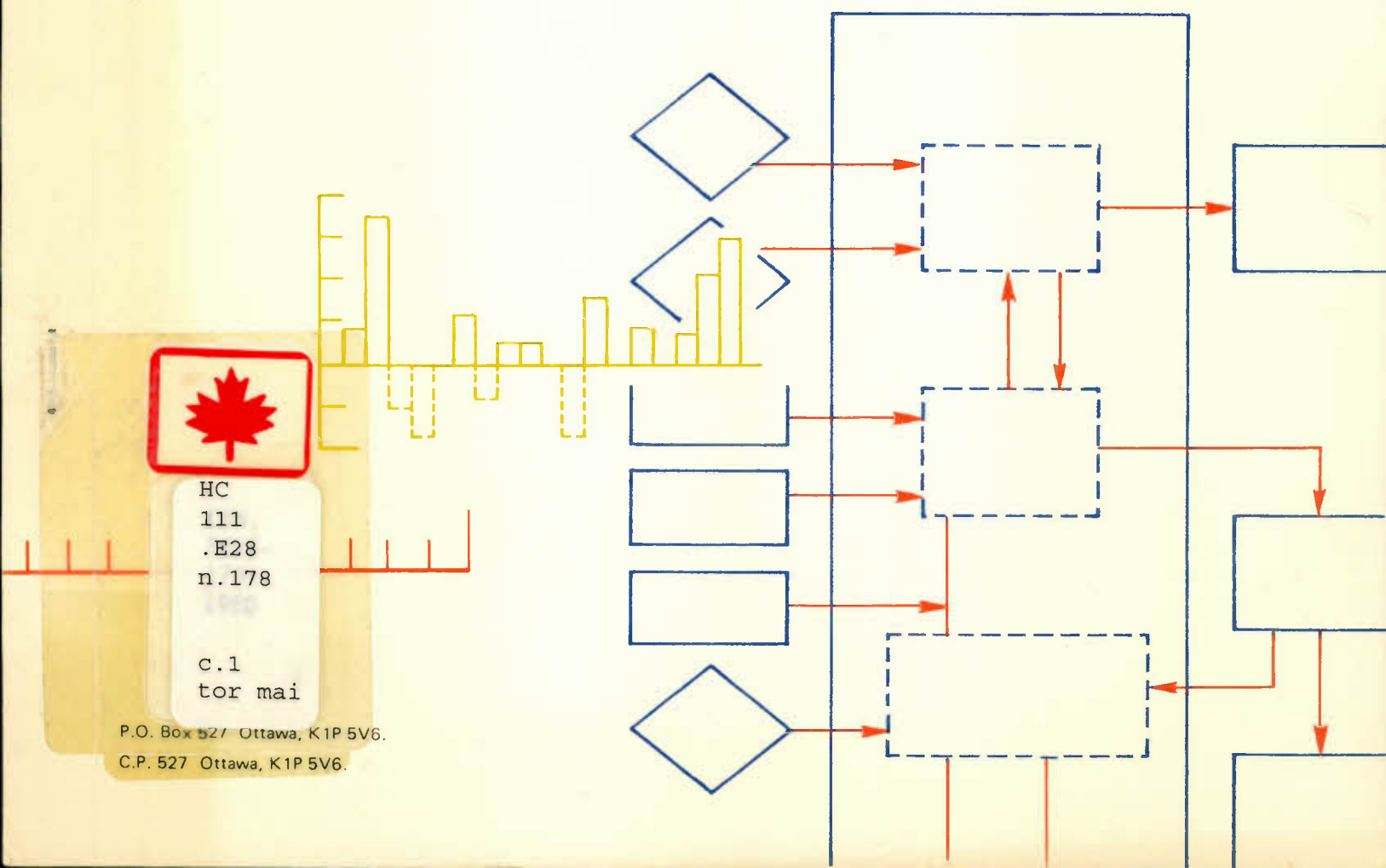
A paper prepared for the

Economic Council of Canada

[redacted]

Un document préparé pour le

Conseil économique du Canada



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DISCUSSION PAPER NO. 178

Some Economic Aspects of Internal Migration: Newfoundland's Case

by Denis Gauthier

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ISSN 0225-8013

October 1980

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ABSTRACT

This paper presents a comparative analysis of certain socio-economic characteristics of various migrant and non-migrant groups in Newfoundland in order to illustrate their particular aspects. Using special compilations of data from the 1971 Census, the Canadian population aged 16 and over at the time of the census is divided into twelve distinct migrant and non-migrant groups which form the basis for comparison.

The first chapter describes the data used and determines the number of people in each migrant and non-migrant group. We find that, in 1971 one of every five people born in Newfoundland resided in another Canadian province and that return migrants accounted for half of all in-migrants to Newfoundland.

The second chapter presents a descriptive analysis of the labour market performances of the various migrant groups. Among men, all migrant groups except return migrants registered lower unemployment rates than the non-migrant groups. Among women, careful study of the unemployment rates for the various migrant groups failed to produce such clear-cut conclusions. We did find, however, that women's participation rates are much lower in Newfoundland than in the rest of Canada. In this same chapter, we also test two hypotheses on the level of education of Newfoundland in-migrants and out-migrants. Using a multivariate nominal scale analysis model, we demonstrate that return migrants' level of education is different (lower) than that of in-migrants born outside Newfoundland but similar to that of Newfoundland-born out-migrants. A stay in another province would appear to have almost no impact on the migrant's education; on returning to Newfoundland, the migrant would then find himself competing in the labour market with a group of in-migrants born outside the province and having more education.

The third chapter deals with the income differences between the various migrant and non-migrant groups. The income determination model used allows us to separate the structural effects (income differences attributable to factors other than migrant status) from the remuneration effects (income differences arising from classification in a particular migrant or non-migrant group). The model is estimated for the total sample and also for a sub-sample consisting of men between the ages of 16 and 45 in the labour force at the time of the 1971 Census. The results indicate that income differences (gains) are associated with migration but that other factors such as a person's age and education cause much greater

variations in income than migrant status alone. The average estimated incomes of return migrants to Newfoundland and the rest of Canada (i.e. those who leave Newfoundland for another province) are lower than those of migrants who remained in their province of destination.

Finally, the results of the comparative analysis for employment, education and the income level for the various migrant and non-migrant groups lead us to conclude that Newfoundland-born out-migrants fare quite well in the Canadian labour market in terms of both jobs and income, and that among in-migrants, there are two equally large groups that have completely opposite attributes. In-migrants born outside Newfoundland possess an advantage in each of the factors studied, while return migrants are at a disadvantage in each. The hypothesis of dissatisfaction with migration is retained for return migrants.*

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*I wish to express particular thanks to Jac-André Boulet, Robert Lévesque, Patrick Robert and David O. Sewell for their invaluable comments and suggestions. I also wish to acknowledge the technical contribution of J.A. Aurèle Leduc and Jean Laperrière, computer analysts at the Council. I assume sole responsibility, however, for any errors that may remain in this paper.

RÉSUMÉ

Dans ce document, nous présentons une analyse comparative de certaines caractéristiques socio-économiques des différents groupes de migrants et non-migrants à Terre-Neuve dans le but d'en faire ressortir leurs particularités. A l'aide de compilations spéciales des données du recensement de 1971, la population canadienne âgée de 16 ans et plus au moment de ce recensement est répartie en douze groupes distincts de migrants et non-migrants qui forment la base de comparaison.

Dans le premier chapitre, nous décrivons les données utilisées et nous évaluons le nombre de personnes composant chaque groupe de migrants et non-migrants. On y observe qu'en 1971, une personne sur cinq nées à Terre-Neuve résidait dans une autre province du Canada et que les migrants de retour constituaient la moitié du nombre total d'entrants à Terre-Neuve.

