Education Obtainment and Generational Income Disparities

Sean FJ Waite
(250256204)

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Professor D. Kerr 3306B

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INTRODUCTION

The societal benefits associated with an educated population have been reaffirmed, both directly and indirectly, in social science research for decades; however, are these benefits equally distributed? Do all Canadians, regardless of generational status (first, second or third generation), benefit equal economic success from a university education? Are the highly educated free from economic discrimination in the labour market? This research paper will address these questions and provide descriptive insight into the social factors influencing variations in economic advantage. This paper will also test for an interaction effect between first and second generation immigrants and years of university, regressed on total wages and salaries. Relevant control variables, such as sex, province of residence, and knowledge of official language, will be introduced to these regressions to control for geographic variations, gender discrimination, and potential linguistic challenges faced by some immigrants. Results of these regression models suggest that the economic benefits associated with years of university education are not equal for all Canadians. Generational status plays an important role in wages and earnings and interacts with years of university. First generation immigrants employed full-time in the Canadian labour force are the highest educated generation group, and yet experience the lowest economic returns for their education. Second generation immigrants experience the greatest economic advantage for their first two years of university education; however, are outpaced after the second year by third and beyond generation Canadians. These results provide insight as to potential policy intervention which could be used to help alleviate the economic disparity between generations.

LITRITURE REVIEW

Since Canada changed its immigration policy with the "point system" in 1967 there has been considerable attention focused on the impact of immigration in terms of economic, social, cultural, and demographic benefit (Weeks, 2008). Subsequent to these changes the ethnocultural composition of immigrants has become more heterogeneous (Weeks, 2008) and immigrants are increasingly more highly educated (Boyd, 2006). This warrants attention as to the benefit of university education for newcomers but also how their offspring and successive generations fare relative to the general Canadian population. Previous literature has identified economic disadvantages for first generation immigrants; however, their economic disadvantage is not entirely passed to their offspring. According to current research the second generation fare better than the first generation as they do not suffer from language or accent barriers, have a greater familiarity with cultural practices, and are more accustomed

to the Canadian labour market (Boyd, 2006). Also, analysis of the educational and occupational achievements of the 1.5 generation (those who were born outside Canada but who migrated at a very young age) show no academic or occupational disadvantaged relative to third and beyond generational groups (Boyd, 2006). Boyd's work has consistently found that the socioeconomic disadvantage of first generation immigrants is not fully inherited by their offspring (1985, 1992, 2002, 2006, and 2009).

Most research reviewed that examines the relationships between educational achievement and earnings does so by controlling for education and explores the potential causes of these disparities, usually focusing on visible minority and racial/ethnic background (Boyd, 1992; Boyd, 2002, Li, 2000; Reitz, 2001). These findings vary significantly, with some pointing to sharp differences between ethnic groups or visible minority groups, non-visible minority groups, and the Canadian born (Pendakur & Pendakur, 1998). Other research points to devalued foreign credentials in the Canadian labour market as a primary factor in these income disparities (Wanner,1998). Unlike other research in which visible minority or racial/ethnic background is the primary independent variable in explaining earning differentials, this paper will explore the benefits immigrants receive for their years of university education. More specifically, it will address whether first generation immigrants receive an equal degree of economic benefit for their successive years of university education, relative to the second and third generation and beyond groups.

M. Reza Nakhaie (2006) used 2001 census data to compare earnings of Canadian native-born and immigrant populations, in particular differences in educational achievement and earnings across various ethnic groups. Nakhaie examined differences for Blacks, Latin Americans, Chinese, Europeans, Arabs, etc., while controlling for relevant variables (gender, religion, age, marital status, community size, geographical mobility, period of immigration, level of education, occupation, industry and weeks worked). Consistent with the previous literature, visible minority immigrants appear to be subjected to discriminatory earning potential, with lower returns for their educational investments. Additionally, this research suggests that some Canadian born visible minorities earn lower returns for their educational achievement than non-visible minority Canadians. The latter suggests that discrimination is systemic in Canadian society, at least for some visible minorities, and not just associated with first generation immigrants. Similar results were also found in Lian and Mathews (1998) research, in which they conclude that John Porters "vertical mosaic" remains relevant in explaining visible minority earnings.

