



COLLABORATION FOR
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LABOUR MOBILITY IN THE MINING, OIL, AND GAS
EXTRACTION INDUSTRY IN NEWFOUNDLAND AND
LABRADOR

Yue Xing⁺, Brian Murphy⁺ and Doug May^{*}

+ Statistics Canada, Ottawa

*** Department of Economics, Memorial University**

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Introduction

Ever since the production of its first barrel of oil in 1997, Newfoundland and Labrador has emerged as one of the major oil and gas jurisdictions. The province has since experienced significant economic growth driven by the mining, oil and gas extraction industry (hereafter referred to as “MOG industry”). Compared to an 8% share of GDP in 1997, the output of the MOG industry grew to account for more than half of the provincial business sector output in 2010¹. It led Newfoundland and Labrador to outperform Alberta, Canada’s largest energy province, by having the highest growth of the business sector nominal GDP. Meanwhile, labour participation in the MOG industry grew at a much higher rate than other industries in Newfoundland and Labrador. Its labour employment was more than doubled in the past decade. Although the MOG industry is still a relatively small industry by accounting for only 3.4% of the total labour employment in Newfoundland and Labrador, its labour productivity represented the fastest compound annual growth (11.3%) among all the industry sectors between 1997 and 2010.

The productivity performance of the booming oil business has had a big impact on Newfoundland and Labrador’s fast growing economy over 1997 and 2010 (Grand’Maison and Sharpe, 2013). This paper intends to explore the labour market changes both inter-provincially and inter-industry which would be intrinsically associated with the source of the MOG’s productivity growth. Over the 1997-2012 period, the expanding industry has drawn workers from other industries in Newfoundland and Labrador (in-movers) as well as workers from other provinces (in-migrants). At the same time there are still a number of Newfoundland and Labrador’s MOG workers migrating to other industries (out-movers) and other provinces (out-migrants). For example, Laporte, Lu and Schellenberg (2013) studied the source of labour supply through inter-provincial employees in Alberta and found that Newfoundland and Labrador contributed the biggest share of inter-provincial employees who received Alberta T4 earnings in recent years.

Given the rapid labour growth and the high labour productivity of the MOG industry, this paper explores the nature and consequence of its labour mobility. This article applies data drawn from T1 Family File (T1FF). A longitudinal database was built for all persons who filed taxes in Newfoundland and Labrador in any year from 2000 through 2012 to explore the relationship of migration and industry mobility in the expanding MOG sector in Newfoundland and Labrador. In addition, it examines the effect of individual characteristics on his/her propensity to move between the MOG industry and other industries using a

¹ Source: Statistics Canada, CANSIM table 383-0026.

binary logistic model. Results suggest that the probability of moving in or out of the MOG industry is more likely for younger persons, males, non-family persons, individuals with lower earnings, and EI recipients.

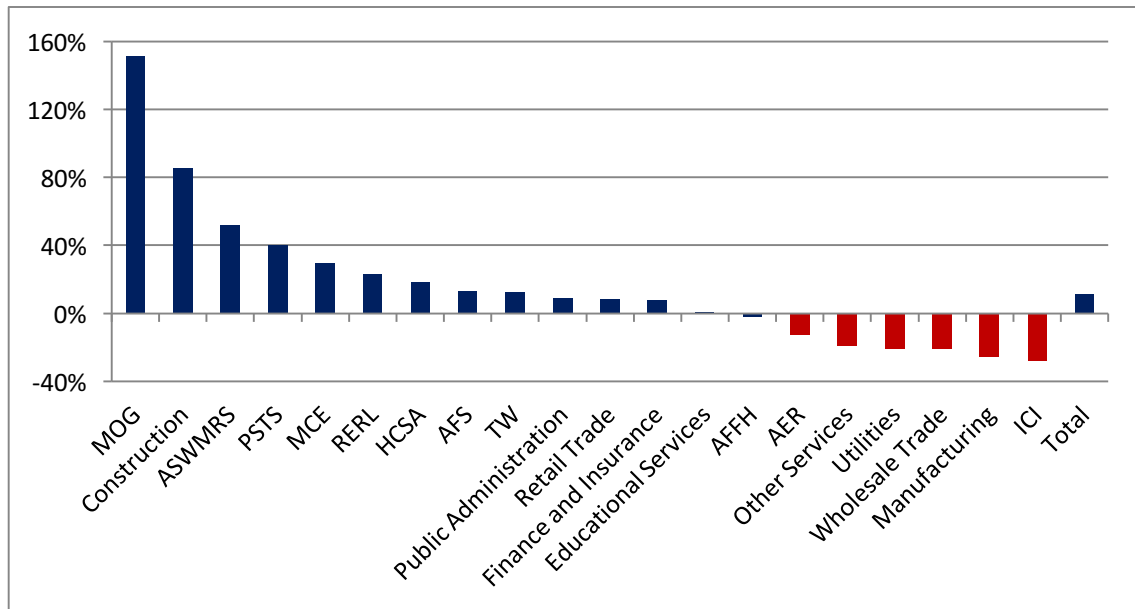
Labour growth² is the largest in the MOG industry between 2000 and 2012

