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Inter-CMA Migration of the Immigrants in Canada: 1991-1996 and 1996-2001

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SEDAP Research Paper No. 195

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INTER-CMA MIGRATION OF THE IMMIGRANTS IN CANADA: 1991-1996 AND 1996-2001

Lei Xu

Abstract:
Based on the tabulations of the IMDB, I characterized, explained and compared the 1991-1996 and 1996-2001 inter-CMA migration of the immigrants in Canada. The spatial and temporal patterns were consistent with the neoclassical economic theory and the ethnic enclave theory. In making their decisions on departure and destination choices, the immigrants (both the 1991 landing cohort and 1996 cohort) were responsive to income and employment incentives, as well as the retaining and attracting powers of ethnic communities. This research also discovered an interesting temporal pattern -- while the inter-CMA migration of immigrants accentuated the over representation of the immigrants in Toronto and Vancouver in the 91-96 period, the rise of the "secondary" CMAs led to a spatial dispersal of the immigrants in the 96-01 period. This "new" finding supplements the existing literature on internal migration of Canadian immigrants, which discovered little evidence of an increased dispersion of immigrants over time.

Keywords: internal migration, immigrants, Canada, Census Metropolitan Area (CMA)

JEL classification: R230, F220, O150, J110

Résumé :
En nous appuyant sur les tableaux de l'*IMDB,* nous avons caractérisé, expliqué et comparé la migration inter-métropolitaine des immigrants au Canada de 1991 à 1996 et de 1996 à 2001. La distribution géographique et temporelle s'accorde avec la théorie néo-classique économique et la théorie des enclaves ethniques. En choisissant leurs destinations d'arrivée et de départ, les immigrants (de la cohorte initiale de 1991 ainsi que de celle de 1996) apparaissent sensibles aux facteurs comme le revenu et l'emploi, et aussi au pouvoir d'attraction et de rétention des communautés ethniques. Cette recherche a également mis à jour une distribution temporelle intéressante – alors que la migration inter-métropolitaine des immigrants accentuait la surreprésentation des immigrants à Toronto et Vancouver entre 1991 et 1996, l'avènement de zones métropolitaines « secondaires » a entraîné une dispersion géographique des immigrants de 1996 à 2001. Cette « nouvelle » conclusion apporte un élément nouveau à la littérature antérieure sur la migration interne des immigrants Canadiens, qui n'a pas jamais vraiment montré l'existence d'une dispersion accrue des immigrants au cours du temps.

1. Introduction

Canada is a country of immigrants. Immigration plays an important role in not only the demographic traits of the Canadian population, but also the geographical distribution of the population. In comparison to Canadian born individuals, immigrants are more likely to settle in Canadian cities, and are particularly concentrated in large metropolitan areas. Based on the 2001 census, the three largest metropolitan areas (namely, Toronto, Montreal and Vancouver) shared 62.3% of the immigrants compared to 27.0% of the Canadian born population (Table 1). Toronto and Vancouver, in particular, attracted a very large proportion of immigrants, and their attraction to immigrants was increasingly strong from 1991 to 2001. For example, Toronto's share of immigrants increased from 33.8% in 1991 to 35.7% in 1996, and then to 37.3% in 2001. For Vancouver, its share of immigrants grew from 11.0% in 1991 to 12.7% in 1996, and further to 13.6% in 2001 (Table 1). In comparison, the share of the Canadian born individuals by the two metropolitan areas hardly changed during 1991-2001.

The increasing attractiveness of Toronto and Vancouver was mainly due to the large inflows of recently arrived immigrants. For instance, 31.8% of the pre-1981 arrivals resided in Toronto in 2001, whereas 43.4% the 1991-1995 arrivals and 43.1% of the 1996-2001 arrivals lived in Toronto. While Toronto and Vancouver have increased their share of immigrants over the immigrant arrival cohorts, this share was rather stable for Montreal, has declined slightly for the total of other metropolitan areas, and it has declined significantly for the non-metropolitan areas. Consequently,

the non-metropolitan population comprises 41.1 percent of the Canadian born population in 2001 but only 5.9 percent of immigrant arrivals of the period 1991-1995 and 1996-2001 (Table 1).

The large impact of immigration on population distribution in Canada has triggered debates on the merits of a more balanced geographic distribution of immigrants (CIC, 2001a). In order to direct immigrants to spread around, policy makers may focus on two spatial processes: initial destination choices of immigrants to Canada, and their post-landing relocations within Canada. In the first spatial process, landing immigrants initially choose a destination with better economic opportunities and/or with a large co-ethnic population (Xu and Liaw, 2003). After initial settlement, immigrants may have better access to information on employment and income opportunities and relocate themselves as a response to changes in the spatial economy of Canada (Liaw and Xu, 2005). In this chapter, we particularly investigate the migratory trends of immigrants after initial settlement and the factors accounting for the patterns of the post-immigration relocations. We hope that the findings of our analysis can serve as useful information for designing immigration policies for a more balanced geographic distribution of immigrants. The results of our research can also provide background information for policies makers to provide timely and effective services to immigrants and promote affordable public housing programs for them.

With few exceptions (e.g. Shaw, 1985; Liaw, Kanaroglou and Moffett., 1986; Trovato, 1988; Moore and Rosenberg, 1995), most Canadian migration studies have

used the provinces as the basic geographical units. Comprehensive research on internal migration at the metropolitan level is hampered by the lack of appropriate data. With the longitudinal data system IMDB (Immigration Data Base), which provides large amount of information at the level of Census Metropolitan Areas (CMAs), we are able to investigate the detailed patterns of inter-CMA migration made by the newly landed immigrants.[1]

The main purpose of this chapter is to gain insights into the 5-year post-landing inter-CMA migration of immigrants and how the migration pattern changed over time between 1991-1996 and 1996-2001 periods. Based on two sets of multidimensional tabulations with origin-to-destination information, we are able to not only characterize but also explain the inter-CMA migration patterns of the immigrants during the two periods. The origins and destinations in the migration system are specified as the 27 CMAs for the 1996-2001 period and 25 CMAs for the 1991-1996 period[2]. The explanatory variables include both place attributes such as

[1] We use the CMAs rather than the provinces as our geographical units due to the following reasons. First, most of Canadian immigrants live in CMAs. In 2001, 94% of the immigrants who had arrived in Canada over the previous 10 years resided in a CMA while only 6% resided in smaller cities or towns or in rural areas. Almost half of the immigrants who arrived in Canada in 2000 settled in the Toronto CMA and over three-quarters were located in the three largest CMAs - Montreal, Toronto and Vancouver (CIC, 2001b). These centers, especially Toronto and Vancouver, are the major gateways for immigration to Canada. Second, metropolitan areas are a good representation of labor market areas, thus are a good research unit for studying the impact of the changing labor market conditions on the migration behaviors of the immigrants. By focusing on CMAs as the geographic units, we have a better chance of discovering the detailed patterns of the immigrants' sensitivity to the spatial changes in economic opportunities among different CMA labor markets.

[2] The CMA system in Canada contains 27 CMAs: St. John's, Halifax, Saint John, Chicoutimi – Jonquiere, Quebec, Sherbrooke, Trois-Rivieres, Montreal, Ottawa - Hull, Kingston, Oshawa, Toronto, Hamilton, St. Catharines – Niagara, Kitchener, London, Windsor, Sudbury, Thunder Bay, Winnipeg, Regina, Saskatoon, Calgary, Edmonton, Abbotsford, Vancouver,

income, employment size, relative size of co-ethnic population as well as personal attributes such as immigration class (i.e. family class, business class, skilled workers, and refugees), educational attainment and country of birth (i.e., Hong Kong, China, India, Lebanon, Philippine, Vietnam)[3].

The chapter is organized as follows. The data and statistical model are specified in section 2. The major theoretical perspectives that guided our study are described in section 3. The empirical findings are presented in section 4. Finally, the concluding points are discussed in section 5.

2. Data and Statistical Model

The major data source for our study of the 1991-1996 and 1996-2001 inter-CMA migration of immigrants are two sets of customized multidimensional tabulations created by Statistics Canada from a longitudinal data system called IMDB (Immigration Data Base). The IMDB was created by linking (1) the official landing records of immigrants kept by Citizenship and Immigration Canada (CIC) with (2) the records of their annual income tax returns filed to Revenue Canada.[4] The multidimensional tabulations cover all individuals in the IMDB who landed in one of the CMAs in 1991 and 1996, respectively, and filed an income tax return in one of the

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Victoria. Note that Abbotsford was not a CMA as of 1991 and therefore was not in the IMDB multidimensional tabulation for the 1991-1996 period. To limit the cost and to reduce errors due to the legally required rounding of cell frequencies, Thunder Bay CMA (which is believed to have very few newly landed immigrants) was also excluded from our request for the 1991-1996 tabulation.

[3] Hong Kong is clearly not a "country", but it is listed separately in the IMDB system. In this research we regard Hong Kong as a place of birth for a distinctive group of immigrants.

[4] The IMDB system covers all immigrants who landed in Canada since January 1, 1980, filed at least one income tax return, and were aged 15 or over in the tax year.

CMAs in 1996 and 2001, respectively. In total, there were 108,500 such immigrants in the 1991-1996 period and 105,400 immigrants in the 1996-2001 period[5].