Warman and Worswick (2004) examined immigrant earning performance at the national and census metropolitan area (CMA) level, without controlling for observable characteristics such as education, using census data for the period of 1981-2001. Their findings suggest that immigrant earnings do not differ greatly across different cities; however, the CMA/non-CMA distinction remains important in the Canadian context. Other researchers have used either the CMA level or province of residence as a control variable when regressing education and earnings (Li, 2000; Nakhaie, Lian & Matthews, 1998; Wanner, 1998; Pendakue & Pendakur, 1998). Province of residence can serve as a useful control, as there are differences in immigrant experience and employability of immigrant populations.

There has also been research on the affect of Canada's growing knowledge based economy and its impact on newcommers (Reitz, 2001). Reitz used the Canadian Census Microdata Individual Files from 1970 to 1995 to explore whether, "[i]ncreased native-born education levels infringe upon the traditional immigrant education advantage, outpacing effects of increased immigrant skill" (Reitz, 2000:579). His aim was to explain why new immigrants were facing declines in their employment success when compared to older immigrant cohorts. One possibility for the decreased labour market success of new immigrants is their diverse ethnic backgrounds and the greater proportion visible minority. Reitz notes that other social research has suggested that Canadian society has become more tolerant even with the changing ethnocultural composition of immigrant groups. Alternatively, his research show that although the education of immigrants has risen, it has not kept up with the mean increase in years of university of other generational groups. The downward trend in earnings for those with foreign credential is at least potentially due to increased competition and credentials of other Canadians.

The vast majority of research on the subject of education, earning, and generational status has used the Canadian Census (Reitz, 2001; Nakhaie, 2006; Pendakur & Pendakur, 1998; Li, 2000; Wanner, 1998; Lain & Mathews, 1998; Samuel & Basavarajappa, 2006; Warman & Worswick, 2004 etc.). Wages and salaries has also been consistently identified as the main dependent variable in the research to date. Years of university education on the other hand has not been used as a main independent variable in research reviewed. Other variables such as total years of schooling were prevalent; however, this paper is interested in the differences between the most highly educated citizens and not lower levels of education on the general population. Sex, province of residence, and knowledge of official language were consistently introduced as control variables throughout the literature and therefore been included in this researchers regression models.

RESEARCH QUESTION/HYPOTHESIS

This paper will explore whether all Canadians, regardless of generational status, experience equal economic returns for successive years of university study. Research to date would suggest that all generations will experience greater economic returns for each subsequent year of university; however, these returns will not be equal for each generation. Specifically this paper will test for an interaction affect between years of university education and generational status, regressed against wages and salaries. It is predicted that: 1) first and second generation Canadians will be more highly educated that third generation and beyond; 2) first generation immigrants will suffer economic disadvantage when compared to second and third generation Canadians; 3) second generation Canadians will experience greater economic returns for years of university education than first generation immigrants, and 4) there will be a positive interaction effect between years of university education and generational status, when regressed against wages and salaries. This research paper will also explore the relevant importance of other control variables in explaining variations in economic benefit, such as unrecognized foreign credentials, barriers associated knowledge of official language, and providence of residence. Although some previous literature finds income disparities attributed to discrimination, this research paper has not controlled for country of birth, race/ethnicity, or visible minority status.

The dependent variable in this analysis is total wages and salaries before tax. The subsample of this analysis was all individuals aged 25 to 65 who were employed full-time in 2000; the unit of analysis being the individual. The independent variables in this analysis are years of university education and generation status. Generation status is later included as an interaction term to test whether the affect of the independent variable, 'years of university education' (x_1), on the dependent variable, 'total wages and salaries', differs by category of the second independent variable, 'generational status'. Control variables introduced were sex, knowledge of official language, and province of residence.

