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CENTRE FOR THE STUDY OF LIVING STANDARDS

ICT INVESTMENT AND PRODUCTIVITY: A PROVINCIAL PERSPECTIVE

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ICT Investment and Productivity: A Provincial Perspective

Abstract

In 2008, Statistics Canada, for the first time, made available estimates of information and communication technology (ICT) investment by province. Given the importance of ICT investment for productivity growth, these data are important for the comparative analysis and understanding of productivity growth by province. The objective of this report is to present the basic data on ICT investment and ICT investment per worker in Canada and the ten provinces over the 1981-2007 period. The first part of the report reviews the literature on why ICT investment is important for productivity. The second part examines ICT investment levels and trends by province. The third part decomposes the gap in ICT investment per worker by province, relative to the national average, into three effects: that related to income levels, to the total investment/GDP share, and to the ICT investment/total investment share.

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Executive Summary

In 2008, Statistics Canada, for the first time, made available estimates of ICT investment by province. Given the importance of ICT investment for productivity growth, these data are important for the comparative analysis and understanding of productivity growth by province. The objective of this report is to present the basic data on ICT investment and ICT investment per worker in Canada and the ten provinces over the 1981-2007 period. The first part of the report reviews the literature on why ICT investment is important for productivity. The second part examines ICT investment levels and trends by province. The third part decomposes the gap in ICT investment per worker by province, relative to the national average, into three effects: that related to income levels, to the total investment/GDP share, and to the ICT investment/total investment share.

The key findings of the report are as follows:

- There is an emerging consensus in the literature that machinery and equipment (M&E) investment, and the subclass of ICT investment in particular, is a uniquely important driver of productivity growth.

- All provinces have experienced strong growth in ICT investment in recent years. From 2000 to 2007 Newfoundland experienced the most rapid growth (14.7 per cent per year) and Quebec the weakest (8.4 per cent).

- Investment in computers and related equipment experienced the fastest growth of the three ICT components (telecommunication equipment, software and computer and related equipment), ranging in the 2000-2007 period from a high of 24.6 per cent per year in Newfoundland to a low of 14.1 per cent in Quebec.

- The level of ICT investment per worker in 2007 was highest in Ontario at $3,870 per worker (2002 chain dollars), and second highest in Alberta ($3,050) and lowest in New Brunswick ($2,445). Ontario had the highest level of software and computer and related equipment investment per worker among the 10 provinces and the second highest level of telecommunications investment per worker (Newfoundland was highest).

- A decomposition analysis reveals that for the eight provinces with levels of ICT investment per worker below the national average, below average income levels was the most important explanation, followed by below average shares of total investment in GDP.

The report concludes that given the importance of ICT investment for productivity growth, identifying the underlying reasons behind provincial disparities in ICT investment intensity beyond the decomposition stage should rank high on any productivity research agenda.

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ICT Investment and Productivity: A Provincial Perspective

I. Introduction

A. Motivation

In 2005, the Centre for the Study of Living Standards (CSLS) published a report that examined investment on information and communication technologys (ICT) in Canada and the United States between 1987 and 2004 (CSLS, 2005). It found that Canadian firms lagged considerably behind US firms in ICT spending and that this situation accounted to some extent for the lower labour productivity growth experienced in Canada. More recently, the CSLS published an update (Sharpe and Arsenault, 2008) which underlined the steady relative improvement of Canada since 2000 in terms of purchasing-power-parity-adjusted ICT investment per worker relative to the US. While encouraging, this improvement may prove unsustainable as it appears to rely largely on the appreciation of the Canadian dollar. More importantly, this positive trend should not obscure the fact that there remains a massive gap in ICT investment intensity between Canada and the United States, with the level of PPP-adjusted ICT investment per worker in Canada still below 60 per cent that of the United States in 2006.

