Going up? Canada's metropolitan areas and their role as escalators or elevators

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Abstract

Canada's major metropolitan areas offer multiple opportunities for economic and social advancement for in-migrants. As such, young adults may be attracted to these locations. In-migrants to Toronto have been observed to receive a substantial income benefit associated with migration into Toronto that is consistent with a productivity effect. This income effect is greater than the income benefit received by migrants elsewhere in the system or those who did not migrate. However, migration into Toronto did not lead to an acceleration in income gains consistent with the more rapid career progression expected to result from migration into an escalator region. Consequently, this paper explores the income benefits for young adult migrants by considering the role of other major metropolitan areas within Canada, and whether they function similarly to Toronto, as escalators, or serve other roles that are unique to employment sector and type.

Keywords: migration, income, metropolitan, productivity, escalators.

Résumé

Les grandes régions métropolitaines du Canada offrent de nombreuses possibilités d'avancement économique et social pour les entrants. C'est pourquoi les jeunes adultes peuvent être attirés vers ces endroits. À Toronto, on a remarqué que les entrants touchent des prestations de revenu considérablement supérieures à ce qui correspond à l'effet de productivité. Cet effet de revenu est supérieur aux prestations de revenu que les migrants touchent ailleurs dans le système ou que les non-migrants touchent. Cependant, la migration vers Toronto n'a pas donné lieu à l'accélération des gains de revenu correspondant à l'avancement professionnel plus rapide attendu d'une migration vers une région mobile. En conséquence, cet article examine les prestations de revenu des jeunes migrants tout en tenant compte du rôle d'autres grandes régions métropolitaines au Canada, à savoir si elles sont semblables à Toronto en termes de mobilité ou si elles sont uniques dans le secteur et le type d'emploi.

Mots-clés : migration, revenu, métropolitain, productivité, régions mobiles.

Introduction

A critical challenge for cities is to create jobs and attract high-quality workers. Research such as that on Florida's "creative class" (Florida 2002a) over the past decade has emphasized the importance of human capital for economic growth and development, and has assumed that migration underlies a portion of the difference in human capital across space. Migration research has long demonstrated the link between residential and occupational mobility, with clear evidence of a beneficial impact to wages

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associated with migration into large cities (e.g., Glaeser and Maré 2001). Fielding's (1992, 1997) *escalator region model* provides one vantage point to evaluate the role of large metropolitan areas vis-à-vis the labour market, occupational mobility, and migration. In this model, young people are drawn to large metropolitan areas at the start of their working lives, consistent with the large flows into Canada's largest metropolitan centres observed by Beckstead et al. (2008). Because of the variety and quality (i.e., higher level) of local employment opportunities in larger metropolitan areas, it is possible for individuals to advance their careers comparatively quickly, with evidence of gains in earnings from migration into higher-order metropolitan areas (Champion et al. 2014; De la Roca and Puga 2012). Nearing the end of their careers, or at the point of retirement and after benefiting from strong salaries or property equity, the former in-migrants become out-migrants and "step off the escalator" (Champion and Coombes 2007; Coombes and Charlton 1992; Fielding 1992, 1993). In short, escalator regions propel the socio-economic status of young inter-regional migrants at a faster rate than other regions, with three observable stages to the escalator: "stepping on the escalator; being taken up to a higher level by the escalator; and stepping off the escalator" (Fielding 1995: 176).

While the income benefits of migration into urban areas have been confirmed (Glaeser and Maré 2001; Newbold and Brown 2012), the literature has focused on the role of *primate* or large metropolitan areas. But does migration into other large metropolitan areas also confer income advantages? Similarly, what is the degree of the income benefit associated with migration into a second-tier centre? In other words, is the income benefit from migrating to other, smaller centres similar or less than that observed from migration into the largest urban centres? This paper seeks to discover whether other metropolitan areas in Canada also function as *human capital "escalators"* for in-migrants and residents.

Using a set of metropolitan areas drawn from across Canada that reflect a mix of *"large" primary centres* (Toronto, Vancouver, Montreal, Calgary) and *secondary centres* (Winnipeg and Halifax), the research evaluates the impact on income associated with migration into a set of selected metropolitan areas. The paper is framed in terms of the potential influence of different metropolitan contexts on the prospects of advancement as measured by wage gains. In this respect, the paper is reflective of the work by spatial economists who have tended to focus on earnings growth (Glaeser and Maré 2001; Glaeser and Resseger 2010; De la Roca and Puga 2012; Newbold and Brown 2012) rather than class transitions, as was the case with Fielding's work. The paper extends the work by Newbold and Brown in two ways. First, it considers a broader set of metropolitan areas that are more reflective of Canada's metropolitan hierarchy, including the importance of other major cities such as Vancouver or Montreal and their respective national/regional roles as other potential national escalators, or as *regional escalator centres* that may be nested within the broader economy. More than likely, Canada's largest metropolitan areas will function similarly to Toronto, having the largest income gains, while migration into second-tier centres will be associated with smaller income gains. Second, this paper considers a group of young adults aged 25–34, which is arguably more representative of individuals that have left school and are engaged in the labour force as compared to the group aged 20–29 that was considered in the earlier paper.