The control variables, sex, province of residence, and knowledge of official language, were included in this analysis. It is expected that women will earn significantly less than men across all generations. The earning disparity between female immigrants and female native born Canadians has been called the 'double negative' because these women are doubly disadvantaged in the Canadian labour market (Boyd 1985:431). It is also predicted that province of residence will contribute to varying economic returns for different generational status groups. Those residing in provinces with more heterogeneous populations (Ontario, Quebec, and British Columbia) will suffer less financial

disadvantage than those residing in more homogeneous provinces (Manitoba, Alberta, Maritime and Atlantic provinces). Although CMA levels were not introduced as controls, province of residence will provide some control for differences in immigrant populations and also different employment policies and legislative differences between the provinces.

Lastly, knowledge of official language was introduced as a control variable. Boyd & Cao's (2009) research confirms a positive association between proficiency of Canada's official languages and immigrant earnings. These results provided the basis for including 'knowledge of official language' as a control variable in this analysis. It is predicted that immigrants with no knowledge of either official languages will experience significantly less financial returns for their respective university education and that immigrants with only knowledge of the French language will experience financial disadvantage when compared to those who are proficient in the English language.

DATA & METHODS

This analysis uses the Public Use Microdata File for Individuals (PUMFI) of the 2001 census of Canada, which represents a 2.7% probability sample of the population enumerated in the census. The census was used in this analysis because it provides quality data of a random sample of the entire Canadian population enumerated in the 2001 Census; and therefore, can be accurately generalized to the Canadian population. The census also provides relevant variables for this analysis, such as generation status, years of university education, and total wages and salaries. Researchers in the field have consistently utilized the Canadian Census and the Public Use Microdata File for Individuals (PUMFI), as it can be compared to census data collected in previous years. The subsample of this analysis was all individuals aged 25 to 65 who were employed full-time in 2000. This subsample was chosen because it reflects those who have likely completed all their post-secondary education and have likely transitioned into the labour force. The primary goal of this analysis is to determine the economic benefit associated with years of university education within the labour force by generation status. Those employed part-time are not participating fully in the work force and may also be characteristically different from those who are working full-time.

The dependent variable in this analysis was total wages and salaries before reductions such as income tax, pensions and Employment Insurance. It includes military pay, allowances, tips, commissions, cash bonuses, benefits from wage-loss replacement plans or income-maintenance insurance, and any casual earnings for the 2000 tax year (Statistics Canada, 2003). This question was asked of all individuals over the age of 15 and was worded as follows:

"During the year ending December 31, 2000, did this person receive any income from the sources listed below? Total wages and salaries, including commissions, bonuses, tips, etc., before any deductions" (Statistics Canada, 2003). Years of university education and generation status were independent variables in this analysis; however, generation status was subsequently included as an interaction term. The question was asked of all respondents aged 15 and older as: "How many years of education has this person completed at university?" (Statistics Canada, 2003). Generation status ranges from: first generation, second generation: both parents born outside Canada, second generation: one parent born outside Canada, and third generation and beyond (Statistics Canada, 2003). Generation status was recoded into dummy variables with third generation and beyond as the reference category. Third generation and beyond was used as a reference category because it reflects the majority of the general Canadian population. Due to the small number of cases of second generation 'both parents born outside Canada' and 'one parents born outside Canada', these two categories were collapsed into a single 'second generation category' for regression analysis.

There were three control variables introduced in this analysis: sex, province of residence, and knowledge of official language. Sex was introduced as a control variable as it has been well documented that women earn less per dollar than men across all generations. Province of residence is a nominal variable that was collapsed and recoded for the purposes of this regression model. Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick were collapsed into a single dummy variable 'Eastern/Maritime Provinces'. Manitoba and Saskatchewan were collapsed into a single dummy variable 'Prairie Provinces'. Yukon Territory, Northwest Territory and Nunavut were excluded from this analysis due to the small numbers. Other provinces were also recoded into dummy variables with Ontario as the reference category. Knowledge of official language is a nominal variable and was recoded into four dummy variables: knowledge of French language, knowledge of English and French language, no knowledge of either French or English Language, and knowledge of English language, which was the reference category for this control.

