EFFECTS OF FAMILY BACKGROUND CHARACTERISTICS ON YOUTH EMPLOYMENT BY MIGRATION STATUS

By

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DEDICATION PAGE

To My Parents, Wenrui Chen and Xiongqin Lin,

who support me selflessly.

To My Girl, Sheng Hong,

who always encourage me.

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ABSTRACT

This paper investigates effects of family background characteristics on youth employment by migration status, with a focus on the influence of the highest education level in the family and equivalent family income, using the 2009-2010 microdata from the CCHS. The results indicate that a 10 percent increase in equivalent family income is associated with a 1.12 percent and a 0.39 percent increase in the probability of youth to be employed for immigrant female and native-born female, respectively. However, the family's highest education level is not the determinant of youth employment. Moreover, employed youth are more likely to work part-time if they attend school, which reduce average 10 working hours per week. Provincial employment rate and other family characteristics such as family size, the language spoken at home, and ethnic background are also associated with youth employment. My findings highlight that, immigrant youth are suggested to be employed and educated more.

LIST OF ABBREVIATIONS USED

CCHS	Canadian Community Health Survey
PUMF	Public use microdata files
OLS	Ordinary Least Squares
YE	Youth employment
HPW	Work hours per week
FT	Full-time
PT	Part-time
α	Alpha
β	Beta
P	Personal Information
IC	Income
EDU	Education level
FS	Family size
RA	Race
ER	Employment rate
LAG	Language(s) spoken at home

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CHAPTER 1   INTRODUCTION

Youth employment has attracted attentions from economists and has emerged as a major public policy issue. The youth age definition of the Labour Force Survey, according to Statistics Canada, is fifteen to twenty-four years (Doucette, 2010). However, most of the previous researchers generally regarded youth employment as a school leaving decision, and ignored youths younger than eighteen. Even youth who are attending high school or an institution of higher education may still seek work for several reasons: to contribute to their household income, to have enough cash to spend, to gain work experience, and to save for the future. Nevertheless, their early employment decisions may strongly correlate with their family background characteristics.

While many youths receive financial support from their family for the educational cost, high-income families can afford to high-level expenses compared with families on a low income, leading to a reduction in the opportunity cost of attending school. Moreover, youths in high-level human capital families often perform well at school and in the labour market (Mazzotta, 2008). While different family backgrounds have various impacts on youth employment, previous researchers like Psacharopoulos (1996), Emerson and Souza (2003) focused on effects of household income and educational attainment, but they ignored other factors like ethnic origin and languages. When taken the migration status into account, some new findings of the effects of family backgrounds on the youth employment will be revealed in this paper.

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As immigration has become an important economic and demographic phenomenon that individuals and families leave their country of origin in pursuit of a "better life" elsewhere. Canada has one of the highest per capita net immigration rates of all countries in the world (Dolin and Young, 2004). Statistics Canada predicts that almost one-half of the population over the age of fifteen will be foreign-born or have at least one foreign-born parent by 2031[1]. The study of the way that immigrants adapt to and affect labour market in Canada has become gradually important.

Many studies such as Baker and Benjamin (1997) have pointed out that migration is not a solitary undertaking and that the "migrating unit" often includes a husband, wife, and children. The motivations of immigrants are the economic prospect of the labour market, a better well-being, or the opportunity for educational advancement (Hagelskamp et al., 2010). There is no doubt that immigrant youth employment affected by their parents' immigration motivation, also background characteristics. However, research on immigrants and labour markets has focused on adults. There are few studies on the employment of adolescent immigrants and natives (National Research Council, 1998).

Education and family backgrounds are the most important determinants of youth employment and wages in Australia (Cooper, 2000). However, Cobb-Clark and Connolly (2001) mention that the immigrant families in Australia play the most important role to affect labour market outcome, and factors such as English language ability, time in residence, health status are the determinants of labour force participation, whereas

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[1] Source: The Daily of Statistics Canada (March 9, 2010): "Projections of the diversity of the Canadian population, 2006 to 2031".

education is not. Although previous research has assessed the influencing factors of youth employment in Australia, the influences of family background characteristics on youth employment in Canada remains unknown.

The primary purpose of this paper is to determine whether the effects of family background characteristics on youth employment are similar among immigrant and native-born youths in Canada by using the 2009-2010 microdata from Canadian Community Health Survey (CCHS). In addition, I examine the role of the family highest education level and household income in the youth labour market by assessing the labour force behaviour of immigrant and native-born youths. It is important to address these problems because the ages of fifteen through twenty-four are the ideal stage for youths to attain the necessary education and employment experience to make the transition to adulthood as skilled workers and taxpayers. Parents would give proper allowances, and government may also provide some financial supports to facilitate youths to strike a better balance between education and employment. Moreover, investigating these problems contribute to the literature, which related to family backgrounds associate with youth employment.

In the next chapter, I state the literature review, which summarizes the methods and results of the relevant research. The following chapter describes the data source and explains the data in detail. Chapter four illustrates the empirical strategy. Chapter five reports the data analysis and estimation results. Finally, chapter six concludes with the results and provides some policy recommendations in view of the results.

CHAPTER 2   Literature Review

There are substantial studies that examine the determinants of youth employment, but fewer that examine the relationship between family background and youth employment, especially by migration status. In the study by Riphahn (2000), she analyzes school to work transitions of youth in Germany between 1984 and 1997. In order to determine influencing factors of youth unemployment, she uses logistic model to estimates the impact of individual, parent, and household characteristics, as well as indicators of the youth's region of residence and local labour markets. There is a new finding that contribute to my research question is that, parents' educational attainment has a significant impact on youth labour. That means family backgrounds and education level including individuals and parents indeed associate with the youth employment. Results also suggest that youth unemployment rate is different among high unemployment states and metropolitan areas. Moreover, Gustman and Steinmeier (1981) used local employment rate as the market signal to measure the job availability. Therefore, it suggests me that to consider the Canadian provincial employment rate in the research is important for the distinction of labour demand in different provinces.

In Latin America, the issues of youth labour force have also been extensively studied. Psacharopoulos (1996) investigates the relation between youth labour and educational attainment of working youths in Bolivia and Venezuela. The result shows that the youth labour force participation in these two countries is unusual relative to other developed countries, and it is associated with a common phenomenon in Latin America: grade repetition. Even though working youths contribute to household income, they have to

give up about two years educational attainment. Hence, their early employment decisions may have disadvantages for their human capital acquisition and future development. Similarly, Patrinos and Psacharopoulos (1997) did an empirical analysis of effects of family size and schooling on youth labour in Peru. They take family size and activities of siblings into consideration, and conclude that youth labour force participation, which causes lower educational attainment, is associated with the situation of family. Along these lines, Emerson and Souza (2003) find strong evidence of links between parents and their children on aspects of educational attainment and family income in Brazil. They believe that the higher education level their parents are, the lower youth labour force participation, and the lower earnings of an adult in the family, the earlier youth enter the labour market. These three papers lead me to find the association between youth employment and several background characteristics including household income, family size, and education level in Canada.

In addition to the factors discussed above, a variety of background characteristics would affect youth employment. Kramarz and Skans (2007) focus on the importance of family networks for the youth labour market outcomes in Sweden. They suggest that family ties are paramount important for the youth transition from school to work, especially for low-educated males in manufacturing industry. Recent work by Mazzotta (2008) highlights that Italian youth from underprivileged household suffers greater difficulties in finding a job regardless of the level of educational achievement. There is one thing in common: family background characteristics are indeed important to youth employment.

Since immigrant youth differ from Canadian-born youth in their experiences and backgrounds, it attracts economists to study the difference impacts of family background characteristics on youth employment between immigrant and native-born youth in Canada. Zhang and Sanders (1999) study the differences between immigrants and natives in Canadian labour market. They use the individuals' total paid work time and the number of family members participating in paid work as the measurement. According to the test of the hypothesis about the extended stratification theory at the individual and family level, they find that immigrants from poor societies work more than native counterparts, and immigrant family tend to have more workers in the labour force market than native-headed households with same economic background. Therefore, it is an appropriate method to measure the hours worked in a period in order to find the native-immigrant differences of youth employment.

