Overeducation as a Determinant of Migrating Out of a Province

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Abstract

Inter-provincial migration is an important subject because it shapes the population size, demographic composition, social and cultural characteristics of each province. It not only affects the province of origin but also has economic consequences for the province of destination. This paper focuses on the out-migration aspect and identifies overeducation as one of the causes of this phenomenon. Drawing data from the 2006 Canadian census of population, the study investigates whether or not overeducation leads to an individual moving out of a province. A logistic regression is employed to test the data whilst the ORU framework is used to determine an individual's overeducation level. The results show that overeducated workers are more likely to move out of a province due to job mismatch than their adequately educated and undereducated counterparts.

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Table of Contents

I. Introduction

Migration is an important subject because it shapes the population size, demographic composition, social and cultural characteristics of each province in Canada. There are variations in the definition of internal migration but an accepted definition according to Dorothy S. Thomas is "a change of residence from one community, or other clearly defined geographical unit, to another within the national border"(George, 1970). From a social perspective migration may be thought of as a change in one's communal affiliation that entails not only a shift in the place of residence but also inherent changes in the relationships with the community and living conditions. Defining migration on the basis of change in the place of residence does not apply to particular groups, those that have no permanent place of residence e.g. vagrants. Likewise those people who move from one house to another in the same locality or from one part of the city to another can be termed as local movers and not migrants. Therefore to differentiate between local movers and migrants, a defined border in changing residence is used and the boundary definition in the type of migration that is of concern here is interprovincial.

The facet of interprovincial migration that is the focal point of the study is known as "out-migration". Out-migration is quantified as the number of persons who leave a province and takes up residence in another province with reference to the province of origin. The province from which migrants leave is referred to as the province of origin and the province into which they enter is called the province of destination. When dealing with migration statistics the term net migration is often used. It is the difference between the inflow and outflow of migrants.

The process of migration is not entirely determined by economic factors. Individual tastes and idiosyncrasies play an important role and so does cultural factors such as density of immigrants and language composition of regions. To an outside observer, the labour market may seem evenly distributed across provinces with the notion that even immigrants are non-transient and work in whichever province they first settle into. However studies have shown that is not the case. Although inter-provincial migration is a perpetual process, out-migration of immigrants and even native residents occur throughout the ten provinces and is particularly high in Atlantic Canada. As seen in the table below, the percentage of movers is the most among the four Maritime Provinces; of which Nova Scotia had the highest at 2.53 percent. Quebec on the other hand experienced the lowest proportion of out-migrants at 0.39 percent, possibly owing to its language barrier element.

Table 1. Number of Movers and Non-movers by Province (2006 Census)

Province of residence 1 year ago	Residents	Movers	Non-movers	% Movers
Alberta	47314	694	46620	1.47
British Columbia	55850	661	55189	1.18
Manitoba	14838	285	14553	1.92
New Brunswick	9733	230	9503	2.36
Newfoundland and Labrador	6447	162	6285	2.51
Nova Scotia	11933	302	11631	2.53
Ontario	165198	1108	164090	0.67
Prince Edward Island	1667	39	1628	2.34
Quebec	102909	399	102510	0.39
Saskatchewan	12486	289	12197	2.31
Total	428375	4169	424206	0.97

Physicians, university graduates and many members of the workforce leave the Atlantic Provinces and move towards the west; notably to British Columbia and Alberta in search of better economic opportunities. An implication of this migration trend is that many of these smaller provinces are then left with a population that is dependent on the remaining taxpayers to support them.

According to the 2006 census of Canada, Nova Scotia had a net out-migration in the five-year period between 2001 and 2006. Table 2 relates to the fact that there were 48,040 in-migrants and 56,040 out-migrants resulting in a net out-migration of 8,000 persons. In contrast, the net out-migration between 1996 and 2001 was only 1,295 persons. It signifies that over five times as many people left the province during the latter period of survey. The vast majority of Nova Scotia's migration activity between 2001 and 2006 was with Alberta followed by British Columbia. Of particular concern is the age group that left Nova Scotia for another province. Young adults aged 15 to 29 were the group most on the move. During the five-year period 2001 to 2005, 21,065 young people left Nova Scotia while 14,600 arrived here representing a negative net migration of 6,465 people. Those aged between 15 and 44 forms more than 80 percent of the migrants out of the region. Whether overeducated workers comprise a substantial portion of young movers from the province is a different matter altogether.