In addition to the IMDB multidimensional tabulations, we also use the 1991, 1996, and 2001 Canadian Census Profile Tables at census tract level[6] to generate various economic and social indicators for the CMAs (discussed in section 3). Because some CMAs have changes in boundary across censuses, we have made necessary adjustments on the data so that the economic and social measurements are consistent in terms of the CMA geographic scope throughout our study periods.

We use various descriptive indices to characterize and compare the overall patterns of the inter-CMA migration for the two periods. Both volumes (in persons) and rates (in percentage) are used for measuring in-, out- and net migration of the immigrants. We also employed departure rates to reveal insights on variations in out-migration propensity for immigrants with different personal attributes. Furthermore, we use destination choice proportions to investigate a CMA's ability to attract relocating immigrants from specific origins.

After the characterization and comparison of inter-CMA migration patterns for the 91 and 96 landing cohorts, we proceed to a multivariate analysis to explain the observed patterns. Our multivariate statistical model is a two-level nested logit model formulated in the following way. For a potential migrant with personal attributes *s* and residing in CMA *i*, we specify that the migration behaviour depends on (1) a

[5] Note all data we received from Statistics Canada were randomly rounded so that the last digit becomes 0 or 5.

[6] The Census Profile Tables were obtained via Canadian Census Analyser at CHASS (Computing in the Humanities and Social Sciences, University of Toronto).

departure probability $P(\ s\ ,\ i\ )$ at the upper level, and (2) a set of destination choice probabilities, $P(\ j\ |\ s\ ,\ i\ )$ for all j not equal to i, at the lower level. Based on a set of reasonable assumptions, these probabilities then become functions of observable explanatory variables in the following two sub-models (Kanaroglou, Liaw and Papageorgiou, 1986; Liaw, 1990).

Destination Choice Sub-model:

$$P(j \mid i,s) = \frac{\exp(b' x[\ j,i,s])}{\sum_{k \neq i} \exp(b' x[\ k,i,s\ ])} \qquad j \neq i \tag{1}$$

where $x[\ j\ ,\ i,\ s\ ]$ is a column-vector of observable explanatory variables; b' is a row-vector of unknown coefficients.

Departure Sub-model:

$$P(i,s) = \frac{\exp(d + c' y[i,s] + u * I[i,s])}{1 + \exp(d + c' y[i,s] + u * I[i,s])} \tag{2}$$

where $y[\ i\ ,\ s]$ is another column-vector of observable explanatory variables; d, c' and u are unknown coefficients, with u being bounded between 0 and 1; and $I\ [\ i\ ,\ s\ ]$ is the so-called inclusive variable defined as:

$$I[i,s] = Ln(\ \sum_{k \neq i} \exp(b' x[k,i,s])) \tag{3}$$

Assuming that the migration behaviours of all persons in the same cell of the multidimensional migration tabulations depend on the same set of $P(\ i\ ,\ s)$ and $P(\ j\ |\ i\ ,\ s)$, we estimate the unknown coefficients in equations (1) and (2) sequentially by the

maximum quasi-likelihood method (McCullagh 1983; Liaw and Ledent 1987).

The best specification of the model is defined as the specification with all the explanatory variables statistically significant (i.e. those whose t-ratios have a magnitude of at least 2.0) and substantively sensible.

The goodness of fit of a given specification of a sub-model is to be measured by

$$\textit{Rho-square} = 1 - L_g \,/\, L_o\,, \tag{4}$$

where L_g is the maximum quasi-log-likelihood of the given specification and L_o is the corresponding null model[7]. Because the actual ceiling of Rho-square is much less than 1.0, a value of about 0.2 may indicate a very good fit (McFadden, 1974). Note that the Rho-square may not be comparable, as the upper bounds may vary between the levels of the choice framework.

In order to evaluate the relative importance of one subset of explanatory variables (e.g. labor market variables) against another subset (e.g. variables representing ethnic similarity), we can delete the two subsets of variables in turn from the best specification and then compare the resulting decreases in Rho-square: the greater the decrease, the more important the deleted subset of variables. The decrease in Rho-square resulting from the deletion of a subset of explanatory variables is called *marginal contribution in Rho-square*.

When conducting selective deletions, we use 1) the fix-coefficient method in which the estimated coefficients of the remaining variables remain unchanged and 2)

[7] The null model is the sub-model where the coefficients of all explanatory variables are set to zero (i.e. the destination choice sub-model with $b' = 0$ or the departure sub-model with $c' = 0$).

the maximizing method in which the coefficients of the remaining variables are changed to maximize the log of quasi-likelihood (Xu and Liaw, 2006). The use of both methods is important in examining and understanding the relative explanatory power of subsets of variables, especially when two explanatory subsets overlap substantially in their explanatory powers.

3. Theoretical Perspectives

There are two theoretical perspectives that are useful in explaining the post-landing relocations of the newly arrived immigrants. First, the neoclassical economic theory (Sjaastad, 1962; Todaro, 1985; Massey et al, 1993) assumes that migration is a form of investment to increase an individual's productivity of human resources, and to maximize the perceived utility, measured by the present value of future income stream. According to this perspective, newly arrived immigrants would decide to stay in their initial destination or migrate to places with the greatest expected net return. The expected net return is associated with the labor market conditions (particularly income and employment opportunities) at both origin and potential destination[8]. Therefore the CMAs, as good representation of labor market areas, are expected to have a strong power in retaining their immigrants and attracting relocating immigrants if they offer relatively high employment income, rapid

[8] The expected net return also considers costs of movement including actual cost of transportation and social cost of movement as well as the difference in cost of living. We employ average house-owner's major *payments* at destination to represent cost of living.

employment growth, large employment base, and/ or low unemployment rate (Edmonston, 1996). In order to examine the responsiveness of the immigrants to labor market changes, we include in our analysis the explanatory factors of *average employment income* (for full-time full-year workers), *5-year employment growth rate* and *unemployment rate* of the CMAs. Moreover, the assessment of the effects of the place attributes can not be properly conducted without controlling for the effect of CMA size or labor market size. In this chapter, the size of CMA is represented by the log of *employment size*.

The second theoretical perspective is based on the theories of ethnic communities and social capital (Portes, 1995). Social structures such as the personal networks of family, kinship, and friendship ties can facilitate and ease the adaptation of immigrants in the host country. Ethnic communities can provide not only useful job search networks, but also opportunities to run profitable ethnic specific businesses (e.g., ethnic restaurants). Furthermore, ethnic communities may offer monetary or emotional support and hold ethnic activities and events according to the cultural traditions. This theoretical perspective implies CMAs with relatively large ethnic population would have a strong power in retaining co-ethnic immigrants and in attracting culturally similar immigrants from other CMAs. To examine the role of ethnic attraction in the inter-CMA migration of the immigrants during the 1991-1996 and 1996-2001 periods, we pay special attention to *ethnic similarity* as an explanatory factor. The ethnic similarity for ethnic group e in CMA_i is defined in terms of "ethnic quotient" - the ratio of the share of ethnics e by CMA_i to the share of total population

by CMA_i[9]. A value of ethnic similarity bigger than 1 means a more than "fair" share of the ethnics indicating the possible existence of large, well-established ethnic communities.

In addition to the two theoretical perspectives, empirical studies have guided us to use some additional explanatory factors in investigating inter-CMA migration of immigrants. In line with the idea of distance decay, information on a distant place is less likely to be complete and reliable. The cost of collecting information and the cost of movement itself tend to be higher as distance increases (Newbold, 1996). Therefore we employ the conventional *distance* factor, defined as the natural log of distance between the origin CMA and destination CMA. It is expected to have a negative sign in the destination choice sub-model. *Coldness*[10] may affect migration decision as well (Frey, et al, 1996). *Coldness* can serve as the proxy of environmental amenity and is thus expected to show a positive sign in the departure sub-model and a negative sign in the destination choice sub-model. We also use a set of dummy variables representing specific CMAs. *Montreal*, for example, is expected to attract immigrants

[9] More specifically, *ethnic similarity* is calculated in the following way:

$S_{e,i} = (p_{e,i}/p_e) / (P_i/P)$

Where $S_{e,i}$ = ethnic similarity for ethnic group e in CMA_i

$P_{e,,i}$ = Population of ethnic group e of CMA_i

p_e = Total population of ethnic group e of the CMA system

P_i = Population of CMA_i

P = Total population of the CMA system

For *ethnic similarity*, a value of 1 or bigger indicates a more than "fair" share of co-ethnic population, probably networked into large ethnic communities.

[10] The variable *coldness* is defined in terms of the average annual number of degree days below 18°C.

with French cultural background (Kaplan, 1995; Liaw et al, 2002) while *Toronto* and *Vancouver* may have strong attracting and retaining power for business immigrants.

Since the effects of the place attributes defined above can have selective effects on immigrants with different personal attributes, we let them interact with various dummy variables representing immigrants' personal backgrounds (e.g. country of birth, age, educational attainment, immigration class, language ability). For example, the interactions of employment income with the dummy variables representing levels of educational attainment can discover the different sensitivity of immigrants to spatial changes in labor market conditions. If better educated immigrants are more responsive than are those with less educational attainment to economic opportunities, as suggested by Bartel (1989) and Nogle (1994), then the relevance of the neoclassical economic theory can be further supported.

