

The Economic Impact of Cities

A Report Prepared for
Corporate Strategy and Economics
The City of Calgary

by

K & L Consulting Inc.
Calgary, Alberta

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Executive Summary

- This is the second of three reports investigating the economics of local government budgets in Canada and, in particular, in Alberta. This report examines the economic impact of cities on the national economy and the role they play in driving economic growth nationally.
- 50% of Canadians aged 15 years and older live in one of Canada's nine largest cities and 80% live in urban areas. In Alberta, 65% of those aged 15 years and above live in either Calgary or Edmonton and 77% live in urban areas.
- Not all provinces are highly urbanized. Only in British Columbia, Ontario, Quebec and Alberta do more than three-quarters of the population live in urban areas.
- International in-migration has accounted for over half of the increase in Canada's population since 1987. Since 1987, international in-migration has accounted for 59% of the increase in Ontario's population. In Alberta, interprovincial and international in-migration have combined to account for 43% of the increase in population since 1987.
- International in-migrants choose overwhelmingly to settle in one of Canada's nine largest cities. In 2002, Toronto received nearly one-half of all international in-migrants to Canada. On average, the largest urban centre in each province received two-thirds of all international in-migrants to that province. In 2002 Calgary (61%) and Edmonton (29%) received 90% of the international in-migrants choosing to settle in Alberta.
- That part of the labour force aged 25-44 years is generally considered to be the most productive part of the labour force due to their being relatively recently graduated from post-secondary institutions and possessing an average of ten or more years of work experience. Although the percentage of the labour force aged 25-44 years is falling in all areas of the country, it is falling considerably less in large cities. In large part this is due to the fact that two-thirds of international in-migrants are 25-44 years of age and they choose to settle in large cities. Thus international in-migration is keeping the labour force in large cities significantly younger than elsewhere.
- In 2002, 60% of all international in-migrants came to Canada with a trade certificate, non-university diploma, bachelor's degree, master's degree or doctorate. This percentage is significantly higher than the Canadian average. Since international in-migrants choose to settle in large cities, their doing so contributes to large cities having a more highly educated work force than elsewhere.
- Average annual rates of growth in employment are considerably higher in large cities than elsewhere. What's more, employment growth in large cities is more reliable in the sense that year-to-year fluctuations in the annual rate of employment growth are much less than elsewhere. In Alberta, between 1996 and 2002 the average annual rate of growth in employment was far higher in Calgary (4.3%) and Edmonton (2.9%) than in rural areas (1.1%). Year-to-year fluctuations in the average employment growth rate were also significantly less in Calgary and Edmonton than elsewhere in the province.

- While urban areas account for 80% of Canada's population, between 1996 and 2002 85% of new jobs were created in urban areas. Over the same period, Canada's nine largest cities accounted for 65% of all newly created jobs even though they contained only 50% of Canada's population. In Alberta, urban areas accounted for 91% of all new jobs created between 1996 and 2002 even though they accounted for only 77% of the population. Over the same period, Calgary accounted for 49% of all new jobs created in Alberta even though it contained only 33% of the population. Rural areas in Alberta accounted for 23% of the population but could claim to have produced only 9% of all the new jobs created in the province.
- Between 1987 and 2002, Canada's nine largest cities accounted for 58% of all new jobs created in Canada. Calgary's job creation record is the most impressive of this group. Over this period, despite containing just 2.9% of Canada's population, 6.9% of all new jobs were created in Calgary. Thus Calgary accounted for more than twice the number of new jobs as might be expected given its population. By comparison, Toronto contains 15.2% of Canada's population and accounted for 18.6% of all new jobs created in Canada.
- The value of international exports has grown from 21% of Canada's GDP in 1981 to 41% in 2002. Over 80% of Canada's trade is with the United States. Over the past twenty years, then, the Canadian economy has been re-oriented along North-South lines. This has been particularly true for the economies of Canada's most urbanized provinces. Whereas in 1981, 55% of Ontario's exports went to other provinces, by 2002 only 27% did so. In Alberta, international exports, as a percentage of international + interprovincial exports, has almost doubled from 34% of provincial GDP in 1981 to 63% in 2002. The implication is that it is the economies of urban areas that are adjusting along a North-South axis and it is the economies of urban areas that are reaping the benefits of economic specialization and greater economic efficiency.
- A straightforward exercise in growth accounting shows that urban areas account for over 83% of all economic growth in Canada. Canada's nine large cities account for 67% of all economic growth in Canada. Urban centres in general, and Canada's large cities in particular, are the engines of economic growth in Canada.
- The implication of the growing importance of city economies, and the fact this growing importance is tied to their access to international markets, is that Canadian cities must more and more prove themselves capable of competing with international cities for financial capital and skilled labour. Municipal governments have an important role to play in this regard. As city governments are responsible for providing many of the services that make a city globally-competitive – serviced land, an efficient transportation system, public safety, potable water, recreation facilities, a culturally diverse and tolerant social environment, and etcetera – their fiscal capabilities are of paramount importance. An inability of city governments to finance these investments in social infrastructure, either at all or via an efficient system of revenue will cause not only the economies of cities to stagnate but also that of the provinces and the nation.

1. Introduction

The past decade has been a tumultuous one for the Canadian economy and for Canadian governments. The early 1990s saw the adoption of a low inflation target by the Bank of Canada the implementation of which resulted in a period of high interest rates. The economic slowdown and increased borrowing costs caused by the increase in interest rates forced the federal government and most provincial governments to make concerted efforts to eliminate their deficits and to begin the long process of debt reduction. The early 1990s also saw the introduction of free trade agreements that lowered the barriers to trade with the U.S. and Mexico but also ushered in a period during which there occurred a general freeing of world trade generally referred to as “globalization.” The opening of the Canadian economy to the free flow of goods and capital across international borders forced a reorganization of Canadian industry toward areas of international comparative advantage. It also forced Canadian governments to take more seriously the impact of budgetary choices on mobile taxpayers, be they persons or corporations. While dealing with a mobile tax base has always been a problem for local governments given their small size, the general trend toward globalization has increased the magnitude of this problem: Calgary must compete not only with Vancouver and Toronto for skilled people and industry, but increasingly, and perhaps more so, with Houston and Shanghai.

This report is the second of a three-part investigation the purpose of which is to provide a framework for the City of Calgary to discuss new funding arrangements with the federal and provincial levels of government. Part One provided an examination of the composition and growth of the local government finances over the period 1988 to 2002. It was shown that the economic events of the past decade have placed local governments in a difficult fiscal position. Their access to revenue is restricted to a handful of sources and the size of one of these revenue sources, intergovernmental transfers, is subject to the whim of senior levels of government. These more senior levels of government have responded to their own fiscal problems by reducing the size of these transfers and by demanding that local governments maintain, and oft-times expand, their share of the provision of government provided goods and services. This has left local governments more heavily reliant on own-source revenues than ever before. The economic characteristics of these revenue sources – the property tax and user fees in particular – are such that local governments are finding it increasingly difficult to meet their expenditure obligations.

This report, Part Two of the three-part investigation of local government finances, will describe and examine the role of cities in the Alberta and Canadian economies over the past decade. It will investigate the impact on city economies of globalization and offer measures of the economic role played by city economies in determining the economic health and wealth of the Canadian economy. Part Three will investigate the feasibility and desirability of alternative sources of revenue for local governments and offer recommendations for reform.