Background literature: Escalator and elevator regions

Fielding (1992, 1993) and others (e.g., Findlay et al. 2009; Champion et al. 2014) have explored the concept of the escalator region in terms of moves across occupational and class mobility, with movement into large metropolitan centres such as London (UK), associated with upward social mobility. But migration into large urban centres will also arguably result in increased income, given that metropolitan areas offer multiple opportunities for economic and social advancement for their

populations as well as in-migrants, reflecting the greater reward for worker skills and their endowed human capital, changes in occupation, or promotion concurrent with migration (Fielding 1992; Dunford and Fielding 1997; Findlay et al. 2009; Van Ham 2001, 2002). Glaeser and Maré (2001), for instance, predict that migrants will receive wage gains following a move into large metropolitan areas. Moreover, this benefit can be expected regardless of ability and is not associated with omitted ability effects. Further, the better-educated tend to receive greater economic rewards after migration (Stalker 2000). Beyond employment opportunities or income gains, large urban areas are also attractive to in-migrants owing to the possibility of increased consumption opportunities (Lee 2010), along with greater social links and amenities (Florida 2002a). Greater employment opportunities are also available for the better educated, meaning that they are more likely to participate in migration and to benefit from it as a result. Reflecting potential income gains, individuals with specialized skills may have an incentive to migrate to larger urban areas, given their potential for a better match between their jobs and skills (e.g., Costa and Kahn 2000), resulting in increased wages. Larger labour markets also offer more specialized opportunities for workers, and, hence, increased wages (Duranton and Puga 2005; Florida 2002b).

The income benefits associated with migration into large urban areas have been confirmed in the literature. In the Canadian context, Newbold and Brown (2012) explored whether Toronto served the role of a *national escalator region* by comparing the earnings trajectory of migrants to Toronto with that of other migrants. Results suggested that young in-migrants to Toronto (aged 20–29) received a greater income benefit as compared to stayers or migrants elsewhere in the system. Moreover, this income benefit was consistent with a *productivity effect*[2] (Krugman 1991; Combes et al. 2008), whereby productivity effects reflect spatial disparities in the use of human capital and may be associated with a better matching between skills and work needs and/or obtaining employment in a more productive firm, both of which would be expected to be greater in large metropolitan areas. As such, productivity effects tend to have a more immediate impact on income, with a jump in income post-migration but no change in the growth rate of income pre- and post-migration. However, migration into Toronto was not observed to be associated with changes in income due to the *learning effect*, an effect that involves a more gradual increase in income as workers learn new skills and firms take better advantage of the skills that workers bring to their job, and implying a change in the income growth rate (Bacolod et al. 2009; Rauch 1993; Glaeser 1999; Glaeser and Maré 2001). Consequently, Toronto was perhaps more similar to an *"elevator" region* for in-migrants rather than an escalator region, with the important distinction between these two effects being whether increased earnings were based on productivity or learning effect. That is, Toronto is a metaphorical elevator because in-migrants to the city experienced a jump in income taking them from one earnings level to another, consistent with the productivity effect. However, the escalator effect did not apply, given that there was no evidence of a change in the *growth rate* of income in the post-migration period.

To date, the majority of existing research associated with escalator regions has tended to focus on migration to primate cities such as London (UK), meaning it is unclear whether (or how) migrants to second-order cities benefit. That is, would migrants to other large or medium metropolitan areas experience similar increases in income as compared to those who move to primate cities? In the UK, Champion et al. (2014) observed that migration to second-order cities such as Manchester, Nottingham, or Leeds resulted in greater upward social mobility than that observed among non-migrants. Moreover, the benefit was similar to that observed for migrants into London, suggesting that migra-

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2. Promotion or occupation changes associated with migration would be consistent with productivity effects, given the better fit between the skills of the migrant and the employment opportunities.

tion only occurs *after* having secured better employment in the destination centre. But would similar outcomes be observed in other systems and urban hierarchies? In part, answering this may depend on the economic structure of the nation in question. Looking at the role of second-order cities in the UK, Champion et al. (2014) argued that the primate-city size distribution of the UK meant that second-order cities, and particularly those that were dealing with de-industrialization, were at an economic disadvantage, with inter-regional migration of young adults focused on London in order to take advantage of more rapid career growth (Coombes and Charlton 1992; Fielding 1993; Champion and Coombes 2007), perpetuating the north-south divide. In the Canadian context, the landscape is instead characterized by a dispersed metropolitan system, with a small set of what might be arguably defined as "national" cities. In this respect, it may be that metropolitan areas such as Montreal, Calgary, and Vancouver also operate as national escalator (or elevator) regions, attracting in-migrants and rewarding them with an income advantage. Looking beyond Toronto as Canada's financial capital, Montreal has a highly diversified economy (Beckstead and Brown 2003), Vancouver is a major destination for immigrants (Schellenberg 2004), and Calgary is an important head office centre, particularly for the oil and gas sector (Beckstead and Brown 2006). Second-tier cities such as Winnipeg or Halifax may act as regional escalators (elevators). Like their larger counterparts, migration into these smaller regional centres could also convey an income advantage, but likely a smaller one than for migrants into larger centres. These regional escalators may also link further to national escalators, forming a hierarchy of regions, with the escalators in each case allowing workers the opportunity to advance their incomes faster than if they had not migrated. Newbold and Brown (2012) demonstrated that migrants to other large cities within the Canadian system achieved a wage premium compared to non-migrants in the same city, although this premium was not as large as that observed among Toronto migrants (Newbold and Brown 2012), suggestive of their role as "mini" or "regional" escalators that exist within a hierarchy of urban areas. However, these other large metropolitan areas were represented by an aggregate, which failed to provide individual insights for each centre. Consequently, this paper disaggregates the large and medium urban areas to evaluate the impact on income associated with migration into selected metropolitan areas.