Dans le deuxième chapitre, nous présentons une analyse descriptive des performances des différents groupes de migrants sur le marché du travail. Chez les hommes, tous les groupes de migrants à l'exception de celui des migrants de retour connaissent des taux de chômage inférieurs à ceux des non-migrants. Chez les femmes, l'examen des taux de chômage des différents groupes de migrants ne mène pas à des conclusions aussi claires. Par contre, on observe au sein de la population féminine que les taux de participation à la population active sont beaucoup moins élevés chez les résidentes de Terre-Neuve que chez celles du reste du Canada. Dans ce même chapitre, nous vérifions aussi deux hypothèses concernant le degré de scolarité des entrants et des sortants à Terre-Neuve. A l'aide d'un modèle d'analyse multivariée de variables qualitatives, nous démontrons que le degré de scolarité des migrants de retour est différent (inférieur) de celui des entrants nés à l'extérieur de Terre-Neuve alors qu'il est similaire à celui des sortants natifs de Terre-Neuve. Un séjour dans une autre province du Canada n'aurait pratiquement aucun impact sur la formation scolaire du migrant et à son retour dans sa province natale, ce dernier se trouverait en concurrence sur le marché du travail avec un groupe d'entrants nés à l'extérieur de Terre-Neuve et jouissant d'une scolarité plus avancée.

Dans le troisième chapitre, nous traitons des écarts de revenus entre les différents groupes de migrants et non-migrants. Le modèle de détermination des revenus que nous utilisons permet de dissocier les effets de structure (écarts de revenus attribuables à d'autres facteurs que le statut de migrant) et les effets de rémunération (écarts de revenus provenant de l'appartenance à un groupe particulier de migrants ou non-migrants). Le modèle est estimé pour

l'échantillon total et aussi pour un sous-échantillon composé des hommes âgés de 16 à 45 ans qui faisaient partie de la population active au moment du recensement de 1971. Les résultats indiquent qu'il y a des écarts (gains) de revenus associés à la migration, mais que d'autres facteurs tels l'âge et la scolarité d'une personne constituent des sources de variations du revenu beaucoup plus amples que le simple statut de migrant. En ce qui concerne les migrants de retour à Terre-Neuve et dans le reste du Canada (c'est-à-dire, ceux quittant Terre-Neuve pour retourner dans une autre province), leurs revenus moyens estimés sont inférieurs à ceux des migrants qui sont demeurés dans leur province de destination.

Enfin, les résultats de l'analyse comparative de l'emploi, de la formation scolaire et du niveau de revenu des différents groupes de migrants et non-migrants nous conduisent à conclure que les sortants natifs de Terre-Neuve s'en tirent fort bien sur le marché du travail canadien autant en termes d'emplois que de revenus et que parmi les entrants, il existe deux groupes de taille égale mais diamétralement opposés au niveau de leurs attributs. Les entrants nés à l'extérieur de Terre-Neuve jouissent d'une situation avantageuse au niveau de chacun des facteurs étudiés alors que les migrants de retour connaissent une situation inverse. L'hypothèse d'insatisfaction face à la migration est retenue pour les migrants de retour.*

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*Je tiens à remercier très particulièrement Messieurs Jac-André Boulet, Robert Lévesque, Patrick Robert et David O. Sewell pour leurs précieux commentaires et suggestions. Je tiens également à souligner la contribution technique de J.A. Aurèle Leduc et Jean Laperrière, informaticiens au Conseil. Je demeure cependant l'unique responsable des erreurs et des fautes qui pourraient subsister dans ce document.

INTRODUCTION

In the two decades after Newfoundland joined Confederation in 1949, over 195,000 people left for other Canadian provinces. A precarious economic situation caused by chronic unemployment, which held average income levels below those observed in other provinces, undoubtedly persuaded many to try their luck in Canada's mainland labour market.[1] In this same twenty-year period, however, 126,000 people from the other provinces moved to Newfoundland.[2] Given the absolute and relative sizes of these flows, identifying certain socio-economic characteristics of these two interprovincial migrant groups and comparing these characteristics with those of other types of migrants and non-migrants in Newfoundland and the rest of Canada would probably give us a better understanding of the migration phenomenon in Newfoundland.

Our statistical information was obtained from special compilations of the 1971 Census data conducted by the Census Operations Divisions of Statistics Canada. These data enable us, among other things, to identify the return migrant group, in which we are particularly interested. The relatively high number of in-migrants to Newfoundland might in fact include a considerable proportion of return

migrants. We can suggest two hypotheses for the economic reasons causing these people to return to their native province. In the first, the return migrant group would consist of Newfoundlanders who left the province in the past to further their education and or acquire experience in the labour market of another province. These people would then return to Newfoundland and form a more highly skilled labour force that would be better paid and less subject to unemployment. The other hypothesis argues instead that the return migrant group consists of people who attempted to improve their economic situation by moving to another province but returned to their native province when they had little success or became disenchanted. Support for one or the other of these hypotheses will be obtained through a comparative analysis of employment, education and income levels for the various migrant and non-migrant groups in Newfoundland and the rest of Canada.

The first chapter describes the data used and determines the number of return migrants to Newfoundland. The second chapter examines the employment and education characteristics of the individuals making up the various migrant groups. Finally, the third chapter discusses the income differences associated with migration and the conclusion reviews the most significant results.

Chapter 1

DESCRIPTION OF THE DATA

The data used in this paper were obtained from the 1971 Census. The total sample contains all individuals 16 years of age and over at the time of the Census, living in Canada during the 1966 and 1971 Censuses. Those whose place of residence was uncertain in 1966 were eliminated from the sample. Six factors characterize each of the respondents retained: age, sex, education, labour market status, migrant status and place of birth. Each of these factors is expressed in nominal form and thus contains several mutually exclusive categories, defined below.

The age factor contains seven categories:

- 16-20 years old,
- 21-25 years old,
- 26-35 years old,
- 36-45 years old,
- 46-55 years old,
- 56-65 years old,
- 66 years and over.

The sex factor contains two categories:

- women,
- men.

The education factor is based on six schooling categories:

- five years or more of university (5+U),
- third and fourth years of university (3-4U),
- first and second years of university (1-2U),
- secondary education, grades nine to thirteen (9-13),
- primary education, grades five to eight (5-8),
- less than five years of primary education (<5),

Each of these is paired with a variable indicating whether the individual has taken vocational training courses:

- WVT : with vocational training,
- W/OVT : without vocational training.

This gives a total of twelve categories for this factor.

The labour market status factor contains three categories:

- employed,
- unemployed,
- outside the labour force.

These three categories represent the respondent's labour market status at the time of the 1971 Census. As we will see in the income analysis in Chapter 3, however, this is also a reasonably reliable indicator of the probability of employment, unemployment and non-participation in the labour force during the twelve months preceding the Census.

The migrant status and place of birth variables were combined to produce the following twelve categories of migrants:

- OUT-MIGRANTS/NFLD. : natives of Newfoundland living in the province in 1966 but in another province in 1971;
- OUT-MIGRANTS : same as above but born outside Newfoundland;
- INTRA CANADA/NFLD. : natives of Newfoundland residing in another province in 1966 and living in another area of the same province or in a third province in 1971;

INTRA CANADA : same as above but born outside Newfoundland;

- STAYERS CANADA/NFLD. : natives of Newfoundland who resided in the same region of another province in both 1966 and 1971;
- STAYERS CANADA : same as above but born outside Newfoundland;
- IN MIGRANTS/NFLD. : natives of Newfoundland residing in another province in 1966 and in Newfoundland in 1971;

- IN-MIGRANTS : same as above but born outside Newfoundland;
- INTRA NFLD./NFLD. : natives of Newfoundland residing in different regions of the province in 1966 and 1971;
- INTRA NFLD. : same as above but born outside Newfoundland;
- STAYERS NFLD./NFLD. : natives of Newfoundland residing in the same region of the province in both 1966 and 1971;
- STAYERS NFLD. : same as above but born outside Newfoundland.

Multiplying the number of categories for each factor, we obtain a total of 6,048 mutually exclusive cases. For each case, we know the number of individuals and their average income over the twelve months preceding the 1971 Census. The sample contains a total of 13,822,824 people. Table 1 gives their distribution among the various factor categories studied as well as the average income for each category.