In 2012, the number of employment in Newfoundland and Labrador was 250,485, up 11% compared with 2000. During this period, the total employment of workers in the MOG industry increased 151% from 3,615 to 9,075, representing the fastest labour growth among all NAICS sectors in the province (Chart 1). The share of the MOG workers made up 3.6% of the total labour force in Newfoundland and Labrador in 2012, up from 1.6% in 2000. Consequently, the size of the MOG industry ranked up from 19 out of 24 two-digit NAICS sectors in 2000 to 11 in 2012. It now employs more workers than industries that had traditionally more hiring in Newfoundland and Labrador, for example, agriculture, forestry, fishing and hunting. The expanding industry also created many spin-off jobs for other industries and businesses. For example, oil and gas pipelines and related industrial complexes construction is one of the components of the construction industry. Compared to 2000, the construction industry had 85% more employment in 2012, representing the second largest labour growth among all NACIS industries. The total labour force in Newfoundland and Labrador had a net gain of 25,165 over the last decade, with more than 20% attributed to the labour growth in the MOG industry.

Chart 1

Labour growth by industry, 2000-2012

² Hereafter we restrict our sample to employees between 18 and 64 years of age and having valid NAICS. This age range is chosen mainly to exclude sample variations in labour force participation status for the youth and seniors.



Note: ASWMRS: Administrative and support, waste management and remediation services

PSTS: Professional, scientific and technical services

RERL: Real estate and rental and leasing

AFS: Accommodation and food services

AFFH: Agriculture, forestry, fishing and hunting

ICI: Information and cultural industries

MCE: Management of companies and enterprises

HCSA: Health care and social assistance

TW: Transportation and warehousing

AER: Arts, entertainment and recreation

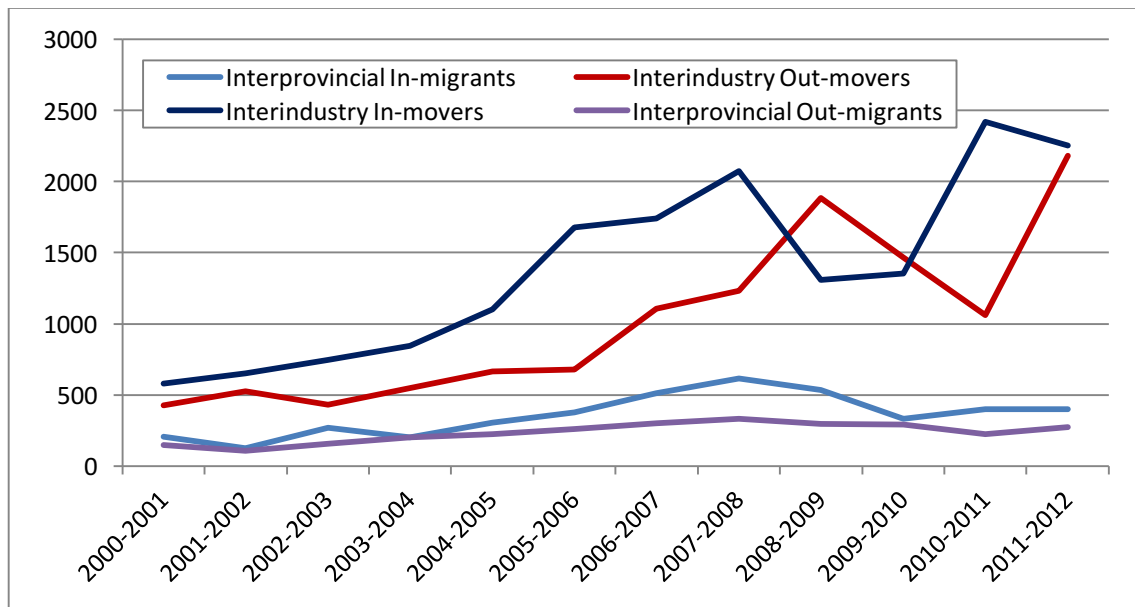
Labour growth in the MOG industry is mainly driven by inter-industry movement and not inter-provincial migration