Data and methods

In the absence of long-term longitudinal data that follows individuals and their occupational and residential transitions, this paper drew upon two complementary data sources: (i) the 2006 Canadian Census (20 per cent sample); and (ii) the 1993, 1996, 1999, 2002, and 2005 Surveys of Labour Income and Dynamics (SLID). The census file is a nationally representative data file of the population on census day, and includes information on migration (contrasting residence at the beginning and end of the census cycle) and other sociodemographic and socioeconomic information. SLID is a longitudinal survey, with each panel collecting labour market and income information over a six-year period, representing approximately 30,000 households in each panel. Migration within the SLID is measured by a change in residential location from one year to the next. Using of both of these files allows us to consider productivity effects, but not learning effects. The six metropolitan areas are: Toronto, Montreal, Vancouver, Calgary, Winnipeg, and Halifax. The first four cities each have populations that exceed one million, and may serve roles similar to Toronto as national escalator cities; Winnipeg and Halifax are representative of medium urban areas, with metropolitan populations of less than one million, that may serve as regional escalators. Research methods include complementary descriptive and multivariate techniques.

The census sample is restricted to individuals aged 25–34 (at the end of the census interval) who are not institutionalized and reported earning an income in 2005. The focus on individuals in this age range represents those more likely to migrate for employment reasons and move "onto the escalator," while also capturing those who are relatively more mobile and have longer time horizons to realize the benefits of migration (Sjaastad 1962). The choice of the 25–34 age group is also consistent with the escalator theory, capturing a cohort that is at the start of their career and therefore quickly developing income growth which could be "supercharged" by moving to larger cities, where the economic structure is richest and opportunities for income growth the greatest. Fielding (1997), for example, notes that escalator regions tend to attract young, upwardly mobile adults.

Multiple regression (OLS) was used to evaluate the correlates of income (log earned income in 2005, based on the 2006 census) and assess the income advantage associated with migration, defined by:

$$\log(W_k) = X_k \beta + U_k \Gamma + \varepsilon_k , \tag{1}$$

where W_k is the log of earned income for individual k, X_k is a vector of individual characteristics—degree holder status, age, gender, knowledge worker status, employment status (self-employed/ employed), visible minority status, and full/part time status)—and U_k is a set of dummy variables capturing the range of migrant and stayer statuses.[3]

The SLID sample also focused on employed individuals aged 25–34 (age at end of panel) who reported earned income. With the SLID, however, migrants include anyone that moved between year t and $t+1$ in any of the panels, while the census captures movement over the five years prior to census day. To allow for a sufficient sample size, the five SLID panels were merged to form one "composite panel." Institutionalized individuals were excluded from the sample, along with residents of the three northern territories. Two measures of income are evaluated: (i) the mean difference in earned after-tax income between the beginning and end panels by migrant status (i.e., income in year 6 minus income in year 1), and (ii) the mean average pre- and post-migration after-tax income (see Table 1).[4] The income of stayers is defined as the average income for all years of the SLID.

Table 1. Income measures.

Data File	Measure	Description
Census	2005 Earned Income	Earned income received in 2005
SLID	Δ Total Income	Total Income year 6 – Total Income year 1
SLID	Δ Average Income	Difference in average pre- and post-migration, excluding year of migration

Complementing the use of the Census files, the SLID files were used two ways. First, similar to the census data, mean incomes were calculated for the sets of migrants and stayers. Second, following Glaeser and Maré (2001), a first-difference model was used to estimate the difference in the log of after-tax income of migrants and stayers, removing individual and time-invariant omitted ability bias (Bradley et al. 2009), defined as:

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3. There is some debate about the most appropriate measure of income to use. It is assumed that *earned income*, which is used in this paper, captures income increases associated with productivity or learning effects, regardless of the impact of space. As an alternative measure, *real income* may capture differences in housing costs, and potentially hide the productivity-enhancing effect of escalator regions. At the same time, in-migrants may be willing to accept a lower real wage as a tradeoff for the benefits associated with living in the city.

4. For example, if an individual moved in year 4 of the SLID, the mean average income would be the difference between the mean income for years 5 and 6 and the mean income for years 1, 2, and 3. This precludes migrations made in years 1 and 6 of the SLID.

$$\log(\Delta W_k) = \Delta X_k \beta + U_k \Gamma + \lambda + \varepsilon_k, \tag{2}$$

where ΔW_k is the difference in the log of after-tax income between panel 1 and panel 6 for individual k (or in the difference in the pre- and post-migration average after-tax income), λ is a dummy variable corresponding to the SLID panel (1–5), and Γ is a set of dummy variables capturing the range of migrant and stayer statuses.