In 2008, Statistics Canada, for the first time, made available estimates of ICT investment by province. Given the importance of ICT investment for productivity growth, these data are important for the comparative analysis and understanding of productivity growth by province. The objective of this report is to present the basic data on ICT investment and ICT investment per worker in Canada and the ten provinces over the 1981-2007 period. The first part of the report reviews the literature on why ICT investment is important for productivity. The second part examines ICT investment levels and trends by province. The third part decomposes the gap in ICT investment per worker by province, relative to the national level into three effects related to income, the total investment/GDP share, and the ICT investment/total investment share.[1]

B. Structure of the Report

This report is divided into four sections. In the first section, we establish the relationship between ICT investment and productivity with a concise review of the literature on the subject. The second section reviews trends in the provinces. The third section decomposes differences in ICT investment per worker between the provinces and the national average. The final section concludes.

[1] A set of tables on ICT investment by province for the 1981-2007 period are found at the end of this report. In addition, a more detailed set of tables on ICT investment by province are posted with this report as an appendix on the CSLS website: www.csls.ca.

I. Why is ICT Investment Important for Productivity?

Over the past twenty years, economists have gained a sharper perspective on the relationship between investment and productivity by investigating the effects of investment in different types of capital. The standard neoclassical growth accounting approach, with its aggregate stock of undifferentiated capital, has largely given way to a more detailed approach in which capital is divided into several subcategories. The broadest of these are machinery and equipment (M&E) and structures (or non-M&E). M&E can be further decomposed into information and communications technology (ICT) and non-ICT capital. The examination of these subcategories of capital has yielded a firmer understanding of the relationships between capital investment, productivity, and growth than had been possible before.

A. On the Importance of M&E

A string of cross-country empirical studies have found M&E investment to have a particularly strong positive relationship with economic growth and productivity growth. The classic work from this literature is that of De Long and Summers (1991), who use cross-country regression analysis to relate M&E and structures investment to per-worker GDP growth. They find that a one percentage-point increase in M&E investment as a share of GDP is associated with an increase of 0.3 percentage points in the annual rate of per-worker GDP growth. This is a significant effect; it amounts to 29 per cent faster per-worker GDP growth over their 25-year sample period. By contrast, De Long and Summers find no statistically significant relationship between per-worker GDP growth and investment in structures.

Most subsequent studies corroborate the De Long and Summers result for M&E investment. De Long and Summers (1992) use updated data and statistical techniques to test their previous results and find them to be robust. Sala-i-Martin (1997) finds a positive relationship between M&E investment and economic growth, similar in magnitude to the relationship identified by De Long and Summers; a one percentage-point increase in the M&E investment share of GDP is associated with a 0.2 percentage-point increase in per-worker GDP growth. This M&E investment effect is about four times the size of the effect of structures investment. Lee (1995) finds a positive cross-country relationship between productivity and the ratio of imported equipment to total investment; since M&E is more easily tradable than structural capital, this measure is likely to reflect the share of M&E in total investment. Jalilian and Odedokun (2000) further subdivide capital investment into five categories (business, machinery, transport, residential, and ‘other’) and find that investment in machinery remains statistically significant in most of their cross-country regression specifications.

B. On the Importance of ICT

Within the subcategory of M&E, the distinction between ICT and non-ICT investment also appears to be important. Fuss and Waverman (2005) develop an econometric model to relate the Canada-US gap in labour productivity to various types of investment. They find that when both the effect of ICT intensity and ICT spillovers are

taken into account, differences in the stock of ICT accounts for 56 per cent of the Canada-US productivity gap in 2000 and 60 per cent of the gap in 2003. In comparison, increases in non-ICT capital per worker (non-ICT capital deepening) accounts for just about 5 per cent of the productivity gap. Digging further, they find that slightly less than half of the ICT contribution to the gap is attributable not to simple capital deepening but to investment spillover effects; information and telecommunications technologies become increasingly important as they spread throughout the economy. Thus, they attribute much of the persistent Canada-US gap in labour productivity to different levels of prior investment in ICT.