The exodus of young and working-age people out of Nova Scotia or any other province includes for instance, new or prevailing university graduates who may be on the move because of being overschooled for their respective occupation. It is therefore important to examine some of the factors that are responsible for this movement.

Table 2. Number of Interprovincial Migrants and Net Migration by Age Group, Nova Scotia

	Nova Scotia 2001-2006		
Age group	In- migrants	Out-migrants	Net migration
5 to 14 years	6120	6740	-620
15 to 29 years	14600	21065	-6465
30 to 44 years	15190	16720	-1530
45 to 64 years	9425	9160	265
65 and above	2705	2355	350
Total	48040	56040	-8000

The problem faced by policy makers is that even if a province is able to replace its working population by attracting international students and/or immigrants, they may decide to move after a certain period of time. In this regard, I have identified overeducation as one of the several dynamics contributing to this decision-making process. "Overeducated workers are defined as those with educational attainments substantially above the mean for their specific occupations" (Verdugo and Verdugo, 1989). Essentially, the argument asserts that because people with a certain amount of education are not finding relevant jobs in their respective fields or are finding jobs that do not compensate them enough, they are leaving the province of origin in search of jobs that match their level of education.

An illustrative example of this event would be that of a bachelor's degree holder who has 16 years of education in total. Upon graduation, he or she finds work as a sales associate that only requires 12 years of education on average; thus the individual is

believed to be overeducated by four years for the current occupation. Ceteris paribus, a person in such a circumstance would be likely to move to a different region in order to remove this education-job gap and consequently expect to earn a higher income.

From a policy perspective, holding on to the young talent pool is vital for the growth of the economy. Provinces across Canada attempt do so through generous graduate retention rebates and a lenient immigration policy. Overeducation is costly to the economy, the firm and the individual. From a macroeconomic standpoint, national welfare is lower as the skills of the overeducated workers are not fully utilized. Moreover, government funds are being squandered on providing individuals with "non-productive" education. At a firm level there is the potential that overeducation is linked with lower productivity. Overeducated workers may be more susceptible to morale issues and, hence, may be regarded as less desirable or unproductive by employers. Given the importance of this topic, there exists a fairly extensive literature on migration albeit, relatively few from a Canadian viewpoint.

II. Theory and Literature Review

The human capital theory of migration holds migration as an investment decision where costs have to be borne today with an expectation of returns accumulated over time.

> In a basic human capital model, an individual compares the present cost of migration with the discounted present value of income gains (which can be considered as return to one's human capital accumulated over time), if any, from each potential destination and chooses the destination with the highest expected net gain. (Basu and Rajbhandary, 2006, p. 187)

It predicts that migration will flow from areas of relatively poor earnings possibilities to places where opportunities are better. Studies of migratory flows in Canada and elsewhere support this prediction. Although the decision of whether or not to move is made by the individual it may or may not be policy induced.

Migration is "highly selective" in the sense that it is not an activity in which all people are equally likely to be engaged. To be specific, migration tends to be higher among the young for two possible reasons. Firstly, the younger one is, the longer the period over which the benefits from an investment can be obtained and the larger the present value of these benefits. Second, a large part of the costs of migration is associated with leaving friends and giving up community ties that were built over many years. As a person grows older, the social attachment becomes stronger and the losses related with leaving seem larger.

Two of the earlier Canadian studies use individual data to examine the relationship between income and migration. Marr and Millerd (1980), using 1971 Census data find the

income of 'lifetime' interprovincial migrants to be significantly higher than that of

stayers. Grant and Vanderkamp (1980) analyze the effects of migration (within the

previous five years) on the 1971 incomes of individuals in large panel study. They find

that although the initial returns to migration are negative most males and persons in the

lower half of the income distribution receive positive payoffs after a few years.