The SLID data were also used to account for one of the key confounding issues: migrant self-selection. Given unobserved characteristics, individuals who migrate and experience income growth are more likely to self-select into migration. Consequently, the estimated income effect of migration can be biased if migrants have characteristics that increase their productivity in different locations. Propensity score matching techniques address selection bias and migrant selectivity (interested readers should consult Ham et al. 2004, Moilanen 2010, Rosenbaum and Rubin 1983 for a more detailed description of the methodology) while estimating the effect of migration on wage growth. We let $D=1$ if an individual migrates and $D=0$ otherwise, with the income outcomes defined as Y_1 and Y_0, respectively. We wish to estimate the average treatment effect (ATT) on the treated:

$$ATT = E(Y_1 - Y_0 \mid D=1) = E(Y_1 \mid D=1) - E(Y_0 \mid D=1) \tag{3}$$

While we observe the income gain of migrants (the first term on the right-hand side), we do not observe the income gain migrants would have experienced had they not migrated $E(Y_0 \mid D=1)$, which is implemented through STATA's *teffects psmatch* routine.

Given the assumption of *unconfoundedness*, whereby income growth for those who do not move is independent of treatment status, of primary importance in the model's estimation is the selection of *conditioning variables* that capture the propensity to migrate, with these effects drawn from the migration literature. Conditioning variables drawn from the SLID include gender, visible minority status, immigrant status, educational attainment, whether an individual is a knowledge worker (individuals in science, education, or other creative occupations), and origin location (province). The log of initial income is also included, to take into account regression toward the mean.

Results

Table 2 reports the mean income based on the SLID and census data files for migrants and stayers. Based on the census results, three broad conclusions can be drawn. First, analysis of the census reveals that migrants typically report a higher income than stayers, suggesting that migration conveys an income advantage. However, the income benefits of migration are typically modest. For instance, migrants to Toronto reported an income of \$41,213, as compared to the income of individuals who stayed in Toronto (\$39,340). Second, migration into Toronto—Canada's largest urban area—conveys the greatest income benefit (excepting individuals who stayed in Calgary), regardless of migrant or stayer status. Third, there appears to be some difference in earnings across the urban hierarchy, with in-migrants to large urban areas (Toronto, Vancouver, Montreal, and Calgary) generally receiving greater income benefits than migrants into medium (Winnipeg and Halifax) and small urban areas.

Turning to the SLID, values reported indicate the difference in after-tax income between the beginning and end panels (Δ total income) and the difference in the average pre- and post-migration income (Δ average total income) by migrant status. Regardless of the measure used, migrants into Toronto experienced the largest increase in income, an increase that was greater than that observed

Table 2. Pre- and post-migration income differences by migration status / destination ($): migrants aged 25–34.

	Census	SLID	
	2005 earned income	Δ average income	Δ total income
Migrate into Toronto	41,213	14,839	22,684
Stay in Toronto	39,340	11,760	19,088
Migrate into Montreal	33,037	10,768	17,090
Stay in Montreal	32,778	8,597	14,057
Migrate into Vancouver	34,300	14,817	23,038
Stay in Vancouver	34,933	8,799	15,164
Migrate into Calgary	40,128	12,236	18,873
Stay in Calgary	42,572	19,316	30,355
Migrate into Halifax	32,583	10,853	16,626
Stay in Halifax	30,163	7,767	13,090
Migrate into Winnipeg	32,041	7,935	12,639
Stay in Winnipeg	30,850	8,048	13,507
Migrate into other Large Urban	37,360	11,293	19,450
Migrate into other Medium Urban	34,694	11,842	19,304
Migrate into Small Urban	33,788	9,459	15,145
Migration into Rural	32,489	9,367	15,277
Other Stayer	32,526	8,575	14,468

among stayers. Migrants into other urban areas typically, but not uniformly, experienced an increase in income as compared to stayers. However, these increases were not as large as compared to those who moved to Toronto. For instance, migrants into Montreal, Vancouver, and Halifax experienced larger increases in income than those who stayed in both cities, again indicating that migration was correlated with an increase in income. Also based on the SLID, migration into Winnipeg did not seem to result in an increase in income, with the income of in-migrants and stayers statistically identical (approximately $8,000 based on the change in average income). Moreover, migrants into Winnipeg appeared to be at a *disadvantage*, with a lower income total income ($12,639) than stayers ($13,507). Migration into other large or medium urban areas also appeared to confer an income advantage as compared to movement into small urban areas or rural areas, and relative to the income of stayers. For example, individuals who moved into other medium and large urban areas saw their incomes increase by just over $19,000 (based on change in total income), while other stayers saw their income increase by $14,468 over the same period.