4. Empirical Findings

4.1 Overall Migration Patterns

4.1.1 Out-migration

According to the IMDB, there were 108,500 immigrants who landed in one of the CMAs in 1991 and filed a 1996 income tax return in one of the CMAs (called the 91 cohort for brevity, see Table 2) and there were 105,400 immigrants landed in 1996 and filed an income tax return in 2001 (the 96 cohort, Table 3). Among the 91 cohort, there were 17,215 inter-CMA migrants, implying a 5-year out-migration rate of 15.9%. With respect to the 96 cohort, there were 21,175 inter-CMA migrants,

indicating a higher out-migration rate of 20.1%. The relatively high mobility of the 96 cohort might be largely due to the better labor market conditions across the CMAs in the 1996-2001 period than the 1991-1996 period. On the one hand, nearly all CMAs had a positive employment growth rate in the latter period. Relatively high employment growth rates were observed particularly in smaller CMAs such as London, St. Catharines-Niagara Falls, and Kingston, where the employment growth rates were negative in the early period (Appendix Table 1). The vitality of the overall economy and the employment opportunities all over the CMA system might serve as a stimulus for the 96 cohort to actively relocate themselves. On the other hand, employment income variation among the CMAs was much slighter in the later period than the early period. For example, the difference in males' average employment income between Toronto and the nearby Hamilton CMA was $2,770 in the early period, but only $377 in the later period. Similarly, the income difference between Vancouver and the regional "secondary" CMA Victoria decreased from $1,849 to $328 (Appendix Table 1). The relative increase in income opportunities in smaller CMAs opened up more choices for newly arrived immigrants.

In both periods, economically weak CMAs in the Atlantic region and the Prairies had the highest out-migration rates. In the case of St. John's, 80.3% of the 91 cohort immigrants relocated themselves towards other CMAs, and as large as 89.5% of the 96 cohort immigrants outmigrated within 5 years after landing. Not surprisingly, with large economic bases and well-functioning ethnic communities, Toronto and Vancouver had the strongest retaining power for both cohorts. However, Vancouver

had the lowest out-migration rate (5.9%) in the earlier period whereas Toronto had the lowest out-migration rate (13.5%) in the later period. This shift probably resulted from the changing spatial economy in the CMA system. In the early 1990s, Vancouver's economy was booming, while Toronto suffered from a serious recession. During the second half of the 1990s, Toronto recovered its economy with the 5-year employment growth rate increasing from 1.1% to 3.4%. In sharp contrast, Vancouver was subject to the negative impacts of the Asian Financial Crisis in the late 1990s: its 5-year employment growth rate dropped substantially from 11.6% to 1.9% (Appendix Table 1).

Immigrants' propensity to out-migrate varied not only among individual CMAs, but also across personal attributes such as educational attainment, immigration class, and ethnicity. By examining the departure rates[11] for immigrants with certain personal attributes, we have identified three salient features for both cohorts. First, consistent with previous empirical findings (Bartel, 1989; Nogle, 1994), the immigrants showed educational selectivity in their post-landing relocations. The overall departure rate differed significantly among the four groups of educational attainment (see Table 4 for the 91 cohort and Table 5 for the 96 cohort). From the lowest educational level (0-9 years of schooling) to the highest level (Bachelor's degree or higher), the departure rate increased monotonically from 13.4% to 21.4% for the 91 cohort and from 16.0% to 28.0% for the 96 cohort. With just a few

[11] The departure rate is used to measure the level of migration out of CMA_i for a group of immigrants with personal attribute t. It is defined as $Q_{i,t} = S_{i,t}/K_{i,t}$, where $S_{i,t}$ is the relevant numbers of out migrants and $K_{i,t}$ is the corresponding at-risk population.

irregularities, this contrast also appeared in the individual CMAs. For example, in the case of Toronto, the out-migration propensity for the 91 cohort took on a very low value of 5.5% for the least educated and a much higher value of 12.2% for the best educated (Table 4). The corresponding departure rate for the 96 cohort ranged from 9.5% to 21.3% in Toronto (Table 5). Those with the highest level of education had the highest propensity to migrate among the CMAs as they tended to have the widest information field and the best chance to catch economic opportunities all over the entire CMA system. It is also very interesting to note that the educational selectivity is particularly strong for Chinese immigrants -- the departure rate increased monotonically from 12.8% (12.0%) for the least educated to 30.9% (43.5%) for the best educated for the 91 (96) cohort. This finding implied that educational attainment played a vital role in migration behavior among Chinese immigrants.

Second, the departure rates varied markedly in terms of immigration class. For both periods, business class immigrants showed the highest propensities of out-migration. The overall departure rate of the business class individuals was 32.5% for the 91 cohort and 31.0% for the 96 cohort (Table 6). This pattern was exacerbated in smaller CMAs such as Saskatoon, St. John's, Sherbrooke, and Thunder Bay, where virtually all business immigrants landed in 1996 departed within 5 years. The exceptionally strong desire to out-migrate was partly due to their high sensitivity to spatial changes in business opportunities. Some of them, particularly those from Hong Kong and China might have used an immigration strategy in which they firstly chose an economically weak CMA as the "intended" destination in order to get their

application approved easily and quickly, and secondly moved to a CMA that fitted their real preference (Liaw and Xu, 2005; Xu and Liaw, 2003). In addition to business immigrants, refugees had a higher-than-average overall departure rate – 24.7% for the 91 cohort and 22.7% for the 96 cohort. Refugees were not given the opportunity to select their initial destinations in Canada. Government-assisted refugees were initially settled in places selected by the government whereas privately-sponsored refugees were located near the location of the sponsorship organizations (Orr, 2004). After initial settlement, refugees were likely to relocate themselves in response to the attractions of economic opportunities and co-ethnic communities elsewhere (Simich, 2003). Not surprisingly, family class immigrants, sponsored by their close family members, had the lowest propensity of out-migration. Their settlement tended to be rather stable as they needed substantial material and emotional supports from their sponsors, at least in the short-run. Our more detailed examination found clear evidence of the above selectivity by immigration class for each individual educational group and for each country of birth.

Third, the overall departure rate also differed significantly among countries of birth. Immigrants from Hong Kong, China, and Vietnam showed higher-than-average departure rates in the early period and only immigrants from China had well above-average departure rates in the later period[12] (Table 6). This pattern is

[12] Although immigrants from China had a much higher overall departure rate than other immigrant groups, their propensities of out-migration from Toronto were extremely low. For example, only 8.9% and 5.9% of the Chinese left Toronto and Vancouver respectively in 1991-1996. This pattern is partly associated with the strong retaining power of the thriving Chinese ethnic enclaves in these two CMAs.

substantially related to the factors of educational attainment and immigration class. For example, many of the immigrants from China were skilled workers with relatively high levels of education, and thus had a strong tendency to relocate. The high departure rates of the immigrants from Hong Kong and Vietnam largely stemmed from the very high proportions of immigrants in the business and refugee classes, respectively. It is worth noting that immigrants from the Philippines had the lowest propensity of out-migration. For both periods, they were less than half as migratory as those from China. The large proportion of the Filipino immigrants by family class helped explained their low departure rates. Another possible reason is that many of the Filipinos came to Canada as live-in care givers or nurses, who were largely concentrated in Winnipeg. The large well-developed Filipino communities provide a broad range of cultural services and the nanny and nurse job market there helped established a niche for the Filipinos so that there was little incentive for them to out-migrate (Liaw and Xu, 2005).

4.1.2 In-migration

While out-migration patterns can reflect a CMA's power in retaining immigrants, the patterns of in-migration can indicate the attractiveness of a CMA. For both periods, Toronto had the highest in-migration rate[13]. For example, among the

[13] In-migration volume, rate, and ratio for each CMA can be found in Table 2 and 3. Note that we compute both an in-migration *ratio* (by using the number of immigrants landed in a given CMA as the denominator) and an in-migration *rate* (by using the number of immigrants landed in the rest of CMA system as the denominator). The former reflects the impact of the inflow of the relocating immigrants on the CMA's immigrant stock, whereas the latter represents the immigrants' propensity in the rest of the system to move into the CMA under consideration. In

55,040 immigrants who landed in the rest of the CMA system in 1996, as many as 12.0% (or 6,560) became residents of Toronto five years after landing (Table 3). With the second highest in-migration rate (4.1% in 1991-1996 and 5.7% in 1996-2001), Vancouver attracted the second largest number of relocating immigrants (Table 2 and 3). With some well-established immigrant communities and being the second largest labor market in the CMA system, Montreal received substantial in-migrants as well. Its in-migration rate jumped from the 4th highest in 1991-1996 to the 3rd highest in 1996-2001. In addition, Ottawa-Hull, and Calgary also had relatively strong power in attracting relocating immigrants, although their ranks in terms of in-migration rate changed a bit over the two periods.

The economically weak CMAs in the Atlantic region and the Prairie generally had very low in-migration rates. CMAs in the non-Montreal part of Quebec also had a very weak ability to attract relocating immigrants. Within economically strong Ontario, Sudbury (plus Thunder Bay for the 96 cohort) had a much lower in-migration rate than the CMAs in the southern part of the province. This pattern is largely due to the decline of the mining industry in Sudbury and the steady decline of both the transportation and forestry workforces in Thunder Bay. Note these two CMAs were the only ones with negative employment growth rates during 1996-2001 (Appendix Table 1).

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this study, we mainly focus on in-migration *rate* (rather than in-migration *ratio*) as an indicator of a CMA's attractiveness.