The distribution of respondents based on the various migrant categories at the time of the 1971 Census reveals that:

- the proportion of native Newfoundlanders in the province's population is 95.5 per cent;

Table 1

DISTRIBUTION OF THE ENTIRE SAMPLE AMONG THE CATEGORIES FOR EACH FACTOR, AND AVERAGE INCOME

	Number of persons	Percentage distribution	Average income (dollars)
Age			
16-20	1,935,534	14.00	891
21-25	1,651,590	11.95	3,442
26-35	2,490,190	18.02	4,681
36-45	2,382,975	17.24	5,326
46-55	2,163,255	15.65	5,144
56-65	1,633,575	11.82	4,338
66 +	1,565,705	11.33	2,961
Sex			
Women	6,972,264	50.44	1,848
Men	6,850,560	49.56	6,090
Education			
5 + U WVT	37,330	0.27	11,596
5 + U W/OVT	295,485	2.14	12,044
3-4 U WVT	311,220	2.25	7,017
3-4 U W/OVT	662,445	4.79	6,432
1-2 U WVT	676,680	4.90	4,910
1-2 U W/OVT	1,006,075	7.28	4,080
9-13 WVT	596,465	4.32	5,425
9-13 W/OVT	5,600,364	40.52	3,380
5-8 WVT	178,660	1.29	5,363
5-8 W/OVT	3,565,255	25.79	3,196
<5 WVT	14,105	0.10	4,387
<5 W/OVT	878,740	6.36	2,464
Labour Market Status			
Employed	7,485,080	54.15	6,069
Unemployed	612,969	4.43	2,558
Outside the labour force	5,724,775	41.42	1,330

Table 1 (cont'd)

Migrant Status			
OUT-MIGRANTS/NFLD.	16,325	0.12	3,552
INTRA CANADA/NFLD.	12,715	0.09	4,544
STAYERS CANADA/NFLD.	49,555	0.36	4,276
OUT-MIGRANTS	6,585	0.05	5,035
INTRA CANADA	2,626,860	19.00	4,261
STAYERS CANADA	10,804,594	78.16	3,910
IN-MIGRANTS/NFLD.	4,970	0.04	3,645
INTRA NFLD./NFLD.	40,125	0.29	2,743
STAYERS NFLD./NFLD.	247,190	1.79	2,448
IN-MIGRANTS	4,970	0.04	5,396
INTRA NFLD.	1,315	0.01	5,578
STAYERS NFLD.	7,620	0.06	5,231
Total	13,822,824		3,950

Source: Special data taken form the 1971 Census, Statistics Canada, and calculations by the author.

- the proportion of out-migrants born outside Newfoundland is 28.7 per cent;
- the number of native Newfoundlanders living in another province in Canada represents 21.2 per cent of all native Newfoundlanders and
- return migrants accounted for 50.0 per cent of all in-migrants to Newfoundland.[3]

We believe the last two figures are higher than those that would normally be observed in Canada's other provinces.

Table 2 gives the proportion of return migrants among the total number of in-migrants to Newfoundland for the various age groups studied. The number of return migrants in the 16-20 group represents only a third of all in-migrants. In the 21-55 categories, this proportion ranges between 41 and 54 per cent. Among those approaching normal retirement age, return migrants account for 71 per cent of all in-migrants, while this figure climbs to 90 per cent among those over 65.

In this chapter, we have defined twelve groups of migrants and non-migrants and determined the size of each of these groups. The following chapter will analyse these groups' performance in the labour market and test two hypotheses on the education of in- and out-migrants in Newfoundland.

Table 2

NUMBER OF IN-MIGRANTS AND PROPORTION OF RETURN MIGRANTS BY AGE GROUP, NEWFOUNDLAND, 1971

	IN-MIGRANTS/ NFLD. (1)	IN-MIGRANTS (2)	Total (3)	Ratio (1) ÷ (3)
Age				
16-20	275	550	825	0.333
21-25	1,220	1,305	2,525	0.483
26-35	2,040	1,715	3,755	0.543
36-45	615	890	1,505	0.409
46-55	310	365	675	0.459
56-65	295	120	415	0.711
66 +	215	25	240	0.896
Total	4,970	4,970	9,940	0.500

Source: Special data taken from the 1971 Census, Statistics Canada, and calculations by the author.

Chapter 2

CHARACTERISTICS OF MIGRANTS' LABOUR MARKET STATUS AND EDUCATION

1. Labour Market Status of Migrants

In Chapter 1, we defined the labour market status of individuals as that described by each respondent at the time of the 1971 Census. Of course, a person considered as unemployed or outside the labour force at the time of the Census may have held a job for part of the year, or vice versa. Table 1 reveals, however, that the average income of respondents holding a job at the time of the census was $6,069 for the twelve months preceding the census. The average income of unemployed respondents was markedly lower -- $2,558 -- while the average annual income of those claiming to be outside the labour force was only $1,330. Even when corrected for the structural effects of the other factors (by disregarding differences in attributes for the other income-determining factors), as we will see in Chapter 3, the income differences between these three groups remain significant. We can therefore assume that the chances of having worked during the twelve months preceding the Census are much higher for respondents who held a job at the time of the Census than for those who were unemployed or outside the labour force at that time.

The proportions of each type of migrant belonging to each of the three labour market categories were computed, as were their unemployment rates. Table 3 lists these figures for men between 16 and 65 years old, while the corresponding figures for women in the same age bracket appear in Table 4.

The lowest unemployment rates among men are registered by those living in Newfoundland in 1971 but born outside the province, while native Newfoundlanders living in the province in 1971 had the highest rates. The latter also had the lowest participation rates of the twelve groups studied. Among in-migrants, those born outside Newfoundland posted 4.4 per cent unemployment while return migrants registered a rate of 13.6 per cent. The two other groups of native Newfoundlanders living in the province were also at a clear disadvantage in terms of employment compared to Newfoundland residents born elsewhere. The actual unemployment rates ranged from 8.0 per cent for INTRA NFLD./NFLD. to 3.1 per cent for INTRA NFLD. and from 10.7 per cent for STAYERS NFLD./NFLD. to 5.0 per cent for STAYERS NFLD.

Native Newfoundlanders living elsewhere in Canada, on the other hand, are doing quite well in terms of unemployment and participation in the labour force. These three groups in fact have the highest participation rates of the twelve groups. Among this category, those who had resided

Table 3

DISTRIBUTION OF THE VARIOUS CATEGORIES OF MIGRANTS AND NON-MIGRANTS IN TERMS OF LABOUR MARKET STATUS, MEN, 16-25 YEARS OLD, 1971

Persons Residing Outside Newfoundland in 1971

Labour Market Status	Born in Newfoundland			Born elsewhere		
	OUT-MIGRANTS/ NFLD.	INTRA CANADA/NFLD.	STAYERS CANADA/NFLD.	OUT-MIGRANTS	INTRA CANADA	STAYERS CANADA
Employed	7,100	5,355	17,840	2,890	1,000,275	3,660,210
Unemployed	475	370	1,145	190	72,715	288,330
Outside the labour force	585	535	1,935	350	141,385	806,010
Total	8,160	6,260	20,920	3,430	1,214,375	4,754,550
	PERCENTAGE DISTRIBUTION					
Employed	87.01	85.54	85.28	84.26	82.37	76.98
Unemployed	5.82	5.91	5.47	5.54	5.99	6.06
Outside the labour force	7.17	8.55	9.25	10.20	11.64	16.95
Unemployment rate (Unemployed ÷ labour force)	6.27	6.46	6.03	6.17	6.78	7.30

Table 3 (cont'd)

Persons residing in Newfoundland in 1971

Labour Market Status	Born in Newfoundland			Born elsewhere			TOTAL
	IN-MIGRANTS/ NFLD.	INTRA/ NFLD./NFLD.	STAYERS NFLD./NFLD.	IN-MIGRANTS	INTRA NFLD.	STAYERS NFLD.	
Employed	1,965	12,640	72,590	2,290	635	2,845	4,786,635
Unemployed	310	1,095	8,705	105	20	150	373,610
Outside the labour force	475	3,615	33,550	280	90	495	989,305
Total	2,750	17,350	114,845	2,675	745	3,490	6,149,550
	PERCENTAGE DISTRIBUTION						
Employed	71.45	72.85	63.21	85.61	85.23	81.52	77.84
Unemployed	11.27	6.31	7.58	3.93	2.68	4.30	6.08
Outside the labour force	17.27	20.84	29.21	10.47	12.08	14.18	16.09
Unemployment rate (Unemployed ÷ labour force)	13.62	7.97	10.71	4.39	3.05	5.01	7.24

Source: Special data taken from the 1971 Census, Statistics Canada, and calculations by the author.