For both the Census and SLID data, migration into Calgary represents an interesting exception. Regardless of the income measure used, migrants into Calgary earned less or experienced a smaller increase in income than those who stayed in Calgary, a situation which may reflect Calgary's employment market. Driven by the oil and gas sector, Calgary has enjoyed tremendous growth over the past two decades, with its metropolitan (CMA) population exploding, growing by 13.4 per cent between 2001 and 2006. Between 2006 and 2011, it grew by an additional 12.1 per cent, with the total CMA population exceeding 1.2 million in 2011. Given its attractiveness and the availability of jobs, in-migrants may be at a relative disadvantage to those who have been in the CMA longer, with in-migrants potentially reflecting greater heterogeneity in terms of earnings potential. That is, Calgary may attract in-migrants with a more diverse set of skills and fit within the labour market, such that the income advantage conferred to migrants is washed out in the short term—although migrants would expect longer-term income gains as they become established in the market.

Multivariate analysis

Income gains from migration may reflect the ability of large metropolitan areas to attract skilled workers as opposed to a true escalator effect, given that differences in income by migrant status may represent unobserved effects of selection, along with the abilities and skills of migrants. We therefore turn next to the multivariate analysis of income level and income growth, using the 2006 census and SLID files.

Table 3. Income premiums by migrant status, aged 25–34.

	2006 Census		SLID			
	2005 earned income		Δ total income		Δ average income	
	B	P	B	P	B	P
Constant	4.991	< 0.0001	6.968	< 0.0001	3.840	< 0.0001
Migrant Status:						
Migrate into Toronto	0.167	< 0.0001	0.532	< 0.0001	0.257	< 0.0001
Stay in Toronto	0.189	< 0.0001	0.115	0.0079	0.080	< 0.0001
Migrate into Montreal	−0.012	0.2368	0.258	0.0020	0.109	< 0.0001
Stay in Montreal	0.013	0.0002	−0.011	0.7919	−0.004	0.9172
Migrate into Vancouver	0.060	< 0.0001	0.335	0.0055	0.138	0.0006
Stay in Vancouver	0.147	< 0.0001	−0.071	0.1994	−0.026	0.1530
Migrate into Calgary	0.126	< 0.0001	0.387	0.0025	0.143	0.0008
Stay in Calgary	0.214	< 0.0001	0.448	< 0.0001	0.189	< 0.0001
Migrate into Halifax	−0.053	0.0041	0.278	0.2022	0.149	0.0413
Stay in Halifax	−0.108	< 0.0001	−0.045	0.7087	−0.066	0.1028
Migrate into Winnipeg	−0.060	0.0047	−0.201	0.3087	−0.029	0.6571
Stay in Winnipeg	−0.005	0.4845	−0.089	0.2841	−0.037	0.1828
Migrate into large urban	0.087	< 0.0001	0.298	< 0.0001	0.091	< 0.0001
Migrate into medium urban	0.009	0.0895	0.256	< 0.0001	0.098	< 0.0001
Migrate into small urban	−0.002	0.7846	0.179	0.2228	0.024	0.2741
Migrate into rural	−0.032	< 0.0001	0.151	0.1996	0.041	0.3027
Age	0.189	< 0.0001				
Age squared	−0.003	< 0.0001				
Male	0.291	< 0.0001				
Immigrant	−0.041	< 0.0001				
Degree holder	0.123	< 0.0001				
Knowledge worker	0.412	< 0.0001				
Employed full time	1.062	< 0.0001				
Wage	0.579	< 0.0001				
Self-employed	0.124	< 0.0001				
Visible Minority	−0.149	< 0.0001				
Log(AT Income, Year 1)			−0.197	< 0.0001	−0.364	< 0.0001
School years			0.063	< 0.0001	0.011	0.0065
New degree holder			0.332	< 0.0001	0.148	< 0.0001
New knowledge worker			0.206	< 0.0001	0.051	< 0.0001
Panel 2			0.187	< 0.0001	0.074	< 0.0001
Panel 3			0.180	< 0.0001	0.075	< 0.0001
Panel 4			0.303	< 0.0001	0.115	< 0.0001
Panel 5			0.330	< 0.0001	0.141	< 0.0001
N						
F	8915.7		25.31		171.75	
Adjusted R2	0.270		0.073		0.387	

Turning first to the results from the census (Table 3), migrants into Toronto received an income premium of 16.7 per cent, slightly less than the income premium for those who stayed in Toronto (18.9 per cent; column 1). On the other hand, migrants to Toronto received a larger premium than migrants to other metropolitan areas. However, migration did not always confer an income advantage. Namely, while migration into Montreal was not associated with a statistically significant change in income (either positive or negative), migrants to Halifax and Winnipeg experienced a small reduction in wages (approximately 5 per cent). Such results are broadly consistent with the differences observed by metropolitan size, migration premiums diminishing with movement down the hierarchy; the greatest gains were observed for migrants into large metropolitan areas, and the smallest were for movements into rural areas, echoing Adamson et al. (2004). Surprisingly, and contrary to other results (Newbold and Brown 2012), although migration resulted in an income benefit, these benefits were typically smaller than those observed among those who did not move. Those who stayed in Calgary perhaps reflect the extreme case, receiving an income premium for staying that was greater than most migrants (21.4 per cent), reinforcing the descriptive results noted earlier and further suggesting that migration into Calgary does not confer an immediate benefit in terms of income. It may, however, be the case that any income benefits are felt over a longer period of time, and employment is the larger factor in determining migration. Still, migrants into Toronto and Vancouver received a larger income benefit than those who migrated into other large, medium or small urban areas. Other correlates included in the model behaved largely as expected. For example, income is observed to increase with increasing age, but at a declining rate. Males, degree holders, knowledge workers, individuals employed full-time, wage earners, and the self-employed are associated with higher incomes. Conversely, lower wages are associated with visible minorities and immigrants.