In addition to in-migration rates and volumes, we also used destination choice proportions to examine a CMA's ability to attract relocating immigrants from specific origins. If a CMA was a popular destination and received a large proportion of immigrants from other CMAs, then the CMA can be considered as an in-migration "magnet" or "core". Table 7 and Table 8 show the overall origin-specific destination choice pattern (with the top 3 destination choices) for the 91 and 96 cohort respectively. With very few exceptions, Toronto, Vancouver and Montreal served as the three major in-migration "magnets" for both periods. On the one hand, proximity, or more precisely accessibility, played an important role to a large extent. For both cohorts, Toronto attracted the largest shares of relocating immigrants from the CMAs in Ontario, ranging from 34% (Ottawa-Hull) to as high as 85% (Oshawa) in 1991-1996. Most immigrants from Quebec chose Montreal as the destination. For example, 62% of the 300 relocating immigrants from Quebec City ended up with settling in Montreal in 1996. Similarly, large shares of those from the Prairies and British Columbia migrated into Vancouver. These patterns indicate that most relocating immigrants from small CMAs chose to move into proximate magnets rather than distant ones, probably because of more exposure to employment opportunities nearby and lower costs of relocation (e.g. transportation spending, cost of collecting reliable information). However, mostly lacking French language ability, most relocating immigrants from the CMAs in the Atlantic region showed much stronger preference for Toronto than for Montreal. For immigrants originating from one of the magnets, the effect of proximity or accessibility was lessened. Vancouver

was the largest destination choice for those from Toronto, although Vancouver is much farther away from Toronto than Montreal. Among the relocating immigrants from Vancouver and Montreal, about half of them selected Toronto in both periods (Table 7 and 8).

When investigating the second and third best choice of relocating immigrants, we found that both the effect of proximity and the strong attraction of the magnets came into play. For instance, 10% of the 91 cohort immigrants from Toronto chose Montreal and 9% moved to nearby Hamilton. During 1991-1996 period, the second best destination for relocating immigrants from Hamilton was the neighboring Kitchener CMA (15%), and the third choice was the magnet of Vancouver (12%).

4.1.3 Net migration

With a net gain of 3,710 and 1,670 relocating immigrants in 1991-1996 and 1996-2001 respectively, Vancouver was the largest net gainer (Table 2 and Table 3). In the first period, it also had the highest net migration rate (30.6%). However, Vancouver was surpassed by a few CMAs in Ontario as well as Calgary in terms of net migration rate in the second period.[14] Interestingly, the share of immigrants by Vancouver at the time of landing was much higher in 1996 (20%) than in 1991

[14] With much smaller shares of the immigrants at landing than that of Vancouver, these CMAs had very high net migration rates (e.g., 58.2% for Oshawa), implying that post-landing inter-CMA migration had a greater relative impact on them than on Vancouver.

(11%).[15] However, Vancouver experienced an economic stagnation in the late 1990s, which could help explain its sharp decline of net migration rate.

During the period of 1991-1996, Toronto had a net gain of 1,700 relocating immigrants (less than half of Vancouver's net gain) and a moderate net migration rate (3.6%, Table 2). This pattern was likely due to the markedly reduced job creation capacity of Toronto's economy in the first half of the 1990s. Unexpectedly, as Toronto's economy recovered and strongly strengthened in the second half of the decade,[16] it turned out to be a slight net loser of relocating immigrants with a net migration rate of -0.5%! In the meanwhile, the attractiveness of the "secondary" CMAs in Ontario improved substantially. CMAs such as Hamilton, London, St. Catharines-Niagara Falls, and Kingston stood out markedly as they switched from net losers of relocating immigrants in 1991-1996 to net gainers in 1996-2001. For example, the net migration volume for Hamilton increased from -70 to 380 and the corresponding net migration rate increased sharply from -3.1% to 24.6%. Furthermore, "secondary" CMAs that had already been net gainers in the first period (namely, Ottawa-Hull, Oshawa, Kitchener, and Windsor) further increased their net migration volumes and net migration rates in the second period.[17]

[15] Compared with the 91 cohort, the 96 cohort immigrants might have more complete information on Vancouver's economic opportunities and co-ethnic communities before their landing. Note that in the first half of the 1990s, Vancouver's economy was prosperous while its "rival" Toronto experienced a serious recession.

[16] For example, Toronto's 5-year employment growth rate increased sharply from 1.1% in the first half of the 1990s to 3.4% in second half of the 1990s.

[17] Note that in the second period, Ottawa-Hull improved its net migration rate only and Oshawa increased its net migration volume only.

This change of relative attractiveness between big “magnet” Toronto and its surrounding “secondary” CMAs might be associated with the increased employment opportunities in the secondary CMAs. As Toronto enjoyed a quite high employment growth during 1996-2001 (Appendix Table 1), its booming economy helped the expansion of its diversified industries, particularly service industries into surrounding areas. Actually all CMAs in southern Ontario (except Kitchener and Windsor) experienced a higher employment growth rate in 1996-2001 than in 1991-1996. With strengthened job creation capacity of the economy as well as great accessibility, secondary CMAs such as Hamilton, London, and Oshawa became relatively attractive for the relocating immigrants from Toronto and other CMAs in the second period than in the first period.

With an expanding energy industry, Calgary achieved a net gain of relocating immigrants. Its net migration rate was further strengthened over the two periods from 1.3% to 12.8% (Table 2 and 3). Except for Calgary, all CMAs in the Atlantic region, Quebec, and the Prairie turned out to be net losers of the relocating immigrants for both periods. Montreal had the largest net loss of migrants, whereas St. John’s had the most negative net migration rates in both periods. The comparison of the two periods revealed that the net migration of Montreal improved (from -3,760 or -15.4% in 1991-1996 to -1,255 or -9.5% in 1996-2001), while that of St. John’s worsened - its net loss amounted to 71.4% of its 91 cohort immigrants and as large as 86.0% of the 96 cohort. In general, the patterns of the inter-CMA net transfers of the recent immigrants found in this analysis were highly consistent with the pattern of the

interprovincial net transfers of 1980-1992 immigrants revealed in an earlier study (Liaw and Xu, 2005). However, by focusing on CMAs as the geographic units, we discovered substantial intra-provincial changes that were invisible in the previous study.

4.2 Multivariate Analysis

To achieve further insights, we apply a two-level nested logit model to investigate how explanatory factors jointly shaped those migration patterns revealed in sub-section 4.1. As presented in section 2, the inter-CMA migration process is conceptualized into two separate processes: 1) a departure process at the upper level, formulated by a departure sub-model, and 2) a destination choice process at the lower level, expressed by a destination choice sub-model (Liaw, 1990). In order to test the relevance of the ethnic enclave theoretical perspective as well as make comparison of the two periods more meaningful, we focus on immigrants from six origins (i.e. Hong Kong, China, India, Lebanon, Philippines, Vietnam) for both periods in our multivariate analysis[18].

4.2.1 Estimation Results of the Destination Choice Model

For each period, the best model fits the data very well, with a high value of Rho-square (0.4912 for the 91-96 period and 0.4970 for the 96-01 period, Table 9 –

[18] Note that for the 1991-1996 period, Abbotsford and Thunder Bay are not in the IMDB multidimensional table and therefore not considered as potential departure points/ destinations in our multivariate analysis.

Panel A and B). In general, the inter-CMA relocating immigrants had a strong tendency to choose a destination with good labor market conditions: a relatively high income level and employment growth, together with relatively low unemployment rate. Note that for both periods, the *average employment income* and *5-year employment growth rate* had positive coefficients associated with very large t-ratios while the variable of *unemployment rate* showed a significant negative sign (Table 9). We also found educational selectivity in terms of the attraction of income for the 96 cohort. The positive effect of employment income was stronger for those with 13 or more years of schooling and the strongest for those with Bachelor's degree or higher educational attainment. Consistent with our expectation, the effect of *employment size* was positive for both cohorts, indicating that the immigrants were generally more prone to going to a larger labor market. As a representation of cost of living, house-owner's *payments* showed a negative sign for the 96-01 period, but turned out to be insignificant for the 91-96 period.

With respect to the attraction of ethnic enclaves, we find that both the 91 and 96 cohort immigrant were prone to going to CMAs with large ethnic communities and well-developed co-ethnic social networks. The positive coefficients of the interactions between ethnic similarity and the dummy variables representing each of the six ethnic groups were associated with large magnitudes of the t-ratios (Table 9). The sharp difference in the magnitudes of the six estimated coefficients indicates that the impact of a unit increase in "ethnic quotient" on destination choice propensity differed substantially among the ethnic groups. The impact was particularly strong for

immigrants from Hong Kong and Philippines in both periods and Vietnam in the second period. It is noteworthy that the effects of ethnic similarity were selective with respect to educational attainment, age and immigration class. Take the 91 cohort Chinese for example, those aged 40 or over and those with less than 12 years of schooling were more strongly subject to the attractions of co-ethnic communities. However, the skilled-worker Chinese were less subject to the effect of ethnic attraction. In fact, those better educated Chinese skilled workers aged 39 or younger displayed a negative coefficient (0.2431 - 0.3293 = - 0.0862)! It seemed that this group of immigrants were not willing to reside in ethnic communities but were eager to assimilate into the mainstream not only economically but also socially.