Table 4

DISTRIBUTION OF THE VARIOUS CATEGORIES OF MIGRANTS AND NON-MIGRANTS IN TERMS OF LABOUR MARKET STATUS, WOMEN, 16-65 YEARS OLD, 1971

Persons residing outside Newfoundland in 1971

Labour Market Status	Born in Newfoundland			Born elsewhere		
	OUT-MIGRANTS/ NFLD.	INTRA CANADA/NFLD.	STAYERS CANADA/NFLD.	OUT-MIGRANTS	INTRA CANADA	STAYERS CANADA
Employed	3,700	2,175	8,940	1,170	539,530	1,907,090
Unemployed	460	255	695	160	56,575	161,699
Outside the labour force	3,790	3,280	12,080	1,675	660,060	2,609,200
Total	7,950	5,710	21,715	3,005	1,256,165	4,677,989
	PERCENTAGE DISTRIBUTION					
Employed	46.54	38.09	41.17	38.94	42.95	40.77
Unemployed	5.79	4.47	3.20	5.32	4.50	3.46
Outside the labour force	47.67	57.44	55.63	55.74	52.55	55.78
Unemployment rate (Unemployed ÷ labour force)	11.06	10.50	7.21	12.02	9.48	7.82

Table 4 (cont'd)

Persons residing in Newfoundland in 1971

Labour Market Status	Born in Newfoundland			Born elsewhere			TOTAL
	IN-MIGRANTS/ NFLD.	INTRA NFLD./NFLD.	STAYERS NFLD./NFLD.	IN-MIGRANTS	INTRA NFLD.	STAYERS NFLD.	
Employed	545	7,615	26,650	685	185	995	2,499,280
Unemployed	55	455	2,240	80	10	85	222,769
Outside the labour force	1,405	12,425	77,430	1,505	325	2,345	3,385,520
Total	2,005	20,495	106,320	2,270	520	3,425	6,107,569
	PERCENTAGE DISTRIBUTION						
Employed	27.18	37.16	25.07	30.18	35.58	29.05	40.92
Unemployed	2.74	2.22	2.11	3.52	1.92	2.48	3.65
Outside the labour force	70.07	60.62	78.83	66.30	62.50	68.47	55.43
Unemployment rate (Unemployed ÷ labour force)	9.16	5.64	7.76	10.45	5.12	7.87	8.19

Source: Special data taken from the 1971 Census, Statistics Canada, and calculations by the author.

outside Newfoundland for over five years by 1971 actually had lower unemployment rates than their Canadian counterparts: 6.5 per cent for INTRA CANADA/NFLD. compared to 6.8 per cent for INTRA CANADA, and 6.0 per cent for STAYERS CANADA/NFLD. compared to 7.3 per cent for STAYERS CANADA. Newfoundland-born out-migrants registered 6.3 per cent unemployment, 0.9 percentage point less than the average rate for all Canadian men and only 0.1 percentage point higher than that for out-migrants born outside Newfoundand.

Even with an unemployment rate of 13.6 per cent, we cannot claim beyond a shadow of a doubt at this stage of the research that return migrants are the unemployables in the Canadian labour market. It must be remembered that in 1971, Canada was just coming out of a recession with an unemployment rate of 6.4 per cent and unemployment in the Atlantic region at the time was running at 8.6 per cent. This matter would certainly be easier to settle if we knew return migrants' labour market status before they returned to Newfoundland. The figures in Table 3 do appear to indicate, however, that in-migrants born outside Newfoundland were guaranteed a job before entering the province whereas return migrants were coming back to Newfoundland with no guarantee.

The reasons for the differences between unemployment rates for the twelve women's groups are not as clear. These ranged from 5.1 to 12.0 per cent, with the lowest rates occurring in Newfoundland. If, however, we look at the proportion of the total number in each group that is employed, we find that these figures are also lowest in Newfoundland, varying between 25.1 and 37.2 per cent compared to 38.1 - 46.5 per cent in the other provinces. This is explained by the very low participation rates for Newfoundland residents (27.2 to 39.4 per cent). It would be easy to ascribe this to the discouragement hypothesis or cyclical withdrawal from the work force. Participation rates in the rest of Canada ranged from 42.6 to 52.3 per cent.

Up to this point, the special data taken from the 1971 Census have revealed, among other things, that half of all Newfoundland in-migrants were born in the province and that this group experienced more difficulty in the labour market than the group born outside Newfoundland.[4] The following section will determine whether differences in educational attributes also exist between these two groups that might partially explain the discrepancies observed in their labour market performance.

2. Migrants' Education

This section will seek the answer to two questions:

1. Does return migrants' level of education differ from that of in-migrants born outside Newfoundland?

2. Does return migrants' level of education differ from that of Newfoundland-born out-migrants?

The answer to the first question will complement the analysis of unemployent rates for the two groups discussed in the previous section. The answer to the second will enable us to partially determine whether a stay in another province has a positive effect on the return migrants' level of education, as suggested in the introduction. The answers to these questions were obtained through a model of multivariate nominal scale analysis, briefly described below.[5]

The Model

Multivariate nominal scale analysis is used to determine the impact of independent (or explanatory) variables on the probability of falling into a specific category of a dependent qualitative variable. In our case, the dependent variable is education. This variable is

divided into five distinct categories: 3-4-5 U, 1-2 U, 11-13, 9-10 and <8.[6] The explanatory variables are age, sex and migrant status. Respondents over 65 years of age were eliminated from our sample since few continue to work past this age. The migrant statuses retained were in- and out- migrants born in Newfoundland and elsewhere. All variables are dummy variables.

We actually have five dependent variables: the five mutually exclusive categories of education. The method of analysis therefore consists of estimating five linear regressions, one for each category of education. The equation estimated is written:

$$(1)\quad \text{Education}_i = a_i + \sum_{j=1}^{6} b_{ij}\,\text{Age}_j + \sum_{k=1}^{2} c_{ik}\,\text{Sex}_k + \sum_{\ell=1}^{4} d_{i\ell}\,\text{Migrant}_\ell + \mu$$

where: Education_1 : 3-4-5 U
" $_2$: 1-2 U
" $_3$: 11-13
" $_4$: 9-10
" $_5$: < 8

Age_1: 16-20 years old
" $_2$: 21-25 years old
" $_3$: 26-35 years old
" $_4$: 36-45 years old
" $_5$: 46-55 years old
" $_6$: 56-65 years old

Sex_1: Women
" $_2$: Men

Migrant_1: OUT-MIGRANTS/NFLD.
" $_2$: OUT-MIGRANTS
" $_3$: IN-MIGRANTS/NFLD.
" $_4$: IN-MIGRANTS

μ : residual term.

The constant term for each of the five equations estimated is equal to the percentage of individuals falling into the corresponding educational category. This results from the use of the constraint that the weighted sum of the coefficients for each factor must equal zero.[7] In this way, no category of the explanatory factors is excluded and the coefficients for each factor are expressed as a deviation from this constant term.