Subsequent columns in the table are based on the SLID data and present the first-difference model results evaluating the relationship between migrant status and income change. Differencing addresses the influence of fixed, unobserved characteristics of migrants and stayers that might bias results. Variables included in the models reflect characteristics that change over time (e.g., degree holder status or knowledge worker status) and could therefore influence income growth. Also included in the model are initial income levels and dummy variables reflecting the different SLID panels.

Overall, the results based on the SLID data reinforce the results based on the census data. Once again, migrants into Toronto received an income advantage, including relative to those who stayed in Toronto over the period. Moreover, migrants into Toronto received the largest income advantage relative to other migrants and stayers. Income advantages were also conferred on migrants into other metropolitan areas, including Montreal, Vancouver, and Calgary, and other large metropolitan areas (including Edmonton and Ottawa). Conversely, migrants into Halifax and Winnipeg did not receive an income advantage. Once again, larger income benefits were associated with movement into larger metropolitan areas, while movement into smaller urban areas was typically associated with lower income premiums.

Among other covariates included the model, *additional years in school* was associated with higher income regardless of income status. Likewise, new degree holders and new knowledge workers were both associated with larger increases in income. Finally, the coefficient associated with the log of income was negative and significant, as expected.

Accounting for selection

Given the potential for bias associated with self-selection, propensity score matching analysis is used, with logit models used to calculate propensity scores for migrants and stayers. Using the SLID

data only, separate models are run for the two definitions of income used in the analysis, and for the different comparators (other migrants, all stayers, and stayers within the selected metropolitan area). Table 4 reports the propensity score matching estimates of earnings premiums (statistically significant results only, $p < 0.05$) associated with migration to the selected metropolitan areas migrating to Toronto.

Table 4. SLID propensity score matching estimates of the effect of migration to selected urban areas relative to other migrants and non-migrants ($).

	Comparison Group	ATT	
		Full	Restricted
1. Δ Average Income			
Calgary	Other Migrants	4,454	2,196
Vancouver	"	2,689	3,337
Montreal	All Stayers	1,849	3,295
Calgary	"	2,567	3,808
Halifax	Halifax Stayers	2,841	2,441
Calgary	Calgary Stayers	3,431	2,881
2. Δ Total Income			
Toronto	Other Migrants	3,889	5,896
Calgary	"	6,352	–
Vancouver	"	3,683	–
Montreal	All Stayers	2,739	4,867
Toronto	"	7,185	9,022
Calgary	"	3,071	5,415
Vancouver	"	1,013	4,030
Halifax	Halifax Stayers	4,029	3,033
Calgary	Calgary Stayers	4,351	3,480

Results of the propensity matching analysis are mixed, revealing that migration only results in a statistically significant increase in income (the average treatment effect of the treated or ATT of migrating) in selected cases. In most every case, in-migrants to Calgary reported a statistically significant increase in their income for both income measures, contrary to the descriptive results which had indicated that they would be at a disadvantage. Relative to other migrants, a migrant into Calgary earned $4,454 more compared to other migrants, based on the average difference in income. Likewise, a migrant into Calgary earned $3,431 more compared to those who stayed in Calgary.

In-migration to Toronto, Montreal, and Vancouver also resulted in wage gains, but only for selected cases. For example, an in-migrant to Vancouver earned just $2,689 more as compared to other system migrants when measured by the change in average income, but wage gains (measured by the change in average income) for in-migrants to Vancouver were not evident when compared to other stayers and those who stayed in Vancouver. Likewise, in-migrants to Toronto experienced a growth in income when the difference in the total income was used, but not for the average difference in income. Similarly, in-migrants into Vancouver tended to experience an income advantage, but only when compared to other migrants, and not to system stayers.

Because changes in worker occupation and educational status could represent important differences influencing changes in income and can also be correlated with the decision to migrate (violating the assumption of unconfoundedness), the same propensity score matching models were estimated but without these two variables as conditioning effects (restricted model results). Typically, the revised estimates of the income change effect are higher as compared to the full model, with the latter providing more conservative estimates of the change in income associated with migration.

Conclusions

Using a set of major metropolitan areas reflecting both national and regional centres, this paper has explored the impact of migration into a set of Canadian metropolitan areas on income, with the expectation that in-migration into these areas would convey an income advantage relative to migrants elsewhere in the system or to stayers (non-migrants). Given the data at hand, it was only possible to evaluate income change associated with productivity effects, and not the learning effects that have been identified elsewhere in the literature (e.g., Glaeser 1999; Glaeser and Maré 2001).

Based on the analysis, two broad conclusions are observed. First, the results are only partially supportive of the concept of *elevator metropolitan areas*, where migration into large urban centres is associated with a gain in income or *productivity effect*. However, the multivariate results are less convincing of this effect, suggesting that no one metropolitan centre provided consistent opportunities for income growth. In other words, migration into metropolitan areas conferred an income advantage in some, but not all, cases. Even Toronto, which Newbold and Brown (2012) described as an elevator metropolitan area, did not consistently perform in this manner. Calgary was perhaps the exception, with in-migration associated with strong income growth. However, productivity effects, capturing the growth of income over time following migration, could not be measured within the current study, and the income benefits of migration may be observed in this case.