The focus of this report is on the economic impact of city economies on determining the health and wealth of provincial economies and that of Canada as a whole. Section 2 provides measures of the economic impact of city economies. That discussion will compare information about the labour force, employment and population characteristics of cities with elsewhere. It will show that these characteristics are such to suggest that cities play a key role in determining economic

growth and economic welfare. Section 3 describes the impact of Canada’s increased integration into the North American economy on trade flows. In that section I will show that large urban centres are the focal points for increased economic integration and the creation of wealth that has followed. In Section 4 I will introduce a method by which one can identify the sources of economic growth in Canada. That exercise will show that the economies of urban areas are the main source of economic growth in Canada. Finally, in section 5, I offer conclusions.

2. Measures of the Economic Impact of Cities

In this section I examine evidence of the economic role played by local economies in determining economic growth provincially and nationally. The data available for this exercise is more limited than would be the case if the goal was provide evidence of the economic importance of the provincial or the national economy. The reason for this is that there is simply less economic data collected and reported for this level of aggregation that is reliable and verifiable.¹ Fortunately, however, certain key data are available at this level of aggregation.

2.1. Population Characteristics

The percentage of the population of Canada living in urban areas has grown steadily since Confederation. By 2002, four out of every five Canadians lived in an urban area. What’s more, as the figures in Table 1 show, a significant fraction of the total population of Canada lives in just a few large urban centres. Even over the relatively short period between 1987 and 2002, the populations of large and medium sized urban centres have grown relative to those of small cities and the rest of the country.

Table 1: Percentage of Canadian Population Aged 15 Years and above Living in Cities, 1987 and 2002²

	Large Cities	Medium Cities	Small Cities	Rest of Canada
1987	49.2%	8.8%	4.5%	37.5%
2002	51.3%	9.0%	4.0%	35.7%

Source: Statistics Canada, Cansim II Table 2820053.

¹ For example, while Statistic Canada does not, private firms offer estimates of gross domestic product for cities. The method by which these firms allocated provincial GDP (reported by Statistics Canada) to regions within the province is proprietary and hence not available. The role of employment, labour force and population growth in generating income is such that Statistics Canada data on these variables serves as an excellent measure of the economic role of cities. As we see in section 4 of this report, these data form the basis of the standard approach used to measure the contribution of regions to national economic growth.

² “Large Cities” are Toronto, Montreal, Vancouver, Ottawa-Hull, Calgary, Edmonton, Quebec, Hamilton and Winnipeg. In 2002, the number of those aged 15 years and above ranged from over 4 million (Toronto) to 538,000 (Winnipeg). “Medium Cities” are Kitchener, London, St. Catherines, Halifax, Victoria, Windsor, Oshawa and Saskatoon. In 2002 these cities the number of those aged 15 years and above averaged 280,000. “Small Cities” are Regina, St. John’s, Chicoutimi-Jonquiere, Sudbury, Sherbrooke, Trois Rivieres and Saint John. In 2002 these cities the number of those aged 15 years and above averaged 126,000.

It is worth noting that while Canada is indeed a highly urbanized country, the figures in Table 2 show that a high degree of urbanization is not characteristic of all provinces. While British Columbia, Ontario, Quebec and Alberta are legitimately described as being urban provinces, this characterization is less true for the other provinces. Outside of these four provinces, only 59.8% of the population aged 15 years and above lived in urban areas in 2002.³

Table 2: Percentage of Population Aged 15 Years and above Living in Urban Areas, by Province, 2002

Newfoundland	48.8%
PEI	58.4%
Nova Scotia	59.8%
New Brunswick	53.8%
Quebec	77.9%
Ontario	86.4%
Manitoba	68.5%
Saskatchewan	61.4%
Alberta	77.2%
British Columbia	87.0%
CANADA	79.8%

Source: Statistics Canada, Cansim II Table 2820066.

The province of Alberta is in a virtual tie with Quebec as the third most urbanized province in Canada. Table 3 shows that Alberta's population is heavily concentrated in just two urban centres; Calgary and Edmonton. Amongst the four most urbanized provinces, Alberta has the largest percentage of those aged 15 years and above living in the province's two largest urban centres.⁴

Table 3: Percentage of Alberta's Population Aged 15 Years and above Living in Cities, 1987 and 2002

	Calgary	Edmonton	Calgary + Edmonton	Rest of Alberta
1987	29.6%	33.6%	63.2%	36.8%
2002	33.7%	31.8%	65.5%	34.5%

Source: Statistics Canada, Cansim II Table 2820053.

³ Statistics Canada defines an urban area as one with a population of at least 1,000 persons and with a population density of no fewer than 400 persons per square kilometre. By way of comparison, in 2002 Calgary had a population density of 1,253 persons per square kilometre. Red Deer has a population density of 1,172 persons per square kilometre and is thus classified as an urban area. With a population of 73,000 persons, it is not large enough to fit into Statistics Canada's "small city" category.

⁴ Vancouver and Victoria make up 60% of the population aged 15 years and over in British Columbia. Montreal and Quebec City account for 57% of Quebec's population while Toronto and Ottawa-Hull combine to account for 51% of Ontario's population.

Table 4: Sources of Population Growth, by Province and for Canada

	Change in Population due to:			
	Natural Increase	Interprovincial Net In-Migration	International Net In-Migration	Total Change in Population
Newfoundland				
1972-1986	103,717	-36,729	5,767	72,755
1987-2002	37,026	-71,256	5,066	-29,164
1972-2002	140,743	-107,985	10,833	43,591
Prince Edward Island				
1972-1986	13,583	3,496	2,158	19,237
1987-2002	9,415	2,729	1,958	14,102
1972-2002	22,998	6,225	4,116	33,339
Nova Scotia				
1972-1986	85,885	11,130	19,610	116,625
1987-2002	53,241	-14,437	26,224	65,028
1972-2002	139,126	-3,307	45,834	181,653
New Brunswick				
1972-1986	87,332	6,261	10,159	103,752
1987-2002	45,615	-16,315	5,102	34,402
1972-2002	132,947	-10,054	15,261	138,154
Quebec				
1972-1986	712,087	-314,185	246,260	644,162
1987-2002	543,252	-170,209	446,136	819,179
1972-2002	1,255,339	-484,394	692,396	1,463,341
Ontario				
1972-1986	945,570	28,125	749,286	1,722,981
1987-2002	1,007,759	99,751	1,569,613	2,677,123
1972-2002	1,953,329	127,876	2,318,899	4,400,104
Manitoba				
1972-1986	124,972	-72,473	64,237	116,736
1987-2002	104,310	-86,776	52,115	69,649
1972-2002	229,282	-159,249	116,352	186,385
Saskatchewan				
1972-1986	133,500	-53,147	24,692	105,045
1987-2002	93,746	-127,026	21,992	-11,288
1972-2002	227,246	-180,173	46,684	93,757
Alberta				
1972-1986	377,276	210,258	134,370	721,904
1987-2002	389,529	137,007	160,750	687,286
1972-2002	766,805	347,265	295,120	1,409,190
British Columbia				
1972-1986	289,965	224,934	235,277	750,176
1987-2002	294,302	257,387	496,381	1,048,070
1972-2002	584,267	482,321	731,658	1,798,246
Canada				
1972-1986	2,895,199		1,493,905	4,389,104
1987-2002	2,603,583		2,786,272	5,389,855
1972-2002	5,498,782		4,280,177	9,778,959

Sources: Statistics Canada, Cansim II Tables 510004, 510011 and 510012.

The sources of the growth in urban populations are examined in Table 4. Looking first at the figures for Canada, the table shows that during the first half of the period 1972-2002 natural increase explained two-thirds of the increase in population. In the latter half, from 1987 to 2002, net international in-migration had grown to the extent that it explained over half of the total increase in Canada's population.