Over the past 13 years, the MOG employees that migrated out of Newfoundland and Labrador (out-migrants) were below 350 per year (Chart 2). Migrants from other provinces that entered Newfoundland and Labrador's MOG industry (in-migrants) were slightly higher than out-migrants, especially in years between 2007 and 2009 when the whole economy had experienced recessions. The inter-industry movement in and out of the MOG industry within Newfoundland and Labrador, on the other hand, posted larger volume of labour mobility than inter-provincial migration. Workers entering the MOG industry from other sectors (in-movers) were most times more than 1,000 since 2005 and were over 2,000 in recent years. The MOG workers that left the industry for other sectors (out-movers) were typically much lower than in-movers except in 2009 and 2010 when the upward trend of in-movement reversed.

In general, for a total of 6,000³ net increase of the MOG employees over the past decade, more than three-fourths was attributable to inter-industry movement within Newfoundland and Labrador. Only less than one-fourth of the labour gain came from inter-provincial net migration. The labour mobility across industry sectors contributed a major part of the MOG labour growth.

Chart 2

Inter-provincial migration and inter-industry movement, 2000-2012



Alberta is the major source of in-migrants and the preferred destination of out-migrants

For the industry total, Ontario comprised the largest portion of inter-provincial in-migrants in Newfoundland and Labrador by accounting for over 40% of this labour force during 2001 and 2005. Starting 2007, Alberta outnumbered Ontario and became the main source province for Newfoundland and Labrador's in-migrant workers, rising from 20% in 2001 to 43% in 2009 and 34% in 2012. Other Atlantic provinces also contributed 14-23% of in-migrants throughout the 2000s.

³ This number only includes migrants and movers with valid province code and NAICS code. For new entrants to the MOG industry or those with missing province code or NAICS code, the net labour loss is 540. The two numbers add up to the total number of MOG's labour growth (5,460) between 2000 and 2012.

As the leading province for substantial oil production, Alberta has become the main source province for in-migrants of Newfoundland and Labrador's MOG sector. During the 2000-2012 period, more than half of the inter-provincial migration in the MOG industry was between Newfoundland and Labrador and Alberta. Despite its lack of proximity, Alberta contributed a considerable 60 to 80 percent of in-migrants (Chart 3.1). A higher inflow of Albertan workers to the MOG sector was observed during the economic recession period. Other Atlantic provinces were only responsible for less than 10% of in-migrants over the period.

On the other hand, Alberta has been the most preferred host province for the MOG out-migrants. As home to the third largest crude oil resource in the world, Alberta has sustained robust economic growth coupled with low unemployment rates over the years. It attracted workers from all over the country. In 2001, 45% of MOG migrants left Newfoundland and Labrador for Alberta (Chart 3.2). It went over 50% ever since and rose up to 68% in 2010.