The second broad conclusion is that income growth may only be achieved through migration into the largest urban centres, inclusive of Toronto, Montreal, Calgary, and Vancouver in the Canadian case. Migration into other, smaller urban centres, including Winnipeg and Halifax, as well as migration into rural areas, appeared to confer much smaller (and often non-significant) income benefits, even as migrants tended to fare better than non-migrants, at least when considering mean incomes. Consequently, it is unlikely that smaller Canadian metropolitan areas provide a true income advantage for in-migrants. However, learning effects may once again be observed over the longer term, and migration into these centres may confer a number of other advantages that are not revealed through changes in income alone.

Why this inconsistency and difference in results, particularly with reference the income advantage gained by migrating to Toronto that Newbold and Brown (2012) observed? It may be that the age group used in their analysis (20–29) captured the large income gains associated with transition from school into the labour force, meaning that almost all migrations would be associated with an income gain. Instead, the age group used in the current analysis (25–34) may be capturing smaller and less consistent gains in income among those already engaged in the labour force. Migrations, while offering opportunities for increased wages and new employment opportunities, may offer opportunities for career growth through a greater number of employment opportunities (e.g., Coombes and Charlton 1992; Fielding 1993; Champion and Coombes 2007), but does not offer the same degree of income growth. Second, the additional SLID cycles used in this analysis may have captured spatial changes in the Canadian economy, decreasing opportunities in eastern Canada, while western cities, and particularly Calgary, experienced rapid growth. Third, definitional and data constraints, such as the limited longitudinal depth of the SLID files (6 years), did not allow learning effects to be evaluated. Fourth, a number of other explanations, including differential roles of occupational change and promotion for migrants, as well as different learning effects by worker type, signify that the benefits of migration will vary by location and migrant.

Finally, it should be noted that while migration may confer an income advantage, migrations occur for many other, non-monetary reasons, including access to educational and employment opportunities, amenities, and social groups, among other benefits (see, for example, Brown and Scott

2012; Coulombe 2006; Finnie 2004). Consequently, not all migrants will benefit from migration, and not all migrations will result in income gains. For example, migrations that include other household members often mean that one partner will benefit while the other will experience disruptions to employment or the income stream (e.g., Cooke et al. 2009; Clarke and Withers 2002), meaning that the escalator (or elevator) will not apply equally to all migrants. Likewise, regional migration patterns and population change—including the greater propensity for French-speaking migrants to move only within Quebec (Lachapelle and Lepage 2010), the by-passing of Quebec by migrants from Atlantic Canada in favour of destinations in Ontario or the western provinces, the ability of the country's largest metropolitan areas to attract and retain immigrants, and the tendency for large metropolitan areas to attract migrants from other large metropolitan areas while smaller urban centres (such as Winnipeg and Halifax) are more likely to attract from their regional hinterlands—may also alter the structure and pattern of employment and earnings opportunities across space. These additional complexities in the migration system provide opportunities for further research related to the income benefits of migration.

References

Adamson, D.W., D.E. Clark, and M. Partridge. 2004. Do urban agglomeration effects and household amenities have a skill bias? *Journal of Regional Science* 44(2):201–23.

Bacolod, M., B.S. Blum, and W.C. Strange. 2009. Skills in the city. *Journal of Urban Economics* 65:136–53.

Beckstead D., M. Brown, and K.B. Newbold. 2008. *Cities and Growth: In Situ versus Migratory Human Capital Growth*. Cat. no. 11-622-M, no. 019. Ottawa: Statistics Canada.

Beckstead, D., and W.M. Brown. 2003. *From Labrador City to Toronto: The Industrial Diversity of Canadian Cities, 1992–2002*. Insights on the Canadian Economy 3. Cat. no. 11-624-MIE. Ottawa: Statistics Canada.

Beckstead, D., and W.M. Brown. 2006. *Head office employment in Canada, 1999–2005*. Insights on the Canadian Economy 14. Ottawa: Statistics Canada, Analytical Studies Branch.

Bradley, S., G. Migali, and J. Taylor. 2009. *An Evaluation of the Impact of Funding and School Specialisation on Student Performance Using Matching Models*. Lancaster (UK): Lancaster University Management School, Department of Economics.

Brown, M.W., and D.M. Scott. 2012. *Cities and Growth: Human Capital Location Choice: Accounting for Amenities and Thick Labour Markets*. Cat. no. 11-622-M – no. 027. Ottawa: Statistics Canada.

Champion, T., and M. Coombes. 2007. Using the 2000 Census to study human capital movements affecting Britain's large cities: Insights and issues. *Journal of the Royal Statistical Society* 170:447–67.

Champion, T., M. Coombes, and I. Gordon. 2014. How far do England's second-order cities emulate london as human-capital 'Escalators'? *Population, Space and Place* 20:421–33.

Clark, W.A.V., and S. Withers. 2002. Disentangling the interaction of migration, mobility and labour-force participation. *Environment and Planning* 34:923–45.