As expected, distance and coldness had significant negative effects on destination choices of the relocating immigrants in both periods. The climate effect was somewhat stronger on older immigrants (aged 40 or over) than the younger ones in the 91-96 period. In light of the cultural distinctiveness of Quebec, the interaction between *Montreal* and *French language ability* had a positive coefficient. Moreover, immigrants from smaller CMAs in Quebec were more likely to select Montreal as the destination. In addition, *Toronto* and *Vancouver* were particularly attractive for business immigrants. Lastly, we found that immigrants from Toronto had a special tendency to choose the nearby CMA Oshawa (for both immigration cohorts) and those from Vancouver were particularly attracted by the adjacent Abbotsford (for the 96 cohort only). This finding is in line with the increasing attractiveness of the "secondary" CMAs discussed in section 4.1.3.

With respect to the relative importance of the explanatory factors, the set of labor market factors had the greatest explanatory power. Based on the fix-coefficient method, the marginal contribution in Rho-square was as large as 0.2484 for the 91-96 period and 0.3092 for the 96-01 period. For comparison, the explanatory factor of ethnic similarity had a much smaller marginal contribution in Rho-square: 0.0376 and 0.0837, respectively (Table 9).[19] When the maximizing method was applied for both periods, the differences in marginal explanatory contributions between the two sets of factors were not large. This implies that the labor market factors and ethnic similarity factor overlap substantially in their explanatory powers.[20]

In sum, the destination choice model yielded meaningful results with respect to both theoretical perspectives presented earlier. On the one hand, we have found substantial evidence that the destination choices of the inter-CMA migrants were highly consistent with the neoclassical economic theory: they were highly responsive to income and employment incentives. The labor market factors also made the largest contribution to the explanatory power of the destination choice model. On the other hand, the estimated results also support the theoretical perspective of ethnic communities and social capital. Immigrants from each individual country of birth were all subject to the attraction of ethnic enclaves in both periods. Of particular

[19] We also examined the relative explanatory powers of other factors such as *coldness and distance*. Their marginal explanatory contributions were rather small and thus not listed in the tables.

[20] For a more detailed discussion on the strength and weakness of the fix-coefficient method and maximizing method, see Xu and Liaw (2006).

interest is the stronger effect for the less educated and the relatively old immigrants from China and Hong Kong.

4.2.2 Estimation Results of the Departure Model

The best specification of the departure model for each period is reported in Table 10 – Panel A and B. The multivariate findings are summarized as follows. First, dummy variables representing personal attributes displayed selectivities in terms of age, education and immigration class. As expected, for both periods, older immigrants (aged 30 or over) were less likely to move after initial settlement (Moore and Rosenberg, 1995). For the 91-96 period, the propensity to depart varied significantly among the three educational groups: very high for those with best educational qualifications (Bachelor's degree or higher), moderately high for those with 13 or more years of schooling, and low for the less educated. Largely consistent with our findings from the descriptive analysis on departure rates (in section 4.1.1), estimated coefficients from the departure model indicated differential mobility levels among different immigration classes: among the four major classes of immigrants, business class immigrants were the most migratory, whereas family class immigrants were the least migratory.

Second, labor market factors had important effects on the propensity of departure. For both periods, the coefficients of employment income and employment growth rate were negative and statistically significant, implying that immigrants had a low propensity to leave CMAs with relatively high income levels and rapid

employment growth. During the 96-01 period in particular, the effect of income varied among the educational groups: stronger for the better educated and weaker for the poorer educated. Not surprisingly, unemployment rate had a positive effect on the propensity of relocation. As expected, size of labor market, represented by CMA's employment size, had a very strong retaining power. For example, the estimated coefficient (-0.596) was associated a very large magnitude of t-ratio of -8.3 for the 91 cohort.

Third, the factor of ethnic and cultural similarity played an important role in retaining immigrants. For both periods, the interactions between ethnic similarity and the dummy variables representing each ethnicity acquired theoretically proper and statistically significant negative coefficients. While initial settlement in ethnic communities of culturally similar individuals generally reduced geographical mobility, the negative effect of ethnic similarity on departure propensities varied among different ethnicities: relatively strong for Lebanese, Filipinos and Vietnamese and relatively weak for immigrants from Hong Kong, China and India. Among the Chinese, the skilled-worker immigrants were less responsive to the retaining power by co-ethnics than other classes in 1996-2001. The less educated Chinese, however, were more strongly subject to the retaining effect of ethnic enclaves than the better educated in both periods (Table 10).

Fourth, the propensity to depart from a CMA was positively affected by the attractiveness in the rest of the CMA system (the inclusive variable) and the coldness

at origin[21]. Immigrants with French language ability were less likely to move out of Montreal in both periods. Finally, we found that business immigrants residing in Vancouver and Toronto had a very weak tendency of relocation. This is consistent with the finding of an early study on interprovincial relocation of immigrants (Liaw and Xu, 2005).

We applied both the fix-coefficient and maximizing methods to examine the relative importance of the explanatory factors in departure model. Based on the fix-coefficient method, the top four explanatory contributors for the 91-96 period were labor market factors, ethnic similarity, immigration class, and the attractiveness of the rest of the system (Table 10). For example, upon deletion of the variables representing labor market opportunities, the goodness of fit of the model declined substantially, resulting in a marginal contribution in Rho-squre of 0.0478 (29% of the Rho-square in the best specification). For the 96-01 period, however, immigration class was the most important factor in the departure decision! Immigration class showed the largest marginal contribution in Rho-squre of 0.0883, accounting for 46% of the Rho-square in the best specification. The other major explanatory contributors in order of relative importance were ethnic similarity, labor market factors, and the attractiveness of the rest of the system. As in the case of destination choice model, the maximizing method resulted in small variations in marginal explanatory contributions

[21] The pushing effect of coldness was revealed in the 91-96 period only. In the 96-01 period, the effect was not statistically significant.

among different explanatory factors, implying that the explanatory powers of the factors also overlap substantially in the departure model.

With respect to theoretical relevance, the estimation results from the departure model are consistent with the neoclassical economic theory in the sense that an immigrant's propensity to depart from a CMA was negatively affected by income level, employment growth, as well as labor market size, and positively affected by unemployment rate. The educational selectivity further supports this theory. The findings are also consistent with the theoretical perspective of ethnic communities in the sense that a CMA with large and well-established immigrant ethnic enclaves tends to have a strong power to retain its immigrants. In both periods, ethnic similarity helped account for a large part of the variations in departure rates.

5. Concluding Discussion

In this research, we studied the inter-CMA migration of the immigrants from two dimensions. The first dimension investigated both the departure process and destination choice process to understand inter-CMA migration. We described the patterns of the two processes using various descriptive measures (e.g. out-, in- and net migration rates, departure rates, destination choice proportions) and then explained the observed patterns by applying a two-level nested logit model. The characterization and explanation showed how the two processes jointly shape the overall net transfer of immigrants among the CMAs. The second dimension of our research was to examine the evolution of mobility behavior over time by comparing the migration

pattern of the 91-96 period with that of the 96-01 period. The comparison helped us gain insights into the temporal pattern of the inter-CMA migration.

Research from the two dimensions revealed substantial evidence supporting the relevance of two theoretical perspectives. First, the spatial and temporal patterns of inter-CMA migration were highly consistent with the neoclassical economic theory. In making their decisions on departure and destination choices, immigrants were highly responsive to income and employment incentives. CMAs with relatively high income and employment growth, relatively low unemployment rate, and/or large labor market base tended to have a strong retaining and attracting power for the immigrants, especially the better educated. Furthermore, immigrants' responsiveness to economic opportunities was clearly shown from cohort to cohort. Second, the spatial and temporal trends were also consistent with the theoretical perspective of ethnic enclaves. In both departure and destination choice processes, immigrants from each of six origins were subject to the retaining and attracting powers of large, cohesive ethnic communities, a finding that held in both the 91-96 and 96-01 periods. Of particular interest was the stronger effect of ethnic similarity for the less educated Chinese immigrants in both periods.

In line with the two theoretical perspectives, the effect of labor market conditions and the effect of ethnic similarity are both important in explaining inter-CMA migration. However, we found that the relative explanatory power of

economic factors was generally stronger than that of ethnic factor.[22] To a large extent, the migration patterns of immigrants follow the spatial changes in the economy, particularly the changing labor market conditions across the CMA system. Because of the growth of the service economy and employment opportunities, some "secondary" CMAs such as Calgary and those in southern Ontario sharply increased their net gains of relocating immigrants across the two periods. In the 91-96 period, the inter-CMA migration of newly landed immigrants accentuated the over representation of the immigrants in Toronto and Vancouver. However, in the 96-01 period the rise of the "secondary" CMAs led to a spatial dispersal of the immigrants! This finding is the most interesting because earlier studies on immigrant relocation yielded little evidence of an increased dispersion of immigrants over time (Beaujot, 2003; Edmonston, 1996; Newbold, 1996; Liaw and Xu, 2005)[23].

It is worth noting that this newly observed spatial dispersal of relocating immigrants is not an ephemeral phenomenon. Our preliminary investigation of the 2001-2003 inter-CMA migration pattern for immigrants landed in 2001 revealed that Toronto continued to be a (slight) net loser of relocating immigrants while CMAs in the rest of Ontario had net gains. These net gainers included not only the "secondary" (medium-sized) CMAs in southern Ontario (e.g., Hamilton, Oshawa) but also

[22] An exception is that for the 96-01 period, the effect of immigration class was more important in the departure decision than ethnic effect, which was in turn slightly stronger than economic effects.