Chart 3.1

Source of Inter-provincial in-migration, 2000-2012

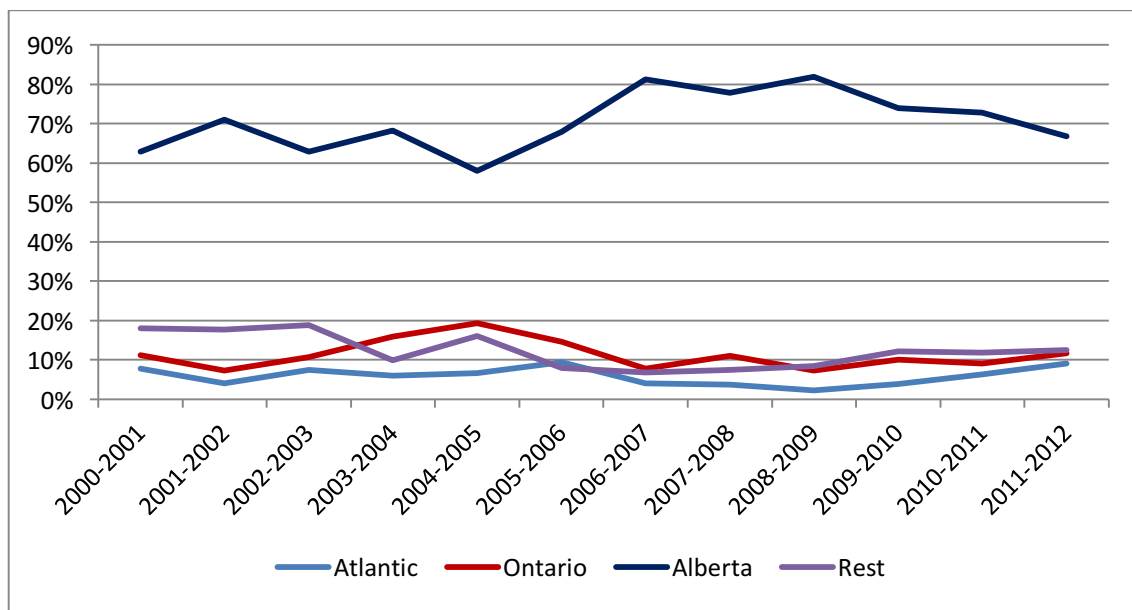
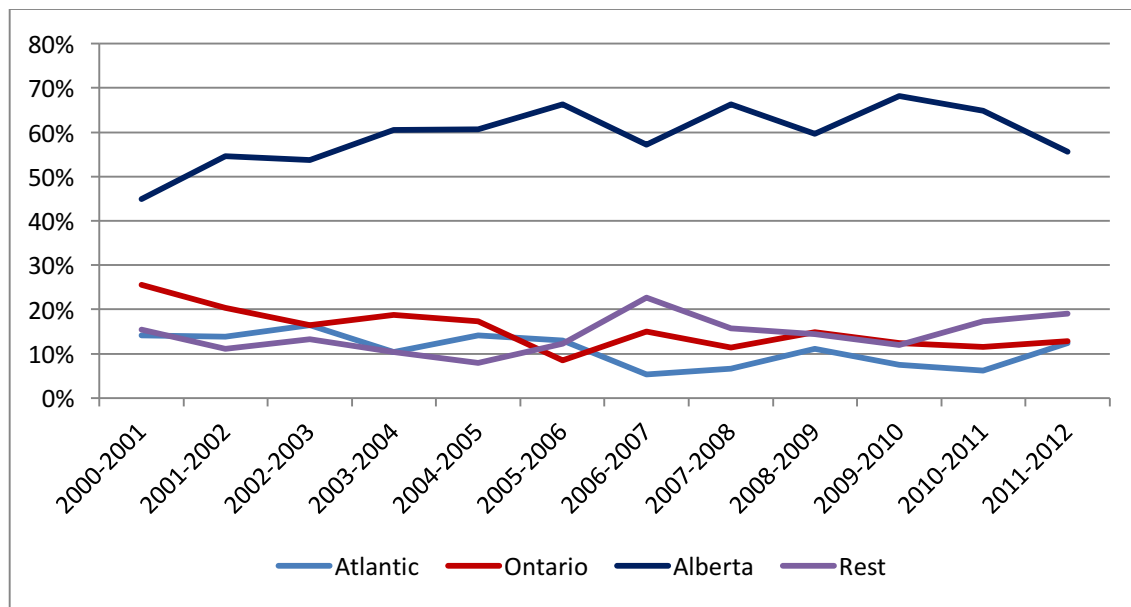


Chart 3.2

Destination of Inter-provincial out-migration, 2000-2012



Construction accounted for the largest proportion of the inter-industry movement

In 2012, 28,605 Newfoundlanders were employed in the construction sector. Construction workers made up over 10% of Newfoundland and Labrador's labour force, making construction the second largest 2-digit NAICS industry in the province. Over the 13-year period, construction employees maintained a compound annual growth rate of 4.1% and contributed over 50% of the province's labour gain.