The growth of the number of immigrant children in the United States is huge during the past two decades. Perreira et al. (2007) investigate differences in youth labour force participation when they enrolled in high school. They show that immigrant youth labour force participation is significantly lower than the native-born youth during middle and high school in America. In addition, race and/or ethnicity, education level, family socioeconomic characteristics, social networks, and job searching opportunities also influence native-immigrant differences in youth employment. These could be similar results with this paper. Compared with Perreira et al. (2007), Hagelskamp et al. (2010) hold different opinions on immigrant youth labour. They find that work expectations of immigrant youth were more significant than educational prospects mainly due to

motivations of family migration. With the growth of immigrant youth employment rate, adolescent GPA in high school decreases significantly. Even though Raijman and Tienda (1999) and Perreira et al. (2007) has the same result that early work experience can complement investments in schooling, and help to improve adult labour market opportunities for immigrant youth in America. However, to balance schoolwork with job may be more helpful to youth future development (Pabilonia, 1999).

Moreover, Wilkinson (2008) studies the labour market experiences of immigrant and Canadian-born youth, which are important to their development and transition to adulthood. The result shows that educational attainment, language ability, parental education modes, and ethnicity are the key factors to induce the youth employment difference in the market. It contributes to the field by addressing the question of how family background characteristics affect the employment of immigrant and native-born youth differently.

In general, youth labour force and employment status is closely associated with two family background characteristics: education and family income. More specifically, it is important to study the impact of education on youth labour force whatever the educational attainment of individual and other family members. Household income is one of the most important factors to measure family background, but household income generally includes youth income and parental income. Since the purpose of this paper is to determine the effects of family backgrounds on youth employment, this paper will

analyze the effects of families' highest education level and household income excluding

youth income on youth employment in particular.

CHAPTER 3　　　Data and Descriptive Statistics

The data source for this analysis is the Canadian Community Health Survey (CCHS) collected for the years 2009 and 2010. CCHS is a cross-sectional survey that collects information related to health status for the Canadian population. A unique feature of the CCHS that is central to my goals is that the CCHS covers about 98% of the Canadian population aged 12 and over. I extracted the public use microdata files (PUMF) from Equinox data delivery system, which is provided by Statistics Canada. Although the sample size is about 65,000 respondents, following exclusion for non-response to any questions used in the analysis, I have 652 fifteen to twenty-four year-old immigrant youth, and 7217 native-born youth. 'Immigrant youth' in the CCHS means that the youth enter and settle in Canada to which they are not native.

The key measure of youth labour force I study is employment status. The labour force question in the CCHS is: "What is your working status in the week prior to the interview?" Respondents have four possible options for this labour force question: worked at a job or business; had a job but did not work; did not have a job; or permanently unable to work. I have aggregated responses the first two and the last two due to the research objective is to indentify whether youth has a job or not. A binary employment status indicator probability of youth employment status takes the value of 1 if youth is employed, and zero otherwise.

Another measurement of youth labour force used in this thesis is the total usual work hours per week. In general, total hours worked at least 30 hours per week considers as

full-time employment, and hours between 0 and 30 are part-time job. In the data analysis process, I set up a dummy variable, which takes the value of 1 if youth works full-time, and zero otherwise. Similarly, another dummy variable is applied in the study, the value of 1 indicates youth works part-time and zero indicates youth works full-time.

The relationship between income and youth labour force is analyzed using two different specifications. One of specifications applied is household income excluding youth income. The measures of income obtained in the CCHS are categories of household and personal income. Since household income generally includes youth income and other members' income, if youth has income, the endogenous[2] income variable will lead to biased results. In order to avoid the problem of endogeneity, I use the household income minus youth income to get the family income without contribution of youth. In this PUMF of the CCHS, annual income is top-coded at $80,000 or more, and successively decreases $20,000 per level. The measure of household income only provides five categories, and personal income has six categories including the same five categories with household income and "No Income". In order to calculate the household income excluding youth income, the midpoint of the reported income categories ($10000, $30000, $50000, $70000, $100000) is applied. Since the highest income category ($80,000 or more) is an open-ended category, the midpoint of the top income category is calculated by using 1.5 times the lower limit of the confidence interval as the upper limit of the top category (U.S. Census Bureau, 1993). Another specification of income is Equivalent Household Income, by dividing the midpoint of reported income categories by the

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[2] There is a correlation between youth income and youth employment, and youth income is part of household income.

Luxembourg Income Study (2009) equivalence scale[3]. This variable will more accurately reflects the youth share of household consumption as it considers different family size.

The education concept measured in the CCHS is "the highest level of education attained". There are two education variables used in the estimation, which is defined by the question of "What is the highest level of education level you obtained?" and "What is the highest level of education acquired by any member of the household?" Possible responses are less than secondary school graduation; secondary school graduation, no post-secondary education; some post-secondary education; or post-secondary degree/diploma. A disadvantage of the CCHS is thus that it only has a four-education scale rather than the more usual six scales, some high school, high school, some undergraduate education, Bachelor, Master, and PhD in particular. As predicted, "highest level of education in the household" is always higher than or equal to "highest level of education of respondent".

The basic personal characteristics including age categories, gender, educational attainment, marital status, and school attendance status are considered in the analysis. As literatures mentioned, some basic family characteristics like family size, family ethnic origin, and languages spoken at home should also be applied. Table 1 reports means and frequencies for each sub-population and for all variables used in my analyses, for immigrant youth and native-born youth, respectively.

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[3] That is the square root of family size (1 to 5 or more).

Table 1   Descriptive statistics for youth aged 15 to 24.

Specification	Immigrant		Canadian-Born	
	Male	Female	Male	Female
Employment Status				
Employed (%)	46.1	46.7	57	60.6
Jobless (%)	53.9	53.3	43	39.4
Basic Personal characteristics				
Youth's age				
Age 15 – 17 (%)	29.3	29.9	35.8	32.9
Age 18 – 19 (%)	21	16.3	21.9	22.7
Age 20 – 24 (%)	49.7	53.8	42.3	44.4
Marital status				
Married (%)	4.14	11.2	1.7	4
Unmarried (%)	95.86	88.8	98.3	96
Youth's highest education level				
Less than secondary school graduation (%)	33.3	31	41.9	36.6
Secondary school graduation (%)	17	17.5	20.7	19.1
Some post-secondary education (%)	20.9	18.5	16.2	19.2
Post-secondary degree/diploma (%)	28.8	33	21.2	25.1
Currently attending a school				
Yes (%)	71.2	64.4	57.6	61.7
No (%)	28.8	35.6	42.4	38.3
Basic Family characteristics				
Household income excluding youth's income				
No income or less than $20,000 (%)	24.8	21.2	15.1	16.1
$20,000 to $39,999 (%)	18.7	24.6	17.8	20.5
$40,000 to $59,999 (%)	14.6	16.2	14.5	15
$60,000 to $79,999 (%)	21.2	19	23.5	21.5
$80,000 or more (%)	20.7	19	29.1	26.9
Equivalent Family Income ($)	33,643	30,129	40,324	37,231
Number of household members	3.4	3.5	3.3	3.3
Highest Education level in family				
Less than secondary school graduation (%)	4.6	1.9	4.4	4.5
Secondary school graduation (%)	4.9	8	12.6	11.1
Some post-secondary education (%)	5.2	8	7.7	8.6
Post-secondary degree/diploma (%)	85.3	82.1	75.3	75.8
Ethnicity				
White (%)	25.5	26.8	84	81.9
Non-white (%)	74.5	73.2	16	18.1
Home Language is not English (%)	60.1	73.2	20.9	21
Number of Observations	338	314	3683	3588

Table 1 shows more immigrant youth did not have a job than those who had a job for both male and female. In contrast, much more native-born youth are employed. It might due to the effects of family background characteristics I will analyze in this paper. It presents that more immigrant youth are married, especially for immigrant female youth. Cultural diversity would be the reason of difference of youth marital status. As predicted, "highest level of education in family" or "youth's highest education level" is higher for immigrant than Canadian-born respondents. For 15 to 24 year-old respondents, there are more immigrant and native-born youths attending a school currently. Moreover, Table 1 confirms that immigrant families have lower income than Canadian-born families. For instance, immigrant household income excluding youth income has lower percentage than that of native-born family in higher income category ($60,000 to $79,999, and $80,000 or more). The real equivalent family income for immigrant youth is only about three-quarters of that of non-immigrant youth.

In the past, Canadian immigrants were mainly white and European. More recently, immigrants' origin countries have changed a lot. The data shows that immigrants do not have the same race backgrounds as the Canadian-born population. In particular, more than 80 percent in the Canadian-born sample are white compared to 26 percent in immigrant youth sample. Ethnicity would also affect youth to enter the labour market. The measure of language is a categorical variable index that "language spoken at home is English or not". Even though French and English is official language, majority of Canadians speak English. The lack of facility in English may cause difficulties at workplace, and hence affect the employment.