The results of Fuss and Waverman (2005) emphasize the importance of the network effects of ICT investment. The internet would be useless if only one computer were connected to it; its transformative economic power is realized only when a large part of the economy has access to it. This idea of ICT as a so-called 'general purpose technology' has advocates (Helpman and Trajtenberg 1998) and detractors (Gordon 2003), but it is broadly consistent with the empirical regularities we have already discussed. ICT has fundamentally altered production and organization processes in at least some sectors. For instance, the US retail market has been revolutionized by the Wal-Mart model of just-in-time inventory management, which would be impossible without the power to collect and transfer large amounts of sales data quickly and cheaply.[2] If ICT investment stimulates the development of new complementary technologies (Basu *et al.*, 2003), then ICT investment may also have spillover effects that make non-ICT investment more effective in promoting productivity growth (Pakko, 2002; Gort *et al.*, 1999).

Abdi (2008) finds empirical support for such spillover effects within the Canadian manufacturing sector. He notes that the elasticity of output with respect to M&E capital is generally found to be greater than M&E's factor share of output, which implies that the level of M&E investment is below the socially efficient level (in line with the predictions of the New Growth Theory of Romer (1986 and 1987), Lucas (1988) and others). This evidence is consistent with the idea that ICT investment has important network effects on economy-wide productivity; one firm's investments in ICT may provide external benefits to the rest of the economy, and since firms cannot capture external benefits, the level of ICT investment will be suboptimal.

C. Summary of Findings

There is an emerging consensus that M&E investment, and the subclass of ICT investment in particular, is a uniquely important driver of productivity growth. However, the results of Fuss and Waverman (2005) suggest that Canadian ICT investment is not keeping pace with that of the US and that Canada's relative productivity performance is adversely affected by this investment disparity.[3] The focus of this paper, however, is not on the Canadian situation relative to that of the US. Instead, we focus on the situation

[2] Harvard economist Kenneth Rogoff (2006) suggests that Wal-Mart (and a small number of other big-box retailers) may account for as much as 50 per cent of the US productivity growth advantage over Europe in the past decade, and that general ICT-related advances in wholesaling supply chains may account for a further 25 per cent of the gap.
[3] For an investigation into the causes of the Canada-US ICT investment gap see CSLS (2005).

within Canada itself using the newly available ICT data by provinces. Important ICT investment disparities exist between Canadian provinces and a first investigation may shed light on some of the reasons for these differences. This paper is a first step as it aims mainly to present and discuss the new data. Further research will be needed to explain the relationship between ICT investment and productivity in the context of the Canadian provinces.