The increase in importance of net international in-migration has been greatest in Ontario, Quebec and British Columbia where it has roughly doubled in size relative to the period 1972-86. In all other provinces, international in-migration has remained more or less constant between these periods. Interprovincial net in-migration has played the largest role in determining provincial population changes in Newfoundland, Quebec, Manitoba, Saskatchewan, Alberta and British Columbia. In Newfoundland, Quebec, Manitoba and Saskatchewan, interprovincial net in-migration has been negative and large relative to population change due to natural increase. Indeed, in Newfoundland and Saskatchewan during the period 1987-2002, interprovincial plus international net out-migration has exceeded natural increase so that provincial populations have fallen. In Alberta and British Columbia, the opposite has been true; interprovincial net in-migration has been positive and, especially in British Columbia, large relative to the increase in population due to natural increase. While in Alberta natural increase explained more than half of the increase in population during the period 1987-2002, in British Columbia and Ontario international and interprovincial net in-migration combined to explain 72% and 62% of the total increase in provincial population, respectively.

Table 5 (below) shows that international in-migrants prefer, overwhelmingly, to settle in urban centres. In 2002, Toronto received nearly one-half of all international in-migrants to Canada and 84% of international in-migrants to Ontario. On average, the largest urban centre in each province received two-thirds of all international in-migrants to that province. Although similar in total population, Calgary received more than twice the number of international in-migrants than Edmonton in 2002.

The size and characteristics of population stocks and flows are useful indicators of the economic role of a nation, province, or urban area for two reasons. First, population growth is an indication that economic growth has occurred. For this purpose, measures of in-migration are particularly useful since the determinants of migration are recognized as being dominated by the availability of employment opportunities.⁵ Thus in choosing a country, province or region to which to migrate, people tend to choose areas where economic growth, and hence employment prospects, are favourable relative to the area in which they currently reside. The second reason why population stocks and flows are useful indicators of the economic role of a region is that population growth is a key input into the process of economic growth. As I will discuss further in Section 4, a simple growth accounting framework indicates that a one percentage point increase in the rate of growth in the labour force contributes 0.67 percentage points of real output

⁵ See, for example, Day and Winer (2001). That study uses data constructed from personal income tax files for the years 1974 to 1996 to investigate the sensitivity of interprovincial migration to differences in tax regimes, differences in publicly provided services, differences in earnings and employment prospects and moving costs. Moving cost and employment prospects were easily the most important determinants of the decision to move between provinces.

growth. Since population growth is highly correlated with labour force growth, regions with rapid population growth are generally those with rapid economic growth.

Table 5: International In-Migration, by Province and by Urban Centres, 2002

	Number	Percentage of Interprovincial In-Migration to Province	Percentage of International In-Migration to Canada
Newfoundland	405		0.2%
St. John's	266	65.7%	0.1%
Rest of Province	139	34.3%	0.1%
PEI	110		0.0%
Nova Scotia	1,419		0.6%
Halifax	1,129	79.6%	0.5%
Rest of Province	290	20.4%	0.1%
New Brunswick	710		0.3%
Saint John	166	23.4%	0.1%
Rest of Province	544	76.6%	0.2%
Quebec	37,627		16.4%
Quebec	1,335	3.5%	0.6%
Montreal	33,004	87.7%	14.4%
Ottawa-Hull (Quebec side)	657	1.7%	0.3%
Rest of Province	2,631	7.0%	1.1%
Ontario	133,641		58.3%
Ottawa-Hull (Ontario side)	7,156	5.4%	3.1%
Toronto	111,580	83.5%	48.7%
Hamilton	3,079	2.3%	1.3%
London	1,710	1.3%	0.7%
Rest of Province	10,116	7.6%	4.4%
Manitoba	4,621		2.0%
Winnipeg	3,810	82.4%	1.7%
Rest of Province	811	17.6%	0.4%
Saskatchewan	1,665		0.7%
Regina	553	33.2%	0.2%
Saskatoon	709	42.6%	0.3%
Rest of Province	403	24.2%	0.2%
Alberta	14,729		6.4%
Calgary	9,038	61.4%	3.9%
Edmonton	4,225	28.7%	1.8%
Rest of Province	1,466	10.0%	0.6%
British Columbia	34,000		14.8%
Vancouver	29,922	88.0%	13.1%
Victoria	754	2.2%	0.3%
Rest of Province	3,324	9.8%	1.5%
CANADA	229,091		100.0%

Source: Citizenship and Immigration Canada, "Facts and Figures 2002: Immigration Overview". Data on international in-migration to Yukon, Nunavut and the Northwest Territories has been omitted.

As an indicator of economic growth population statistics are limited by the fact they do not indicate the age structure and education levels of those actually in the labour force. Economic growth is positively related to a younger labour force and a more highly educated work force. Evidence on these questions is the subject of the next section.

2.2. Labour Force Characteristics

In Table 6 contains data showing the percentage of the total labour force aged 25 to 44 years. These data are presented for large, medium and small cities, other areas of the country and for Canada. This age group is generally considered to be that which defines the most productive part of the labour force due to their being relatively recently graduated from post-secondary institutions and possessing an average of ten or more years of work experience. The table shows that the percentage of the Canadian labour force in this age group has fallen by 3.8 percentage points since 1987. This, of course, is due to the general ageing of the Canadian population. This trend, however, is significantly less pronounced in large cities where the percentage of the labour force in this age group has fallen by only 2.8 percentage points since 1987. The trend is significantly more pronounced in small cities and in the rest of the country where the percentage of the labour force in this age group has fallen by 7.1 and 5.1 percentage points, respectively.

Table 6: Labour Force Aged 25-44 Years as a Percentage of the Total Labour Force, by Size of Urban Area

	Large Cities	Medium Cities	Small Cities	Rest of Country	Canada
1987	53.8%	53.5%	54.1%	52.3%	53.3%
1988	54.3%	53.6%	55.1%	53.5%	54.0%
1989	54.6%	54.5%	56.7%	54.3%	54.6%
1990	55.5%	54.3%	55.9%	55.0%	55.2%
1991	55.5%	55.3%	55.7%	55.2%	55.4%
1992	54.9%	55.6%	56.1%	55.1%	55.1%
1993	55.2%	55.4%	55.5%	54.6%	55.0%
1994	54.9%	55.1%	54.9%	53.8%	54.5%
1995	55.5%	53.1%	54.7%	52.8%	54.3%
1996	55.8%	53.3%	54.5%	52.0%	54.2%
1997	55.4%	53.0%	54.2%	51.5%	53.8%
1998	54.6%	52.3%	52.8%	51.0%	53.1%
1999	53.6%	52.2%	51.8%	49.9%	52.1%
2000	52.7%	50.8%	50.8%	49.2%	51.2%
2001	52.1%	50.6%	49.1%	48.5%	50.6%
2002	51.0%	49.8%	47.1%	47.2%	49.5%
Percentage point change since 1987	-2.8%	-3.7%	-7.1%	-5.1%	-3.8%

Source: Statistics Canada, Cansim II Tables 2820002 and 2820066.

These differences in labour force ageing reflect the international in-migration patterns discussed earlier. International in-migrants choose to locate in large cities. Since almost two-thirds of international in-migrants are in the 25 to 44 age group, the fact they choose to settle in large

cities prevents the labour force in large cities from ageing as quickly as elsewhere.⁶ As international net in-migration is responsible for one-half of the increase in Canada's total population, the fact they are in the productive 25-44 age group is having an important impact on the age distribution of the labour force.