Table 2 The distribution of immigrant and Canadian-born youth employment status by different families' highest education levels.

			Families' highest education levels				
			Less than secondary school graduation	Secondary school graduation	Some post-secondary graduation	Post-secondary graduation	N
Immigrant	Male	Employed	4.5 %	3.1 %	3.7 %	88.7 %	156
		Jobless	4.5 %	6.5 %	6.5 %	82.5 %	182
	Female	Employed	0.6 %	8.2 %	6.0 %	85.2 %	146
		Jobless	2.8 %	8.2 %	7.8 %	79.2 %	168
Canadian-born	Male	Employed	3.2 %	13.5 %	6.8 %	76.5 %	2098
		Jobless	6.1 %	11.4 %	8.8 %	73.7 %	1585
	Female	Employed	2.3 %	10.1 %	8.4 %	79.2 %	1415
		Jobless	8.1 %	12.7 %	8.9 %	70.3 %	2173

When I analyze the distribution of immigrant and native-born youth employment status by different families' highest education levels, I find evidence suggesting, first, that there are more immigrant youth jobless than these employed, and on the contrary, the percentage of employed non-immigrant youth is higher than those jobless. Second, the percentage of employed immigrant youth is always lower than that of jobless for both male and female if their family's highest education level is lower than post-secondary graduation. Moreover, Canadian-born youth also prefer to work if their families' highest education level is post-secondary graduation.

In addition, immigrant youth reports more likely "employed" as families' highest education level increased. For example, 3.1 percent of immigrant male youth with families' highest education of secondary school graduation report employed, compared to

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6.5 percent of same sub-group jobless. While the families' highest education level increased to some post-secondary degree, there are 3.7 percent of immigrant male youth employed, and 6.5 percent of those jobless. That is, the difference between immigrant male youth employed and jobless for post-secondary degree is 3.4 percent, more than 2.8 percent of the sub-group of high school graduation. Similarly, native-born youth reports more likely "employed" as families' highest education level increased within each sub-group. Moreover, female youth are more likely "employed" compared to same migration status male youth.

Table 3   The distribution of immigrant and Canadian-born youth employment status by different household income excluding youth's income levels.

			Household income excluding youth's income levels					
			No income or less than $20,000	$20,000 to $39,000	$40,000 to $59,999	$60,000 to $79,999	$80,000 or more	N
Immigrant	Male	Employed	21.9 %	15.5 %	16.5 %	25.2 %	20.9 %	156
		Jobless	27.2 %	21.5 %	13.0 %	17.8 %	20.5 %	182
	Female	Employed	16.9 %	21.8 %	18.5 %	22.5 %	20.3 %	146
		Jobless	24.9 %	27.0 %	14.3 %	15.9 %	17.8 %	168
Canadian-born	Male	Employed	13.6 %	14.4 %	14.2 %	25.8 %	32.0 %	2098
		Jobless	15.8 %	17.0 %	14.9 %	20.4 %	31.9 %	1584
	Female	Employed	13.7 %	17.6 %	14.7 %	25.1 %	28.9 %	1415
		Jobless	19.8 %	20.3 %	15.5 %	16.0 %	28.4 %	2173

When I explore the immigrant and native-born youth employment status defines clusters by different level of household income excluding youth's income, it illustrates, first, that youth with high level of household income prefer to "employed". The percentage of employed youth is higher than that of jobless for immigrant youth who household income

excluding youth's income is higher than 40,000 dollars and for Canadian-born youth who household income excluding youth's income is higher than 60,000 dollars. However, within each sub-level, a higher proportion of native-born youth concentrates on household income more than 60,000 dollars per year. With the higher income level, Canadian-born youth are more likely "employed". Furturemore, it demonstrates that jobless immigrant youth concentrates on income below 40,000 dollars. As the income level increases, the difference of immigrant youth employed compared to those jobless change from negative to positive. Moreover, female youth are more likely "employed" compared to same migration status male youth, especially for native-born female. In general, I conclude that youth trend to employed as the household income increased for both immigrants and non-immigrants.

To summarize, the preliminary data and descriptive statistics suggest, first, there is a positive association between families' highest education level and youth employment status for both immigrant and native-born youth. Second, the positive association between household income excluding youth's income and youth employed is larger for Canadian-born youth than immigrant youth. Last, female youth are more likely "employed" compared to same migration status male youth. To examine these hypotheses more carefully, I estimate probit models of youth employment, pooling all observations.

CHAPTER 4   Empirical Strategy

In this paper, I focus explicitly on families' highest education level and two specifications of income[4] related to youth employment while controlling for other factors by using Probit model and Ordinary Least Squares (OLS) model. The reason for using probit model is that the dependent variable can only take two possible outcomes denoted as the values 1 or 0. Therefore, combining with the OLS model, I can obtain relationship between families' highest education level, income and youth employment, and number of youth worked hours influenced by family background characteristics.

According to Gustman and Steinmeier (1981), Patrinos and Psacharopoulos (1997), and Riphahn (2000)'s probit model, suppose that the basic regression is

$$Y* = X'\beta + \varepsilon \tag{1}$$

which $Y* =$ youth employment status (YE) is the exact but unobserved dependent variable, X is the vector of independent variables, and β is the vector of regression coefficients which I need to estimate. Moreover, instead of the unobserved variable $Y*$, I use the observable categories of response:

$$Y = \begin{cases} 0 & \text{if } Y* \leq 0 \\ 1 & \text{if } Y* > 0 \end{cases} \tag{2}$$

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[4] One specification is household income excluding youth income; another specification is equivalent household income.

Then the probit regression will use the observations on $Y = P_{i,t}$ (YE) or $P_{i,t}$ (FT) or $P_{i,t}$(PT), which are a form of censored data on $Y *=$ YE or FT or PT, to estimate the parameter vector β.

In order to show the result of effects of family background characteristics on youth employment, I pooled all observations in the regression. The basic regression (1) can be extended to the function as follows:

$$YE_{i,t} = \alpha + \beta_0 P_{i,t} + \beta_1 IC_{i,t} + \beta_2 EDU_{i,t} + \beta_3 FS_{i,t} + \beta_4 RA_{i,t} + \beta_5 LAG_{i,t} + \beta_6 ER_{i,t} + \varepsilon \qquad (3)$$

which $YE_{i,t}$ shows employment status of youth i who is interviewed at time t, the employment status indicator $P_{i,t}$(YE) takes the value of one if youth is employed, and zero otherwise. P is the personal information including age categories, educational attainment, marital status, and status of school attendance; IC is the (log of) equivalent household income or household income excluding youth income; EDU is the family highest education level; FS is family size; RA is the origin ethnicity; and LAG is languages spoken at home. In addition, ER is the employment rate of province that respondent live in.

In particular, in order to consider labour demand, I use the provincial employment rate for adults to measure the job availability according to Gustman and Steinmeier (1981). The provincial employment rate[5] used in regression is estimated based on data from 2009 to 2010. As job opportunities would influence youth employment, respondents from different provinces also faced with different labour market conditions. To measure the

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[5] Source: Statistics Canada, Table 282-0004 – Labour force survey estimates (LFS).

job availability, it is better to distinguish the youth live in urban or rural, or specific economic region. However, the data related to above information is not available in the CCHS. Because of this limitation, I only can use employment rate for adults to measure the job availability.

According to the equation (3), I can estimate the two key regression coefficients β_1 and β_2, respectively. When I use the native-born youth data, I can work out the corresponding β_1 and β_2 for native-born youth donated as $\beta_{1native-born}$ and $\beta_{2native-born}$. Similarly, the corresponding β_1 and β_2 for immigrant youth donated as $\beta_{1immigrant}$ and $\beta_{2immigrant}$ can be obtained when I use the immigrant youth data. Then I can figure out the native-immigrant differences of the effects of families' highest education level and household income on the youth employment by comparing $\beta_{1native-born}$ and $\beta_{1immigrant}$, and $\beta_{2native-born}$ and $\beta_{2immigrant}$. Moreover, the model also shows the different effects of other family background characteristics on youth employment by migration status.