Finnie (1999) reports results of empirical analysis of inter-provincial migration based

on the Longitudinal Administrative Database (LAD), which was created by linking

individuals' tax files over time. He looks at the extent of inter-provincial mobility

between 1982 and 1995; how these dynamics vary by age, sex, and province; and the

income profiles of movers and non-movers before and after moving. The study reveals

that for men, moving has usually been more common at higher income levels and tends to

bring substantial income gains, especially amongst younger individuals. For women on

the other hand, migration has been generally much less related to initial income levels

and has more often resulted in income losses rather than gains.

Another study that uses microdata is by Edmonston (2002). In it he compares internal

migration patterns of the native-born to the foreign born population in Canada using the

1991 census of Canada. He develops two logistic regression models using variables such

as population size, provincial unemployment rate, and average wage in the province of

origin as determinants of migrating out of a province. He discovers that foreign-born and

native-born migration patterns are similar in three ways: (1) migration tends to be out of

the Atlantic and prairie provinces of Manitoba and Saskatchewan and into Ontario,

British Columbia and Alberta; (2) migration tends to be from less to more populated

provinces; and (3) foreign-born and native-born migration appears to respond to

differences in unemployment, wage rate, and labour force size differences in the same manner. Nevertheless, the native-born tend to move from provinces with a higher proportion of foreign-born population, while the foreign born are more likely to stay in provinces with a higher proportion of the foreign-born with the same ethnicity as themselves.

Certain studies are more specialized in that they study the interprovincial movements of people in specific occupations and not of the general population or the labour force. Benarroch and Grant (2004) measure the effect of income tax on physicians, health care spending per capita, and the number of hospital beds per person among other variables on the migration of physicians. Thereafter, running tests using the conditional logit models they find that in-migration of doctors is considerably higher where fee schedules are more generous and where provinces spend more on health care; thus suggesting policy-induced migration.

Similarly, Basu & Rajbhandary (2005) analyze factors contributing to the inter-provincial migration of physicians whereby they compare migration patterns of general practitioners and specialists; the changing patterns of out-migration over time via the interactions between the province of residence and time period; and the effect of language as a determinant of migration out of predominantly French speaking Quebec. They employ a logistic discrete-time-hazard model to evaluate the yearly probability of a physician moving from their current province of residence as a function of a group of independent variables such as age, sex, immigrant status and so on. Among other findings, the results indicate that compared to middle-aged physicians (45 - 50 years old), younger ones are more likely to move. Besides, specialists are more likely to move than

family physicians. In terms of physicians living in Nova Scotia, the odds of moving are higher in all subsequent periods starting from the period 1984 – 1988 than in the reference period 1974 – 1978. Physicians whose language is not French and those residing in Quebec are 47% more likely to move than residing in any other province. The study suggests that the pattern of regional distribution of physicians is as important as the aggregate demand for and supply of physicians in Canada. For example, the knowledge that younger physicians are more likely to migrate and then settle with age can allow policy makers to create incentives attractive to young physicians to draw them to provinces where they are needed.

Whilst migration is the dependent variable in this study, over-education is the independent variable of interest here; hence it would be prudent to succinctly include some theory on this matter.

> Over-education describes the degree to which an individual holds a level of education in excess of that which is required for their particular job. The phenomenon was first brought to the attention of researchers by Richard Freeman in his 1976 study of the US graduate labour market. (Mcguiness, 2006, p. 387)

Overeducated workers, owing to the fact that part of their educational investment is unproductive, are likely to earn a lower return on their investment relative to similarly educated individuals whose jobs match their education. Over-educated workers may also incur "non-transitory" costs associated with lower levels of job satisfaction. Hence, one of the ways in which they may respond to this disparity is by moving to a job that matches their education level; even if it means having to leave the province of origin.

It is important to note here that overeducation is a relative term. A person identified as overeducated in one job may not be so defined in another. For example, a worker with 12 years of schooling is overeducated if he or she is a textile sewing machine operator, but undereducated if he or she is an electrical engineer. Therefore, it is not necessarily the case that an overeducated worker has more education than an under- or adequately educated worker. This is because one's label as under-, over-, or adequately educated differs from job to job.

It is apparent; firstly, that studies conducted in the past observed variables such as income, unemployment, immigrant status and demographics and their effects on migration patterns and that the consensus is to employ a logit model for similar studies. Secondly, despite extensive analysis on interregional migration, there has not been a study that expresses overschooling as one of the explanatory variables in internal migration thus making it all the more relevant. To my knowledge, a study of this kind investigating the overeducation aspect affecting people's migration decision would be the first in Canada.