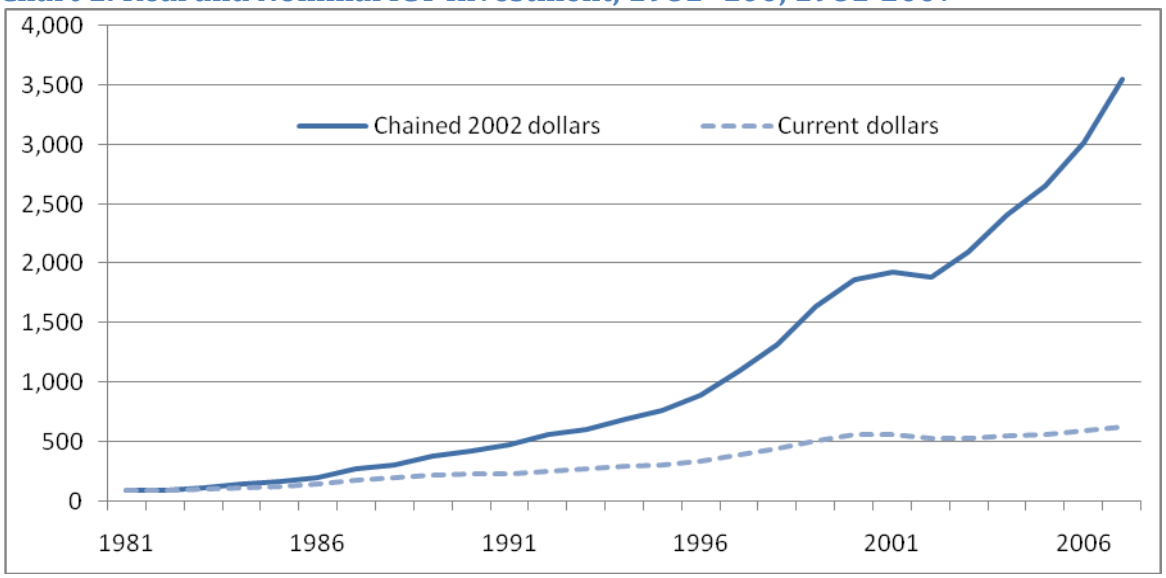
II. Trends in ICT Investment

This section first reviews broad trends in real ICT investment in the Canadian provinces since 1990, and compares them to that of other asset types. It then provides an overview of provincial differences in ICT investment per worker.

A. The National Context

ICT investment in Canada has grown enormously in recent decades (Chart 1). Measured in real terms, ICT investment at the total economy level rose 35 fold to $56.6 billion 2002 dollars in 2007 from $1.6 billion in 1981, or to 4.3 per cent of GDP from 0.2 per cent. In current dollars, ICT investment increased 6 times to $35.7 billion in 2007 from $5.7 billion in 1981 or to 2.3 per cent from 1.6 per cent of GDP. This slower growth in nominal ICT investment reflects the very large fall in the quality-adjusted price of ICT investment goods, which declined at a compound rate of 6.5 per cent between 1981 and 2007.

Chart 1: Real and Nominal ICT Investment, 1981=100, 1981-2007



Since the early 1980s ICT investment has advanced strongly every year, except in the early 2000s when it rose weakly in 2001 and fell in 2002 because of the downturn in the high-tech sector. This weakness has meant that ICT investment growth since 2000 has been slower than in the 1980s and 1990s (9.6 per cent in 2000-2007 versus 16.7 per cent

in 1981-2000 and 15.8 per cent in 1990-2000). But since 2002, the ICT investment growth has again taken off, advancing at a 13.4 per cent compound annual rate.

ICT investment consists of three components: computers and related equipment, software, and telecommunications equipment. At the national level, the growth rate for computers and related equipment has tended to be roughly double that of software, and the growth rate for software has tended to be double that of telecommunications equipment. For example, over the 1981-2007 period, real investment in computers advanced at a 24.7 per cent compound annual rate, compared to 13.5 per cent for software and 5.4 per cent for telecommunications equipment (Tables 1a-c at the end of the report).

Summary Table 1: Real Investment ($2002 Chained) Growth by Province and Investment Asset Type, compound annual growth rate in per cent, 1990-2000 and 2000-2007

	Canada	Newfoun-dland	PEI	Nova Scotia	New Brunswick	Québec	Ontario	Manitoba	Saskatch-ewan	Alberta	British Columbia
1990-2000											
Total	3.5	5.1	3.7	2.6	3.4	2.4	3.1	2.7	2.8	7.0	2.4
Structures	0.7	3.9	-0.7	0.8	2.3	-2.2	-1.7	-2.8	2.1	5.7	0.5
M&E	5.9	7.0	7.6	4.3	4.6	5.5	5.8	7.4	3.9	9.2	4.1
ICT	15.8	8.4	15.9	12.2	13.2	16.5	15.5	15.9	14.4	18.1	15.8
Telecommunications Equipment	6.7	2.3	1.8	5.4	7.6	8.9	6.4	4.1	5.8	6.1	6.6
Software	11.3	4.1	10.9	6.5	10.3	11.0	10.7	11.6	10.8	17.3	10.5
Computers and Related Equipment	29.8	23.9	35.9	26.5	25.5	30.7	29.5	30.3	27.8	29.6	30.6
2000-2007											
Total	5.3	0.8	5.5	3.2	3.8	4.3	4.7	5.7	3.1	7.6	5.7
Structures	4.6	1.1	0.6	0.3	1.7	5.4	3.7	6.0	0.2	6.2	4.7
M&E	6.0	1.1	8.7	5.7	5.2	3.8	5.5	5.5	7.1	9.8	7.0
ICT	9.6	14.7	13.6	9.9	9.1	8.4	9.1	9.9	13.0	11.2	10.6
Telecommunications Equipment	3.1	4.1	4.3	2.3	3.1	0.8	2.5	7.4	5.8	5.2	6.0
Software	7.8	18.6	18.0	9.8	8.3	8.3	7.3	7.9	11.9	5.9	9.0
Computers and Related Equipment	16.7	24.6	14.6	20.0	18.7	14.1	16.1	14.4	20.7	23.9	16.7