Table 7 presents similar data for Calgary and Edmonton. Once again, the effects of migration are apparent. Calgary receives 60% of all international migrants to Alberta and twice as many as Edmonton. As a result Calgary's labour force has aged considerably less than Edmonton's.

Table 7: Labour Force Aged 25-44 Years as a Percentage of the Total Labour Force, Calgary vs. Edmonton

	Calgary	Edmonton
1987	55.1%	55.8%
1988	57.2%	54.6%
1989	58.3%	56.2%
1990	57.9%	56.5%
1991	57.9%	56.7%
1992	57.4%	54.7%
1993	57.9%	55.5%
1994	56.9%	56.2%
1995	58.5%	54.1%
1996	58.3%	53.4%
1997	57.3%	53.3%
1998	55.1%	53.3%
1999	54.8%	51.4%
2000	52.5%	50.9%
2001	51.7%	49.1%
2002	51.2%	47.4%
Percentage point change since 1987	-3.9%	-8.4%

Source: Statistics Canada, Cansim II Table 2820002.

Canada also benefits from the fact that most international immigrants are highly educated. In 2002, 60% of all international immigrants aged 15 years and older came to Canada with a trade certificate (4.3%), non-university diploma (9.2%), bachelor's degree (34.1%), master's degree (10.1%) or doctorate (1.8%). These compare to the Canadian average of 11.2% of those aged 15 years and older holding a bachelor's degree, and 5.1% with a master's or doctorate degree.⁷

⁶ In 2002, of all international in-migrants to Canada aged 15 years and above, 64% were aged 25 to 44 years. In each of 2000 and 2001, the percentage was 65%. Source: Citizenship and Immigration Canada, "Facts and Figures 2002: Immigration Overview". Over the period 1998-2002, one-third of all interprovincial migrants aged 15 years and above were in the 25 to 44 age group. This fraction has been increasing over time.

⁷ Data on education attainment by immigrants is from Citizenship and Immigration Canada, "Facts and Figures 2002: Immigration Overview." Data on average education attainment of all Canadians is from Statistics Canada Cansim II Table 2820004.

Cities, particularly large cities, have labour forces that are more heavily weighted in the 25-44 year age group than the labour force in the rest of Canada. This is significant because this age group is generally considered to be that which defines the most productive part of the labour force due to their being relatively recently graduated from post-secondary institutions and possessing an average of ten or more years of work experience. The ability of cities to better maintain the share of their labour force in this age group is due to international migrants making large cities their destination of choice. Two-thirds of immigrants are aged 25-44 years and this inflow has enabled cities to better maintain the relative size of their labour forces in this age group than other areas of Canada. Cities have also benefited from the fact the large influx of international immigrants is significantly more highly educated than the average Canadian. Thus cities have enjoyed, and continue to enjoy, the benefits of a younger, more highly educated work force than the rest of Canada.

2.3. Employment

Strong population and labour force growth, and a young, educated work force define favourable conditions for economic growth, but to what extent have these favourable conditions in fact yielded strong economic growth?

Table 8 presents data on the level of employment in different geographic locations of Canada for the period 1996 to 2002. The table shows that roughly 80% of all employment is in urban areas and over one-half of all employment is in Canada's nine largest cities. Over this period, 85% of the total increase in employment in Canada took place in urban centres and 65% took place in large cities.

Table 8: Employment, by Area, Canada 1996 – 2002
(thousands of people aged 15 years and above)

	Urban					Rural		Canada	
	Large Cities	Medium Cities	Small Cities	Other Urban	Small Towns	Rural Areas			
1996	10,842	6,944	1,247	552	2,100	2,621	843	1,778	13,463
1997	11,098	7,163	1,273	551	2,111	2,677	852	1,825	13,774
1998	11,400	7,390	1,300	561	2,149	2,741	856	1,885	14,140
1999	11,686	7,589	1,345	576	2,177	2,845	909	1,936	14,531
2000	12,033	7,860	1,392	590	2,192	2,877	937	1,940	14,910
2001	12,230	8,025	1,389	594	2,223	2,847	914	1,933	15,077
2002	12,492	8,218	1,407	604	2,264	2,920	935	1,985	15,412
Annual Growth Rate									
Average	2.4%	2.8%	2.0%	1.5%	1.3%	1.8%	1.7%	1.9%	2.3%
Std. Dev.	0.5%	0.5%	1.4%	1.0%	0.5%	1.6%	2.9%	1.5%	0.6%

Source: Calculated using data from Statistics Canada Cansim II Tables 2820066 and 2820053.

The last two rows of the table show the average and the standard deviation of the annual rate of growth in employment over this period. These data show that the average annual rate of growth in employment is significantly faster in urban as opposed to rural areas and is significantly faster in large cities than anywhere else. Also notable is the fact that the standard deviation of the rate

of employment growth is significantly lower in large cities than elsewhere. Thus large cities are not only the source of the fastest rates of growth in employment but are also the most reliable source of employment growth in the sense that year-to-year variation in the rate of growth in employment is smaller in large cities.

Table 9: Employment, by Area, Alberta 1996 – 2002
(thousands of people aged 15 years and above)

	Urban			Rural			Alberta	
	Calgary	Edmonton	Other Urban	Small Towns	Rural Areas			
1996	1,064	452	441	172	344	140	205	1,408
1997	1,114	474	466	174	344	141	203	1,458
1998	1,159	499	475	185	356	142	214	1,515
1999	1,184	519	483	182	369	153	217	1,553
2000	1,222	546	489	188	366	169	197	1,588
2001	1,263	570	505	188	370	162	208	1,632
2002	1,306	583	522	201	368	166	202	1,674
Annual Growth Rate								
Average	3.5%	4.3%	2.9%	2.7%	1.1%	2.9%	-0.2%	2.9%
Std. Dev.	0.9%	1.1%	1.7%	3.4%	2.0%	5.3%	5.4%	0.7%

Source: Calculated using data from Statistics Canada Cansim II Tables 2820066 and 2820053.

Table 9 presents similar calculations for Alberta. In Alberta urban centres play an even more important role in job creation. Large cities (Calgary and Edmonton) account for about two-thirds of all employment in the province but between 1996 and 2002 these two cities accounted for 80% of all new employment, with Calgary accounting for 49% of new employment in the province and Edmonton 31%. Like large cities elsewhere in Canada, large cities in Alberta also play the role of being the most reliable sources of economic growth. Employment in Calgary grew by an average of 4.3% per year during this period and, as indicated by the low standard deviation in this growth rate, the employment growth was steady. Employment growth in rural areas was not only slower on average but was also more volatile and unreliable.

To some extent, heavily populated areas generate a lot of employment simply because they are heavily populated. This is so because more people require more employment in service industries. In Table 10, I try to identify areas of the country that are incubators for employment growth; areas in which the share of new employment is greater than that areas share of total population. The values in the table indicate that over the period 1997-2002 just under 80% of all those aged 15 years and above lived in urban areas and just over 20% lived in rural areas. However urban areas accounted for 85% of all new employment while rural areas accounted for just 15% of all new employment. Similar calculations are shown for single years.⁸ Shaded cells denote times when urban (rural) areas accounted for a percentage of all new jobs greater than the

⁸ In 2001, employment in rural areas fell by an amount equal to 17.6% of all new jobs created in Canada in that year. The increase in employment in urban areas more than made up for the fall in rural employment with the result that the increase in employment in urban areas increased by 117.6% of the increase in national employment.

urban (rural) share of total population. In these years then, the area under consideration generated more employment than might be expected given its share of total population.