RESULTS

This paper will begin by describing the proportion of full-time employed individuals within each respective generation status (Table 1). These descriptive statistics show that 50.60% of first generation immigrants, 47.47% of second generation with both parents born outside Canada, 50.78% of second generation with one parent born outside Canada, and 55.79% of third and beyond generation Canadians are employed full-time in the labour market. Most

interestingly is the small variation between the generations. It is encouraging to see that first generation immigrants are faring relatively well in comparison to other generations in their ability to find full-time employment. Later results will provide predictions on whether their full-time employment equates to equal economic advantage.

Table 1
Individuals Working Full-Time by Generation Status

	Working Full-Time	(%)	Working Part-Time or Unemployed	(%)	Total
First Generation	73157	0.50600368	71421	0.49399632	144578
Second Generation (Both Parents Born Outside Canada)	25867	0.474693533	28625	0.52530647	54492
Second Generation (One Parent Born Outside Canada)	25699	0.507815124	24908	0.49218488	50607
Third Generation & Over	221001	0.55787061	175150	0.44212939	396151

Source: 2001 Canadian Census Public Use Microdata File for Individuals (PUMFI), unweighted

Table 2 provides descriptive data regarding the educational composition of each generation status. Most interestingly is the proportion of first generation immigrants who have no university education in comparison to the others. Only 59.34% of first generation immigrants report having no university, which is less than all other generational groups. Also, 8.47% of first generation immigrants report having 6 years and beyond of university education compared to 4.50% of those in the third and beyond generation group. These results are inconsistent with the results identified in Boyd's (2006) analysis of second generation educational and occupational achievements. Boyd reported that second generation immigrants have higher on average educational achievements than all other generation groups; whereas, Table 2 suggest that first generation immigrants have the highest level of university education compared to all other generational groups. Inconsistencies between these results and those reported by Boyd (2006) are likely due to differences in the independent variable used to measure education level. A common variable for many researchers is total years of schooling, which includes all elementary school years, whereas years of university focuses on the most highly educated members of our society. Secondly the difference in results could be attributed to sub sample populations, as Boyd did not specify only those employed full time in her analysis.

Table 2
Years of University Education for Individuals Working Full-Time by Generation Status

	First Generation		Second Generation (Both Parents Born Outside Canada)	
Years of University	(N)	(%)	(N)	(%)
None	43414	0.593436035	15755	0.609077
Less than 1 year	2107	0.028801072	968	0.037422
1 Year	1204	0.016457755	651	0.025167
2 Years	2824	0.038601911	923	0.035683
3 Years	3743	0.051163935	1470	0.056829
4 Years	9371	0.128094372	3021	0.11679
5 Years	4299	0.058764028	1304	0.050412
6 Years and more	6195	0.084680892	1776	0.068659
TOTAL	73157		25867	

	Second Generation (One Parent Born Outside Canada)		Third Generation & Over	
Years of University	(N)	(%)	(N)	(%)
None	16534	0.643371337	159239	0.720535
Less than 1 year	951	0.037005331	7075	0.032013
1 Year	700	0.027238414	5570	0.025204
2 Years	980	0.03813378	6479	0.029317
3 Years	1267	0.049301529	10636	0.048126
4 Years	2400	0.093388848	14709	0.066556
5 Years	1140	0.044359703	7340	0.033213
6 Years and more	1727	0.067201058	9954	0.045041
TOTAL	25699		221001	

Source: 2001 Canadian Census Public Use Microdata File for Individuals (PUMFI), unweighted

TOTAL WAGES AND SALARIES REGRESSED ON GENERATION STATUS

Table 3 represents total wages regressed on generation status. When total wages and salaries were regressed on generation status it is estimated that first generation immigrants earn about $1,925 less than third and beyond generation and that second generation immigrants earn $3,537 more than third generation and beyond. These results are consistent with Boyd's (2006) work mentioned above. The constant (y-intercept) in this model is $35,814 which represents the total wages and salaries for the reference category, i.e. third generation and beyond. The standardized slope of the first generation is -0.028, which indicated a weak inverse relationship between first generation and total individual wages and salaries. The standardized slope of the second generation is 0.044, which indicated a weak positive relationship between second generation status and total individual wages and salaries.

