact at the higher quantiles (i.e., the 75th and 90th quantiles) of the wage distribution, a total positive public premium is observed among both the immigrant and Canadian-born groups in public administration only because the positive value of the explained effect outweighs the negative value of the unexplained effect component. It can thus be argued that a pure public wage premium does not exist at those higher quantiles of public administration, as the higher public sector wage is accounted for by the relatively higher level of credentials of public workers. The opposite holds

true for both immigrants and Canadian-born at the lowest tail (i.e. 10th quantile) of the wage distribution.

5.2 POLICY RECOMMENDATIONS

To address the immigrant wage gap that is attributable to discrimination against immigrant workers, particularly in the private sector, government should expand efforts at implementing the purpose of the Employment Equity Act (S.C. 1995, c.44) as last amended on December 12, 2017. The Act seeks to, among others, “correct the conditions of disadvantage in employment experienced by ... and members of visible minority...” (Government of Canada, 2020, pg. 1).

Additionally, in recent times where there is an increasing pressure for governments to constrain public wages, among other expenditures, in order to balance budgets, it is worth noting that a general constraint across board could have repercussions on wage equity and the general competitiveness of the public sector on the labour market. Firstly, a general cut could widen the immigrant wage gap at the 10th quantile of the non-administrative level of the public sector, as the unconditional quantile results at that level show that immigrants face a public wage penalty whereas the Canadian-born enjoys a public wage premium. Secondly, within the higher quantiles of the various levels of public administration where the public premium is attributable to the positive value of the component/explained effect, cutting wages at those levels could lead to the loss of such skilled workers to the private sector, *ceteris paribus*. This could consequently reduce productivity in the public sector. Governments thus need to review and implement well-tailored public wage policies that meets its expenditure-minimization goal without widening the already-existent immigrant-Canadian-born wage inequalities within the levels of the public sector or reduce productivity in the sector.

5.3 LIMITATIONS AND DELIMITATIONS

While this thesis contributes significantly to literature about immigrant-Canadian-born wage comparisons, there are some limitations and delimitations of this study. Firstly, the LFS neither contains ethnicity nor language skills variables, both of which can confound immigrant wage outcomes. Also, the public administration industry is exclusive to the public sector and so it has an inherent ability to introduce biases when being compared to the private sector. Additionally, it could be the case that the legal minimum wage is a binding lower bound for the lowest quantiles of workers in the sample and in that case, a more complicated Tobit quantile regression technique would be required for the analysis. Furthermore, this thesis could have probed further to measure the marginal effect of discrimination in determining the immigrant wage gap using the country of birth as a proxy. Finally, we could have run an additional set of regressions which controls for the immigrant-specific variables to observe how the wage gaps change under those conditions.

References

- Aydemir, A., & Skuterud, M. (2005). Explaining the deteriorating entry earnings of Canada's immigrant cohorts, 1966 - 2000. *Canadian Journal of Economics/Revue Canadienne D'Economique*, 38(2), 641–672. doi:10.1111/j.0008-4085.2005.00297.x
- Aydemir, A., & Skuterud, M. (2008). The immigrant wage differential within and across establishments. *ILR Review*, 61(3), 334–352. doi:10.1177/001979390806100304
- Baker, M., & Benjamin, D. (1994). The performance of immigrants in the Canadian labor market. *Journal of Labor Economics*, 12(3), 369-405. Retrieved from <http://www.jstor.org/stable/2535221>
- Banerjee, R., & Lee, B. Y. (2015). Decreasing the recent immigrant earnings gap: The impact of Canadian credential attainment. *International Migration*, 53(2), 205-218. doi:10.1111/j.1468-2435.2012.00775.x
- Beine, M., Boadway, R. W., & Coulombe, S. (2016). *Moving parts: Immigration policy, internal migration and natural resource shocks* (Commentary No. 446). Retrieved from Demographics and Immigration, C.D. Howe Institute website: https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/Commentary_446.pdf
- Benjamin, D., Gunderson, M., Lemieux, T. and Riddell, C. (Eds.). (2007). *Labour market economics, 6th edition*. Toronto, ON: McGraw-Hill Ryerson.
- Bloom, D., Grenier, G., & Gunderson, M. (1995). The changing labour market position of Canadian immigrants. *The Canadian Journal of Economics / Revue Canadienne D'Economique*, 28(4b), 987-1005. doi:10.2307/136132
- Bonikowska, A., Hou, F., & Picot, G. (2011). *Do highly educated immigrants perform differently in the Canadian and US labour markets?* (Catalogue no. 11F0019M- No. 329). Retrieved from Analytical Studies Branch Research Paper Series, Statistics Canada website: <https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2011329-eng.pdf>
- Boudarbat, B., & Lemieux, T. (2014). Why are the relative wages of immigrants declining? A distributional approach. *Industrial and Labor Relations Review*, 67(4), 1127-1165. doi:10.1177/0019793914546298
- Cai, L. & Liu, A. (2015). Wage differentials between immigrants and the native-born in Australia. *International Journal of Manpower*, 36 (3), 374-396. doi:10.1108/IJM-04-2014-0104
- Chowhan, J., Zeytinoglu, I. U., & Cooke, G. B. (2012). Are immigrants' pay and benefits satisfaction different than Canadian-born? *Relations industrielles/Industrial Relations*, 67(1), 3-24. doi:10.7202/1008193ar
- Coulombe, S., Grenier, G., & Nadeau, S. (2014). Human capital quality and the immigrant wage