Construction⁴ has become the dominant source industry for MOG in-movers since 2003. Approximately one-third of new MOG entrants were construction workers in 2009 (Chart 4.1). The proportion reached a maximum 36% in 2011. For workers leaving the MOG sector, construction also topped the list of destination industries. In most of the 13-year period, over 30% of MOG out-movers went for the

⁴ Oil and gas pipelines and related industrial complexes construction is one of the components of the construction industry. However, it can only be determined at 5-digit NAICS level which is unavailable in the examined data. With the future development of the Longitudinal Administrative Databank (LAD), we will be able to refine our analysis to detailed lower levels of construction industry. It will help determine whether the labour mobility between the two industries is related to the construction of oil and gas pipelines.

construction work (Chart 4.2). In 2012, construction workers represented more than half of the new MOG employees from other sectors.

Chart 4.1

Source sectors of inter-industry in-movers, 2000-2012

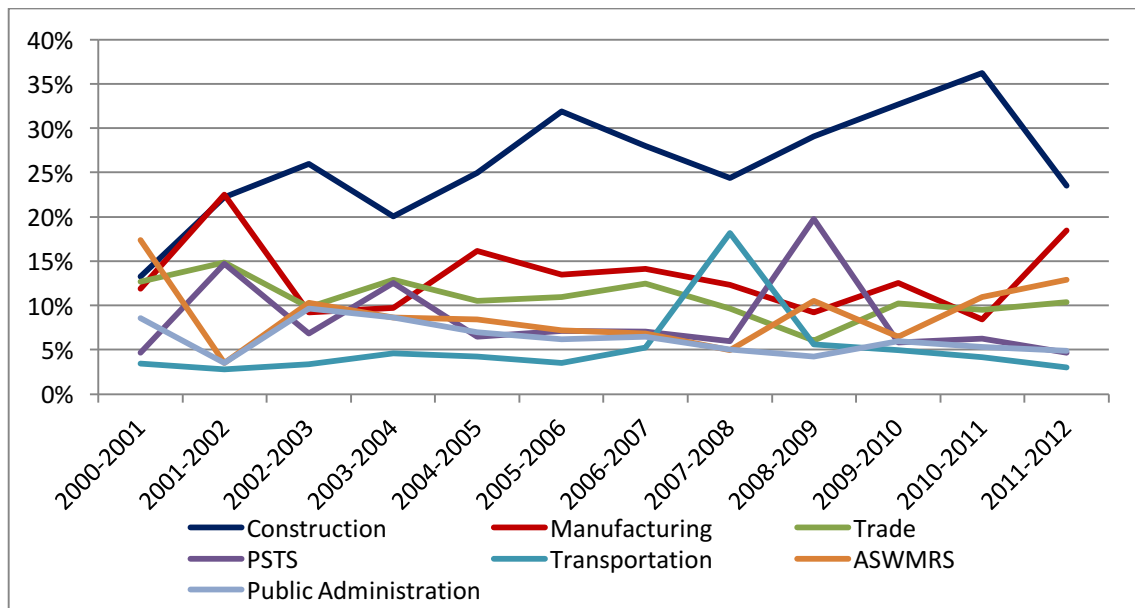
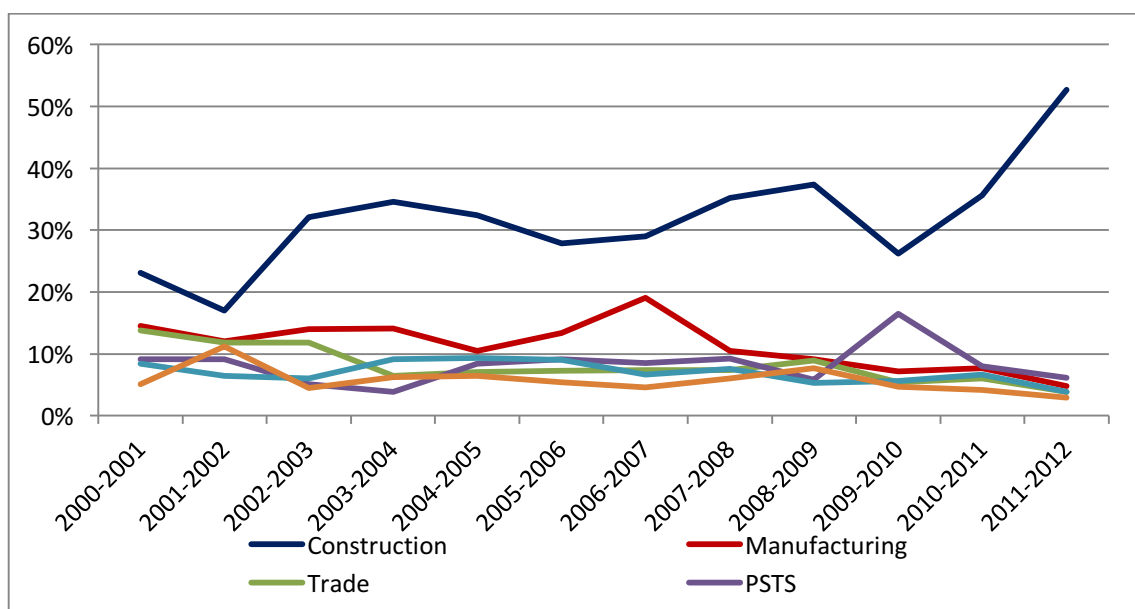