Figure 10: Shares of National Population and Job Creation

	Urban Share of		Rural Share of	
	Population	Change in Employment	Population	Change in Employment
1997	79.3%	82.1%	20.7%	17.9%
1998	79.4%	82.4%	20.6%	17.6%
1999	79.4%	73.3%	20.6%	26.7%
2000	79.4%	91.7%	20.6%	8.3%
2001	79.6%	117.6%	20.4%	-17.6%
2002	79.8%	78.3%	20.2%	21.7%
1996-2002	79.5%	84.7%	20.5%	15.3%

Source: Calculated from Statistics Canada, Cansim II Table 2820066.

Table 11 focuses on employment growth by type of urban area. As in the previous table, I try to identify the extent to which urban areas of various types generate a greater share of national employment than might be expected given their share of total population. Here we see that amongst urban areas, it is large cities that are consistently responsible for creating a larger percentage of new jobs than might be expected given their share of national population. Over the period 1996-2002, large cities accounted for 65% of all new employment in the country even though they made up just 51% of the total population. The number of shaded cells falls as we consider smaller and smaller urban areas indicating that it is rare for these smaller urban areas to generate a share of employment even equal to their share of national population. In most cases, the share of new jobs created in these smaller urban areas is well below what might be expected given their share of population.

Table 11: Shares of National Population and Job Creation, by Type of Urban Area

	Large City Share of		Medium City Share of		Small City Share of		Other Urban Areas' Share of	
	Population	Change in Employment	Population	Change in Employment	Population	Change in Employment	Population	Change in Employment
1997	50.1%	70.3%	8.9%	8.3%	4.3%	-0.2%	16.0%	3.7%
1998	50.3%	62.0%	8.9%	7.4%	4.2%	2.5%	15.9%	10.5%
1999	50.5%	50.9%	9.0%	11.5%	4.2%	3.9%	15.7%	7.0%
2000	50.8%	71.5%	9.0%	12.4%	4.1%	3.6%	15.5%	4.1%
2001	51.0%	98.7%	9.0%	-1.8%	4.1%	2.6%	15.5%	18.1%
2002	51.3%	57.6%	9.0%	5.4%	4.0%	2.9%	15.4%	12.4%
1996-2002	50.7%	65.4%	9.0%	8.2%	4.1%	2.7%	15.7%	8.4%

Source: Calculated from Statistics Canada, Cansim II Table 2820066.

In Table 12 the focus is on Alberta. Over the period 1996-2002, a remarkable 91% of all new jobs in Alberta were created in urban areas even though only 77% of those aged 15 years and above lived in urban areas. While containing 23% of the population, rural areas in Alberta generated just 9% of all new jobs created in Alberta over this period.

Table 12: Shares of Alberta Population and Job Creation

	Urban Share of		Rural Share of	
	Population	Change in Employment	Population	Change in Employment
1997	76.3%	100.0%	23.7%	0.0%
1998	76.4%	79.1%	23.6%	20.9%
1999	76.3%	65.7%	23.7%	34.3%
2000	76.4%	108.3%	23.6%	-8.3%
2001	76.7%	92.3%	23.3%	7.7%
2002	77.2%	103.6%	22.8%	-3.6%
1996-2002	76.6%	91.0%	23.4%	9.0%

Source: Calculated from Statistics Canada, Cansim II Table 2820066.

Table 13 offers a break down of the shares of population and job creation by urban area in Alberta. It shows that Calgary is the main engine of employment creation in Alberta; on average, nearly one in every two jobs is created in Calgary even though the city contains only a third of the population aged 15 years and above. In 2000, a remarkable three of every four jobs created in Alberta was created in the Calgary.

Table 13: Shares of Alberta Population and Job Creation by Urban Area

	Calgary's Share of		Edmonton's Share of		Other Urban Areas' Share of	
	Population	Change in Employment	Population	Change in Employment	Population	Change in Employment
1997	31.8%	42.6%	32.3%	51.7%	12.2%	5.7%
1998	32.2%	44.5%	32.1%	15.3%	12.2%	19.3%
1999	32.5%	53.3%	32.0%	21.6%	11.8%	-9.2%
2000	32.9%	75.4%	31.8%	16.6%	11.6%	16.3%
2001	33.4%	54.4%	31.8%	36.2%	11.5%	1.6%
2002	33.7%	31.4%	31.8%	41.5%	11.7%	30.7%
1996-2002	32.7%	49.1%	32.0%	30.7%	11.8%	11.2%

Source: Calculated from Statistics Canada, Cansim II Table 2820066.

Finally, Table 14 below presents data showing new jobs created in the nine largest cities in Canada as a percentage of all new jobs created in Canada. Shaded cells indicate that the share of all jobs created in that city exceeded that city's share of national population. The last column measures the total number of jobs (measured in thousands) created in that period. This table tells a remarkable story about the location of job creation in Canada.

The last row shows the percentage of all jobs created in Canada over the period 1988 to 2002 in each city. Thus of the 3.091 million jobs created in Canada over that period, 18.6% were created in Toronto, 8.5% were created in Montreal, and so on. The cells for Toronto, Vancouver, Ottawa-Hull, Calgary, Edmonton and Quebec are shaded to indicate that in these cities over this period, the share of all new jobs created in Canada that were created in these cities exceeded these city's shares of the national population. Thus 18.6% of all new jobs in Canada created over this period were created in Toronto even though over this period Toronto averaged only 15.2% of Canada's population aged 15 years and above. Calgary's performance is most remarkable of all as 6.9% of all new jobs were created there even though over this period Calgary averaged only 2.9% of Canada's population aged 15 years and above. Calgary, then, created more than twice as many jobs as might be expected given its population. Calgary's record for creating new employment was easily the best of all cities in Canada over the period 1988-2002.

Table 14: Shares of National Job Creation by Large City

	Toronto	Montreal	Vancouver	Ottawa-Hull	Calgary	Edmonton	Quebec	Hamilton	Winnipeg	Canada
1988	10.8%	4.2%	8.6%	7.3%	2.8%	2.9%	1.1%	2.4%	0.8%	390
1989	19.8%	8.6%	15.0%	-0.4%	3.9%	2.0%	4.2%	2.7%	2.3%	276
1990	-11.6%	-11.5%	22.5%	12.0%	6.1%	8.1%	17.6%	2.6%	-1.5%	98
1991	46.5%	14.9%	-5.0%	0.0%	0.4%	-2.0%	0.9%	9.6%	2.6%	-233
1992	22.5%	20.4%	-29.8%	8.2%	1.1%	-0.9%	8.3%	10.1%	5.6%	-91
1993	11.3%	-11.5%	9.9%	-0.4%	2.5%	-7.1%	-3.2%	-3.8%	1.8%	98
1994	-3.3%	10.1%	15.5%	4.7%	3.1%	2.6%	4.4%	6.5%	-0.3%	254
1995	38.9%	9.4%	8.4%	-5.3%	9.2%	5.2%	-3.2%	1.0%	5.6%	245
1996	30.2%	7.5%	18.0%	5.7%	24.2%	-0.8%	5.8%	-4.0%	-3.0%	106
1997	33.1%	10.7%	7.3%	2.4%	6.8%	8.2%	-1.6%	2.7%	0.8%	312
1998	20.4%	15.5%	2.3%	3.5%	7.0%	2.4%	4.8%	3.3%	3.0%	366
1999	20.0%	10.7%	6.6%	6.8%	5.2%	2.1%	-1.3%	0.3%	0.5%	391
2000	28.8%	8.9%	10.3%	6.1%	6.9%	1.5%	1.8%	5.4%	1.6%	379
2001	43.1%	9.5%	3.9%	5.4%	14.3%	9.5%	7.4%	1.8%	3.8%	167
2002	14.9%	18.4%	7.5%	0.7%	3.9%	5.2%	5.8%	-0.1%	1.4%	335
1988-2002	18.6%	8.5%	11.4%	3.8%	6.9%	4.0%	2.5%	1.4%	1.3%	3,091

Source: Calculated from Statistics Canada, Cansim II Table 2820066.