Combes, P.P., G. Duranton, and L. Gobillon. 2008. Spatial wage disparities: Sorting matters! *Journal of Urban Economics* 63(2):723–42.

Cooke, T.J., P. Boyle, K. Couch, and P. Feijten. 2009. A longitudinal analysis of family migration and the gender gap in earnings in the United States and Great Britain. *Demography* 46(1):147–67.

Coombes, M., and M. Charlton. 1992. Flows to and from London: A decade of change, in *Migration Processes and Patterns Volume 2: Population Redistribution in the United Kingdom*, edited by J. Stillwell, P. Rees, and P. Boden. London: Belhaven, p. 56–77.

Costa, D.L., and M.E. Kahn. 2000. Power couples: Changes in the locational choice of the college educated, 1940–1990. *Quarterly Journal of Economics* 115:1287–1315.

Coulombe, S. 2006. Internal migration, asymmetric shocks, and interprovincial economic adjustments in Canada. *International Regional Science Review* 29(2):199–223.

De la Roca, J., and D. Puga. 2012. *Learning by Working in Big Cities*. CEPR Discussion Paper 9243. Washington: Centre for Economic Policy Research.

Dunford, M., and A. Fielding. 1997. Greater London, the South East region and the wider Britain, in *People, Jobs and Mobility in the New Europe: Metropolitan Polarisation, Uneven Development and Interregional Migration*, edited by H. Blotevogel and A. Fielding. Chichester (UK): Wiley, p. 247–76.

Duranton, G., and D. Puga. 2005. From sectoral to functional urban specialization. *Journal of Urban Economics* 57(2):343–70.

Fielding, A. 1992. Migration and social mobility: South East England as an escalator region. *Regional Studies* 26(1):1–15.

———. 1993. Migration and the metropolis: An empirical and theoretical analysis of interregional migration to and from South East England. *Progress in Planning* 39:71–166.

———. 1995. Migration and social change. *European Journal of Population Studies* 11:107–21.

———. 1997. The effects of economic restructuring on the populations of Western Europe's cities and regions, in *People, Jobs and Mobility*, edited by H. Blotevogel and A. Fielding. Chichester (UK): Wiley, p. 287–304.

Findlay, A., C. Mason, D. Houston, D. McCollum, and R. Harrison. 2009. Escalators, elevators and travelators: Occupational mobility of migrants to the South East of England. *Journal of Ethnic and Migration Studies* 35:861–79.

Finnie, R. 2004. Who moves? A logit model analysis of inter-provincial migration in Canada. *Applied Economics* 36(16):1759–79.

Florida, R. 2002a. *The Rise of the Creative Class and how it is Transforming Work, Leisure, and Everyday Life*. New York: Basic Books.

———. 2002b. The economic geography of talent. *Annals of the Association of American Geographers* 92(4):743–55.

Glaeser, E.L. 1999. Learning in cities. *Journal of Urban Economics* 46:254–77.

Glaeser, E.L., and D.C. Maré. 2001. Cities and skills. *Journal of Labor Economics* 19:316–42.

Glaeser, E.L., and M.G. Resseger. 2010. The complementarity between cities and skills. *Journal of Regional Science* 50:221–44.

Ham, J., X. Li, and P. Reagan. 2004. Propensity Score Matching, a Distance-based Measure of Migration, and the Wage Growth of Young Men. Working Paper. Columbus OH: Ohio State University, Department of Economics.

Krugman, P. 1991. Increasing returns and economic geography. *Journal of Political Economy* 99:483–99.

Lachapelle, R., and J-F. Lepage. 2010. *Languages in Canada 2006 Census.* Cat. no. CH3-2/8-2010. Ottawa: Statistics Canada.

Lee, S. 2010. Ability sorting and consumer city. *Journal of Urban Economics* 68:20–33.

Moilanen, M. 2010. Matching and settlement patterns: The case of Norway. *Papers in Regional Science* 89:607–23.

Newbold, K.B., and W.M. Brown. 2012. Testing and extending the escalator hypothesis: Does the pattern of post-migration income gains in toronto suggest productivity and/or learning effects? *Urban Studies* 49(15):3438–56. DOI: 10.1177/0042098012443859.

Rauch, J.E. 1993. Productivity gains from geographic concentration of human capital: Evidence from the cities. *Journal of Urban Economics* 34(3):380–400.

Rosenbaum, P.R., and D.B. Rubin. 1983. The central role of the propensity score in observational studies for causal effects. *Biometrica* 70(1):41–55.

Schellenberg, G. 2004. *Immigrants in Canada's Census Metropolitan Areas.* Trends and Conditions in Census Metropolitan Areas 3. Ottawa: Statistics Canada, Analytical Studies Branch.

Sjaastad, L.A. 1962. The costs and returns of human migration. *Journal of Political Economy* 70:80–93.

Stalker, P. 2000. *Workers without Frontiers.* Geneva: International Labour Office.

Van Ham, M. 2001. Workplace mobility and occupational achievement. *International Journal of Population Geography* 7:295–306.

———. 2002. *Job Access, Workplace Mobility and Occupational Achievement.* Delft: Eburon.