Chart 4.2

Destination sectors of inter-industry out-movers, 2000-2012



Out-migrants and in-movers posted positive earnings growth while earnings dropped for in-migrants and out-movers

Better employment environment and higher economic return are some of the main incentives of labour mobility. Differed from Newfoundland and Labrador that has the highest unemployment rates among provinces, Alberta has maintained low unemployment rates over the years. Different levels of earnings pre- and post- mobility reflected provincial-specific and industry-specific employment differentials. Some findings suggest better earnings return associated with inter-provincial migration (Finnie 1998, ...) while others provided mixed evidence of earnings changes by individual characteristics and province (Finnie 2001).

For inter-provincial migration, MOG out-migrants presented positive earnings growth most years while the post-migration earnings dropped for out-migrants (Chart 5.1). Since Alberta is the major source and destination province for MOG migrants, the results seemed to suggest that Alberta offered better economic opportunities for MOG workers who migrated out of Newfoundland and Labrador for Alberta. On the contrary, migrants coming from a more affluent province, Alberta, experienced lower post-migration earnings in Newfoundland and Labrador. It seemed to suggest that economic incentives may be important other factors may influence mobility besides economic incentives, for example,

The inter-industry movement also showed better economic outcome for those who joined MOG, a wealthier industry, from other industries (Chart 5.2). For MOG out-movers, however, worsened earnings returns were observed post-move. MOG stayers, though maintained moderate earnings growths, did not benefit as much as in-movers did. Similarly, earnings declined in 2009 for both industry movers and stayers followed by a quick recovery.