TABLE 3

Total Wages and Salaries Regressed on Selected Independent Variables, 2001 Canadian Census Public Use Microdata File for Individuals (PUMFI), Unstandardized Coefficients

		St. Error
Constant	35814.100**	64.156
Generation Status		
First Generation	-1925.455**	125.701
Second Generation	3537.831**	149.221
Third Generation and Over (reference)		
R^2	0.003	
N	305478	

** P-Value <0.05; **P-<0.01*

Total Wages and Salaries Regressed on Selected Independent Variables, 2001 Canadian Census Public Use Microdata File for Individuals (PUMFI),Standardized Coefficients

Generation Status	
First Generation	-0.028**
Second Generation	0.044**
Third Generation and Over (reference)	
R^2	0.003
N	305478

** P-Value <0.05; **P-<0.01*

TOTAL WAGES AND SALARIES REGRESSED ON YEARS OF UNIVERSITY

Table 4 represents total wages regressed on years of university. When total wages and salaries are regressed on years of university it is estimated that individuals will receive a $2,805.094 increase in their total yearly wages and salaries with each additional year of university education. The constant (y-intercept) in this model is $31,661.026, which indicates that expected wages and salaries for a full-time employed individual without any university education. The standardized slope of this regression is 0.238, which indicates a relatively strong positive association between years of university education and total wages and salaries.

TABLE 4

Total Wages and Salaries Regressed on Selected Independent Variables, 2001 Canadian Census Public Use Microdata File for Individuals (PUMFI), Unstandardized Coefficients

		St. Error
Constant	31661.026**	58.652
Years of University	2805.094**	20.681
R^2	0.057	
N	305478	

** P-Value <0.05; **P-<0.01*

Total Wages and Salaries Regressed on Selected Independent Variables, 2001 Canadian Census Public Use Microdata File for Individuals (PUMFI),Standardized Coefficients	
Years of University	0.238**
R^2	0.057
N	305478
** P-Value <0.05; **P-<0.01*	

TOTAL WAGES AND SALARIES REGRESSED ON ALL INDEPENDENT AND CONTROL VARIABLES INCLUDING INTERACTION EFFECT

Table 4 represents total wages regressed on generation status, years of university, province of residence, knowledge of official languages, including interaction affects (first generation and years of university; second generation and years of university). An interaction affect was used in this analysis to test whether the affect of the independent variable, 'years of university education' (x_4), on the y-intercept, 'total wages and salaries', differs by category of the second independent variable, 'generational status'(x_2, x_3). The results of the interaction term was significant which makes interpretation of the main affects (generation status and years of university) unnecessary (see Table 5).

TABLE 5

Total Wages and Salaries Regressed on Selected Independent and Control Variables, 2001 Canadian Census Public Use Microdata File for Individuals (PUMFI),Unstandardized Coefficients

	Wages and Salaries (OLS Models)	St. Error
Constant	28886.139**	116.694
Sex	11008.749**	97.501
Generation Status		
First Generation	-3598.495**	153.405
Second Generation	934.409**	174.302
Third Generation and Over (reference)		
Years of University	3249.831**	27.388
Province		
Eastern/Maritime Provinces	-10443.4**	233.410
Quebec	-3559.123**	199.790
Prairie Provinces	-8510.074**	203.260
Alberta	-1320.174**	167.755
British Columbia	-2099.116**	155.829
Ontario (reference)		
Knowledge of Official Languages		
Knowledge of French Language	-5106.998**	250.913
Knowledge of English and French Language	370.272*	171.547
No Knowledge of English nor French	-12210.20**	599.450
Knowledge of English Language (reference)		
Generation Status (as interaction)		