Similarly, the basic regression (1) can be also extending to the function as follows:

$$FT_{i,t} = \alpha + \beta_0 P_{i,t} + \beta_1 IC_{i,t} + \beta_2 EDU_{i,t} + \beta_3 FS_{i,t} + \beta_4 RA_{i,t} + \beta_5 LAG_{i,t} + \beta_6 ER_{i,t} + \varepsilon \qquad (4)$$

$$PT_{i,t} = \alpha + \beta_0 P_{i,t} + \beta_1 IC_{i,t} + \beta_2 EDU_{i,t} + \beta_3 FS_{i,t} + \beta_4 RA_{i,t} + \beta_5 LAG_{i,t} + \beta_6 ER_{i,t} + \varepsilon \qquad (5)$$

where $FT_{i,t}$ and $PT_{i,t}$ shows working status of youth i who is interviewed at time t. The dummy variable $FT_{i,t}$ uses the value of one if youth works full-time, and zero otherwise. Moreover, for the dummy variable $PT_{i,t}$, the value of 1 indicates youth works part-time and zero indicates youth works full-time.

From equation (4) and equation (5), I can conclude that how the family highest education level / income affect youth working status in more details: what makes youth work full-time, and what makes youth work part-time.

In addition, the OLS equation (6) I will estimate is of the form

$$HPW_{i,t} = \alpha + \beta_0 P_{i,t} + \beta_1 IC_{i,t} + \beta_2 EDU_{i,t} + \beta_3 FS_{i,t} + \beta_4 RA_{i,t} + \beta_5 LAG_{i,t} + \beta_6 ER_{i,t} + \varepsilon$$

(6)

where $HPW_{i,t}$ is hours worked per week of youth i who is interviewed at time t. Since HPW applied in equation (6) is larger than zero, there is a sample selection bias (Heckman, 1976). While the probability of labour force participation is not estimated thus no inverse Mills ratio, Heckman correction cannot be applied. According to above equation, the extensive marginal effect of household income and families' highest educational attainment to youth hours worked per week can be obtained.

CHAPTER 5   Estimation Results

In the previous chapters, I presented descriptive characteristics for native-born and immigrant youth. As explained, native-immigrant differs in terms of their observable characteristics including employment status, personal and family's highest education level, marital status, status of school attendance, family size, household income, race, and languages spoken at home. In this chapter, I focus on the potential link and differences between youth employment and families' highest education level and household income. I present the detailed estimation results on different labour market measures using regression analysis, in which I compare native-born youth to immigrant youth after controlling for observable characteristics.

Table 4M and Table 4F presents the estimation results of coefficient in probit model of youth employment status using native-born and immigrant youth data by gender, male and female, respectively. Table 4M and Table 4F use the specification of income: equivalent family income. Results from another specification of income, which is household income excluding youth income, reported in the Appendix, Table A.3M and Table A.3F. They also shows estimated magnitude and statistical significance of coefficient in probit model of youth employment status as sets of explanatory variables added by migration status. The results in Table 5 present the marginal effect of variables in probit regression of youth employment status use different measurements of income by gender and migration status is most credible, because Table 5 reveals the crucial relationship between family background characteristics and youth employment status. Table 6 and Table 7 show the factors that make youth work full-time / part-time. Lastly, Table 8 demonstrates the potential change of hours worked per week by different factors.

Table 4M Coefficient of variables in probit regression of male youth employment status.

	Immigrant				Native-born			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Employment rate	3.856	0.543	1.725	1.278	1.356**	0.722	0.778	1.686**
	(3.202)	(3.526)	(3.700)	(3.865)	(0.642)	(0.758)	(0.788)	(0.836)
Age	0.621***	0.498**	0.578**	0.642***	0.135***	0.054	0.057	0.062
	(0.174)	(0.196)	(0.230)	(0.236)	(0.042)	(0.050)	(0.053)	(0.053)
Personal Education Level								
Secondary school graduation	-0.271	-0.221	-0.271	-0.382	0.479***	0.476***	0.450***	0.438***
	(0.341)	(0.359)	(0.435)	(0.448)	(0.084)	(0.092)	(0.103)	(0.103)
Some post-secondary	0.107	0.127	0.201	0.157	0.424***	0.420***	0.471***	0.444***
	(0.338)	(0.359)	(0.447)	(0.462)	(0.085)	(0.094)	(0.106)	(0.107)
Post-secondary graduation	-0.188	-0.080	-0.146	-0.095	0.511***	0.612***	0.558***	0.518***
	(0.376)	(0.383)	(0.468)	(0.483)	(0.094)	(0.097)	(0.112)	(0.113)
In school	-1.011***	-1.147***	-1.085***	-1.075***	-0.534***	-0.559***	-0.547***	-0.546***
	(0.215)	(0.255)	(0.267)	(0.276)	(0.060)	(0.069)	(0.073)	(0.073)
Married	-0.003	-0.191	-0.057	0.174	0.241	0.237	0.288	0.294
	(0.476)	(0.472)	(0.530)	(0.632)	(0.202)	(0.210)	(0.216)	(0.218)
Family size				0.206**				-0.001
				(0.111)				(0.032)
Family's Highest Education Level								
Secondary school graduation	-0.219		-0.094	-0.422	0.221		-0.012	-0.021
	(0.657)		(0.899)	(1.110)	(0.149)		(0.183)	(0.185)
Some post-secondary graduation	-0.108		-0.209	-0.565	-0.003		-0.243	-0.260
	(0.641)		(0.817)	(1.052)	(0.157)		(0.195)	(0.197)
Post-secondary graduation	0.430		0.233	-0.213	0.220*		0.005	-0.015
	(0.522)		(0.723)	(0.972)	(0.133)		(0.171)	(0.173)
ln(Equivalent Family Income)		0.111	0.085	-0.021		0.024	0.013	0.013
		(0.069)	(0.077)	(0.087)		(0.025)	(0.027)	(0.028)
Race — White				0.669**				0.200**
				(0.289)				(0.089)
Not speak English at home				-0.097				0.189**
				(0.234)				(0.077)
Constant	-4.104*	-2.079	-3.120	-2.344	-1.215***	-0.528	-0.456	-1.227*
	(2.166)	(2.466)	(2.659)	(2.870)	(0.439)	(0.554)	(0.585)	(0.628)
Observations	338	338	338	338	3683	3683	3683	3683
Pseudo-R-squared	0.2374	0.2031	0.2281	0.2794	0.1136	0.0924	0.0887	0.0930

Notes: This table reports probit estimates of male youth employment status, P(YE) takes the value of 1 if youth is employed, and zero otherwise. Standard errors are reported in parentheses; ***1%, ** 5%, * 10% significance level.

Table 4F   Coefficient of variables in probit regression of female youth employment status.

	Immigrant				Native-born			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Employment rate	5.745**	2.668	4.810	4.929	1.552**	1.627**	1.537*	1.631**
	(2.806)	(3.197)	(3.479)	(3.661)	(0.628)	(0.789)	(0.818)	(0.861)
Age	0.055	-0.005	0.128	0.102	0.102**	-0.046	-0.021	-0.015
	(0.174)	(0.209)	(0.228)	(0.234)	(0.044)	(0.052)	(0.056)	(0.057)
Personal Education Level								
Secondary school graduation	0.484	0.657*	0.293	0.356	0.439***	0.589***	0.544***	0.545***
	(0.337)	(0.397)	(0.439)	(0.460)	(0.084)	(0.096)	(0.109)	(0.110)
Some post-secondary	0.959***	0.701*	0.738*	0.853*	0.322***	0.511***	0.415***	0.382***
	(0.355)	(0.388)	(0.448)	(0.462)	(0.086)	(0.096)	(0.112)	(0.114)
Post-secondary graduation	0.669*	0.880**	0.711	0.782	0.591***	0.931***	0.799***	0.734***
	(0.371)	(0.408)	(0.467)	(0.484)	(0.097)	(0.103)	(0.123)	(0.126)
In school	-0.685***	-0.746***	-0.863***	-0.848***	-0.314***	-0.306***	-0.315***	-0.312***
	(0.203)	(0.236)	(0.251)	(0.255)	(0.061)	(0.072)	(0.074)	(0.075)
Married	-0.971***	-0.913***	-1.028***	-0.979***	-0.417***	-0.314**	-0.319**	-0.335**
	(0.287)	(0.324)	(0.340)	(0.349)	(0.119)	(0.130)	(0.133)	(0.133)
Family size				-0.135				-0.050*
				(0.108)				(0.032)
Family's Highest Education Level								
Secondary school graduation	0.797		5.367	6.024	0.392***		0.130	0.106
	(0.735)		(180.8)	(600.3)	(0.147)		(0.178)	(0.182)
Some post-secondary graduation	-0.768		4.121	4.516	0.532***		0.379**	0.398**
	(0.773)		(180.8)	(600.3)	(0.157)		(0.190)	(0.193)
Post-secondary graduation	0.253		4.357	4.958	0.596***		0.321**	0.349**
	(0.686)		(180.8)	(600.3)	(0.135)		(0.171)	(0.174)
ln(Equivalent Family Income)		0.201***	0.248***	0.296***		0.114***	0.095***	0.099***
		(0.075)	(0.086)	(0.098)		(0.022)	(0.025)	(0.026)
Race —White				0.355				0.200**
				(0.249)				(0.085)
Not speak English at home				-0.218				-0.047
				(0.238)				(0.077)
Constant	-4.071**	-3.545	-9.978	-10.61	-1.632***	-1.895***	-1.951***	-2.059***
	(1.994)	(2.269)	(180.8)	(600.3)	(0.434)	(0.556)	(0.592)	(0.631)
Observations	314	314	314	314	3588	3588	3588	3588
Pseudo-R-squared	0.1520	0.1373	0.1814	0.2061	0.0798	0.0769	0.0773	0.0819