III. Data and Methodology

The decision to migrate from one province to another may be a personal one or may be the result of a government policy that makes a province more attractive in terms of economic welfare over the other. The objective of this study is to detect whether overschooled people are more likely to migrate or not in general. It is not designed to catch marginal effects of whether an incremental increase in education years increases the likelihood of a person to move or not.

The data source for this study is the 2006 Census Public Use Micro data File (PUMF) published by Statistics Canada. The original dataset consists of 844,476 observations representing a 2 percent sample of the population. It also contains 124 variables (both categorical and numeric). After making necessary adjustments described in the following sections, the dataset has been reduced to 428,375 observations. In addition, the variables have been narrowed down to 13 (including the regressand). Table 3 records a description of the variables used in the regression analysis.

An important change made to the census data is that for the first time, the 2006 Census included an explicit question asking participants to report whether they had completed high school with a separate category for completion of high school equivalencies. One of the limitations of the data however is that it does not indicate the number of years of education that a person has. Hence actual education years for an individual had to be deduced on the basis of two sets of information – highest certificate, diploma or degree, and high school graduation certificate or equivalent. Taking the two into account, it proved rational to assign someone who graduated high school and with no further degrees to have received 12 years of formal education. Likewise, someone who

completed high school and holds a bachelor's degree is implicitly assumed to have 16
years of education (12 years of high school plus four years of university coursework).

Table 3. Description of Variables

Variables	Variables
Province of residence	Age groups
Newfoundland	20 - 24
Prince Edward Island	25 - 29
Nova Scotia	30 - 34
New Brunswick	35 - 39
Quebec	40 - 44
Ontario	45 - 49
Manitoba	50 - 54
Saskatchewan	55 - 59
Alberta	60 - 64
British Columbia	Sex
Household size	Female
One person	Male
Two persons	Immigrant Status
Three persons	Non-permanent residents
Four persons	Non-immigrants
Five persons	Immigrants
Six persons	Proimary household maintainer indicator
Sever or more persons	Person is not primary maintainer
Presence of children in Census family households	Person is primary maintainer
None	Total income after tax
One or more	Education years (required for occupation)
Legal marital status	Overeducation
Divorced	Undereducation
Legally married (and not seperated)	
Seperated but still legally married	
Never legally married (single)	
Widowed	

From the categorical variables revealed in Table 4, one can easily approximate the
education years for an individual. Someone whose highest degree reads as "none" and
who has "no high school certificate or equivalence certificate without further schooling"

16

has been given a value of 0 for actual education years. On the other extreme, a person with a "degree in medicine, dentistry, veterinary medicine or optometry" as the highest degree and a high school certificate has been awarded 24 years of education based on the following calculation: (16 years of pre-medical school education including bachelor degree + 4 years at medical school + 4 years of post-graduate medical education). Therefore education years achieved by an individual ranges from a minimum of zero to a maximum of 24, and in between there are those for example with a Master's degree with 18 years of education assuming completion of a bachelor program.

For a study of this nature, it is important to distinguish between the individual and regional characteristics for the specified data set. Individual characteristics include age, gender, and occupation among many other things, while regional differences may be attributed to climate, distance between provinces, house prices, unemployment rate and so on. Observations made at different locations (provinces) may not be independent. For example, measurements made at nearby provinces may be closer in value than measurements made at locations farther apart. This is known as spatial autocorrelation and to control its effects the variable *pr_1* (province of residence one year ago) has been treated as a cluster variable.

Several other revisions have been performed on the data for the analysis. The records have been reduced to reflect the ten provinces as the current province of residence as well as the province of residence one year ago. People younger than 20 years and older than 64 years have been eliminated to focus on the working age population. Individuals whose mobility status is shown as external migrants have been removed because their movement is across international boundaries and is therefore beyond the scope of the study.