B. Provincial Trends in Real ICT Investment

Summary Table 1 provides an overview of trends in the different types of investment for Canada and the 10 provinces for the 1990-2000 and 2000-2007 periods. In general, the national ICT investment trends played out at the provincial level, as the following examples illustrate.

- At the national level, ICT investment grew much faster than structures and M&E investment (which includes both ICT and non-ICT M&E) in both

the 1990-2000 and 2000-2007 periods. This was the case for all the provinces in both periods.

- At the national level, computers and related equipment investment grew faster than software, and software faster than telecommunications equipment in both the 1990-2000 and 2000-2007 periods. Again this was also the case for all provinces in both periods.

- At the national level both total ICT investment and each of the three components grew at a slower rate in the 2000-2007 period relative to the 1990-2000 period. This was the case for total ICT for all provinces except Newfoundland, for telecommunications equipment for all provinces except Newfoundland, Prince Edward Island, and Manitoba, for software for all provinces except Newfoundland, PEI, Nova Scotia, Manitoba and Saskatchewan, and for computers and related equipment for all provinces except Newfoundland.

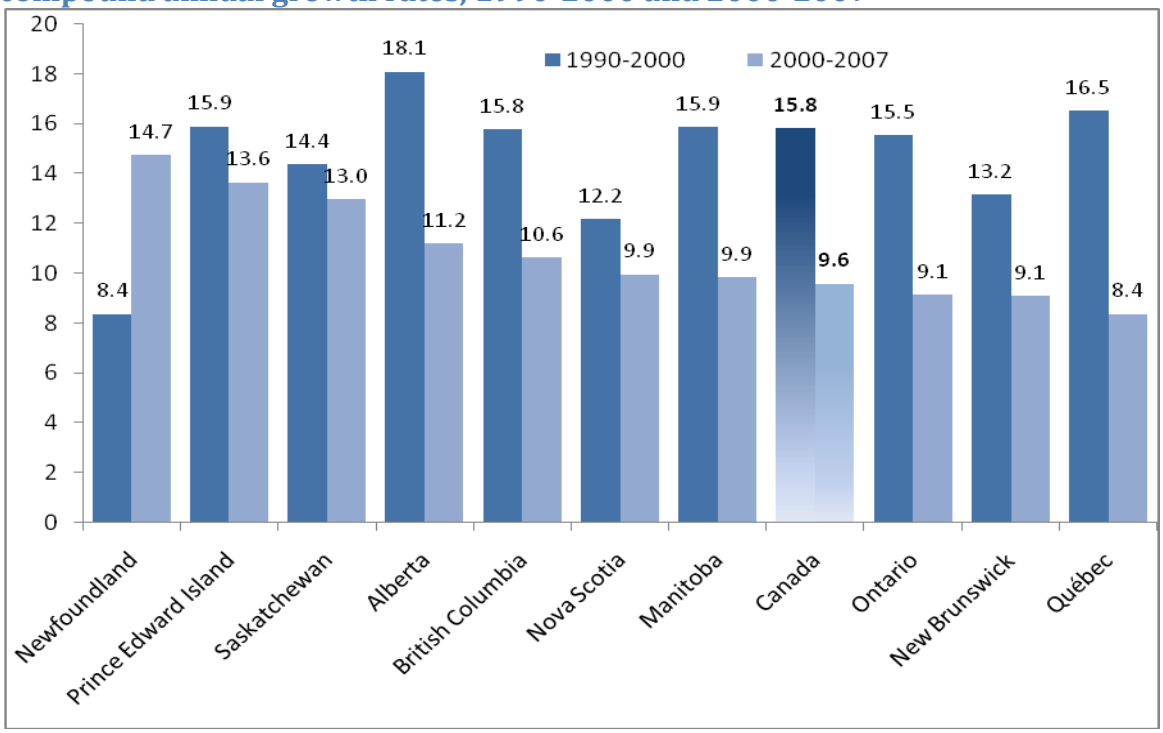
Between 1990 and 2000, real ICT investment grew on average fastest in Alberta (18.1 per cent per year) and Quebec (16.5 per cent) and slowest in Newfoundland (8.4 per cent) and Nova Scotia (12.2 per cent). Quebec's performance was particularly notable given that the province experienced the slowest rate of growth of total investment of all provinces over the period, only 2.4 per cent per year. In comparison, Alberta's strong ICT investment growth was in part the result of its strong overall investment growth, with the province reporting an average annual growth rate of total investment of 7.0 per cent, well above second-place Newfoundland (5.1 per cent).