The calculations for individual years need to be interpreted carefully. Because the cells measure the change in city employment as a percentage of the change in national employment, positive values indicate that city and national employment levels are changing in the same direction. Negative values indicate that city and national employment levels are changing in opposite directions. Thus in 1991 and 1992, when national employment fell by 233 thousand and by 91 thousand jobs, respectively, The positive value for Toronto indicates that employment in that city *fell* by 108 thousand; 46.5% of the 233 thousands jobs lost nationally. In that same year employment in Vancouver *increased* by 11.6 thousand; 5% of the 233 thousand jobs lost nationally. One also needs to be aware that small changes in national employment, such as in 1990, 1992 and 1993, can produce large changes in city employment when measured as a percentage of the change in national employment. Thus while in 1990 Vancouver accounted for

22.5% of all new jobs created in Canada in that year, thus amounted to only 22 thousand jobs. In the previous year Vancouver accounted for a smaller percentage of all new jobs created in Canada (15%) but this amounted to over 41 thousand jobs.

Calgary accounts for more shaded cells than any other city; in 12 of the 15 years Calgary accounted for a larger share of new jobs created nationally than what might be expected given its population share. Vancouver and Toronto are tied for second with 10 of 15 years generating new jobs in excess of what might be expected given its share of national population but Vancouver deserves to stand alone in second place because in 1991 and 1992, employment in that city increased even while national employment was falling while in Toronto city employment was falling. Indeed in 1991, Toronto and Hamilton combined to account for 56% of all jobs lost in Canada in that year. This calculation highlights how small areas of the country, in this case the so-called Golden Horseshoe of southern Ontario, can bear the brunt of a national recession. The fact that in 1996 Calgary, with just 2.9% of Canada's population accounted for 24% of all new jobs created in Canada highlights the opposite; how a small area of the country can account for a large part of an economic expansion. Montreal enjoys the fewest number of shaded cells indicating that over this period that city rarely accounted for changes in employment exceeding its share of national population. In fact, two of its four shaded cells, those in 1991 and 1992, indicated Montreal bore a larger share of the *loss* of jobs nationally than might be expected given its population. In fact, in each year from 1990 to 1993 inclusive, the number of jobs fell in Montreal. Over those four years Montreal lost 76 thousand jobs.

3. Cities in Canada's Changing Economic Environment

One of the most notable changes in Canada's economic environment over the past 15 years has been the growth in international exports and imports as a fraction of GDP. From 21% of GDP in 1981, international exports have grown to equal 41% of GDP in 2002.⁹ Imports from abroad have similarly grown; from 22% of GDP in 1981 to 36% in 2002. The growth in international trade is generally considered to have been an important driver of Canada's improved economic performance over the past decade. Increased trade enables greater economic specialization, increased economic efficiency and increased economic welfare. The increase in international trade, more than 80% of which is with the U.S., has substantially re-oriented Canadian economic activity from an East-West to a North-South axis. Canadian industry must more and more be competitive not just with firms in neighbouring provinces but with firms in the U.S. and elsewhere.

Table 15 presents data showing the extent to which the economies of each province have re-oriented toward the North-South and away from the East-West axis. The figures in the table measure the value of international trade as a percentage of total (international + interprovincial) trade in goods and services. The higher is this percentage, the greater is the share of international trade and the smaller is the share of interprovincial trade. The data show that the economy of Ontario, which makes up over 40% of Canada's GDP, has over time been considerably reoriented toward North-South trade and away from East-West trade. Whereas in

⁹ Due to a slowdown in the U.S. economy, exports as a percentage of GDP are down from their high of 45% reached in 2000.

Table 15: International Trade as a Percentage of International + Interprovincial Trade

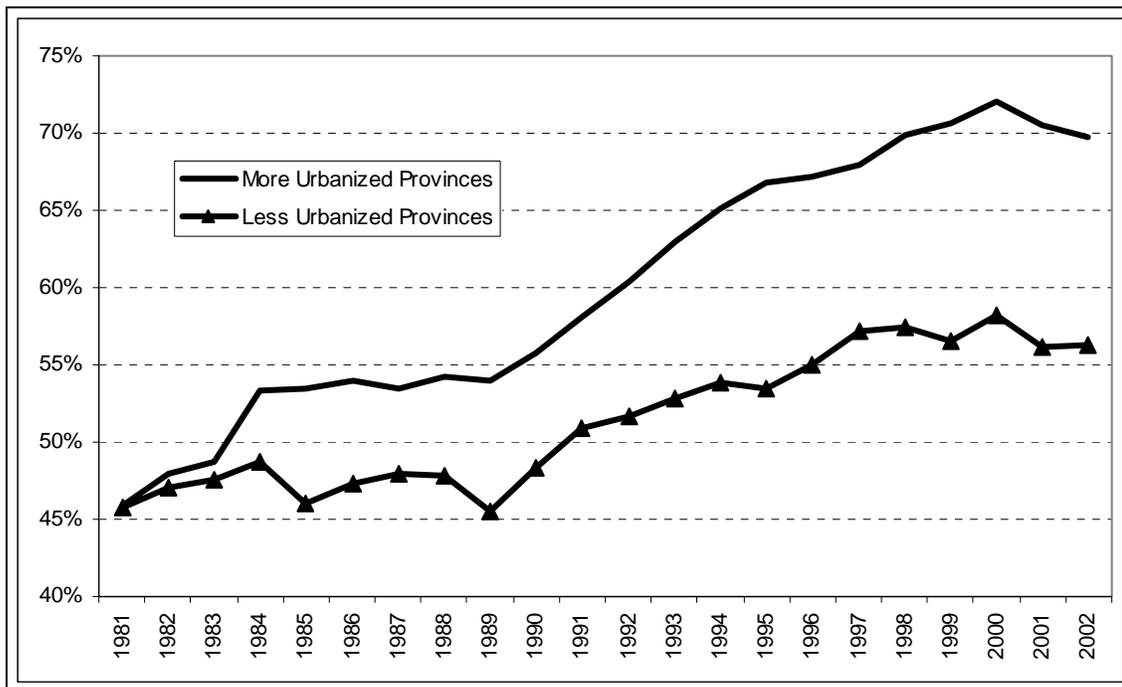
	Newfoundland		Prince Edward Is.		Nova Scotia		New Brunswick		Quebec		Ontario		Manitoba		Saskatchewan		Alberta		British Columbia	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
1981	73%	18%	24%	15%	43%	30%	46%	34%	45%	45%	45%	60%	30%	32%	53%	27%	34%	34%	65%	41%
1982	68%	18%	26%	14%	47%	30%	49%	30%	46%	42%	48%	59%	32%	29%	55%	26%	36%	32%	67%	39%
1983	68%	21%	25%	17%	44%	28%	50%	29%	46%	44%	49%	61%	32%	31%	57%	27%	35%	31%	68%	41%
1984	71%	20%	30%	18%	45%	30%	51%	32%	50%	46%	55%	65%	35%	34%	56%	30%	37%	37%	70%	43%
1985	67%	19%	31%	18%	43%	28%	51%	33%	49%	48%	55%	66%	33%	35%	51%	29%	41%	36%	70%	42%
1986	69%	19%	34%	19%	46%	32%	51%	35%	49%	49%	56%	67%	33%	36%	53%	29%	41%	36%	69%	44%
1987	64%	22%	35%	17%	48%	35%	50%	36%	46%	49%	55%	67%	36%	35%	54%	29%	43%	36%	70%	46%
1988	72%	29%	31%	18%	43%	36%	47%	34%	47%	51%	56%	69%	37%	35%	54%	29%	46%	37%	70%	46%
1989	73%	29%	32%	19%	43%	36%	45%	36%	48%	52%	55%	69%	36%	36%	47%	29%	47%	37%	69%	47%
1990	70%	31%	29%	20%	45%	38%	47%	38%	50%	55%	57%	70%	40%	38%	54%	30%	48%	38%	69%	48%
1991	67%	29%	31%	19%	48%	39%	50%	38%	51%	58%	60%	72%	44%	41%	56%	33%	52%	42%	70%	51%
1992	66%	27%	34%	22%	49%	40%	51%	41%	54%	59%	63%	74%	45%	43%	58%	35%	57%	43%	68%	53%
1993	73%	29%	33%	23%	50%	42%	51%	46%	57%	60%	66%	75%	46%	44%	59%	37%	57%	44%	69%	56%
1994	72%	32%	39%	25%	50%	42%	50%	48%	62%	59%	67%	78%	47%	46%	62%	39%	58%	43%	71%	55%
1995	75%	37%	41%	25%	48%	43%	50%	48%	62%	60%	69%	78%	45%	49%	61%	41%	60%	44%	74%	55%
1996	74%	38%	41%	23%	52%	46%	52%	48%	64%	61%	70%	78%	47%	46%	62%	39%	59%	48%	72%	56%
1997	76%	42%	46%	27%	55%	49%	53%	49%	64%	64%	71%	79%	50%	49%	63%	43%	60%	52%	71%	58%
1998	76%	44%	50%	30%	55%	49%	54%	50%	66%	65%	73%	79%	51%	49%	62%	44%	63%	54%	70%	58%
1999	76%	44%	53%	30%	55%	50%	54%	50%	67%	66%	74%	79%	49%	48%	60%	44%	62%	53%	70%	59%
2000	73%	48%	54%	30%	58%	50%	56%	51%	69%	67%	75%	81%	50%	49%	64%	44%	64%	56%	71%	59%
2001	59%	45%	52%	28%	58%	50%	55%	51%	68%	65%	74%	79%	49%	46%	63%	41%	64%	55%	69%	58%
2002	60%	45%	53%	29%	59%	48%	56%	49%	66%	64%	73%	79%	49%	47%	61%	41%	63%	54%	68%	58%