The coefficients estimated can be better understood by referring to a passage from Andrews and Messenger:

> The coefficients show the "effects" of membership in the particular category of the independent variable on the likelihood of membership in each category of the dependent variable. [...] It is important to recognize that the coefficients take into account any relationships that may be present between the various independent variables and between each independent variable and the dependent variable. Thus they can be interpreted as indicating the gain or loss in likelihood after "holding constant" all other independent variables. Another way of saying this is that the coefficients indicate what the effect of a particular category would be if the members of this category were distributed as in the general population with respect to all other predictor variables.[8]

Results

The empirical results are presented in Table 5. The first part of the table shows the distribution of individuals among the five education categories (constant terms in the equations).[9] The coefficients of determination (R square) are also given for each of the equations, as well as the coefficient of determination related to the entire model (R^2). The model explains only 3.6 per cent of the variation in the dependent variable. This should give no cause for alarm, in view of the subtle character of the concept of variance when applied to a qualitative dependent variable. The robustness of the relationship between the explanatory variables and the dependent variable can be measured in another way. The Theta statistics, which has a value of .3250 in our model, indicates that 32.5 per cent of the cases could be correctly classified after taking into consideration the characteristics related to the three explanatory variables for each individual. For each explanatory variable, the equivalent statistics for the simple correlation analysis are also given. The Theta statistics must be interpreted in the framework of an individual analysis (one person) while the R^2 statistics and eta are related to a case analysis (a group of people with common attributes). For each category of explanatory factors, Table 5 gives three rows of figures. The first (percentage) describes the distribution

Table 5

RESULTS OF THE MULTIVARIATE NOMINAL SCALE ANALYSIS APPLIED TO THE EDUCATION OF IN- AND OUT-MIGRANTS, 15-65 YEARS OLD

	3-4-5 U	1-2 U	11-13	9-10	< 8	Total
Total percentage	12.53	18.00	24.11	27.00	18.36	100
R^2 = .0358						
θ = .3250						
R square	.0564	.0167	.0175	.0240	.0773	
Age						
n^2age = .0170						
θ age = .2873						
Eta square	.0245	.0102	.0080	.0088	.0399	
16-20 (16.92%, N=5,455)						
Percentage	2.75	14.02	30.80	35.11	17.32	100
Coefficient	-8.46	-3.45	7.08	7.22	-2.39	0
Adjusted percentage	4.07	14.55	31.19	34.22	15.97	100
21-25 (31.12%, N=10,035)						
Percentage	11.46	21.72	24.51	27.75	14.55	100
Coefficient	0.24	4.58	1.27	-0.36	-5.74	0
Adjusted percentage	12.77	22.59	25.38	26.64	12.62	100
26-35 (29.35%, N=9,465)						
Percentage	17.38	19.92	23.61	25.09	14.00	100
Coefficient	4.03	1.55	-0.74	-1.36	-3.48	0
Adjusted percentage	16.55	19.56	23.37	25.64	14.88	100
36-45 (12.51%, N=4,035)						
Percentage	17.35	15.99	21.44	22.43	22.80	100
Coefficient	2.33	-3.50	-4.37	-2.38	7.92	0
Adjusted percentage	14.86	14.50	19.74	24.62	26.28	100
46-55 (6.39%, N=2,060)						
Percentage	13.83	11.41	17.23	23.30	34.22	100
Coefficient	-0.29	-7.69	-8.06	-2.26	18.29	0
Adjusted percentage	12.24	10.31	16.06	24.74	36.65	100
56-65 (3.71%, N=1,195)						
Percentage	9.21	7.95	15.06	20.50	47.28	100
Coefficient	-2.69	-9.94	-8.45	-7.29	28.37	0
Adjusted percentage	9.84	8.07	15.66	19.71	46.73	100

Table 5 (cont'd)

Sex

n^2sex = .0012
θ sex = .2700

Eta square	.0037	.0000	.0001	.0023	.0003	
Women (47.23%, N=15,230)						
Percentage	10.41	18.29	24.46	29.25	17.60	100
Coefficient	-1.82	0.33	0.20	2.09	-0.79	0
Adjusted percentage	10.71	18.34	24.31	29.08	17.57	100
Men (52.77%, N=17,015)						
Percentage	14.43	17.75	23.80	24.98	19.04	100
Coefficient	1.63	-0.30	-0.18	-1.87	0.71	0
Adjusted percentage	14.16	17.70	23.94	25.13	19.07	100

Migrant Status

n^2migrants = .0175
θ migrants = .3021

Eta square	.0377	.0045	.0080	.0159	.0292	
OUT-MIGRANTS/NFLD. (49.96%, N=16,110)						
Percentage	7.29	16.17	22.81	31.07	22.66	100
Coefficient	-4.25	-2.34	-2.37	3.26	5.70	0
Adjusted percentage	8.28	15.66	21.75	30.26	24.06	100
OUT-MIGRANTS (19.96%, N=6,435)						
Percentage	17.87	21.91	28.13	21.37	10.72	100
Coefficient	4.75	5.14	5.23	-5.05	-10.07	0
Adjusted percentage	17.28	23.15	29.34	21.94	8.29	100
IN-MIGRANTS/NFLD. (14.75%, N=4,755)						
Percentage	10.73	15.88	17.56	30.91	24.92	100
Coefficient	-3.39	-2.16	-5.34	5.28	5.61	0
Adjusted percentage	9.13	15.84	18.78	32.28	23.97	100
IN-MIGRANTS (15.34%, N=4,945)						
Percentage	24.37	20.93	29.42	17.29	7.99	100
Coefficients	10.94	3.01	6.04	-9.12	-10.87	0
Adjusted percentage	23.47	21.01	30.15	17.88	7.49	100

of individuals among the five education categories. The regression coefficients appear in the second row, while the third gives the adjusted percentages (constant terms added to the coefficients). The results for the age factor meet the normal expectations: level of education increases up to 35 years of age and then drops off. The sex factor has very little impact (θsex = .2700), as the coefficients are minimal in most cases.

The factor that interests us most is migrant status. This factor also makes the greatest contribution to explaining the variance of the dependent variable (θmigrants = .3021). Within an education category, a positive coefficient indicates a greater than average tendency to fall into this category, while a negative coefficient indicates the opposite. A close look at the coefficients reveals two well defined structures. Newfoundland-born in- and out-migrants have negative coefficients for the 3-4-5 U, 1-2 U and 11-13 categories, and positive coefficients for the 9-10 and < 8 categories, while the opposite applies to in- and out-migrants born outside Newfoundland. Native Newfoundlanders are therefore over-represented in categories of little education and under-represented in the higher education categories. The opposite again applies to those born outside Newfoundland.

The first question raised at the start of this section can be answered in the affirmative. Return

migrants' education definitely differs from that of IN-MIGRANTS (the former have less). The adjusted percentages reflect the distribution of individuals among the five education categories after correction for the structural effects of the age and sex factors (i.e., equal structure for these two factors). The adjusted distribution for IN-MIGRANTS/NFLD. and IN-MIGRANTS is given below in per cent values;

	3-4-5 U	1-2 U	11-13	9-10	< 8	Total
IN-MIGRANTS/NFLD.	9.13	15.84	18.78	32.28	23.97	100
IN-MIGRANTS	23.47	21.01	30.15	17.88	7.49	100

The multivariate analysis model was rounded out with a test of the statistical independence of the adjusted distributions for the two migrant groups. The value of the chi-square statistic at 4 degrees of freedom is 1090.21, which is quite sufficient to reject the null hypothesis of statistical independence between the two distributions, which means that the two adjusted distributions are statistically different. Judging by the adjusted distributions, in-migrants born outside Newfoundland are better educated and form a more skilled labour force than return migrants, which partly explains their greater probability of finding work, as discovered at the start of this chapter.

As to whether a stay in another province has a positive effect on return migrants' education, we found the effect to be practically non-existent. The adjusted percentage distributions are:

	3-4-5 U	1-2 U	11-13	9-10	< 8	Total
OUT-MIGRANTS/NFLD.	8.28	15.66	21.75	30.26	24.06	100
IN-MIGRANTS/NFLD.	9.13	15.84	18.78	32.28	23.97	100

Except for the 9-10 and 11-13 categories, the differences between the two distributions are minimal and do not exceed one percentage point. The value of the chi-square statistic at 4 degrees of freedom is 23.46, which means we must reject the null hypothesis of statistical independence. On the other hand, if we take secondary education as a single category (i.e., by combining the 9-10 and 11-13 groups), the value of the chi-square statistic at 3 degrees of freedom is only 3.86. The hypothesis of statistical interdependence could then not be rejected. We can therefore conclude that the distributions are basically the same, with minimal differences appearing only within the secondary education level.

The results of our analysis for migrants' labour market status and level of education lead us to the conclusion that supply and demand in the Newfoundland labour market are somewhat asymetrical. In-migrants born outside

the province enter Newfoundland to take up specialized jobs for which Newfoundland-born out-migrants and return migrants are usually not qualified.