[23] Earlier empirical studies mainly focused on interprovincial migration of Canadian immigrants, therefore patterns of migration among CMAs within a province could not be discovered. In general, researchers found substantial evidence on the further concentration of immigrants into Ontario and British Columbia (Edmonston, 1996; Newbold, 1996; Liaw and Xu, 2005).

small-sized CMAs in northern Ontario (e.g. Sudbury). In addition, Vancouver's net gain continued to decline while Montreal's net loss reduced substantially during 2001-2003. Although this dispersion pattern is somewhat consistent with the widespread spatial dispersal of immigrants in the U.S. since the 1990s[24] (Passel and Zimmermann, 2001; Fix and Passel, 2003; Frey, 2004 and 2006), the dispersion is unlikely to reach the small CMAs and non-CMA areas in economically weak Atlantic region, Quebec and the Prairies in the foreseeable future, due to immigrants' responsiveness to changing labor market conditions. Therefore, policies for a more balanced geographic redistribution of immigrants should focus on measures to induce a greater dispersal of employment opportunities in those peripheral CMAs and non-CMA areas.

Nevertheless, it seems that the reinforcement of concentration of immigrants in Toronto and Vancouver via post-landing relocation no longer exists, at least for the later period of our study. To get a better understanding of the temporal trend, more detailed research on the 2001-2003 inter-CMA migration is needed[25]. Just as previous immigrants moved from the Prairies to the large industrial cities in Ontario and B.C. in response to the structural change in economy from agriculture to manufacturing, recent immigrants may migrate towards secondary and even small CMAs in response to the switch of the economy from manufacturing to services.

[24] The marked dispersal of immigrants (particularly low-skilled Hispanic immigrants) in the U.S. was partly induced by the demand of low-skilled workers to fill in injury-prone and menial jobs in non-metropolitan areas (Gozdziak and Bump, 2004; Kandel and Parrado, 2005).

[25] The IMDB system is updated on an ongoing basis with the lag times of a few years. As of year 2006, the most recent data available in the system is up to year 2003.

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Table 1. Distribution of Canadian Born Individuals and Immigrants by Arrival Cohorts among Census Metropolitan Areas (CMAs) in 1991, 1996, and 2001.

CMA name	Canadian born	Immigrants			Canadian born	Immigrants				Canadian born	Immigrants				
		Total	Before 1981	1981-1991		Total	Before 1981	1981-1990	1991-1996		Total	Before 1981	1981-1990	1991-1995	1996-2001
	Census 1991				Census 1996					Census 2001					
Toronto	10.2	33.8	31.6	39.4	10.3	35.7	31.5	40.0	42.4	10.7	37.3	31.8	40.6	43.4	43.1
Montreal	11.3	12.0	11.2	14.0	11.4	11.8	11.0	12.8	12.9	11.4	11.4	10.8	12.3	11.6	11.9
Vancouver	4.9	11.0	10.2	12.9	4.9	12.7	10.4	13.7	18.3	5.0	13.6	10.5	13.7	17.9	17.6
Sub-total	26.4	56.8	53.0	66.2	26.6	60.2	52.9	66.4	73.7	27.0	62.3	53.1	66.6	72.9	72.6
Other CMAs	31.0	27.9	28.9	25.4	31.2	26.1	28.7	24.7	20.5	31.9	25.5	28.7	24.8	21.2	21.5
Other	42.7	15.3	18.1	8.4	42.2	13.7	18.4	8.9	5.9	41.1	12.2	18.2	8.6	5.9	5.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: 1991, 1996, and 2001 Census Profile Tables from Canadian Census Analyzer at CHASS (Computing in the Humanities And Social Sciences, University of Toronto).

Table 2. The 1991-1996 Inter-CMA Migration of the Immigrants in Canada.

CMA	Population Size		In-Migration		Out-Migration		Net Migration		In-migration
	1991 (Persons)	1996 (Persons)	Volume (Persons)	Ratio (%)	Volume (Persons)	Rate (%)	Volume (Persons)	Rate (%)	Rate (%)
St. John's	215	60	20	8.9	170	80.3	-150	-71.4	0.02
Halifax	495	285	60	12.3	275	55.2	-210	-42.8	0.05
Saint John	60	40	5	11.5	30	45.9	-20	-34.4	0.01
Chicoutimi - Jonquière	40	15	5	7.3	30	68.3	-25	-61.0	0.00
Québec	635	400	110	17.6	345	54.5	-235	-36.9	0.09
Sherbrooke	155	80	30	17.9	105	66.0	-75	-48.1	0.02
Trois-Rivières	40	30	15	32.5	25	57.5	-10	-25.0	0.01
Montréal	24,435	20,675	1,155	4.7	4,915	20.1	-3,760	-15.4	1.22
Ottawa - Hull	4,240	4,845	1,515	35.7	910	21.4	605	14.3	1.32
Kingston	220	190	90	41.0	120	54.5	-30	-13.5	0.08
Oshawa	410	520	295	72.8	185	45.1	115	27.7	0.25
Toronto	46,820	48,515	5,650	12.1	3,955	8.4	1,695	3.6	7.79
Hamilton	2,225	2,155	680	30.6	750	33.7	-70	-3.1	0.58
St. Catharines - Niagara	755	690	210	27.6	275	36.2	-65	-8.6	0.18
Kitchener	1,525	1,650	540	35.5	415	27.3	125	8.2	0.46
London	1,910	1,630	395	20.6	670	35.2	-280	-14.6	0.34
Windsor	1,270	1,360	375	29.4	285	22.3	90	7.1	0.32
Sudbury	85	85	40	44.2	40	45.3	0	-1.2	0.03
Winnipeg	2,665	1,935	150	5.6	880	33.0	-735	-27.5	0.13
Regina	380	215	35	9.2	205	53.3	-170	-44.1	0.03
Saskatoon	430	260	55	12.7	225	52.1	-170	-39.4	0.05
Calgary	3,235	3,275	720	22.3	680	21.0	40	1.3	0.62
Edmonton	3,570	3,125	420	11.7	865	24.2	-445	-12.5	0.36
Vancouver	12,140	15,850	4,430	36.5	720	5.9	3,710	30.6	4.14
Victoria	545	615	215	39.4	145	26.8	70	12.7	0.18
Total	108,500	108,500	17,215	15.9	17,215	15.9	0	0.0	

Note: The in-, out-, and net migration volumes are rounded independently so thatnet migration needed not be exactly equal to the difference between in-and out-migration.

Table 3. The 1996-2001 Inter-CMA Migration of the Immigrants in Canada.

CMA	Population Size		In-Migration		Out-Migration		Net Migration		In-migration
	1996 (Persons)	2001 (Persons)	Volume (Persons)	Ratio (%)	Volume (Persons)	Rate (%)	Volume (Persons)	Rate (%)	Rate (%)
St. John's	230	30	10	3.5	205	89.5	-195	-86.0	0.01
Halifax	1,245	435	105	8.4	915	73.6	-810	-65.2	0.10
Saint John	70	40	10	14.1	45	60.6	-35	-46.5	0.01
Chicoutimi - Jonquière	30	25	5	23.3	15	46.7	-5	-23.3	0.01
Québec	700	350	100	14.0	450	64.2	-350	-50.2	0.09
Sherbrooke	315	160	60	19.2	215	68.7	-155	-49.5	0.06
Trois-Rivières	45	35	15	37.8	30	62.2	-10	-24.4	0.02
Montréal	13,165	11,910	1,910	14.5	3,165	24.0	-1255	-9.5	2.07
Ottawa - Hull	2,830	3,275	1,385	48.9	945	33.3	440	15.6	1.35
Kingston	115	140	110	94.0	85	72.6	25	21.4	0.10
Oshawa	245	385	265	108.6	125	50.4	140	58.2	0.25
Toronto	50,365	50,110	6,560	13.0	6,815	13.5	-255	-0.5	11.92
Hamilton	1,540	1,915	975	63.2	595	38.7	380	24.6	0.94
St. Catharines - Niagara	430	525	255	59.3	160	36.7	95	22.6	0.24
Kitchener	1,030	1,380	670	65.1	325	31.4	350	33.7	0.64
London	785	900	415	52.6	300	38.1	115	14.5	0.40
Windsor	975	1,445	750	76.6	280	28.9	465	47.7	0.72
Sudbury	70	50	25	38.0	50	70.4	-25	-32.4	0.03
Thunder Bay	70	45	15	21.4	40	57.1	-25	-35.7	0.01
Winnipeg	1,840	1,385	185	10.0	640	34.7	-455	-24.7	0.18
Regina	310	140	35	11.5	205	66.0	-170	-54.5	0.03
Saskatoon	360	205	70	19.4	225	62.9	-155	-43.5	0.07
Calgary	3,525	3,980	1,450	41.1	995	28.3	450	12.8	1.42
Edmonton	2,595	2,280	555	21.4	870	33.5	-315	-12.1	0.54
Abbotsford	805	875	280	34.6	210	25.9	70	8.7	0.27
Vancouver	21,270	22,935	4,770	22.4	3,105	14.6	1665	7.8	5.67
Victoria	430	450	190	44.4	170	39.8	20	4.6	0.18
Total	105,400	105,400	21,175	20.1	21,175	20.1	0	0.0	

Note: The in-, out-, and net migration volumes are rounded independently so thatnet migration needed not be exactly equal to the difference between in-and out-migration.

Table 4. 1991-1996 CMA Departure Rates of the Immigrants: Educational Selectivity.