Notes: This table reports probit estimates of female youth employment status, P(YE) takes the value of 1 if youth is employed, and zero otherwise. Standard errors are reported in parentheses; ***1%, ** 5%, * 10% significance level.

Table 5 Marginal effect of variables in probit regression of youth employment status by different measurements of income by migration status.

	Immigrant				Native-born			
	Male		Female		Male		Female	
Employment rate	0.541	0.541	1.595	1.602	0.650**	0.647**	0.691**	0.686**
	(1.512)	(1.512)	(1.407)	(1.408)	(0.314)	(0.314)	(0.326)	(0.326)
Age	0.058**	0.058**	0.008	0.008	0.040**	0.040**	0.009	0.009
	(0.084)	(0.084)	(0.082)	(0.082)	(0.019)	(0.019)	(0.021)	(0.021)
Personal Education Level	0.013	0.013	0.103*	0.103*	0.055**	0.055**	0.076**	0.076**
	(0.058)	(0.058)	(0.053)	(0.053)	(0.014)	(0.014)	(0.016)	(0.016)
In school	-	-	-	-	-	-	-	-
	(0.084)	(0.084)	(0.088)	(0.088)	(0.025)	(0.025)	(0.026)	(0.026)
Married	0.062	0.062	-	-	0.113	0.113	-	-
	(0.234)	(0.234)	(0.101)	(0.101)	(0.071)	(0.071)	(0.053)	(0.053)
Family size	0.081*	0.081**	-0.058	-0.040	-0.001	0.001	-0.026**	-0.020
	(0.042)	(0.040)	(0.044)	(0.041)	(0.013)	(0.012)	(0.013)	(0.012)
Family's Highest Education Level	0.024	0.024	-0.056	-0.056	0.003	0.003	0.041**	0.040**
	(0.082)	(0.082)	(0.072)	(0.072)	(0.016)	(0.016)	(0.017)	(0.017)
ln(Household Income excluding youth income)	-0.001		0.109**		0.009		0.037**	
	(0.032)		(0.037)		(0.010)		(0.010)	
ln(Equivalent Family Income)		-0.002		0.112**		0.010		0.039**
		(0.033)		(0.038)		(0.011)		(0.010)
Race —White	0.254**	0.255**	0.121	0.121	0.074**	0.074**	0.080**	0.080**
	(0.095)	(0.095)	(0.094)	(0.094)	(0.035)	(0.035)	(0.033)	(0.033)
Not speak English at home	-0.035	-0.034	-0.079	-0.079	0.069**	0.069**	-0.022	-0.022
	(0.089))	(0.089)	(0.091)	(0.091)	(0.028)	(0.028)	(0.030)	(0.030)
Observations	338	338	314	314	3683	3683	3588	3588

Note: Personal education level and family's highest education level takes on four values: less than secondary school graduation, secondary school graduation, some post-secondary education, post-secondary degree. Higher numeric values indicated higher education level.
Notes: This table reports probit estimates of youth employment status by migration status and gender, P(YE) takes the value of 1 if youth is employed, and zero otherwise. Standard errors are reported in parentheses; ***1%, ** 5%, * 10% significance level.

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In Table 4M, I report the estimated size and statistical significance of the coefficient in probit model of youth employment status by migration status for male. Firstly, it shows there a negative relationship between youth in school and their employment status for both immigrant and native-born youth, and it is always statistically significant at 1 percent level. It seems that the size of association for immigrant is almost twice times as much as native-born youth. The coefficient in Table 4F also shows the similar result for female. The corresponding marginal effect in Table 5 presents that if high-school graduation immigrant male youth is attending to a post-secondary school, it results to a reduction in the probability of "employed" by almost 39 percentage points. Immigrant female also seems less likely to be employed if they are in school by a probability of 32 percentage points, which is still larger than Canadian-born male and female. All these effects are statistically significant at 1 percent level. This may indicate that the status of school attendance has stronger effect on immigrant youth, especially for male youth. Obviously, time is an opportunity cost for youth.

Secondly, the coefficients of personal education level and the family's highest education level are always not statistically significant for immigrant male youth. Similarly, the effect of education level variables of immigrant female shows no significant regardless of individual or family. However, personal education level of Canadian-born youth has a statistically significant at 1 percent level correlation with employment status. As the personal education level increase from secondary school graduation to some post-secondary graduation, the probability of "employed" increases 5.5 percentage points for male and 7.6 percentage points for female. It may be due to the personal educational

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attainment less certifiable for immigrant youth. The coefficient between youth employment status and the family's highest education level only reveals statistically significant for native-born female in Table 4F columns (5)-(8), which changes from 1 percent level to 5 percent level when equivalent family income controlled. These might be due to the reasons that more educated native-born parents value education more, they prefer their daughter to educate more, and the high level equivalent household income can afford to support the tuition fee. In addition, youth with higher education level and still attending to school, they prefer to work to increase their personal consumption and gain experience in the labour market. Take together, differences in the effects of families' highest education level on youth employment between immigrant and non-immigrant respondents, while differences are large if all variables controlled, are not an important reason for observed differences in youth employment status. Differences in equivalent household income are actually the most important factor.

In order to account for the potential correlation between youth income in household income and youth employment, I employ two specification of income to eliminate the effect of youth income on youth employment. The results of probit regression of youth employment status, which adopt two different specification of income, show the similar results as presented in Table 5. This way may be better to figure out the effect of income on youth employment without endogeneity problem. Here I analyze the estimated result of probit model using equivalent family income because it has taken account of family size. The coefficients of equivalent family income present in Table 4M and Table 4F shows that equivalent family income is always statistically significant at 1 percent level

for immigrant and native-born female. Moreover, the higher equivalent family income, the higher probability of female youth works. It might be explained as that rich families can support their children to educate more, as female youth become more educated, and they tend to participate more fully in the labour market. Compared immigrant female with native-born female, the equivalent family income increase by 10 percent level, immigrant female has 1.12 percentage points more chance to have a job, which is higher than 0.39 percentage points of native-born female. It may due to they are affected by their parents' migration motivation — employment (Hagelskamp et al., 2010). While the employment status of male youth shows no significant correlated with equivalent family income, and higher equivalent family income even slightly reduce the probability of immigrant male to be employed. This would be identified as "the phenomenon of rich second generation", that children from a rich home can obtain everything without hard working (Mack, 2012). Overall, similar to native-born youth, immigrant youth employment status is associated more with equivalent family income relative to highest level of education in the family.

Furthermore, I find no significant effect of employment rate on immigrant youth employment status. However, the result shows that the coefficient of employment rate for native-born youth is statistically significant at 5 percent level. One interpretation may be that most of immigrants settle in cities, where there are more jobs available, and some native-born youth lives in rural areas. If youth lives in rural areas go to cities, they will have more likely to employ. The correlations between age and youth employment status indicate that the likelihood of having a job significant increased by approximately 5.8

percentage points if immigrant male is 21 years-old, and by 4 percentage points if native-born male is 20 years-old[6]. I interpret this as fact that older youth male can afford to do some physical works while female cannot.

The last but not least, I find that married female appear to have a lower chance to be employed compared to their unmarried counterparts. The marginal effect of marital status for immigrant female is twice as large as it is for native-born female in Table 5. This perhaps explains as married female intend to take care of children rather than working. Moreover, this could indicate that marital status plays an important indicator of labour market attractiveness for potential employers of female. In addition, the position of ethnicity and language, not surprisingly, are extremely important for both native-born and immigrant youth. From these two aspects, it is particularly true for immigrant youth, and they will be at a disadvantage when they are seeking a job in the labour market.