First Generation	-1259.981**	47.300
Second Generation	-540.508**	56.998
Third Generation and Over (reference)		
R^2	0.116	
N	305768	

** P-Value <0.05; **P-<0.01*

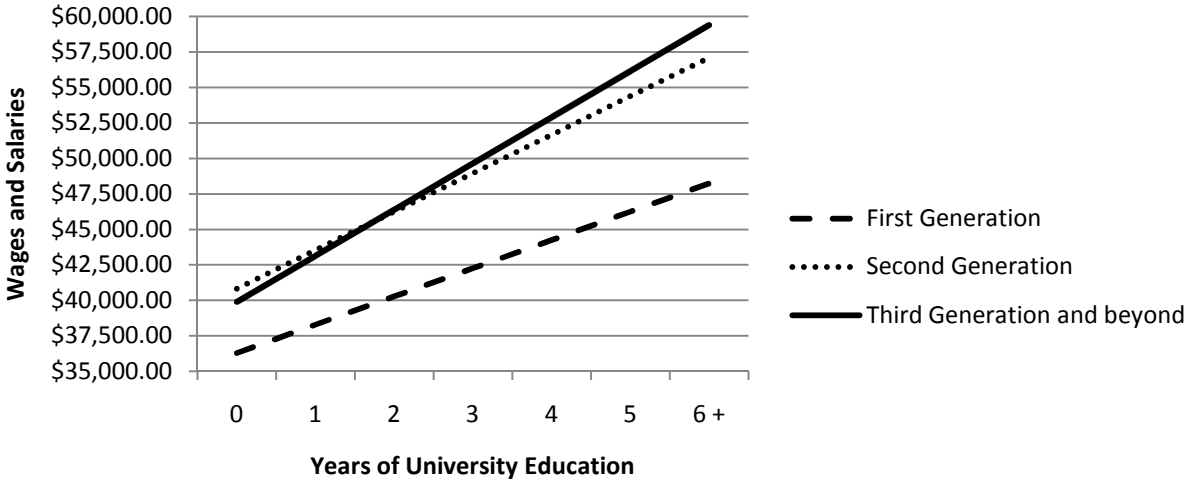
Total Wages and Salaries Regressed on Selected Independent and Control Variables, 2001 Canadian Census Public Use Microdata File for Individuals (PUMFI),Standardized Coefficients

	Wages and Salaries (OLS Models)
Sex	0.192**
Generation Status	
First Generation	-0.053**
Second Generation	0.012**
Third Generation and Over (reference)	
Years of University	0.276**
Province	
Eastern/Maritime Provinces	-0.080**
Quebec	-0.054**
Prairie Provinces	-0.075**
Alberta	-0.014**
British Columbia	-0.025**
Ontario (reference)	
Knowledge of Official Languages	
Knowledge of French Language	-0.056**
Knowledge of English and French Language	0.005*
No Knowledge of English nor French	-0.035**
Knowledge of English Language (reference)	
Generation Status (as interaction)	
First Generation	-0.067**
Second Generation	-0.022**
Third Generation and Over (reference)	
R^2	0.116
N	305768

** P-Value <0.05; **P-<0.01*

For descriptive and explanatory purposes, the results from Table 5 are used to calculate the predicated earnings of an English speaking, first, second, and third generation, male, living in Ontario employed full-time in 2000 with years of university education from zero to 6+ (Please refer to Appendix "A" for the specific mathematical application of the results summarized in Figure 1).

Fig. 1 Expected Earnings of English Speaking First, Second and Third Generation Men, Living in Ontario and Employed Full-Time in 2000 by Years of University Education



The regression models in Table 5 are consistent with the hypothesis that while first and second generation groups are more highly educated than the third generation it is the first generation immigrants that suffer the greatest economic disadvantage, regardless of years of university study. Figure 1 uses these regression results to predict expected income for English speaking first, second and third generation men, living in Ontario and employed full time in 2000 by total years of university education. This interaction also supports our hypothesis that second generation immigrants will experience greater economic returns for years of university education than first generation immigrants; as represented by their respective slopes. This interaction effect shows that, at least for the expected earnings of an English speaking second generation immigrant man, residing in Ontario and working full-time in 2000, the initial years of university education benefit the second generation the most for the first two years; however, by the second year of university those in the third generation and beyond outpace, in terms of economic advantage per year of university study, the second generation status immigrants. Figure 1 shows us that years of university are positively correlated with wages and salaries for all generations; however, the strength of the third and beyond generation wages and salaries is predicted to be the strongest.