Table 4. Determinants of Education Years

Highest certificate, diploma or degree	High school graduation certificate or equivalent
None	No high school certificate or equivalency certificate without further schooling
High school graduation certificate or equivalency certificate	No high school certificate or equivalency certificate with registered apprenticeship or other trade certificate
Other trades certificate or diploma	No high school certificate or equivalency certificate with college, CEGEP or other non-university certificate
Registered apprenticeship certificate	With high school certificate or equivalency certificate without further schooling
College, CEGP or othre non-university certificate or diploma from a program of 3 months to less than one year	With high school certificate or equivalency certificate with registered apprenticeship or other trade certificate
College, CEGP or othre non-university certificate or diploma from a program of 1 to 2 years	With high school certificate or equivalency certificate with college, CEGEP or other non-university certificate
College, CEGP or othre non-university certificate or diploma from a program of more than 2 years	With high school certificate or equivalency certificate with certificate below bachelor
University certificate or diploma below bachelor level	With high school certificate or equivalency certificate with bachelor's degree
Bachelor's degree	With high school certificate or equivalency certificate with certificate above bachelor
University certificate or diploma above bachelor level	With high school certificate or equivalency certificate with degree in medicine, dentistry, veterinary medicine or optometry
Degree in medicine, dentistry, veterinary medicine or optometry	With high school certificate or equivalency certificate with master's degree
Master's degree	With high school certificate or equivalency certificate with earned doctorate degree
Earned doctorate degree	

Likewise those whose occupation could not be classified in the original data were discarded. Observations for which data is not available are naturally omitted.

In addition to that, a number of different variables including but not limited to over-education and under-education were created. The **ORU** framework (**O**ver-education/**R**equired education/**U**nder-education) is used to identify whether an individual is overschooled or underschooled for his or her respective occupation. The ORU

literature is primarily concerned with whether workers are over-educated, under-educated or correctly matched given the usual educational requirements of their occupation (Chiswick and Miller, 2009). The modal measure is used to compute the required level of education in each of 25 different occupations based on the 2006 National Occupation Classification. Table 5 identifies the modal occupation years for each occupation where occupations involving senior management and teaching have the highest level - 16 years of education. Occupations associated with labourers in primary and manufacturing industries require 12 years of education.

The computation of overeducation is closely related to the method used by Verdugo and Verdugo in a 1989 study where they measure the impact of overeducation on earnings for different occupations. They computed the mean education and standard deviation for each occupation. According to this technique workers with educational attainment greater than one standard deviation above the mean for their specific occupation are described as overeducated. On the contrary, undereducated workers are those whose education is less than one standard deviation below the mean. Adequately educated workers make up the middle range; within +/- one standard deviation of the mean. One of the criticisms of the method however is that it uses the mean number of schooling to determine whether an individual is overeducated or undereducated. Under this condition most, if not all, observations are likely to lie above or below the mean thus making it challenging to identify someone with the required amount of education for an occupation.

This is where the definition of overeducation in this analysis departs from Verdugo and Verdugo's concept. The mode is used instead of the mean and the standard deviation

is not considered at all. The introduction of two dichotomous variables i.e. *overed* and

undered eliminates the need to create another variable to define the required education

Table 5. Modal Education Years by Occupation

2006 National Occupation Classification	Occupants	Modal education years
Senior mangament	5134	16
Other management	37561	12
Professional occupations in business and finance	11207	16
Financial, secretarial and administrative	23165	12
Clerical occupations and clerical supervisors	46636	12
Natural and applied sciences	29640	16
Professional occupations in health	12260	16
Technical, assisting and related occupations in health	12947	14
Social science, government services and religion	19885	16
Teachers and professors	18269	16
Art, culture, recreation and sport	12360	16
Wholesale, technical, insurance, real estate, grain buyers	9068	12
Retail trade supervisors, salespersons, and cashiers	24423	12
Chefs, supervisors and other occupations in food service	12638	12
Protective services	7189	12
Childcare and home support	6643	14
Service supervisors, travel and accomodation, attendants	33228	12
Contractors and supervisors in trades and transportation	3053	12
Construction trades	11294	12
Other trades	23640	14
Transport and equipment operators	17723	12
Trades helpers, construction and transportation labourers	9984	12
Occupations unique to primary industries	14024	12
Supervisors, machine operators and assemblers in manufacturing	19596	12
Labourers in processing, manufacturing and utilities	6808	12
Total	428375	

level. As a result, if an individual holds the adequate level of education for an occupation both *overed* and *undered* variables will have the value 0 whereas if one of the two variables is 1, it indicates that person is over- or underschooled. Table 6 provides the proportions defined as overeducated, adequately educated and undereducated within each of the 25 broad occupational categories. The incidence of over-, undereducation differs across the occupational groups. The proportion of overeducated workers ranges from 12 percent (for those employed in arts, culture, recreation and sport) to 64 percent (among management occupations excluding senior positions). About 38 percent of the individuals in the sample are defined as overeducated when all occupations are concerned.