	All	0-9 Years of Schooling	10-12 Years of Schooling	13+ Years of Schooling	Bachelor's Degree or Higher
All	16.3	13.4	15.7	16.8	21.4
Selected CMAs					
Montreal	18.4	15.5	19.8	18.0	21.6
Ottawa - Hull	26.1	21.6	22.0	31.9	30.5
Toronto	7.7	5.5	7.1	8.1	12.2
Calgary	21.9	21.7	20.8	21.4	24.4
Vancouver	6.6	6.2	6.4	6.5	7.9
Country of Birth					
Hong Kong	23.0	24.7	24.4	19.6	23.1
China	20.2	12.8	15.8	21.8	30.9
Lebanon	12.3	10.4	11.7	12.0	16.5
India	15.1	12.1	13.8	18.2	17.7
Phillipines	8.9	8.4	6.5	9.0	11.7
Vietnam	19.8	22.5	18.3	11.8	14.3
Other	16.6	12.7	16.5	17.4	22.3

Table 5. 1996-2001 CMA Departure Rates of the Immigrants: Educational Selectivity.

	All	0-9 Years of Schooling	10-12 Years of Schooling	13+ Years of Schooling	Bachelor's Degree or Higher
All	20.2	16.0	17.1	20.1	28.0
Selected CMAs					
Montreal	37.7	38.3	38.8	34.5	38.5
Ottawa - Hull	38.6	27.6	34.7	35.8	47.3
Toronto	13.7	9.5	9.9	13.7	21.3
Calgary	29.5	21.4	23.9	28.5	43.4
Vancouver	13.7	11.0	11.4	13.5	19.7
Country of Birth					
Hong Kong	20.9	21.6	20.9	20.2	21.3
China	25.2	12.0	15.5	24.8	43.5
Lebanon	18.7	12.1	12.4	19.6	33.5
India	18.7	15.9	17.4	18.6	23.4
Phillipines	9.8	6.8	5.4	8.6	17.1
Vietnam	11.9	11.2	11.5	13.8	20.9

Table 6. 1991-1996 and 1996-2001 CMA Departure Rates of the Immigrants: By Immigration Class and Country of Birth

		Country of Birth					
Immigration Class	**All**	**Hong Kong**	**China**	**Lebanon**	**India**	**Phillipines**	**Vietnam**
Panel A: 1991-1996 Period							
All	16.3	23.0	20.2	12.3	15.1	8.9	19.8
Family Class	10.1	17.3	11.1	8.3	12.1	6.2	6.3
Business Class	32.5	31.8	31.6	25.0	54.6	15.4	----
Skilled Workers	16.3	22.0	24.4	12.6	19.1	10.6	10.7
Refugees	24.7	----	23.3	15.2	----	----	38.7
Panel B: 1996-2001 Period							
All	20.2	20.9	25.2	18.7	18.7	9.8	11.9
Family Class	10.5	8.0	8.6	11.2	13.4	3.4	11.3
Business Class	31.0	27.4	28.2	36.4	37.9	30.0	50.0
Skilled Workers	27.6	20.9	41.4	31.5	25.3	21.9	13.4
Refugees	22.7	----	----	9.9	42.0	----	15.8

Note: The rates for cells with small frequencies are suppressed.

Table 7. Destination Choices of the 1991-1996 Inter-CMA Migration of the Immigrants.

Origin	Best Destination	Share (%)	2nd Best Destination	share (%)	3rd Best Destination	Share (%)	Joint Share (%)
St. John's	Toronto	33.3	Ottawa-Hull	30.0	Vancouver	16.7	80.0
Halifax	Toronto	27.7	Vancouver	19.2	Ottawa-Hull	14.9	61.7
Saint John	Toronto	33.3	Ottawa-Hull	33.3	Vancouver	33.3	100.0
Chicoutimi - Jonquière	Montreal	75.0	Ottawa-Hull	12.5	Kitchener	12.5	100.0
Quebec	Montreal	61.7	Ottawa-Hull	11.7	Toronto	11.7	85.0
Sherbrooke	Montreal	61.1	Ottawa-Hull	16.7	Toronto	11.1	88.9
Trois-Rivières	Montreal	100.0	----	0.0	----	0.0	100.0
Montreal	Toronto	50.3	Vancouver	22.1	Ottawa-Hull	13.6	85.9
Ottawa-Hull	Toronto	34.1	Montreal	26.9	Vancouver	19.8	80.8
Kingston	Toronto	42.4	Ottawa-Hull	21.2	Vancouver	12.1	75.8
Oshawa	Toronto	85.7	Hamilton	4.8	Kitchener	2.4	92.9
Toronto	Vancouver	35.7	Montreal	10.1	Hamilton	9.3	55.1
Hamilton	Toronto	54.8	Kitchener	15.3	Vancouver	12.1	82.2
St. Catharines - Niagara	Toronto	54.2	Hamilton	11.9	Edmonton	6.8	72.9
Kitchener	Toronto	48.9	Vancouver	14.9	Montreal	7.5	71.3
London	Toronto	56.5	Vancouver	10.9	Hamilton	5.8	73.2
Windsor	Toronto	62.5	Vancouver	12.5	Kitchener	5.4	80.4
Sudbury	Toronto	50.0	Ottawa-Hull	33.3	Vancouver	16.7	100.0
Winnipeg	Vancouver	43.6	Toronto	28.5	Calgary	8.7	80.8
Regina	Vancouver	31.6	Toronto	26.3	Winnipeg	7.9	65.8
Saskatoon	Toronto	26.4	Vancouver	24.5	Calgary	13.2	64.2
Calgary	Vancouver	42.1	Toronto	29.3	Edmonton	9.0	80.5
Edmonton	Vancouver	42.5	Toronto	21.3	Calgary	19.0	82.8
Vancouver	Toronto	53.2	Victoria	11.5	Calgary	9.4	74.1
Victoria	Vancouver	70.4	Ottawa-Hull	7.4	Windsor	7.4	85.2

Table 8. Destination Choices of the 1996-2001 Inter-CMA Migration of the Immigrants.

ORIGIN	Best Destination	Share (%)	2nd Best Destination	share (%)	3rd Best Destination	Share (%)	Joint Share (%)
St. John's	Toronto	40.2	Hamilton	8.8	Ottawa-Hull	8.3	57.4
Halifax	Toronto	46.4	Vancouver	21.3	Montreal	10.5	78.2
Saint John	Vancouver	44.2	Toronto	27.9	Edmonton	7.0	79.1
Chicoutimi - Jonquière	Montreal	64.3	Quebec	14.3	Sherbrook	14.3	92.9
Quebec	Montreal	50.4	Toronto	14.2	Kitchener	9.1	73.8
Sherbrooke	Montreal	32.6	Toronto	18.1	Hamilton	14.4	65.1
Trois-Rivières	Montreal	53.6	Toronto	25.0	Quebec	10.7	89.3
Montreal	Toronto	49.6	Vancouver	22.5	Ottawa-Hull	8.9	81.1
Ottawa-Hull	Toronto	52.8	Montreal	18.1	Vancouver	12.3	83.2
Kingston	Toronto	41.2	Ottawa-Hull	28.2	Montreal	16.5	85.9
Oshawa	Toronto	86.2	Vancouver	5.7	Montreal	3.3	95.1
Toronto	Vancouver	35.2	Montreal	13.3	Ottawa-Hull	8.8	57.3
Hamilton	Toronto	62.4	Vancouver	6.2	Montreal	5.4	74.0
St. Catharines - Niagara	Toronto	62.0	Hamilton	10.8	Vancouver	5.7	78.5
Kitchener	Toronto	59.0	Vancouver	9.6	Hamilton	9.0	77.5
London	Toronto	57.7	Vancouver	8.0	Windsor	7.7	73.3
Windsor	Toronto	53.9	Vancouver	11.7	Montreal	7.5	73.1
Sudbury	Toronto	42.0	Montreal	18.0	Hamilton	10.0	70.0
Thunder Bay	Toronto	40.0	Vancouver	12.5	Montreal	10.0	62.5
Winnipeg	Toronto	36.2	Vancouver	24.5	Calgary	8.5	69.1
Regina	Toronto	29.6	Vancouver	21.4	Calgary	12.6	63.6
Saskatoon	Toronto	21.6	Calgary	13.2	Windsor	12.8	47.6
Calgary	Vancouver	40.7	Toronto	38.4	Edmonton	5.4	84.6
Edmonton	Vancouver	32.0	Toronto	31.3	Calgary	18.3	81.5
Abbotsford	Vancouver	50.0	Toronto	22.6	Calgary	20.7	93.3
Vancouver	Toronto	53.0	Calgary	13.3	Abbotsford	6.7	73.0
Victoria	Vancouver	63.4	Toronto	7.6	Calgary	6.4	77.3

Table 9. Estimation Results of the Destination Model of the Inter-CMA Migration of the Immigrants in Canada.