In summary, for both immigrant and native-born youth, youth employment status is associated more with equivalent family income / household income excluding youth income as result in Table 5. It is important that some results of this paper are similar to current literature. The higher equivalent household income associated with female youth have more opportunity to educated more, and then higher personal education level make youth have higher likelihood to be employed. It proves relatively similar to Emerson and Souza (2003), and Mazzotta's (2008) empirical results. Moreover, there is a significant negative association between status of school attendance and youth employment status for all youth. This strongly supports the supposition by Psacharopoulos (1996), Patrinos

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[6] The mean of age for immigrant youth and native-born youth is present in Appendix Table A.1 and Table A.2.

and Psacharopoulos (1997), that work may have deleterious effects on schooling because of the opportunity cost of time, while some youth may not attend to school if they do not have work. Taken together, these results are economically significant, and suggest that immigrant youth are more likely to have adverse in labour market and immigrant youth employment status interrelates their parents' migration motivations.

Table 6 Coefficient and marginal effect of variables in probit regression of youth full-time employment by migration status and gender.

| | Immigrant | | | | Native-born | | | |
| | Male | | Female | | Male | | Female | |
	Coef.	dy/dx	Coef.	dy/dx	Coef.	dy/dx	Coef.	dy/dx
Employment rate	3.995	1.256	7.142*	1.795*	2.258**	0.836**	1.609**	0.525**
	(4.006)	(1.259)	(3.940)	(1.010)	(0.911)	(0.337)	(0.920)	(0.300)
Age	0.987***	0.077***	0.289	0.018	0.335***	0.031***	0.315***	0.026***
	(0.297)	(0.099)	(0.246)	(0.067)	(0.057)	(0.021)	(0.062)	(0.021)
Personal Education Level	0.084	0.026	0.290*	0.073**	0.212***	0.078***	0.239***	0.078***
	(0.152)	(0.046)	(0.153)	(0.029)	(0.038)	(0.014)	(0.043)	(0.013)
In school	-0.751***	-0.248***	-1.235***	-0.323***	-1.191***	-0.424***	-0.806***	-0.266***
	(0.244)	(0.086)	(0.258)	(0.079)	(0.071)	(0.023)	(0.072)	(0.024)
Married	0.454	0.160	-0.891**	-0.162***	0.438**	0.170*	-0.240*	-0.073**
	(0.533)	(0.203)	(0.361)	(0.059)	(0.221)	(0.088)	(0.130)	(0.036)
Family size	0.135	0.042	-0.135	-0.034	-0.027	-0.010	-0.103***	-0.034***
	(0.107)	(0.032)	(0.118)	(0.030)	(0.035)	(0.013)	(0.034)	(0.011)
Family's Highest Education Level	-0.199	-0.063	-0.072	-0.018	-0.119***	-0.044***	0.026	0.009
	(0.215)	(0.065)	(0.212)	(0.052)	(0.046)	(0.017)	(0.052)	(0.017)
ln(Equivalent Family Income)	0.053	0.017	0.257**	0.064**	0.036	0.013	0.122***	0.040***
	(0.087)	(0.027)	(0.109)	(0.028)	(0.030)	(0.011)	(0.028)	(0.009)
Race —White	0.485*	0.164	0.321	0.085	0.165	0.059*	0.199**	0.062**
	(0.285)	(0.103)	(0.260)	(0.072)	(0.101)	(0.035)	(0.095)	(0.028)
Not speak English at home	-0.036	-0.011	-0.268	-0.069	0.063	0.023	0.008	0.003
	(0.241)	(0.076)	(0.260)	(0.069)	(0.084)	(0.031)	(0.082)	(0.027)
Constant	-6.576**		-7.940***		-2.717***		-3.849***	
	(3.036)		(2.977)		(0.674)		(0.669)	
Observations	338	338	314	314	3683	3683	3588	3588
Pseudo-R-squared	0.3011		0.2718		0.2868		0.2073	

Notes: This table reports probit estimates of youth full-time employment by migration status and gender, P(FT) takes the value of 1 if youth works full-time, and zero otherwise. Standard errors are reported in parentheses; ***1%, ** 5%, * 10% significance level.

Table 7 Coefficient and marginal effect of variables in probit regression of youth part-time employment by migration status and gender.

Dependent Variable: P(PT)=1, if youth works part-time; P(FT)=0, if youth works full-time.	Immigrant				Native-born			
	Male		Female		Male		Female	
	Coef.	dy/dx	Coef.	dy/dx	Coef.	dy/dx	Coef.	dy/dx
Employment rate	-6.149	-2.363	-4.994	-1.984	-0.585	-0.205	-1.346	-0.537
	(5.739)	(2.210)	(4.837)	(1.924)	(1.281)	(0.449)	(1.121)	(0.447)
Age	-0.932**	-0.089***	-0.323	-0.032	-0.466***	-0.041***	-0.427***	-0.042***
	(0.373)	(0.138)	(0.362)	(0.146)	(0.076)	(0.025)	(0.076)	(0.030)
Personal Education Level	-0.131	-0.050	-0.220	-0.087	-0.168***	-0.059***	-0.148***	-0.059***
	(0.188)	(0.075)	(0.230)	(0.089)	(0.054)	(0.020)	(0.054)	(0.021)
In school	0.291	0.112	1.112***	0.417***	1.418***	0.487***	0.855***	0.331***
	(0.316)	(0.121)	(0.313)	(0.106)	(0.097)	(0.030)	(0.088)	(0.032)
Married	-0.614	-0.211	0.373	0.144	-0.705	-0.197**	-0.038	-0.015***
	(0.677)	(0.200)	(0.488)	(0.182)	(0.438)	(0.087)	(0.174)	(0.070)
Family size	-0.063	-0.024	0.058	0.023	0.051	0.018	0.056	0.022
	(0.143)	(0.055)	(0.151)	(0.060)	(0.049)	(0.017)	(0.042)	(0.017)
Family's Highest Education Level	0.510*	0.196	-0.015	-0.006	0.176***	0.062**	0.050	0.020
	(0.312)	(0.123)	(0.275)	(0.109)	(0.068)	(0.024)	(0.064)	(0.026)
ln(Equivalent Family Income)	-0.116	-0.044	-0.133	-0.053	0.033	0.012	0.065*	0.026*
	(0.115)	(0.044)	(0.144)	(0.057)	(0.043)	(0.015)	(0.035)	(0.014)
Race —White	0.118	0.046	-0.297	-0.118	-0.162	-0.058	-0.150	-0.059
	(0.352)	(0.137)	(0.322)	(0.127)	(0.139)	(0.052)	(0.117)	(0.046)
Not speak English at home	-0.024	-0.009	0.345	0.136	0.093	0.033	-0.114	-0.045
	(0.307)	(0.118)	(0.329)	(0.129)	(0.112)	(0.040)	(0.102)	(0.040)
Constant	6.622		5.431		0.881		2.636***	
	(4.299)		(3.616)		(0.969)		(0.827)	
Observations	156	156	146	146	2098	2098	2173	2173
Pseudo-R-squared	0.1986		0.2144		0.3752		0.2163	

Notes: This table reports probit estimates of youth part-time employment by migration status and gender, P(FT) takes the value of 1 if youth works part-time, and zero if youth works full-time. Standard errors are reported in parentheses; ***1%, ** 5%, * 10% significance level.

Table 8   Coefficient of variables in OLS regression of number of hours youth worked per week by migration status and gender.