Since the dependant variable is qualitative in nature, a qualitative response regression model known as logistic regression is used. One of the questions on the census questionnaire is related to the province a person resided one year ago. If the current province of residence is different than the province of residence one year ago, then he or she is defined as a mover. For each observation, the dependant variable takes the value 1 if the event occurred to that individual, 0 otherwise. Hence the two possible outcomes are denoted by 1 for a mover, and 0 for a non-mover. To determine the likelihood of a person moving from one province to another due to overeducation, the following model is used:

$$\textit{Logit } (Y_i/1-Y_i) = \alpha + \beta X_i$$

where Y_i is the dependant variable representing the ith individual in the dataset and X_i is a vector of unique characteristics that influence the decision to migrate. $(Y_i/1-Y_i)$ is simply the odds ratio of moving versus not moving from a province. The coefficients are not the marginal effects of the X variables on the probability of moving, rather they indicate the change in the log odds ratio of moving, relative to not moving. Nonetheless, the signs of

the coefficients indicate whether the probabilities of moving rises or falls with the X variables.

Table 6. Incidence of Overeducation by Occupational Category

2006 National Occupation Classification	Occupants	Overed.	Undered.	Adequately ed.	% Overed.
Senior mangament	5134	1019	2650	1465	19.85
Other management	37561	24217	3771	9573	64.47
Professional occupations in business and finance	11207	2043	4876	4288	18.23
Financial, secretarial and administrative	23165	14263	1785	7117	61.57
Clerical occupations and clerical supervisors	46636	24673	4885	17078	52.91
Natural and applied sciences	29640	4296	15877	9467	14.49
Professional occupations in health	12260	3319	5374	3567	27.07
Technical, assisting and related occupations in health	12947	3860	3848	5239	29.81
Social science, government services and religion	19885	3752	10118	6015	18.87
Teachers and professors	18269	7072	2749	8448	38.71
Art, culture, recreation and sport	12360	1449	7625	3286	11.72
Wholesale, technical, insurance, real estate, grain buyers	9068	5836	756	2476	64.36
Retail trade supervisors, salespersons, and cashiers	24423	10196	3984	10243	41.75
Chefs, supervisors and other occupations in food service	12638	4769	3087	4782	37.74
Protective services	7189	4213	779	2197	58.60
Childcare and home support	6643	1515	3091	2037	22.81
Service supervisors, travel and accomodation, attendants	33228	12833	9149	11246	38.62
Contractors and supervisors in trades and transportation	3053	1552	738	763	50.84
Construction trades	11294	4861	3561	2872	43.04
Other trades	23640	7667	9325	6648	32.43
Transport and equipment operators	17723	5446	6419	5858	30.73
Trades helpers, construction and transportation labourers	9984	2554	3524	3906	25.58
Occupations unique to primary industries	14024	4456	4796	4772	31.77
Supervisors, machine operators and assemblers in manufacturing	19596	6776	5697	7123	34.58
Labourers in processing, manufacturing and utilities	6808	1730	2508	2570	25.41
All occupations	428375	164367	120972	143036	38.37

Reasons for the inclusion of gender, primary household maintainer indicator, household size, presence of children, immigrant status, marital status (all of which are dummy variables), age, education years and income are grounded on the theory and literature on migration discussed earlier. The dummy variables representing the province

of residence or the destination province are incorporated to capture the general provincial characteristics.

Age is the single most important factor in determining who migrates (Ehrenberg and Smith, 2012). The human capital theory on migration states that the younger one is, the longer the period over which benefits from an investment can be obtained. In contrast older people are less likely to move because of longstanding social ties. There is also the view that men are more on the move than women who are mostly secondary workers and compromise their own careers in order to advance those of their spouses. Immigrants comprise another group of migrants who have been known to move to areas where there are larger communities, as recorded in past studies (Edmonston, 2002).