Source: Statistics Canada, Cansim II Table 3840002.

1981 55% of Ontario's exports went to other provinces by 2002 only 27% did so. Imports into Ontario from outside Canada have similarly increased in importance, from accounting for 60% of all imports in 1981 to accounting for 79% in 2002. A similar transition has occurred in Alberta where the share of international exports has almost doubled from 34% in 1981 to 63% in 2002.

Figure 1 offers a different perspective on these data. It presents time series showing the value of international exports as a percentage of total (international + interprovincial) exports in goods and services for the heavily urbanized provinces – those in which more than 75% of those aged 15 years and above live in urban areas -- and the same series for the less urbanized provinces. As reported in Table 1, the more urbanized provinces are British Columbia, Ontario, Quebec and Alberta. These provinces contain 8 of the 9 large cities of Canada.

Figure 1: The Growing Share of North-South Exports, More and Less Urbanized Provinces



In 1981, the more and the less urban provinces were identical in terms of their export orientation; for both sets of provinces, international exports accounted for 46% of total exports. Since 1981, and particularly since the signing of the NAFTA in 1988, the more urbanized provinces have outpaced the less urbanized provinces in reorienting exports along North-South lines.

The implication to be drawn from this is that the economies of the most urbanized provinces, those containing 8 of Canada's 9 large cities, have been substantially reoriented toward the new North-South axis characteristic of closer North American integration. While it is true that the Canadian economy as a whole has reoriented itself along North-South lines, the discussion above

indicates that this is not true of all parts of Canada. Those regions of the country most tightly entwined in the North American economy are the more urbanized parts.

The fact that Canada is being more closely integrated into the North American economy mainly via the integration of the economies of the major urban centres has recently been emphasized by Berridge (2002). He draws attention to the growth of international relative to interprovincial trade in goods and services in the more urbanized regions of the country but also emphasizes that the role of large urban centres is equally important with respect to financial capital flows. The reality is that participation in the financial services, media and technology sectors requires that a region have a large urban centre to attract the firms and people who work in those areas.

Berridge suggests that the vision of Canada reflected in its existing governmental, economic and cultural structures is an East-West country. The new economy of Canada, however, consists more of a number of North-South multi-national economic cells, each anchored in Canada by a major urban centre. Canada's economic competitiveness, then, depends on the competitiveness of its major urban centres with those in the U.S., China, and elsewhere. What is critical for the economic health of Canada is the economic health of its major urban centres. This in turn depends on the ability of Canadian cities to offer competitive tax regimes and attractive sets of public goods and services in the form of modern infrastructure and a young, well-educated work force.

4. Accounting for Growth

In this section I review a method for inferring what the information gathered about labour force characteristics, employment growth rates, immigration and the impact of trade means for the relative contributions of urban and rural areas to economic growth. The approach taken is referred to as *growth accounting*. The next few paragraphs describe the approach. For those not interested in the technical details, the results of this exercise are reported in the final two paragraphs of this section.

An economy's output of goods and services depends on the quantities of available inputs and the productivity of the production process using those inputs. Inputs into the production process can be broadly defined as capital (K) and labour (L). Using Y to represent the output of goods and services and A to represent a measure of the productivity of the production process, we can write an aggregate production function in as;

$$Y = A \cdot F(L, K).$$

Thus the level of output produced depends on the amounts of labour and capital employed and the productivity of the production process. Straightforward manipulation of this aggregate production function yields the following relationship between the rate of growth in output, the rates of growth in inputs and the rate of productivity growth;

$$\frac{\Delta Y}{Y} = \frac{\Delta A}{A} + \alpha \frac{\Delta L}{L} + \beta \frac{\Delta K}{K}.$$

In this equation the symbol Δ indicates “change in” so that ΔY represents the change in the quantity of goods and services produced from one period to the next. $\Delta Y/Y$, then, represents the rate of change (or growth) in the quantity of goods and services produced. Similarly, $\Delta L/L$ and $\Delta K/K$ represent the rates of growth in employment and the capital stock, respectively. Symbol α is used to measure the elasticity of output with respect to labour. Thus α measures the responsiveness of the rate of output growth to the rate of growth of employment. Similarly, β measures the elasticity of output with respect to capital. The larger are α and β , the more sensitive is the rate of output growth to the rates of growth in employment and the capital stock, respectively.

In growth accounting exercises using Canadian data the values of α and β are typically judged to be 0.67 and 0.33, respectively.¹⁰ The value of α indicates that should, for example, the rate of growth in employment ($\Delta L/L$) equal 10%, then all else equal, output would grow by $(0.67)(10\%) = 6.7\%$. In a similar manner we can determine that should the rate of change in the capital stock ($\Delta K/K$) be 10%, then all else equal, output would grow by $(0.33)(10\%) = 3.3\%$.