Dependent Variable:	Immigrant		Canadian-born	
Number of hours worked per week	Male	Female	Male	Female
Employment rate	81.323	76.751*	26.811**	25.668**
	(55.800)	(45.444)	(10.970)	(9.839)
Age	5.595	2.798***	5.298***	1.175***
	(3.459)	(3.525)	(0.701)	(0.682)
Personal Education Level	2.232	-1.037	0.769*	1.390***
	(2.002)	(2.240)	(0.470)	(0.486)
In school	-9.120***	-11.12***	-13.41***	-9.296***
	(3.367)	(3.060)	(0.905)	(0.811)
Married	8.339	-7.549	1.948	-1.283
	(5.990)	(4.931)	(2.156)	(1.507)
Family size	0.686	-0.227	-0.811**	-0.347
	(1.467)	(1.422)	(0.410)	(0.371)
Family's Highest Education Level	-1.996	0.432	-0.743	-0.355
	(2.807)	(2.725)	(0.581)	(0.579)
ln(Equivalent Family Income)	0.054	3.394**	0.164	0.562*
	1.193	(1.383)	(0.361)	(0.314)
Race ─White	2.526**	5.556**	0.398	0.562
	(3.779)	(3.048)	(1.254)	(0.314)
Not speak English at home	-1.619**	-6.459**	-1.112	0.833
	(3.779)	(3.050)	(0.983)	(0.902)
Constant	-40.401	-81.901**	6.541	-6.444
	(41.725)	(33.898)	(8.311)	(7.259)
Observations	156	146	2098	2173
R-squared	0.1989	0.4050	0.3625	0.3056

Notes: This table reports OLS estimates of number of hours youth worked per week by migration status and gender. Standard errors are reported in parentheses; ***1%, ** 5%, *10% significance level.

In order to determine what makes youth works full-time or part-time, the probit regression of full-time employment and part-time employment are estimated in Table 6 and Table 7, respectively. In addition, Table 8 illustrates the results of OLS regression of

male and female youth hours worked per week by migration status. In order to facilitate a comparison of the correlation between the dependent variable and related factors, I apply the 'side by side' reporting of estimates for immigrant youth and native-born youth.

First, Table 6 shows that highest education level in the family is negative correlated to full-time dummy variable except for native-born female. Moreover, it seems that the higher equivalent family income is, the higher probability for youth working full-time. It is statistically significant at least 5 percent level for female. However, the magnitude of the coefficient of equivalent family income for immigrant female is almost twice as large as native-born female, demonstrating that immigrant youth are more likely to work more, this might due to the influences of parents' work prospects. The likelihood of full-time employment decreased by 16.2 percentage points for married immigrant female relative to 7.3 percentage points for married native-born female. Moreover, married native-born male significantly increase the probability of full-time employment by 17 percentage point. Taken together, it reveals that immigrant female prefer to work full-time before married even though their household economic status is good, and married native-born youth tend to work more to afford to pay the babysitting fee. It would be a new finding that explaining the effect of marital status to youth employment compared with current literature. The effect of school attendance is negative and statistically significant for all youth. One potential reason would be youth do not have time to work full-time if they are attending school.

The present of Table 7 is to determine the probability of youth works part-time or full-time if youth is employed. Part-time employment dummy variable is significantly negative correlated with age, revealing the same result as Table 6 that the immigrant youth older than 21 and native-born youth older than 20 are more likely to work full-time. The coefficients of in school variable indicate that youth prefer to have a part-time job if they are employed. The effect of marital status is negative in all but immigrant female, reflecting married youth are more likely full-time employment except for married immigrant female if they are employed. There is a positive association between family's highest education level and part-time employment except for immigrant female. This means with higher family education level, employed youth prefer to work part-time. In particular, employed Canadian-born male have 6.2 percentage points more probably to work part-time if their family's highest education level is higher than some post-secondary graduation, and the effect is statistically significant at 5 percent level. Nevertheless, there is a negative correlation with equivalent household income for immigrant youth and a positive coefficient for native-born youth. Therefore, the negative coefficient indicates immigrant youth be more willing to do a full-time job with the higher equivalent household income although it is not statically significant. This finding shows that native-born youth pay more attention on the balance of work and education, while employed immigrant youth tend to work more by potential effect of their parents. Compared with Pabilonia (1999), and Wilkinson's (2008) empirical results, I find that immigrant youth may not well balance schoolwork with job, and they would not developed well in the labour market. Therefore, an appropriate mechanism may be design to encourage immigrant youth to employed and educated more. Compared to the

proposed mechanism by Patrinos and Psacharopoulos (1997) that provide subsidies to poor children or compensation to their families, I suggest that policy makers and researchers may consider providing subsidies to employer who employ immigrant youth and school which immigrant youth attending to.

Finally, compared with Zhang and Sanders's (1999) study, the results of OLS model in Table 8 demonstrates the opposite views that the higher equivalent family income, the number of hours worked per week is statistically significant higher for both immigrant and native-born female. To gain a better understanding on the magnitude of coefficient, I compare the coefficient of equivalent family income for immigrant and native-born female. Using this comparison, it shows the increased working time of immigrant female is almost six times as much as native-born female with one unit of log equivalent household income increased. This might due to immigrants mainly settled in cities, where there are more work opportunities. Moreover, highest education level in family does not have significant effect on the number of hours worked. Employment rate correlates with number of hours worked per week significantly for Canadian-born youth, showing that 1 percent employment rate increased will rise 0.26 hours per week on average. However, if youth are attending to a school, it reduces average 10 working hours per week and it is statistically significant at 1 percent level. That could be the reason that youth who attending to school are less likely to work full-time. Neither ethnic background nor home language is statistically significant on native-Canadian youth. Nevertheless, both two factors are statistically significant for immigrant youth at 5 percent level. This could be the similar supposition by Bean and Bell-Rose (2004), and Perreira et al. (2007) that

either ethnic background or language spoken at home affects the employment of immigrant youth rather than native-born youth.

Overall, Table 5 reveals the most credible result that a 10 percent increase in equivalent family income is associated with a 1.12 percent and a 0.39 percent increase in the probability of youth to be employed for immigrant female and native-born female, respectively. However, the family's highest education level is not the determinant of youth employment. I emphasize on this most since relationship between family background characteristics and youth employment status is the main research question in this paper. Table 6 and Table 7 show the factors that make youth work full-time / part-time, and Table 8 demonstrates the potential change of hours worked per week by different factors if youth have a job.

CHAPTER 6   Conclusion

This study provides empirical estimates of the effects of family background characteristics on youth employment for immigrant and native-born youth, with a focus on the influence of the highest education level in the family and equivalent family income. I find that youth employment associates more with equivalent household income relative to family's highest education level. A 10 percent increase in equivalent family income is associated with a 1.12 percent and a 0.39 percent increase in the probability of youth to be employed for immigrant female and native-born female, respectively, as result in Table 5. These results are similar to Emerson and Souza (2003), and Mazzotta's (2008) findings. Higher equivalent family income also associated female youth prefer to work full-time if they have a job as result in Table 6. Moreover, the significantly increased working time of immigrant female is almost six times as much as native-born female. The family's highest education level is only significant associated with native-born female employment status. However, youth personal educational attainments associated more with youth employment relative to family's highest education level. Overall, it seems that native-born female youth focus more on the balance of work and education, while immigrant parents' work prospects shape youth work more. Another explanation would be parental education (e.g., more educated parents value education more, and they prefer their children to educate more) or equivalent household income (e.g., rich families can support their children to educate rather than work).

In addition, there is a negative relationship between status of attending school and youth employment status for all youth that is strongly supported by Psacharopoulos (1996),

Patrinos and Psacharopoulos's (1997) empirical results. Employed youth are more likely to work part-time if they attend school, which reduce average 10 working hours per week as result in Table 8. I also find that married female appear to less likely to employed compared to their unmarried counterparts. Nevertheless, immigrant female tend to work part-time, and native-born youth are more likely to choose working full-time if they have a job. The new finding reveals that native-born youth tend to work more to pay the babysitting fee rather than to reduce the working hours, which is in contrast with immigrant female. Other family characteristics such as the number of family member, languages spoken at home and ethnic background are also associated with youth employment.

From the policy perspective, these results suggest that immigrant youth in Canada not well balance work and education compared with native-born youth. As the number of immigrant youth in Canada continues to grow, facilitating their successful school to work transitions and promote their social and economic development will be important not only for immigrants but also for the country. The policies that suggest immigrant youth to be employed and educated more might be implemented in order to increase personal social experience, and sustain the Canadian labour force. Policy makers and researchers may consider a mechanism that providing subsidies to employer who employ immigrant youth and school which immigrant youth attending to.