- gap. *IZA Journal of Migration*, 3(1), 14. doi:10.1186/2193-9039-3-14
- Firpo, S., Fortin, N., & Lemieux, T. (2009). Unconditional quantile regressions. *Econometrica* 77(3), 953-973. Retrieved from <http://www.jstor.org/stable/40263848>
- Frank, K., & Hou, F. (2015). *Source-country female labour force participation and the wages of immigrant women in Canada*. (Catalogue no. 11F0019M- No. 365). Retrieved from Analytical Studies Branch Research Paper Series, Statistics Canada website: <https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2015365-eng.htm>
- Frenette, M., & Morissette, R. (2005). Will they ever converge? Earnings of immigrant and Canadian-born workers over the last two decades. *International Migration Review*, 39(1), 228-257. doi:10.2139/ssrn.473861
- Government of Canada (2016, February 23). *A pan-Canadian framework for the assessment and recognition of foreign qualifications*. Retrieved on December 02, 2019, from <https://www.canada.ca/en/employment-social-development/programs/foreign-credential-recognition/funding-framework.html>
- Government of Canada (2020, February 26). *Employment Equity Act (S.C. 1995, c. 44)*. Retrieved on March 05, 2020, from <https://laws-lois.justice.gc.ca/eng/acts/E-5.401/>
- Green, D. A., & Worswick, C. (2010). Entry earnings of immigrant men in Canada: the roles of labour market entry effects and returns to foreign experience. In: T. McDonald, E. Ruddick, A. Sweetman and C. Worswick (Eds.), *Canadian immigration: Economic evidence for a dynamic policy environment*, (pp. 77-110). Kingston, ON: McGill-Queen's University Press.
- Gunderson, M. (1979). Earnings Differentials between the public and private sectors. *The Canadian Journal of Economics*, 12(2), 228. doi:10.2307/134598
- Hou, F., & Coulombe, S. (2010). Earnings gaps for Canadian-born visible minorities in the public and private sectors. *Canadian Public Policy*, 36(1), 29-43. doi:10.3138/cpp.36.1.29
- Hou, F., & Bonikowskan A. (2015). *The earnings advantage of landed immigrants who were previously temporary residents in Canada* (Catalogue no. 11F0019M- No. 370). Retrieved from Analytical Studies Branch Research Paper Series, Statistics Canada website: <https://www150.statcan.gc.ca/n1/en/pub/11f0019m/11f0019m2015370-eng.pdf?st=mXxeJWrb>
- Hou, F., & Picot, G. (2016). Changing immigrant characteristics and pre-landing Canadian earnings: their effect on entry earnings over the 1990s and 2000s. *Canadian Public Policy*, 42(3), 308-323. doi:10.3138/cpp.2015-062
- Kerr, S. P., & Kerr, W. R. (2011). *Economic impacts of immigration: a survey* (Working Paper No. 16736). Retrieved from the National Bureau of Economic Research website: <https://www.nber.org/papers/w16736>