Chapter 3

ANALYSIS OF INCOME DIFFERENCES ASSOCIATED WITH MIGRATION

At the microeconomic level, migration can be considered as an investment involving costs and benefits (monetary and psychosociological). Using the information available to him, a rational individual will not migrate unless the anticipated benefits outweigh the costs, or in other words, unless he expects to improve his own well-being or that of the family unit, as the case may be. Ignoring the non-monetary benefits, we should expect to find income gains associated with migration. However, in a world of imperfect information, situations will arise where the income gains prove insufficient and therefore provide an inadequate return on the investment, or even prove to be negative. One of the hypotheses explained in the introduction states that such situations might be the cause of return migration. In this chapter, we will examine the income differences between the various migrant and non-migrant groups.

There are two basic ways of conducting a comparative analysis of the income of various categories of migrants. One is to examine the growth over time in the various groups' income. This procedure requires chronological information on each individual which, under some conditions, allows us to analyse the income gains associated with migration.[10] The other, which we have

chosen, uses cross-sectional data to analyse the income differences between various groups of migrants at one point in time.[11] This analysis will be conducted with an individual income determination model designed to isolate the effect on income of falling into a given migrant category.

The Model

Several factors influence the determination of income. The data available to us, however, cover only five of these: age, sex, labour market status, education and migrant status. The linear regression method will enable us to isolate the impact of each of these factors on personal income. The equation is written:

$$(2)\quad Y = a + \sum_{i=1}^{7} b_i \, Age_i + \sum_{j=1}^{2} c_j \, Sex_j + \sum_{k=1}^{3} d_k \, LMS_k + \sum_{\ell=1}^{12} f_\ell \, Education_\ell + \sum_{m=1}^{12} g_m \, Migrant_m + u$$

where: Y: personal income
LMS: labour market status and
u: residual term.

The other variables are those defined in Chapter 1. All the explanatory variables are dummy variables.

As with the multivariate analysis model in Chapter 2, we have applied the constraint of the weighted sum of the coefficients equal to zero to the income equation. Technically, this method is equivalent to the omission of one category for each factor and the incomes

estimated are the same regardless of the constraint applied. At the analytical level, however, interpretation of the results proves easier because all coefficients are interpreted in terms of deviation from the constant term (a) which in this case is equal to the average income of the total population.[12]

Each of the regression coefficients computed can be expressed in the following form:[13]

$$(3) \qquad \hat{\beta}_{rs} = \bar{Y}_{rs} - \bar{Y} - \frac{1}{n_{rs}} \left[\sum_{\substack{v=1 \\ v \neq r}}^{V} \sum_{w=1}^{W_v} \hat{\beta}_{vw} \, (n_{rs} \odot n_{vw}) \right]$$

where:

$\hat{\beta}_{rs}$: the regression coefficient estimated for category s of factor r;

$\bar{Y}_{rs}$: average income observed for individuals in category s of factor r;

$\bar{Y}$: average income observed for the total population;

n_{rs} : number of individuals in category s of factor r;

V : number of factors determining income;

W_v : number of categories within factor v;

$\hat{\beta}_{vw}$: regression coefficient estimated for category w of factor v;

$n_{rs} \odot n_{vw}$: number of individuals in both category s of factor r and category w of factor v.

Using the OUT-MIGRANTS category of the migrant status factor as an example, the coefficient estimated for this

variable will represent the difference between the average income of OUT-MIGRANTS and the average income of the population after correction for the structural effect of the other factors. This correction is made by applying to the group analysed (in this case, OUT-MIGRANTS) the total population's average structure for the other factors, i.e., by assuming this group is distributed among the categories of the other factors (age, sex, labour market status and education) in the same way as the total population.

Analytically, equation (3) indicates that the remuneration effect is equal to the difference observed in incomes minus the structural effect, or conversely, that the sum of the remuneration and structural effects is equal to the observed difference in incomes. These two effects may have the same sign and thus amplify the observed income difference, or opposite signs and thus decrease the difference. Since the coefficients express the remuneration effect as deviation from the population's average income, the difference in remunerations between two categories of a given factor can be obtained by subtracting the coefficients for the two groups.[14]

Estimating Technique

We will now rewrite equation (2) in more general form:

(4) $Y_p = X_p\beta + u_p, \qquad p = 1,\ldots,P$

where:

Y_p : personal income of person p;

X_p : vector of the factors determining person p's income;

β : vector of the coefficients to be estimated;

u_p : residual term and

P : number of individuals.

The ordinary least squares method produces the following solution:

(5) $\hat{\beta} = (X'X)^{-1} X'Y$

When all the explanatory variables of an equation are dummy variables, as in equation (2), calculation of the moments matrix requires only the following information: average income for each category of each explanatory factor; the number of individuals in each of these categories and the cross-frequencies for the explanatory factors.[15] We are therefore able to compute matrices (X'X) and (X'Y) with the census data. The only remaining step is to apply the usual solution formula of the ordinary least squares to these matrices equation (5). This estimating technique produces results identical in all respects to those that would be obtained by applying the ordinary least squares method to micro-economic data.

One additional piece of information is required to compute the various statistical tests accompanying a regression analysis: the variance of the dependent

variable. We estimated this variance by assuming that for each of the 6,048 mutually exclusive cases making up our population, the observed average income had no variance, i.e., all individuals identical in the five attributes analysed would have the same income. As this approximation of the variance underestimates the real variance, the t, R^2 and F statistics will suffer from a positive bias. On the other hand, since the coefficients estimated represent the differences in average income between groups of individuals, the proposed statistical tests are more appropriate to the type of analysis we wish to conduct.[16]

Interpreting the Results

In the first stage, we estimated the income determination equation (2) for the total population in order to study the behaviour of each of the explanatory factors. The income determination equation was then estimated using a limited sample that was more representative of the migrants. A more detailed analysis of the results accompanies this second estimation.

Table 6 lists the regression coefficients estimated for the equation covering the total population. The constant term in this equation is equal to the average income of the population, which is $3,950. Each of the coefficients for each variable is expressed as the deviation

Table 6

REGRESSION COEFFICIENTS FOR THE INCOME DETERMINATION EQUATION, TOTAL POPULATION, 1971

Explanatory variables	Categories	Coefficients	t Statistics
Age	16-20	-2809.62	-2800.05
	21-25	-1426.96	-1325.83
	26-35	100.83	120.93
	36-45	985.37	1163.22
	46-55	1035.65	1149.01
	56-65	817.20	768.97
	66 +	1034.90	885.17
Sex	Women	-1492.69	-3569.34
	Men	1519.21	3569.34
Education	5 + U WVT	5059.94	686.12
	5 + U W/OVT	6096.85	2332.19
	3-4 U WVT	1623.42	640.29
	3-4 U W/OVT	1975.19	1144.75
	1-2 U WVT	611.92	359.79
	1-2 U W/OVT	564.52	408.01
	9-13 WVT	515.01	284.12
	9-13 W/OVT	-10.91	-22.53
	5-8 WVT	-316.32	-94.25
	5-8 W/OVT	-1012.97	-1489.45
	< 5 WVT	-973.13	-81.20
	< 5 W/OVT	-1536.84	-1006.21
Labour Market Status			
	Employed	1379.96	3357.23
	Unemployed	-975.34	-542.47
	Not in labour force	-1699.85	-3153.01

Table 6 (cont'd)

	OUT-MIGRANTS/NFLD.	106.21	9.53
	INTRA CANADA/NFLD.	77.49	6.14
	STAYERS CANADA/NFLD.	144.32	22.61
	OUT-MIGRANTS	325.49	18.56
	INTRA CANADA	82.99	101.67
Migrant status	STAYERS CANADA	-6.93	-33.26
	IN-MIGRANTS/NFLD.	-505.16	-25.02
	INTRA NFLD./NFLD.	-356.68	-50.24
	STAYERS NFLD./NFLD.	-593.94	-208.66
	IN-MIGRANTS	630.35	31.22
	INTRA NFLD.	370.63	9.44
	STAYERS NFLD.	641.50	39.35
	Constant term	3950.42	10319.16
	$\bar{R}^2$	0.8352	
	F Statistic	2,260,364.1	
	Number of observations	13,822,824	

from the average income. The results presented in this table indicate that income increases with age until it peaks between 46 and 55 years of age. From 56 to 65, income is lower, while those over 65 have the same average income as the 46-55 group. The greatest difference, between the 16-20 and 46-55 groups, is $3,845. The adjusted average income for men is $3,012 higher than for women. With regard to the education variable, individuals with a doctor's degree (5+U) form a distinct category. Their adjusted income are $5,060 (WVT) and $6,097 (W/OVT) higher than the total population's average income. As expected, income increases as a function of education. The maximum difference is $7,634 between the adjusted average incomes of the 5+U W/OVT and < 5 W/OVT groups. Vocational training courses appear to have a positive impact on income up to the first and second years of university. Moreover, individuals with less than five years primary education who have taken vocational training have slightly higher adjusted average income than those with five to eight years of school who have not taken vocational training courses. The largest difference in income attributable to vocational training is $697 and occurs in the group with 5 to 8 years of primary education. Among university graduates, the adjusted average income of those who have not completed vocational training courses is higher than the adjusted average income of those who have. At this level of education, the group with vocational training probably includes a greater proportion of individuals

holding jobs in fields other than those of their university program.