The rate of growth in national output can be determined by summing the rates of growth in output in each industry, in each province, or in each city. Our goal here is to identify the separate contributions to growth caused by growth in the labour and capital inputs in urban as opposed to rural areas. For this purpose we re-write the growth accounting equation as;

$$\frac{\Delta Y}{Y} = \left(\frac{\Delta A^u}{A^u} + \frac{\Delta A^r}{A^r} \right) + \left(\alpha^u \frac{\Delta L^u}{L^u} + \alpha^r \frac{\Delta L^r}{L^r} \right) + \left(\beta^u \frac{\Delta K^u}{K^u} + \beta^r \frac{\Delta K^r}{K^r} \right)$$

Here the superscripts denote variables measured for urban (u) and rural (r) areas. The sensitivities of national output with respect to growth in the labour input in urban areas (α^u) and in rural areas (α^r) will differ for two reasons. First, they will differ because urban and rural areas differ in size. Thus an increase in the growth rate of urban employment will have an effect on national output proportional to urban employment’s share of total employment. Second, should the characteristics of employed labour in urban and rural areas differ then an increase in the growth rate of urban employment might have a larger impact on the national growth rate than will an increase in the growth rate of rural employment. Evidence has been presented to suggest such differences exist. In particular, it has been shown that percentage of the labour force aged 25-44 years is significantly higher in urban areas and that education levels are also higher in urban areas. For both these reasons, then, one would expect $\alpha^u > \alpha^r$. For similar reasons one might expect that the sensitivity of national output growth might differ with respect to changes in growth in the capital stock in urban as opposed to the rural areas.

To understand the implications of these differences, I used the average growth rates of employment in urban (2.4%) as opposed to rural (1.8%) areas reported in Table 8 and I assumed

¹⁰ The fact that these values sum to unity means that the production process exhibits the property of constant returns to scale. Thus a doubling of L and K will result in a doubling of Y. It is common to impose this property on the aggregate production function.

a rate of growth in the capital stock reported by Statistics Canada.¹¹ I assumed values representing the sensitivity of national output to changes in the growth rates of employment and capital for urban and rural regions that sum to the commonly cited national values of 0.67 and 0.33, respectively.¹² These assumptions yield the result that, assuming a national rate of output growth equal to 3.5%, 2.89 percentage points will be due to economic growth emanating from urban centres and 0.61 percentage points will be due to economic growth emanating from rural areas. Thus 82.7% of all economic growth in Canada emanates from urban centres.

In a similar way, it is possible to derive an estimate of how much of all economic growth in Canada emanates from just Canada's nine large cities. Large cities account for 53% of employment in Canada and, as reported in Table 8, employment grows more quickly in these centres than elsewhere.¹³ Adjusting the parameter values to capture these and other changes, I calculate that assuming a national rate of output growth equal to 3.5%, 2.35 percentage points will be due to economic growth emanating from urban centres and 1.15 percentage points will be due to economic growth emanating from rural areas. Thus 67.0% of all economic growth in Canada emanates from Canada's nine largest cities.

5. Conclusions

The focus of this report has been on identifying indicators of the impact city economies have on provincial and national economic conditions. The evidence suggests that cities are the engines of economic growth in Canada. Large cities generate new employment well in excess of what might be expected given their share of population. Evidence has been presented showing that only a few cities have sometimes carried the national economy on their backs. In 1996, for example, the Calgary economy generated 24 percent of all new jobs in Canada even though the city contains less than 3% of Canada's population. Other times only a few cities have borne the brunt of a national recession. In 1991, for example, Toronto and Hamilton combined to account for 56% of all jobs lost in Canada in that year; a total of 130 thousand jobs. Thus the engines of economic *growth* must also bear the weight of occasionally being the engines of economic

¹¹ See the volume index of capital input in the business sector reported in Statistics Canada, Cansim II series V2007223. That series reports an average growth rate in the national capital stock of 3.4% between 1981 and 2000. I assumed a growth rate of the capital stock in urban areas of 3.8% per annum versus 2.4% in the rural sector. Assuming the urban sector contains 75% of all capital, these assumptions imply a national growth rate in capital inputs of 3.4%.

¹² Thus I assumed $\alpha^u=0.54$, $\alpha^r=0.13$, $\beta^u=0.25$ and $\beta^r=0.08$. The assumed value for α^u is equal to 80% of the national value of 0.67. This reflects the share of urban employment in total employment. The assumed value for β^u is based on the assumption that 75% of the national capital stock is in urban areas. A further assumption made in the calculations is that 80% of the effects on growth due to technological advances accrue to urban areas while 20% accrues to rural areas.

¹³ In the growth accounting equation, the u superscript now defines variables relevant to large cities while the r superscript defines those relevant to the rest of the country. I assumed values of $\alpha^u=0.36$, $\alpha^r=0.31$, $\beta^u=0.20$ and $\beta^r=0.13$. The assumed value for α^u is equal to 53% of the national value of 0.67. This reflects the share of employment in large cities relative to total employment. The assumed value for β^u is based on the assumption that 60% of the national capital stock is in large cities. The capital stock is assumed to grow at 4.0% per annum in large cities and 2.4% elsewhere. These assumptions produce the same 3.4% annual growth rate in the national capital stock that was assumed in the previous exercise. Finally, I assume 67% of the effects on growth due to technological advances accrue to large cities while 33% accrues elsewhere.

contraction. Calculations based on a simple growth accounting framework suggests that urban centres account for over 78% of all economic growth in Canada while the nine largest cities alone account for over 64% of all economic growth. This sword cuts both ways, however, as this also suggests urban areas and large cities account for 78% and 64%, respectively, of all economic contractions.

The growing importance of city economies has been fuelled by a number of factors. First, the urbanization of Canada continues as productivity growth in agriculture continues to reduce employment prospects in rural areas. This is a continuation of a process that has been on-going for 100 years in Canada. Second, the decision of the federal government to significantly increase the number of in-migrants to Canada has had its most dramatic impact on Canadian cities. Immigrants tend to be younger and better educated than the average Canadian and they overwhelmingly choose to settle into urban areas. As a consequence, urban labour forces are younger and better educated than elsewhere. Third, the adoption of free trade policies has enabled Canadian industry to specialize in areas of comparative advantage and has opened to them the huge U.S. market. The dramatic growth in Canadian exports to the U.S. indicates that industry has risen to this challenge and profited from it. The growth in international trade has been much greater in the most urbanized provinces (British Columbia, Ontario, Quebec and Alberta), those containing 8 of Canada's 9 largest cities. The clear inference is that city economies have been the main beneficiaries of more open markets and greater economic efficiency.

The implication of the growing importance of city economies, and the fact this growing importance is tied to their access to international markets, is that Canadian cities must more and more prove themselves capable of competing with international cities for financial capital and skilled labour. Municipal governments have an important role to play in this regard. They must provide an attractive location for international mobile firms and people. Berridge (2002) argues that the challenge of providing a globally-competitive environment to which to attract internationally mobile firms and people will be resolved primarily within Canada's big cities. His conclusion is certainly supported by what has been reported here: Canada's cities are the magnets for labour and capital and a growing national economy depends on the economic growth generated by city economies. As city governments are responsible for providing many of the services that make a city globally-competitive – serviced land, an efficient transportation system, public safety, potable water, recreation facilities, a culturally diverse and tolerant social environment, and etcetera – their fiscal capabilities are of paramount importance. An inability of city governments to finance these investments in social infrastructure, either at all or via an efficient system of revenue will cause not only the economies of cities to stagnate but also that of the provinces and the nation. Simply put, Canada owes its economic strength to the competitive advantage of its cities and cities in turn owe their competitive advantage to their ability to finance the maintenance and improvement of the stock of assets that make them the centres of economic growth.

References

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