- King, K. M. (2009). *The geography of immigration in Canada: Settlement, education, labour activity and occupation profiles*. Working Paper Series: Ontario in the Creative Age. Ontario: Martin Prosperity Institute, University of Toronto.
- Lammam, C., Palacios, M., Ren, F., & Clemens, J. (2016). *Comparing government and private sector compensation in Canada government sector*. Retrieved from Fraser Institute website: <https://www.fraserinstitute.org/sites/default/files/comparing-government-and-private-sector-compensation-in-canada.pdf>
- Lyu, Y. (2016). *Evolution of immigrant wage gap across Canadian provinces from 2006 to 2011*. (Master's thesis). University of Ottawa, ON, Canada. Retrieved from https://ruor.uottawa.ca/bitstream/10393/34737/1/Lyu_Yitian_2016_researchpaper.pdf
- Mallett, Ted, and Queenie Wong (2008). *Wage watch: A comparison of public-sector and private-sector wages*. Retrieved from Canadian Federation of Independent Business website: <https://www.cfib-fcei.ca/en/research-economic-analysis/wage-watch-comparison-public-sector-and-private-sector-wages>
- McIvor, S. (2016). *Differentials in wage equity between the public and private sectors*. (Undergraduate thesis) University of Victoria, BC, Canada. Retrieved from <https://www.uvic.ca/socialsciences/economics/assets/docs/honours/Sydney%20McIvor%20Thesis.pdf>
- Mueller, R. E. (1998). Public–private sector wage differentials in Canada: evidence from quantile regressions. *Economics Letters*, 60(2), 229-235.
- Mueller, R. E. (2000). Public-and private-sector wage differentials in Canada Revisited. *Industrial Relations: A Journal of Economy and Society*, 39(3), 375-400. doi:10.1111/0019-8676.00173
- Mueller, R. E. (2019). *The gender pay gap in the public sector: Evidence from the labour force survey*. Retrieved from SSRN website: <https://ssrn.com/abstract=3477612>
- Nadeau, S. (2010). Another look at the francophone wage gap in Canada: Public and private sectors, Quebec and outside Quebec. *Canadian Public Policy*, 36(2), 159–179. doi:10.3138/cpp.36.2.159
- Nadeau, S. (2013). *The immigrant wage gap in Canada: Differences between the public and the private sector* (Working Paper No. 1303E). Retrieved from University of Ottawa, Department of Economics, Faculty of Social Sciences website: <https://socialsciences.uottawa.ca/economics/sites/socialsciences.uottawa.ca/economics/files/1303e.pdf>
- Nadeau, S., & Seckin, A. (2010). The immigrant wage gap in Canada: Quebec and the rest of Canada. *Canadian Public Policy*, 36(3), 265–285. doi:10.3138/cpp.36.3.265
- Palacios, M., & Clemens, J. (2013). *Comparing public and private sector compensation in Canada*. Retrieved from Fraser Institute website:

<https://www.fraserinstitute.org/sites/default/files/comparing-public-and-private-sector-compensation-in-canada%281%29.pdf>

Palacios, M., Jacques, D., & Lammam, C. (2018). *Comparing government and private sector compensation in British Columbia, 2018*. Retrieved from Fraser Institute website: <https://www.fraserinstitute.org/sites/default/files/comparing-government-and-private-sector-compensation-in-bc.pdf>

Palacios, M., Jacques, D., Lammam, C., & Lafleur, S. (2018). *Comparing government and private sector compensation in Alberta, 2018*. Retrieved from Fraser Institute website: <https://www.fraserinstitute.org/sites/default/files/comparing-government-and-private-sector-compensation-in-alberta-2018.pdf>

Palacios, M., Jacques, D., Lammam, C., & Lafleur, S. (2018). *Comparing government and private sector compensation in Ontario, 2018*. Retrieved from Fraser Institute website: <https://www.fraserinstitute.org/sites/default/files/comparing-government-private-sector-ON-2018.pdf>

Parkinson, D. (2018, December 13). Canada has an immigrant wage-gap problem; The country must address discrepancies between newcomer incomes and the work force as a whole. *The Globe and Mail*. Retrieved from <https://www.theglobeandmail.com/business/commentary/article-canada-must-address-its-immigrant-wage-gap-problem/>

Picot, G., & Hou, F. (2014). *Immigration, low income and income inequality in Canada: What's new in the 2000s?* (Catalogue no. 11F0019M- No. 364). Retrieved from Analytical Studies Branch Research Paper Series, Statistics Canada website: <https://www150.statcan.gc.ca/n1/en/pub/11f0019m/11f0019m2014364-eng.pdf?st=r6jx3ioe>