Whereas age is perhaps the best predictor of who will move, education is the single best indicator of who will move within an age group. Educational attainment is predicted to have the expected impacts, with higher movement for those with higher levels of education and a broader skill set acquired from various training programs. People who have surplus years of education than that which is required by their occupation are expected to move to a province where the economic prospects are more promising.

Family characteristics are another set of variables and include the household size and the presence of children in the household. These capture the effects of the family environment on an individual's decision to migrate. Besides that, the decision to migrate is a joint one for married couples as opposed to singles. Household size is an important indicator as the bigger the household and the presence of younger children, the costlier it becomes to migrate.

Finally, total after-tax income has been included to catch the effects of disposable income on the decision to migrate or not. Differences in provincial tax laws also mean that a person may prefer to move to a province where taxes in general are lower.

IV. Results

The results from the logit estimation are presented in Table 7. With 428,375 observations, there are clearly no issues with the sample size. Overall, the regression proved successful. The variables *pr* (current province of residence); *hhsize* (household size); *pkidhh* (presence of children in household); *prihm* (primary household maintainer); *marst* (legal marital status); *sex*; *immstat* (immigrant status) are all dummy variables. Variables denoted by *overed* (overeducation) and *undered* (undereducation) have 0 or 1 values. For the categorical variables such as province of residence the base is Newfoundland and Labrador and the rest can be found in Table 3 (description of variables).

As far as the province of residence is concerned, those living in Alberta are more likely to be movers as opposed to those residing in Newfoundland and Labrador. Alberta has had fluctuations in migration flows reflecting the volatility in its economy given that it depends heavily on its petroleum sector. The rest of the provinces show expected results with a lower probability of moving to a different province as opposed to when residing in Newfoundland.

Household size however shows some interesting results. Families with three, four, five persons have a higher probability of migrating than a family with one person. Notably, families with three persons are 24 percent more likely to move to a different province which challenges the traditional view that the larger the family, the lesser the likelihood of movement because the greater the expenses that must be borne. This may be due to the presence of higher child tax benefits in certain provinces or simply down to the fact that the perceived future income stream from the move outweighs the initial cost of

moving combined with the income that could have been earned by not moving. Families that have one or more children on the contrary, face the reduced probability of moving as opposed to families with no children, as predicted.

Surprisingly, if the person is the primary maintainer of the census household, the likelihood of migrating to a different province decreases. It possibly suggests that the decision to move is not always made by the head or the highest earner in the family, rather it is a collective agreement of all family members.

In harmony with the theory on migration, age has a negative relationship with migration patterns. The results displayed above reinforce the belief that as people become older they become less of a mover. Gender also plays an important role in determining who migrates. Males are 21.5 percent more likely to be movers than females conforming to findings in Finnie's study (1999). He concludes that interprovincial migration provides a route to better labour market opportunities for men, particularly if they are young and come from lower income provinces.

Both immigrants and non-immigrants (Canadian citizens by birth) are less likely to move versus non- permanent residents. One possible explanation for this might be the fact that immigrants enjoy many of the benefits (e.g. student loans, removal of tuition differential) as citizens do and are therefore not as desperate in seeking suitable employment. Non-permanent residents however face the struggle of obtaining permanent resident status by fulfilling certain requirements (one of which is often finding a job that matches the level of education) while staying on a temporary residence permit.

Income after tax of an individual does not appear to have any significant influence on the decision to migrate.

Table 7. Odds ratios of moving as the dependant variable.