Chart 5.1

Post-migration earnings growth, 2000-2012

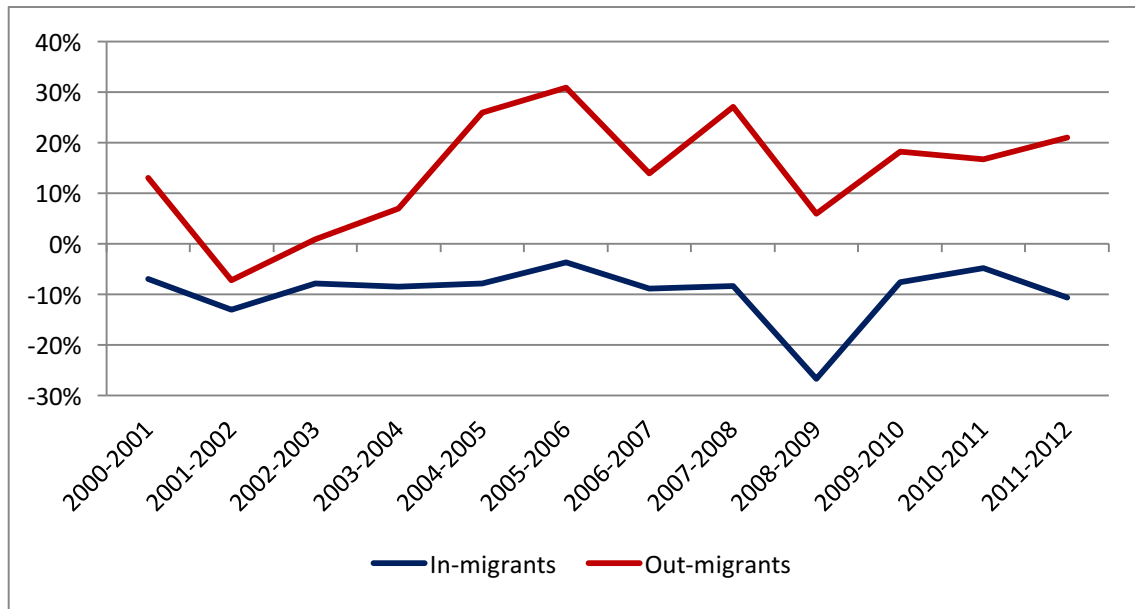
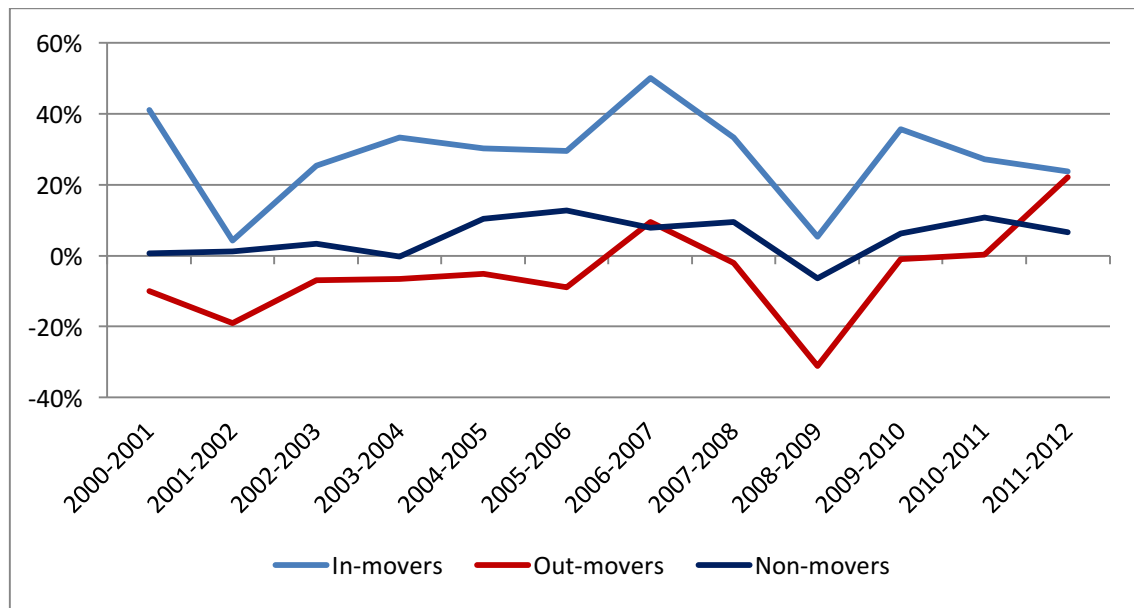


Chart 5.2

Post-movement earnings growth, 2000-2012



Migrants tend to be younger, less likely to be married and have kids and the proportion of EI recipients is higher among out-movers

The average age of MOG migrants leaving Newfoundland and Labrador is around mid-30s. They are slightly younger than MOG entrants from other industries and other provinces. Those who stayed in the MOG industry tend to be older in their early 40s.

Through 2000 and 2012, workers who are married or in a common-law relationship account for approximately 80% among MOG stayers. However, only approximately five in 10 out-migrants are married or in a common-law relationship. In general, marrieds or common laws are less representative among movers and migrants, accounting for significantly lower proportions between 42% and 64%.

Of non-movers in the MOG industry, approximately half of them live in couple families with kids. In comparison, this proportion is in the 27% to 43% range for industry movers over the 2000-2012 period. Inter-provincial migrants tend to have even lower proportions to have kids in their families. For out-migrants, less than three in ten of them have kids in most years of the period.