	PANEL A : 1991-1996				PANEL B : 1996-2001			
Rho-Square	0.4912				0.4970			
	Best Specification		Marginal Contribution in Rho-square		Best Specification		Marginal Contribution in Rho-square	
	Coefficient	t-ratio	fix-coefficient method	maximizing method	Coefficient	t-ratio	fix-coefficient method	maximizing method
1. Economic Factors			0.2484	0.0917			0.3092	0.0532
Income	0.0919	7.9			0.0736	5.2		
Income * 13+ Years of Schooling	----	----			0.0640	4.3		
Income * Bachelor's Degree or Above	0.1137	22.9			0.0869	6.9		
Employment Growth Rate					0.0417	7.9		
Unemployment Rate	-0.1307	-7.0			-0.2016	-10.5		
Employment Size	1.1419	39.4			1.1693	41.6		
Payment	----	----			-0.0027	-8.1		
2. Ethnic Similarity			0.0376	0.0253			0.0837	0.0295
Ethnic Similarity * Hong Kong	0.4875	11.6			1.1037	32.0		
Ethnic Similarity * Hong Kong * Aged 40+	0.3400	3.8			----	----		
Ethnic Similarity * China	0.2431	3.9			0.7925	14.9		
Ethnic Similarity * China * Aged 40+	0.2820	4.2			----	----		
Ethnic Similarity * China * 12- Years of Schooling	0.2119	3.6			0.2027	4.3		
Ethnic Similarity * China * Skilled-worker	-0.3293	-5.5			-0.4108	-8.0		
Ethnic Similarity * Iindia	0.4194	6.7			0.5410	12.1		
Ethnic Similarity * India * 12- Years of Schooling	0.4432	5.1			0.3900	7.0		
Ethnic Similarity *Lebanon	0.4685	10.6			0.6624	9.3		
Ethnic Similarity * Lebanon * Aged 40+	0.2290	2.8			----	----		
Ethnic Similarity * Lebanon * 12- Years of Schooling	0.1720	2.8			----	----		
Ethnic Similarity * Philippines	0.7254	15.0			0.8823	17.1		
Ethnic Similarity * Vietnam	0.4251	2.7			1.2016	4.9		
3. Other Factors and Interaction Terms								
Ln (Distance)	-0.3990	-27.9			-0.3034	-27.5		
Coldness	-0.0002	-5.5			-0.0004	-12.6		
Coldness * Aged 40+	-0.0003	-4.7			----	----		
Vancouver to Abbotsford	----	----			1.5118	10.8		
Toronto to Oshawa	1.5623	3.3			1.1273	2.5		
Montreal * French Language Ability	1.4396	8.8			1.5946	7.5		
Rest of Quebec to Montreal	1.5963	7.8			2.0813	7.3		
Vancouver * Business Class	0.7487	5.8			0.4838	4.4		
Toronto * Business Class	0.9965	8.3			0.4894	5.0		

Note: For brevity, marginal contribution in Rho-squre is only reported for factors with relatively large contribution.

Table 10. Estmation Results of the Departure Model of the Inter-CMA Migration of the Immigrants in Canada.

	PANEL A : 1991-1996				PANEL B : 1996-2001			
Rho-Square	0.1673				0.1912			
	Best Specification		Marginal Contribution in Rho-square		Best Specification		Marginal Contribution in Rho-square	
	Coefficient	t-ratio	fix-coefficient method	maximizing method	Coefficient	t-ratio	fix-coefficient method	maximizing method
1. Personal Factors								
Constant	-2.571	-8.2			-0.701	-3.4		
Aged 30+	-0.135	-4.0			-0.077	-2.7		
13+ Years of Schooling	0.156	3.7			----	----		
Bachelor's Degree or Above	0.381	8.7			----	----		
Immigration Class			0.0263	0.0200			0.0883	0.0590
Family Class	-0.805	-11.9			0.425	5.9		
Business Class	0.882	9.8			2.225	17.9		
Skilled Workers	-0.276	-4.2			1.766	24.2		
Refugees	0.215	2.5			1.384	14.4		
2. Labor Market Factors			0.0478	0.0194			0.0469	0.0295
Income	-0.016	-4.1			-0.022	-6.3		
Income * 13+ Years of Schooling	----	----			-0.011	-4.8		
Income * Bachelor's Degree or Above	----	----			-0.010	-3.2		
Employment Growth Rate	-0.074	-13.5			-0.031	-7.6		
Unemployment Rate	0.066	4.6			0.118	6.6		
Employment Size	-0.596	-22.9			-0.446	-17.5		
3. Ethnic Similarity			0.0307	0.0246			0.0478	0.0341
Ethnic Similarity * Hong Kong	-0.132	-3.5			-0.621	-27.7		
Ethnic Similarity * China	-0.087	-2.2			-0.502	-13.3		
Ethnic Similarity * China * 12- Years of Schooling	-0.132	-3.0			-0.230	-6.7		
Ethnic Similarity * China * Skilled-worker	----	----			0.301	8.2		
Ethnic Similarity * Iindia	-0.129	-3.5			-0.495	-19.7		
Ethnic Similarity *Lebanon	-0.558	-20.2			-0.670	-10.8		
Ethnic Similarity * Philippines	-0.495	-17.0			-0.854	-26.9		
Ethnic Similarity * Vietnam	-0.445	-6.6			-0.967	-11.0		
3. Other Factors and Interaction Terms								
Coldness	0.200	7.4						
Attractiveness of the Rest of the System	0.239	7.0	0.0061	0.0014	0.214	5.6	0.0159	0.0008
Montreal * French Language Ability	-0.235	-2.8			-1.006	-5.8		
Quebec * Business Class	----	----			0.976	5.8		
Vancouver * Business Class	-1.303	-7.8			-0.753	-5.4		
Toronto * Business Class	-0.893	-6.8			-0.517	-4.2		

Note: For brevity, marginal contribution in Rho-squre is only reported for factors with relatively large contribution.

Appendix Table 1. Employment and Income Indicators for the CMA system in Canada.

	1991-1996					1996-2001				
CMA NAME	**Employment Size**	**Income - Male ***	**Income - Female***	**5-year Employment Growth Rate (%)**	**Unemploy-ment Rate (%)**	**Employment Size**	**Income - Male ***	**Income - Female***	**5-year Employment Growth Rate (%)**	**Unemploy-ment Rate (%)**
St.John's	75190	28146	16639	-0.35	16.0	74930	41,788	15,128	1.38	14.2
Halifax	163515	30821	17656	-0.29	9.1	168160	40,357	16,510	1.70	8.6
SaintJohn	55310	29196	15261	-3.47	11.3	53390	41,292	17,205	0.93	13.1
Chicoutimi-Jonquiere	64945	29873	15016	-1.60	13.1	63905	41,536	18,840	0.51	13.4
Quebec	316405	29205	17272	-0.43	9.0	315045	40,743	18,979	1.82	10.4
Sherbrooke	64440	26108	15683	3.42	10.8	67635	37,504	17,928	2.17	10.3
Trois-Rivieres	57845	28111	14281	1.43	13.2	58670	40,498	20,094	0.78	12.0
Montreal	1516430	29920	17961	-0.93	11.6	1502380	41,674	19,557	2.35	11.2
Ottawa-Hull	503410	35046	21767	-0.27	7.2	496220	47,009	18,546	2.65	8.8
Kingston	68455	31165	18545	-2.34	7.5	67370	41,444	15,812	1.09	9.4
Oshawa	120770	35349	19090	5.05	8.5	126865	48,147	20,718	3.76	9.0
Toronto	2039805	35779	21855	1.07	8.5	2061615	48,498	20,075	3.41	9.1
Hamilton	293850	33009	18180	0.13	8.8	294225	46,795	19,622	2.15	8.1
St.Catharines-Niagara	168740	30382	15864	-2.08	9.5	165230	42,940	18,208	1.84	9.9
Kitchener	182665	31980	17900	5.14	9.0	192055	44,064	18,866	2.92	8.1
London	193615	31696	18826	-1.66	8.5	198970	43,942	16,984	1.68	9.3
Windsor	117725	31438	17645	11.08	11.7	134585	48,095	22,679	2.26	8.1
Sudbury	74270	32790	16843	-5.52	8.5	72415	47,275	20,742	-0.52	12.0
ThunderBay						58260	44,664	20,988	-0.41	10.7
Winnipeg	325880	28287	17229	-0.35	8.5	324745	39,334	16,301	1.29	7.9
Regina	97260	30765	18245	-0.88	7.2	96400	42,051	17,045	0.84	7.3
Saskatoon	103220	28785	16602	3.80	8.6	107150	39,963	16,923	1.39	7.5
Calgary	406015	34396	19391	8.76	8.0	441575	47,337	19,673	4.47	6.6
Edmonton	434250	30952	17931	-0.05	8.2	434020	42,581	18,349	3.20	8.2
Abbotsford						60645	42,230	19,353	2.73	10.0
Vancouver	814070	32820	19499	11.58	9.1	908320	46,487	20,918	1.92	8.6
Victoria	139165	30971	18859	6.99	7.6	148890	42,105	19,445	0.92	7.7

Data source: 1996, 2001 Canadian census profile (Census Tract level) @ Canadian Census Analyser
Note: the data have been adjusted for boundary changes of some CMAs.
* Average employment income (full time full year) in Canadian Dollars

Number	Title	Author(s)
(2005)		
No. 124:	Exploring the Use of a Nonparametrically Generated Instrumental Variable in the Estimation of a Linear Parametric Equation	F.T. Denton
No. 125:	Borrowing Constraints, The Cost of Precautionary Saving, and Unemployment Insurance	T.F. Crossley H.W. Low
No. 126:	Entry Costs and Stock Market Participation Over the Life Cycle	S. Alan
No. 127:	Income Inequality and Self-Rated Health Status: Evidence from the European Community Household Panel	V. Hildebrand P. Van Kerm
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