The coefficients estimated for the variable representing the individual's labour market status at the time of the 1971 Census confirm the validity of this variable as an indicator of the probability of being employed, unemployed or outside the labour force during the twelve months preceding the Census. Even after adjustment for the structural effects of the other factors, significant income differences persist between the three groups. The adjusted annual average income of employed respondents at the time of the Census was $2,355 higher than that of the unemployed and $3,080 higher than that of individuals outside the labour force at the time of the Census. The difference between the adjusted incomes of the unemployed and those outside the labour force is $725.

The differences between the adjusted incomes of the various categories of migrants are much smaller and do not exceed $1,235. The income differences attributable to migration will be analysed thoroughly using a sample that is more representative of migrants. It should be noted for the moment, however, that native Newfoundlanders living in another Canadian province in 1971 had adjusted average income between $434 and $738 higher than those living in Newfoundland.

The estimation of the income determination equation using the total population was aimed primarily at learning the behaviour of the variables other than migrant status. As each variable conformed to the usual expectations, the model proved satisfactory. The remainder of our discussion will focus on the differences in average income between the various groups of migrants and non-migrants. The analysis is based on a sample consisting of men between the ages of 16 and 45 in the labour force at the time of the 1971 Census. This sample was chosen in order to conduct the analysis in the labour market context and because over three-quarters (78.5 per cent) of all migrants were less than 46 years old in 1971.

The regression coefficients estimated with this limited sample are given in Table 7. The coefficients of the age, education and labour market status variables meet with our expectations except for the coefficient of the 9-13 WVT category, which is greater than the coefficients of the first and second year university category. Since the age factor is kept constant when analysing the coefficients of the education factor, the additional years of experience and the vocational training of individuals in the 9-13 WVT category would carry more weight in employers' eyes than an incomplete university undergraduate program. The maximum differences between the adjusted incomes of the categories for each of the explanatory variables are:

Table 7

REGRESSION COEFFICIENTS FOR THE INCOME DETERMINATION EQUATION, LIMITED SAMPLE,* 1971

Explanatory variables	Categories	Coefficients	t Statistics
Age	16-20	-4549.55	-3047.88
	21-25	-2046.55	-1665.73
	26-35	957.07	1063.90
	36-45	2695.57	2843.32
Education	5 + U WVT	3468.69	330.25
	5 + U W/OVT	5002.70	1695.45
	3-4 U WVT	1231.29	393.04
	3-4 U W/OVT	1483.56	641.76
	1-2 U WVT	314.99	129.96
	1-2 U W/OVT	125.73	62.68
	9-13 WVT	345.94	149.42
	9-13 W/OVT	-110.69	-146.18
	5-8 WVT	-862.62	-188.67
	5-8 W/OVT	-1597.53	-1224.81
	< 5 WVT	-1833.24	-78.17
	< 5 W/OVT	-2672.71	-632.20
Labour Force Status	Employed	172.76	918.24
	Unemployed	-1925.05	-918.24
Migrant status	OUT-MIGRANTS/NFLD.	487.37	35.35
	INTRA CANADA/NFLD.	349.02	21.35
	STAYERS CANADA/NFLD.	294.65	29.03
	OUT-MIGRANTS	776.73	34.35
	INTRA CANADA	198.96	185.31
	STAYERS CANADA	-49.49	-126.31
	IN-MIGRANTS/NFLD.	-820.60	-32.20
	INTRA NFLD./NFLD.	-758.94	-71.16
	STAYERS NFLD./NFLD.	-1094.13	-225.46
	IN-MIGRANTS	1535.38	61.40
	INTRA NFLD.	1437.94	28.81
	STAYERS NFLD.	1925.22	72.28
	Constant term	6536.79	10673.54
	$\bar{R}^2$	0.8771	
	F Statistic	984,288.3	
	Number of observations	3,586,125	

* The limited sample is made up of men between 16 and 45 years old who were part of the labour force at the time of the 1971 Census.

Explanatory variables	Maximum differences in adjusted income (dollars)
Age	7,245
Education	7,675
Labour Market Status	2,098
Migrant Status	3,019

These figures reveal that a person's age and education are much more important sources of income variations than migrant status.

We will now examine each coefficient of the migrant status variable, in three steps: 1) comparison of coefficients for individuals living outside Newfoundland in 1971; 2) comparison of coefficients for those living in Newfoundland in 1971 and 3) comparison of coefficients for native Newfoundlanders.

Incomes registered by the two out-migrant groups are higher than average and also above those of the other categories of migrants and non-migrants living outside Newfoundland. The average adjusted income for OUT-MIGRANTS, however, is $289 higher than for OUT-MIGRANTS/NFLD. This may be the result of those who had previously lived outside Newfoundland being more familiar with the mainland labour market. Native Newfoundlanders living in another province for more than five years have a higher adjusted average

income than their Canadian counterparts. The difference is $150 for migrants and $344 for non-migrants.[17]

Persons living in Newfoundland in 1971 but born outside the province enjoy a big advantage in incomes, since the adjusted differences are $2,356 for in-migrants, $2,197 for intra-provincial migrants and $3,019 for non-migrants. The coefficients computed for the three Newfoundland-born groups do indicate that opportunities exist for increasing income while remaining in the province. Intra-provincial migrants have an adjusted income of $335 more than non-migrants and $61 more than return migrants.

Comparison of the coefficients for the Newfoundland-born groups reveals that those who move to another province have adjusted incomes from $1,115 to $1,582 higher than those who remain in the province. Furthermore, assuming that return migrants suffered no loss in adjusted income when returning to their province of birth, we are inclined to conclude that many returned due to dissatisfaction because their aspirations were not met.[18]

Briefly, then, our results show the existence of income differences (gains) associated with migration. Among Newfoundland-born men, those who migrated to another province and those who moved within their native province have higher adjusted average incomes than non-migrants. The

same situation can be observed among males born outside Newfoundland. Moreover, return migrants in Newfoundland and the rest of Canada (the latter have not necessarily returned to their province of origin) have lower adjusted average incomes than migrants who remained in their province of destination. Our results fail to show, however, the period of time necessary to turn a profit on the investment of migration. Among persons born outside Newfoundland but living in that province in 1971, IN-MIGRANTS had an adjusted average income lower than STAYERS NFLD. but higher than INTRA NFLD. On the other hand, among native Newfoundlanders, OUT-MIGRANTS/NFLD. had a higher adjusted average income for the same year than the two other groups living in the rest of Canada for at least five years. Chronological information on the incomes of various migrants groups would be necessary for a valid analysis of the profitability of migration over time.

We will now attempt to explain the origin of the income differences. In accordance with economic theory and the model used, there are at least three reasons for the existence of differences in adjusted income between the various groups of migrants:

-- first, migrants would earn more because they are better informed about opportunities elsewhere and because they have greater initiative to take advantage of these opportunities;

-- second, part of the estimated income differences are the result of a lack of variables. The involuntary omission of a variable representing the respondent's occupation undoubtedly caused us to overestimate the differences, particularly for individuals born outside Newfoundland but living in the province in 1971.
-- third, use of a linear additive model, which hides the effects of interaction between variables such as age and education, and measurement of the variables (particularly the variable representing labour market status) also constitute sources of the estimated income differences.