The isolation of individuals employed full-time was inspired by research conducted by Reitz's (2001) which found that since the 1980's immigrant cohorts have gradually been experiencing higher rates of

unemployment and more difficulty transitioning into Canada's knowledge economy. Reitz's work does offer insight into the growing unemployment trend since the 1980's; however, findings within this analysis were not as drastic as one might expect. Table 1 shows that 50.60% of first generation, 47.47% of second generation with both parents born outside Canada, and 50.78% of second generation with one parent born outside Canada were employed full-time in 2000, in comparison to 55.79% of the greater Canadian population or third generation and beyond citizens. Although these results do identity slight variations in labour force participation between generational statuses the differences are small.

The control variable, province of residence, provides some interesting results. It is predicted that residing in Ontario is the most advantageous province in terms of wages and salaries when controlling for all other variables. Residing in the Eastern and Maritime provinces is predicted to be the most disadvantageous, with individuals earnings $10,443.40 less than earnings those residing in Ontario (Table 5). Residing in Alberta was predicted to be most similar in terms of wages and salaries in comparison to Ontario, with earnings only $1,320.174 less than Ontario. It is important to note macroeconomic processes at the time of this census. During the year 2000 Ontario was still a powerhouse of industry and manufacturing. More recently Ontario's economy has taken a nose dive and Alberta's economy, on account of the tar sands, has prospered. In light of these current economic conditions future regression analysis will likely vary considerably from those reported in this paper.

Sex and knowledge of official language were also interesting control variables. In the multiple regression model it was estimated that men will earn $11,008.749 more than women when controlling for all other variables. It was also estimated that those who have knowledge of only the French language will earn $5,106.998 less total individual wages and salaries than those who speak only English. This tells us that when controlling for all other variables, including province of residence, speaking only French is disadvantageous. Those with no knowledge of official languages were estimated to earn $12,210.20 less than those who spoke only English and those with knowledge of both languages were estimated to earn only $370.27 more than those who only speak English.

DISCUSSION AND CONCLUSION

These results suggest that educational advantage of first generation immigrants does not equate to higher economic advantage within the labour market; that although those migrating from abroad are highly educated, they

suffer the greatest economic disadvantage when compared to other generations. Second generation Canadians are doing much better than their parents, which is supported by previous research suggesting that greater economic outcomes are associated with greater acculturation and familiarity with the Canadian labour force. Those who comprise the third generation do not fare as well as those in the second generation if poorly educated but obtain higher wages than other generations if they complete their education.

These results also suggest that new strategies need to be implemented to assist highly educated immigrant groups in their transition into the Canadian market place, including strategies to utilize their foreign credentials. Variations between provinces also suggests that Eastern and Maritime Provinces need to better reward those with high levels of university education if they want to remain competitive in Canada's growing knowledge based economy. The economic benefits associated with knowledge of official language, specifically English, provide a great opportunity for new immigrants and the Canadian government. It would be advantageous for the Canadian government to invest in language education services for newcomers, as it would directly equate into higher returns for their university education. Some research has suggested that the disadvantage of the first generation immigrant populations and some of the disadvantage experienced by successive generations may be associated with the visible minority and ethnocultural composition of these generations. They point to discrimination in the labour market as the cause of these variations. Analysis of the relative impact of ethnocultural and visible minority status is outside the scope of this paper; however, should be examined in the future. Perhaps the most valuable contribution from this research is the insight it provides into how different generational groups are faring in the Canadian economy. This research suggest that although first generation immigrants faring considerable hurdles in realizing economic benefit relative to their education, second generation Canadians are faring relatively at par with third and beyond generation Canadians.