Picot, G., & Sweetman, A. (2005). *The Deteriorating economic welfare of immigrants and possible causes, update 2005* (Catalogue no. 11F0019MIE- No. 262). Retrieved from Analytical Studies Branch Research Paper Series, Statistics Canada website: <https://www150.statcan.gc.ca/n1/en/pub/11f0019m/11f0019m2005262-eng.pdf?st=ZtDVLHym>

Picot, W. G., Hou, F., & Coulombe, S. (2007). *Chronic low income and low-income dynamics among recent immigrants* (Catalogue no. 11F0019MIE- No. 294). Retrieved from Analytical Studies Branch Research Paper Series, Statistics Canada website: <https://www150.statcan.gc.ca/n1/en/pub/11f0019m/11f0019m2007294-eng.pdf?st=1-tq28iI>

Prescott, D., & Wandschneider, B. O. (1999). Public/private sector wage differentials in Canada - evidence from the 1991 and 1982 surveys of consumer finance. *Applied Economics*, 31(6), 723-731. doi:10.1080/000368499323931

Shapiro, D. M., & Stelcner, M. (1989). Canadian public-private sector earnings differentials, 1970–1980. *Industrial Relations: A Journal of Economy and Society*, 28(1), 72–81. doi:10.1111/j.1468-232X.1989.tb00724.x

- Statistics Canada. (2017, October 25). *Immigration and ethnocultural diversity: Key results from the 2016 Census*. Retrieved from <https://www150.statcan.gc.ca/n1/daily-quotidien/171025/dq171025b-eng.htm?indid=14428-1&indgeo=0>
- Statistics Canada. (2017, November 27). *Income and mobility of immigrants, 2015*. Retrieved from <https://www150.statcan.gc.ca/n1/daily-quotidien/171127/dq171127a-eng.htm>
- Statistics Canada. (2019, May 7). *Classification of admission category of immigrant*. Retrieved from <http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=323293&CVD=323294&CLV=0&MLV=4&D=1>
- Statistics Canada. (n.d.). *Labour Force Survey (LFS)*. Retrieved May 22, 2019, from <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3701>
- Statistics Canada. (n.d.). *Immigrant Income by admission year and immigrant admission category, Canada and provinces* [Table]. Retrieved January 15, 2019, from <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=4310001001>
- Statistics Canada. (n.d.). *Labour force characteristics of immigrants by educational attainment, annual* [Table]. Retrieved January 18, 2019, from <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410008701>
- Statistics Canada.(n.d.). *Union status by industry* [Table]. Retrieved January 25, 2019, from <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410013201>
- Tiagi, R. (2010). Public sector wage premium in Canada: Evidence from labour force survey. *Labour*, 24(4), 456-473. doi:10.1111/j.1467-9914.2010.00495.x
- Wright, R. E., & Maxim, P. S. (1993). Immigration policy and immigrant quality: Empirical evidence from Canada. *Journal of Population Economics*, 6(4), 337-352. Retrieved from <https://link.springer.com/content/pdf/10.1007%2F00599042.pdf>
- Zheng, B. K. (2017). *The wage gap between the public and the private sector among Canadian-born and immigrant workers*. (Master's thesis). University of Ottawa, ON, Canada. Retrieved from https://ruor.uottawa.ca/bitstream/10393/36133/1/Zheng_Kaiyu_2017_researchpaper.pdf

APPENDIX

Table A.1: *Real Immigrant Wage Gap Within Sectors, Unconditional Quantile Regression (robust standard errors are in parentheses)*