Be that as it may, the income differences that matter are those occurring in the real world. As already demonstrated through equation (3), the observed difference in income is equal to the sum of the structural and remuneration effects. Using the coefficients estimated in equation (3), it is possible to compute the structural effects of each of the other explanatory factors for each migrant category. Table 8 gives the observed income differences and breaks them down into structural and remuneration effects for each migrant category.

In only two cases do the structural and remuneration effects work in opposite directions. Newfoundland-born out-migrants experience a positive remuneration effect and a negative structural effect three times greater primarily due

Table 8

BREAKDOWN OF THE OBSERVED INCOME DIFFERENCES INTO STRUCTURAL AND REMUNERATION EFFECTS*

Migrant category	Observed differences	Structural Effects				Remuneration Effects
		Age	Education	Labour Force Status	Total	
OUT-MIGRANTS/NFLD.	-1079.95	-1516.31	-91.73	40.72	-1567.32	487.37
INTRA CANADA/NFLD.	1040.17	537.21	116.72	37.22	691.15	349.02
STAYERS/NFLD.	730.66	706.90	-315.51	44.62	436.01	294.65
OUT-MIGRANTS	1757.27	354.66	576.75	49.13	980.54	776.73
INTRA CANADA	549.62	-14.94	332.97	32.63	350.66	198.96
STAYERS CANADA	-159.58	7.06	-107.11	-10.04	-110.09	-49.49
IN-MIGRANTS/NFLD.	-374.06	262.03	275.24	-90.73	446.54	-820.60
INTRA NFLD./NFLD.	-1129.98	-438.06	69.45	-2.43	-371.04	-758.94
STAYERS NFLD./NFLD.	-1772.03	-71.22	-516.17	-90.51	-677.90	-1094.13
IN-MIGRANTS	2491.18	137.13	748.36	70.31	955.80	1535.38
INTRA NFLD.	2846.36	411.47	882.46	114.49	1408.42	1537.94
STAYERS NFLD.	3316.07	752.07	598.86	39.92	1390.85	1925.22

* All differences are expressed as deviation from the average income of the limited sample, which is $6,536.79.

to their young age. Return migrants are favoured by their structural effect but suffer from a larger remuneration effect. The income differences observed for Newfoundland residents born outside the province are much larger than the estimated differences, because these individuals enjoy a considerable advantage due to their distribution in each of the three explanatory factors. Finally, the figures presented in Table 8 clearly demonstrate the importance of multivariate analysis which enables us to differentate between structural and remuneration effects.

CONCLUSION

Newfoundlander's strong tendency to migrate to other Canadian provinces has produced the situation in which one of every five people born in Newfoundland lived in another province of Canada in 1971. Newfoundland-born out-migrants do very well in the Canadian labour market in terms of both jobs and income.

Among in-migrants, we found two distinct groups of equal size that are diametrically opposed in terms of attributes. Return migrants had the highest unemployment of all groups studied and their adjusted average income exceeded only that of Newfoundlanders who had not left the province. Moreover, their stay in another province had almost no impact on their level of education. These findings lead us to conclude that these persons returned to Newfoundland because they were dissatisfied with their migration experience. On the other hand, the group of in-migrants born outside Newfoundland has a much higher level of education than return migrants, which gives them an advantage in finding work and achieving high income levels. In contrast to return migrants who come back to their native province to look for work, in-migrants born outside the province would seem to move to Newfoundland to fill a job, and a well paid one at that. This group's position also tends to improve with time.

The mechanism of migration has endowed Newfoundland with a more skilled, or at least better educated, labour force. Contrary to the first hypothesis presented in the introduction, this did not occur through return migration of a group of Newfoundlanders who had furthered their education, but rather through the inflow of people born outside Newfoundland who generally had more education than Newfoundland-born migrants.

NOTES

1. Sociological and psychological needs can also be reasons for geographic mobility. Our study is limited, however, to economic considerations only.

2. The number of in- and out-migrants mentioned in the introduction were obtained from Yoshiko Kasahara's estimates for 1951-61 and from the Population Estimates and Projections Section of Statistics Canada for 1961-71. It should be noted that in both cases, the number of migrants was estimated from compilations of the number of address changes recorded in Family Allowance files and therefore cannot be compared with the number obtained from the five-year censuses.

3. It is a recognized fact that census data tend to underestimate the number of migrants, since migrants are identified by comparing the respondent's place of residence in 1966 and 1971 only. It is therefore impossible to identify multiple and return migrations that occurred between the census surveys. However, since both the numerator and denominator used to compute the proportion of return migrants among the total number of in-migrants are underestimated, our estimation of 50 per cent could prove to be a fairly good indicator of the actual sitation. We asked Professor Kenneth Grant of the University of Guelph to perform the same type of calculation using the Unemployment Insurance Commission's data bank. This bank can be used to identify migratory movements on an annual rather than a five-year basis. Although working with a small sample, Professor Grant estimated that return migrants represented 50 per cent of all in-migrants between 1968 and 1971. By limiting his sample to individuals residing in Newfoundland in 1971, (i.e., to in-migrants entering Newfoundland between 1968 and 1971 and still living in the province in 1971), the proportion of return migrants rises to 56 per cent.

4. To the extent that the relative labour market status of the various migrant groups at the time of the census is a reliable indicator of their long-term situation.

5. A detailed technical description of the method of analysis can be found in F.M. Andrews and R.C. Messenger, "Multivariate Nominal Scale Analysis, a report on a new analysis technique and a computer program," Survey Research Center, Institute for Social Research, University of Michigan, Ann Arbor, Michigan, 1973.

6. A technical constraint in the method of analysis forced us to redefine the various categories of the education variable. In the analysis of income differences associated with migration, we will use the education variable as defined in Chapter 1.

7. Emanuel Melichar, "Least-Squares Analysis of Economic Survey Data," 1965 Proceedings of the Business and Economic Statistics Section, American Statistical Association, 1-13.

8. F.M. Andrews and R.C. Messenger, op. cit., 1973, pp. 14-15.

9. A first glance at the constant terms reveals the selective character of migration. Among the four groups of migrants studied here, 30.5 per cent have an education equivalent to or surpassing first year university. The proportion of non-migrants in our total sample with the same education is only 16.2 per cent.

10. Two studies of this type are: T.J. Courchene, "Migration, Income and Employment: Canada, 1965-68," C.D. Howe Research Institute, Montreal, 1974 and E.K. Grant and J. Vanderkamp, "The Economic Causes and Effects of Migration: Canada, 1965-71," Economic Council of Canada, Ottawa, 1976.

11. A detailed description of the methodology can be found in J.-A. Boulet, "L'analyse des disparités de revenus : un cadre méthodologique de recherche," Discussion Paper No. 34, Economic Council of Canada, Ottawa, 1975.

12. When one category is omitted from each factor, the constant term is equal to the average income of the typical individual who belongs to each of the omitted categories. Interpretation of the results becomes more complex as each coefficient is expressed as deviation from a frequently arbitrary collection of one category from each explanatory factor.

13. A mathematical demonstration of equation (3) is presented in J.-A. Boulet, op. cit.

14. The author is aware of the existence of interaction effects between the explanatory variables of the income determination equation. In view of the large number of explanatory factor categories, however, he chose a linear model that would be easy to use and interpret over the option of crossed variables.

15. The estimating technique is described in J.-A. Boulet and P. Robillard, "A Technique for Efficient Estimation Using Grouped Micro-Data," Discussion Paper No. 103, Economic Council of Canada, Ottawa, 1977.

16. It should be noted that by using the approximation proposed for the variance of the dependent variable, the only cause of divergence of the coefficient of determination (R^2) from the unit value is interaction between the independent variables. Thus, if no interaction occurred between the explanatory variables, the coefficient of determination would automatically equal 1.

17. It should be noted that the INTRA CANADA/NFLD. and INTRA CANADA categories include both inter- and intra-provincial migrants. Return migrations are also included in these categories. The income differences computed for these two groups are therefore averages of the adjusted income differences for the various groups of migrants.

18. One should not jump to the conclusion, however, that return migrants have lost in the game. Although their average income is lower than that of the other two groups, comparison of their income before and after the two migrations may reveal an increase in income as large or larger than that registered by the other groups. This is in fact demonstrated in Table 16 of T.J. Courchene's 1974 study.

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