APPENDIX "A"

Application of the Interaction Equation

The equation for this interaction can be expressed as:

$\hat{Y} = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + b_{11}X_{11} + b_{12}X_{12} + b_{1nt}[(x_1)(x_2)] + b_{2nt}[(x_1)(x_2)]$

Where:

$\hat{Y}$ = the expected value of the dependent variable (total wages and salaries)
a = the predicted value of the y-intercept when all independent variables are equal to zero, the constant
b = the unstandardized slope of the respective independent variables
b_{1nt} = the unstandardized slope of interaction affect 1 (First Generation and Years of University)
b_{2nt} = the unstandardized slope of interaction affect 2 (Second Generation and Years of University)
X_1 = Sex
X_2 = First Generation
X_3 = Second Generation
X_4 = Years of University
X_5 = Eastern/Maritime Provinces
X_6 = Quebec
X_7 = Prairie Provinces
X_8 = Alberta
X_9 = British Columbia
X_{10} = Knowledge of French Language
X_{11} = Knowledge of English and French Language
X_{12} = No Knowledge of English or French
$[(x_2)(x_4)]$ = First Generation and Years of University
$[(x_3)(x_4)]$ = Second Generation and Years of University

HYPOTHESIS

We predict that the effect of university education will be weaker for first generation than for second generation immigrants.

<u>First Generation Interaction</u>

Note: First generation, four years of university, male, living in Ontario who speaks only English and works full-time

$\hat{Y} = 28886.139 + (11008.749)X_1 - (3598.495)X_2 + (934.409)X_3 + (3249.831)X_4 - (10443.40)X_5 - (3559.123)X_6 - (8510.074)X_7 - (1320.174)X_8 - (2099.116)X_9 - (5106.998)X_{10} + (370.272)X_{11} - (12210.20)X_{12} - (1259.981)[(x_2)(x_4)] - (540.508)[(x_3)(x_4)]$

$\hat{Y} = 28886.139 + (11008.749)(1) - (3598.495)(1) + (934.409)(0) + (3249.831)(4) - (10443.40)(0) - (3559.123)(0) - (8510.074)(0) - (1320.174)(0) - (2099.116)(0) - (5106.998)(0) + (370.272)(0) - (12210.20)(0) - (1259.981)[(1)(4)] - (540.508)[(0)(4)]$

$\hat{Y} = 28886.139 + (11008.749)(1) - (3598.495)(1) + (3249.831)(4) - (1259.981)[(1)(4)]$

$\hat{Y} = 28886.139 + 11008.749 - 3598.495 + 12999.324 - 5039.924$

$\hat{Y}$ = $44,255.793

Second Generation Interaction

Note: Second generation, four years of university, male, living in Ontario who speaks only English and works full-time

$\hat{Y} = 28886.139 + (11008.749)X_1 - (3598.495)X_2 + (934.409)X_3 + (3249.831)X_4 - (10443.40)X_5 - (3559.123)X_6 - (8510.074)X_7 - (1320.174)X_8 - (2099.116)X_9 - (5106.998)X_{10} + (370.272)X_{11} - (12210.20)X_{12} - (1259.981)[(x_2)(x_4)] - (540.508)[(x_3)(x_4)]$

$\hat{Y} = 28886.139 + (11008.749)(1) - (3598.495)(0) + (934.409)(1) + (3249.831)(4) - (10443.40)(0) - (3559.123)(0) - (8510.074)(0) - (1320.174)(0) - (2099.116)(0) - (5106.998)(0) + (370.272)(0) - (12210.20)(0) - (1259.981)[(0)(4)] - (540.508)[(1)(4)]$

$\hat{Y} = 28886.139 + (11008.749)(1) + (934.409)(1) + (3249.831)(4) - (540.508)(4)$

$\hat{Y} = 28886.139 + 11008.749 + 934.409 + 12999.324 - 2162.032$

$\hat{Y}$ = $51,666.589

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