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APPENDIX A – SUPPLEMENTARY TABLES

Table A.1 Individual characteristics for immigrant youth

Variable	Male				Female			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Employment rate	0.633	0.028	0.516	0.702	0.635	0.029	0.587	0.702
Age	20.916	3.464	15	24	20.955	3.536	15	24
Personal Education Level	2.451	1.222	1	4	2.534	1.239	1	4
In school	0.712	0.453	0	1	0.643	0.480	0	1
Marital Status	0.041	0.199	0	1	0.111	0.315	0	1
Family size	3.375	1.185	1	5	3.541	1.136	1	5
Family's Highest Education Level	3.713	0.760	1	4	3.704	0.693	1	4
Household Income excluding youth income	44969	33431	0	100000	43257	32265	0	100000
Equivalent Family Income	33643	17486	4472	70710	30129	16488	4472	70710
Race	0.254	0.436	0	1	0.268	0.444	0	1
Speak English at home	0.600	0.490	0	1	0.586	0.493	0	1

Notes: The table includes means and standard deviations for individuals from 2009-2010 CCHS data sets. Sample size is 338 for males and 314 for females.

Table A.2 Individual characteristics for Canadian-born youth

Variable	Male				Female			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Employment rate	0.630	0.038	0.516	0.702	0.630	0.038	0.516	0.702
Age	20.162	3.524	15	24	20.456	3.487	15	24
Personal Education Level	2.165	1.183	1	4	2.327	1.206	1	4
In school	0.576	0.494	0	1	0.617	0.486	0	1
Marital Status	0.017	0.128	0	1	0.040	0.196	0	1
Family size	3.336	1.060	1	5	3.288	1.056	1	5
Family's Highest Education Level	3.540	0.873	1	4	3.556	0.861	1	4
Household Income excluding youth income	53926	32461	0	100000	50035	33291	0	100000
Equivalent Family Income	40324	16784	4472	70710	37230	17800	4472	70710
Race	0.840	0.367	0	1	0.819	0.385	0	1
Speak English at home	0.209	0.407	0	1	0.210	0.407	0	1

Notes: The table includes means and standard deviations for individuals from 2009-2010 CCHS data sets. Sample size is 3683 for males and 3588 for females.

Table A.3M   Coefficient of variables in probit regression of male youth employment status.

	Immigrant				Native-born			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Employment rate	3.856	0.476	1.665	1.279	1.356*	0.725	0.784	1.690*
	(3.202)	(3.531)	(3.705)	(3.865)	(0.642)	(0.757)	(0.788)	(0.836)
Age	0.621***	0.507***	0.584**	0.642***	0.135***	0.054	0.057	0.062
	(0.174)	(0.197)	(0.230)	(0.236)	(0.042)	(0.050)	(0.053)	(0.053)
Personal Education Level								
Secondary school graduation	-0.271	-0.221	-0.269	-0.381	0.479***	0.477***	0.450***	0.438***
	(0.341)	(0.359)	(0.435)	(0.448)	(0.084)	(0.092)	(0.103)	(0.103)
Some post-secondary graduation	0.107	0.135	0.199	0.157	0.424***	0.421***	0.471***	0.444***
	(0.338)	(0.359)	(0.447)	(0.462)	(0.085)	(0.094)	(0.106)	(0.107)
Post-secondary graduation	-0.188	-0.070	-0.130	-0.095	0.511***	0.612***	0.558***	0.518***
	(0.376)	(0.383)	(0.468)	(0.483)	(0.094)	(0.097)	(0.112)	(0.113)
In school	-1.011***	-1.152***	-1.089***	-1.076***	-0.534***	-0.559***	-0.546***	-0.546***
	(0.215)	(0.255)	(0.267)	(0.276)	(0.060)	(0.069)	(0.073)	(0.073)
Married	-0.003	-0.183	-0.051	0.174	0.241	0.236	0.286	0.292
	(0.476)	(0.472)	(0.529)	(0.632)	(0.202)	(0.210)	(0.216)	(0.218)
Family size				0.208*				-0.001
				(0.111)				(0.034)
Family's Highest Education Level								
Secondary school graduation	-0.219		-0.094	-0.425	0.221		-0.009	-0.019
	(0.657)		(0.896)	(1.109)	(0.149)		(0.183)	(0.185)
Some post-secondary graduation	-0.108		-0.180	-0.565	-0.003		-0.241	-0.258
	(0.641)		(0.817)	(1.052)	(0.157)		(0.195)	(0.197)
Post-secondary graduation	0.430		0.210	-0.216	0.220*		0.008	-0.012
	(0.522)		(0.721)	(0.971)	(0.133)		(0.171)	(0.173)
ln(Household Income excluding youth income)		0.117*	0.092	-0.019		0.022	0.009	0.010
		(0.064)	(0.072)	(0.086)		(0.023)	(0.025)	(0.028)
Race —White				0.668**				0.200**
				(0.288)				(0.089)
Not speak English at home				-0.097				0.189**
				(0.234)				(0.077)
Constant	-4.104*	-2.187	-3.209	-2.364	-1.215***	-0.522	-0.431	-1.207*
	(2.166)	(2.462)	(2.657)	(2.866)	(0.439)	(0.553)	(0.584)	(0.627)
Observations	338	338	338	338	3683	3683	3683	3683
Pseudo-R-squared	0.2374	0.2062	0.2299	0.2793	0.1136	0.0924	0.0886	0.0929

Notes: This table reports probit estimates of female youth employment status, P(YE) takes the value of 1 if youth is employed, and zero otherwise. Standard errors are reported in parentheses; ***1%, ** 5%, * 10% significance level.

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Table A.3F   Coefficient of variables in probit regression of female youth employment status.

	Immigrant				Native-born			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Employment rate	5.745**	2.632	4.637	4.908	1.552**	1.649**	1.555*	1.644*
	(2.806)	(3.192)	(3.464)	(3.656)	(0.628)	(0.789)	(0.818)	(0.861)
Age	0.055	-0.010	0.124	0.106	0.102**	-0.046	-0.021	-0.015
	(0.174)	(0.209)	(0.227)	(0.234)	(0.044)	(0.052)	(0.056)	(0.057)
Personal Education Level								
Secondary school graduation	0.484	0.665*	0.299	0.348	0.439***	0.594***	0.546***	0.545***
	(0.337)	(0.397)	(0.438)	(0.459)	(0.084)	(0.096)	(0.109)	(0.110)
Some post-secondary graduation	0.959***	0.713*	0.735*	0.846*	0.322***	0.527***	0.417***	0.382***
	(0.355)	(0.388)	(0.446)	(0.462)	(0.086)	(0.096)	(0.112)	(0.114)
Post-secondary graduation	0.669*	0.887**	0.710	0.774	0.591***	0.944***	0.804***	0.734***
	(0.371)	(0.407)	(0.467)	(0.484)	(0.097)	(0.103)	(0.123)	(0.126)
In school	-0.685***	-0.738***	-0.863***	-0.852***	-0.314***	-0.302***	-0.313***	-0.311***
	(0.203)	(0.235)	(0.251)	(0.255)	(0.061)	(0.072)	(0.074)	(0.075)
Married	-0.971***	-0.895***	-1.009***	-0.986***	-0.417***	-0.309**	-0.313**	-0.334**
	(0.287)	(0.323)	(0.340)	(0.350)	(0.119)	(0.130)	(0.133)	(0.133)
Family size				0.183				-0.065*
				(0.116)				(0.034)
Family's Highest Education Level								
Secondary school graduation	0.797		5.381	6.032	0.392***		0.141	0.109
	(0.735)		(180.6)	(600.5)	(0.147)		(0.178)	(0.182)
Some post-secondary graduation	-0.768		4.194	4.530	0.532***		0.392**	0.402**
	(0.773)		(180.6)	(600.5)	(0.157)		(0.190)	(0.193)
Post-secondary graduation	0.253		4.416	4.967	0.596***		0.338**	0.355**
	(0.686)		(180.6)	(600.5)	(0.135)		(0.171)	(0.174)
ln(Household Income excluding youth income)		0.174**	0.210***	0.288***		0.100***	0.081***	0.094***
		(0.069)	(0.078)	(0.096)		(0.021)	(0.023)	(0.026)
Race —White				0.352				0.201**
				(0.248)				(0.085)
Not speak English at home				-0.219				-0.046
				(0.238)				(0.077)
Constant	-4.071**	-3.363	-9.675	-10.54	-1.632***	-1.832***	-1.890***	-2.033***
	(1.994)	(2.256)	(180.626)	(600.5)	(0.434)	(0.556)	(0.592)	(0.630)
Observations	314	314	314	314	3588	3588	3588	3588
Pseudo-R-squared	0.1520	0.1341	0.1765	0.2057	0.0798	0.0757	0.0763	0.0816

Notes: This table reports probit estimates of female youth employment status, P(YE) takes the value of 1 if youth is employed, and zero otherwise. Standard errors are reported in parentheses; ***1%, ** 5%, * 10% significance level.

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