move	Odds ratio	Robust std. err.	z	P> |z|
pr				
Prince Edward Island	0.9121373	1.398701	-0.06	0.952
Nova Scotia	0.8931581	1.489886	-0.07	0.946
New Brunswick	0.5982687	0.963929	-0.32	0.750
Quebec	0.1341219	0.2058915	-1.31	0.191
Ontario	0.2089043	0.4026934	-0.81	0.417
Manitoba	0.4787409	0.745351	-0.47	0.636
Saskatchewan	0.6692135	1.072782	-0.25	0.802
Alberta	1.237902	2.143585	0.12	0.902
British Columbia	0.6218325	0.9748389	-0.3	0.762
hhsize				
Two persons	0.9746537	0.0593215	-0.42	0.673
Three persons	1.244735	0.0949503	2.87	0.004
Four persons	1.02252	0.0930849	0.24	0.807
Five persons	1.023322	0.0892712	0.26	0.792
Six persons	0.9276015	0.1523116	-0.46	0.647
Seven or more persons	0.8463228	0.1526622	-0.93	0.355
pkidhh				
One or more	0.3717182	0.0354359	-10.38	0.000
prihm				
Person is primary maintainer	0.9396196	0.0524208	-1.12	0.264
agegrp	0.766713	0.0046287	-44.00	0.000
marst				
Legally married (and not seperated)	0.8686983	0.1024977	-1.19	0.233
Seperated, but still legally married	1.262796	0.1941231	1.52	0.129
Never legally married (single)	0.9425002	0.0851701	-0.66	0.512
Widowed	1.26226	0.2068352	1.42	0.155
sex				
Male	1.21571	0.0339006	7.00	0.000
immstat				
Non-immigrants	0.9896232	0.0852878	-0.12	0.904
Immigrants	0.8951795	0.152317	-0.65	0.515
totincatax	0.9999963	0.00000258	-1.43	0.152
edyears	1.016914	0.0116957	1.46	0.145
overed	1.135167	0.0385035	3.74	0.000
undered	0.9766636	0.0452474	-0.51	0.610
_cons	0.6278701	0.75435	-0.39	0.698

Number of obs	428375
Pseudo R2	0.1151

The education category overall shows encouraging results. An increase in education years does seem to slightly increase the probability of moving although it is not statistically significant. The reason for this may lie in the derivation of education years as it lacks accuracy and it is based on a clearly defined set of variables and assumptions (refer to Table 4) and is not provided in the original census data. Education years are in the model to filter out (control) its effects on migration while examining the effect of the overeducation concept. While both variables are included in the model it is understood that overeducation acts as a proxy for education and is therefore also taking away some of the effects of education years on the decision to move.

Finally, overeducation, the single most important variable of the research, shows a positive outcome. The probability of moving to a different province increases by 13.5 percent for an overeducated worker versus one who is adequately educated for his or her occupation.

V. Conclusion

The empirical evidence presented above confirms that overeducation acts as one of the determinants of the decision to migrate out of a province. In the context of the Canadian labour market, it is expected that there may be an increasing supply of college and university educated workers, partly due to the inflow of international students each year. It would lead economists to extrapolate that there is likely to be an increase in the number of overschooled workers in various sectors in the near future. This is why it is important for policy makers to recognize overeducation as one of the possible factors that influences interprovincial migration.

Workers may realize that being in an occupation for which one is overeducated reduces their earnings relative to other workers with equal years of schooling. Indeed, research has shown that overeducated workers earn less than those who are not overeducated (Verdugo and Verdugo, 1989). Overschooled workers may react to the situation of this education-job mismatch in different ways, one of which is to migrate out of the province of residence in search of better or higher paying jobs elsewhere. The findings presented in this paper shed light on the moving pattern of overschooled workers across all occupations.

Since interprovincial migration is one of the important components that may potentially affect the regional distribution of workers across Canada, provinces such as Nova Scotia may be faced with the problem of holding on to its educated workforce due to the relatively small size of the job market. This information can alert policy makers to implement policies that can avert or encourage interprovincial migration depending on the needs of the province. The study makes a clear link between an individuals' education

level and the likelihood to migrate from the province where they are currently located. It can be used to direct policy. For example, the knowledge that college graduates who are non-permanent residents are more likely to migrate because of the pressures of finding suitable employment, can allow policy makers to create incentives attractive to them. Such strategies may include graduate retention rebates, preference in granting permanent resident status through "Provincial Nominee" programs and so on.

This study is perhaps too simplistic to give insight to provincial policy makers about how to implement policies that affect migration. The effect of overeducation may be a bit more complex than is portrayed in this paper. Particularly the absence of education years in the census data increased the scope of erroneousness and more efforts than were made might have exhibited better results. Nevertheless it has laid a foundation that connects overeducation and migration and this is a stepping-stone for future research investigating this relationship at a broader level.

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