The proportion of workers who reported receiving employment insurance is the lowest among MOG stayers. While more than 60% of workers who moved out of the MOG industry were EI recipients, only about one in four stayers received employment insurance. In general, migrants tend to have lower proportions of EI recipients than movers over the years.

Modelling

While there is a large volume of literature on inter-provincial migration, the study of inter-industry labour mobility is scarce (Osberg, Gordon and Lin, 1994). In this section, we use a binary logistic model to measure how pre- and post-mobility demographic and labour market profiles affect individuals' propensity to move into or out of the MOG industry. The model is defined as follows:

$$P_i = 1/(1 + e^{\alpha + \beta X_i})$$

Where the dependent variable P_i captures whether individual i moves in/out of the industry or stay. X is a vector of explanatory variables which include age group, sex, marital status, family composition, earnings, and EI indicator.

The model results suggest similar results for MOG in-move and out-move pre-mobility models. In comparison to workers who are aged under 30, individuals who are aged between 30 and 39, 40 and 49 or 50 and 64 are less likely to move in or out of the MOG industry. In addition, male workers have a higher probability to move than their female counterparts. Compared with individuals who are married or in a common-law relationship, non-family persons are more likely to make an inter-industry mobility move. Those who are divorced, separated or widowed also have a lower propensity to move than their single counterparts. The coefficients associated with the family size reveal that workers from one-person families are more likely to move across industries than those from families of bigger sizes.

In regard to labour market characteristics, the earnings profile indicate that individuals with higher earnings have lower odds of inter-industry movement than workers who make the lowest earnings, which may imply that economic gain may be a stimulus for inter-industry mobility for less-paid workers. Moreover, persons who are EI recipients have a higher tendency to move than non-EI recipients as expected.

The post-mobility model shares similar results as the pre-mobility model despite a few exceptions on the effect of family sizes and the magnitude of influence. Using post-mobility family sizes, the model suggests that individuals from family of bigger sizes are now more inclined to enter or exit the MOG industry than those from one-person families. This may correspond to the role of financial incentives driven by changing family compositions.

In general, the model estimates echo the descriptive statistics that MOG movers tend to be young, male, single, less-paid, and EI recipients.

Table 1. Pre- and post-mobility logistic regression model

	Pre-mobility				Post-mobility			
	Out-move		In-move		Out-move		In-move	
	Coefficient	Odd ratio	Coefficient	Odd ratio	Coefficient	Odd ratio	Coefficient	Odd ratio
Intercept	-0.156		0.560		-1.013		-0.079	
Age group (reference group: under 30)								
30-39	-0.152	0.859	-0.288	0.750	-0.257	0.774	-0.434	0.648
40-49	-0.220	0.802	-0.351	0.704	-0.336	0.714	-0.528	0.590
50-64	-0.036	0.964	-0.490	0.612	-0.295	0.745	-0.768	0.464
Sex (reference group: Female)								

Male	0.232	1.261	0.374	1.453	0.329	1.389	0.280	1.323
Marital status (reference group: Single)								
Married or common-law	-0.602	0.548	-0.434	0.648	-0.461	0.630	-0.439	0.645
Divorced/separated/widowed	-0.377	0.686	-0.372	0.690	-0.345	0.708	-0.307	0.735
Family size (reference group: 1 person)								
2 - 3 persons	-0.432	0.649	-0.660	0.517	0.299	1.348	0.080	1.083
4 - 5 persons	-0.352	0.703	-0.517	0.596	0.411	1.508	0.230	1.259
6 persons or more	-0.565	0.569	-0.652	0.521	0.131	1.140	0.235	1.264
Earnings category (reference group: under 50k)								
50-75k	-0.558	0.572	-0.766	0.465	-0.637	0.529	-0.464	0.629
75k-100k	-1.142	0.319	-1.543	0.214	-1.411	0.244	-1.166	0.312
100k+	-1.215	0.297	-1.724	0.178	-1.344	0.261	-1.437	0.238
EI (reference group: non-EI recipient)								
EI recipient	0.813	2.253	0.320	1.376	0.808	2.243	0.547	1.728

Conclusion

In the past decade, the MOG industry has become the major industry of Newfoundland and Labrador and grew to contribute more than half of the provincial business sector output. The labour growth has also accounted for more than 20% of the provincial labour growth despite the relatively small size of this industry.