	q=0.10		q=0.25		q=0.50		q=0.75		q=0.90	
Private Sector	0.095	***	0.123	***	0.129	***	0.129	***	0.114	***
	(.0000)		(.0000)		(.0000)		(.0000)		(.0001)	
R ²	0.2250		0.3283		0.3625		0.3166		0.2327	
Sample size	3,786,573		3,786,573		3,786,573		3,786,573		3,786,573	
All public sector	0.082	***	0.064	***	0.047	***	0.050	***	0.029	***
	(.0001)		(.0001)		(.0001)		(.0001)		(.0001)	
R ²	0.1726		0.3150		0.3804		0.2872		0.1911	
Sample size	1,546,505		1,546,505		1,546,505		1,546,505		1,546,505	
Non admin public sector	0.073	***	0.057	***	0.090	***	0.052	***	0.024	***
	(.0001)		(.0001)		(.0001)		(.0001)		(.0001)	
R ²	0.1765		0.3225		0.3997		0.2866		0.1796	
Sample size	1,132,692		1,132,692		1,132,692		1,132,692		1,132,692	
Federal public admin	0.103	***	0.061	***	0.063	***	0.044	***	0.030	***
	(.0004)		(.0002)		(.0002)		(.0002)		(.0002)	
R ²	0.1420		0.2845		0.3535		0.2984		0.2228	
Sample size	166,513		166,513		166,513		166,513		166,513	
Provincial public admin	0.081	***	0.063	***	0.091	***	0.062	***	0.049	***
	(.0003)		(.0002)		(.0002)		(.0002)		(.0003)	
R ²	0.1330		0.2767		0.3805		0.3303		0.2396	
Sample size	127,094		127,094		127,094		127,094		127,094	
Local public admin	0.068	***	0.034	***	0.043	***	0.022	***	0.022	***
	(.0004)		(.0002)		(.0002)		(.0002)		(.0003)	
R ²	0.1819		0.2849		0.3687		0.3032		0.2354	
Sample size	115,355		115,355		115,355		115,355		115,355	

Notes: the following controls were used in each regression: highest level of education, age and its squared, sex, marital status, economic family type, province, urban status, survey period, multiple job holder, full/part-time job status, job type, firm size, job tenure, union status, occupation, industry.

Table A.2-A: *Public Sector Real Wage Premiums, Immigrants, Unconditional Quantile Regression (robust standard errors are in parentheses)*

	q=0.10		q=0.25		q=0.50		q=0.75		q=0.90	
All public sector	-0.005	***	0.069	***	0.189	***	0.079	***	0.056	***
	(.0001)		(.0001)		(.0001)		(.0002)		(.0002)	
Non admin public sector	-0.005	***	0.069	***	0.190	***	0.080	***	0.056	***
	(.0001)		(.0001)		(.0001)		(.0002)		(.0002)	
Federal public admin	0.171	***	0.260	***	0.352	***	0.294	***	0.137	***
	(.0006)		(.0007)		(.0006)		(.0008)		(.0007)	
Provincial public admin	0.182	***	0.281	***	0.325	***	0.226	***	0.100	***
	(.0006)		(.0007)		(.0006)		(.0008)		(.0008)	
Local public admin	0.196	***	0.301	***	0.419	***	0.331	***	0.161	***
	(.0006)		(.0007)		(.0006)		(.0008)		(.0008)	
R ² (All public sector only)	0.2040		0.3339		0.4008		0.3585		0.2336	
R ² (Disaggregated public sector)	0.2041		0.3340		0.4010		0.3586		0.2337	
Sample size	815,435		815,435		815,435		815,435		815,435	

Notes: Refer to notes under Table A.1. Disaggregated public sector comprises of non admin public sector, federal public admin, provincial public admin and local public admin.

Table A.2-B: Public Sector Real Wage Premiums, Canadian-Born, Unconditional Quantile Regression (robust standard errors are in parentheses)

	q=0.10		q=0.25		q=0.50		q=0.75		q=0.90	
All Public sector	0.074	***	0.120	***	0.059	***	0.008	***	0.012	***
	(.0001)		(.0001)		(.0001)		(.0001)		(.0001)	
Non admin public sector	0.074	***	0.120	***	0.059	***	0.008	***	0.013	***
	(.0001)		(.0001)		(.0001)		(.0001)		(.0001)	
Federal public admin	0.136	***	0.196	***	0.260	***	0.194	***	0.121	***
	(.0003)		(.0002)		(.0002)		(.0002)		(.0002)	
Provincial public admin	0.151	***	0.212	***	0.182	***	0.129	***	0.070	***
	(.0003)		(.0002)		(.0002)		(.0002)		(.0002)	
Local public admin	0.149	***	0.218	***	0.232	***	0.159	***	0.104	***
	(.0003)		(.0002)		(.0002)		(.0002)		(.0002)	
R ² (All public sector only)	0.2547		0.3409		0.3779		0.3245		0.2183	
R ² (Disaggregated public sector)	0.2547		0.3409		0.3782		0.3247		0.2185	
Sample size	4,517,6 43		4,517,6 43		4,517,6 43		4,517,6 43		4,517,6 43	

Notes: Refer to notes under Table A.2-A.