Strong real ICT investment growth at the provincial level over the 1990-2000 period was spurred primarily by strong investment growth in computers and related equipment. The province experiencing the slowest growth in this type of ICT investment was Newfoundland at the robust rate of 23.9 per cent per year, while Prince Edward Island had the fastest growth at 35.9 per cent. Real software investment also experienced relatively strong growth across the country, ranging from a low of 4.1 per cent per year in Newfoundland to a high of 17.3 per cent per year in Alberta). Real investment growth in telecommunications equipment exhibited the slowest growth of the three ICT investment components, and the least provincial variation ranging from 1.8 per cent in Prince Edward Island to 8.9 per cent in Quebec.

In the 2000-2007 period, total ICT investment growth was strongest in Newfoundland, advancing 14.7 per cent per year and, weakest in Quebec at 8.4 per cent (Chart 2). For computers and related equipment, again the fastest growth ICT component, Newfoundland enjoyed the most rapid growth at 24.6 per cent per year, while Quebec experienced the weakest (14.1 per cent). For software, Newfoundland again had the fastest growth (18.6 per cent), with Alberta the lowest (5.6 per cent). Manitoba had the most rapid telecommunication equipment growth (7.4 per cent) and Quebec the lowest (0.8 per cent).

As noted earlier, ICT investment growth was significantly lower in the 2000-2007 period than in the 1990-2000 period across all provinces but Newfoundland (Chart 2). Quebec and Ontario were the provinces most affected by the slowdown, with ICT investment growth in Quebec halving between the two periods and that of Ontario falling by about 40 per cent. The slowdown in total ICT investment growth was not generally due to a fall in one particular component, but rather reflected a slowdown in investment growth in each of the three components.

Chart 2: Real ICT Investment Growth by Province, chained 2002 dollars, compound annual growth rates, 1990-2000 and 2000-2007



B. Relative ICT Investment per Worker Levels by Province

ICT investment growth rates are important because investment determines the amount of ICT goods that workers have to work with in production. Absolute investment figures alone, however, cannot reveal the whole story because ICT capital per worker or ICT capital intensity depends on both the amount of investment and the number of workers. It is ICT investment per worker that is of greater interest. Summary Table 2 contains comprehensive comparative data on the level of ICT investment per worker in Canada and the provinces in 1990, 2000, and 2007 for total ICT and the three components in absolute terms and relative to the national average.

The most striking characteristic of the data is that only two provinces – Ontario and Alberta – had ICT investment per worker above the national average in 2007 (Chart 3). Indeed, ICT investment per worker in Ontario was above the national average in every year over the 1981-2007 period (see Table 5 at the end of the report), although the differential has decreased slightly over time. Per-worker ICT investment was 15.4 per cent above the national average in 2007, down from a relative peak of 24.9 per cent

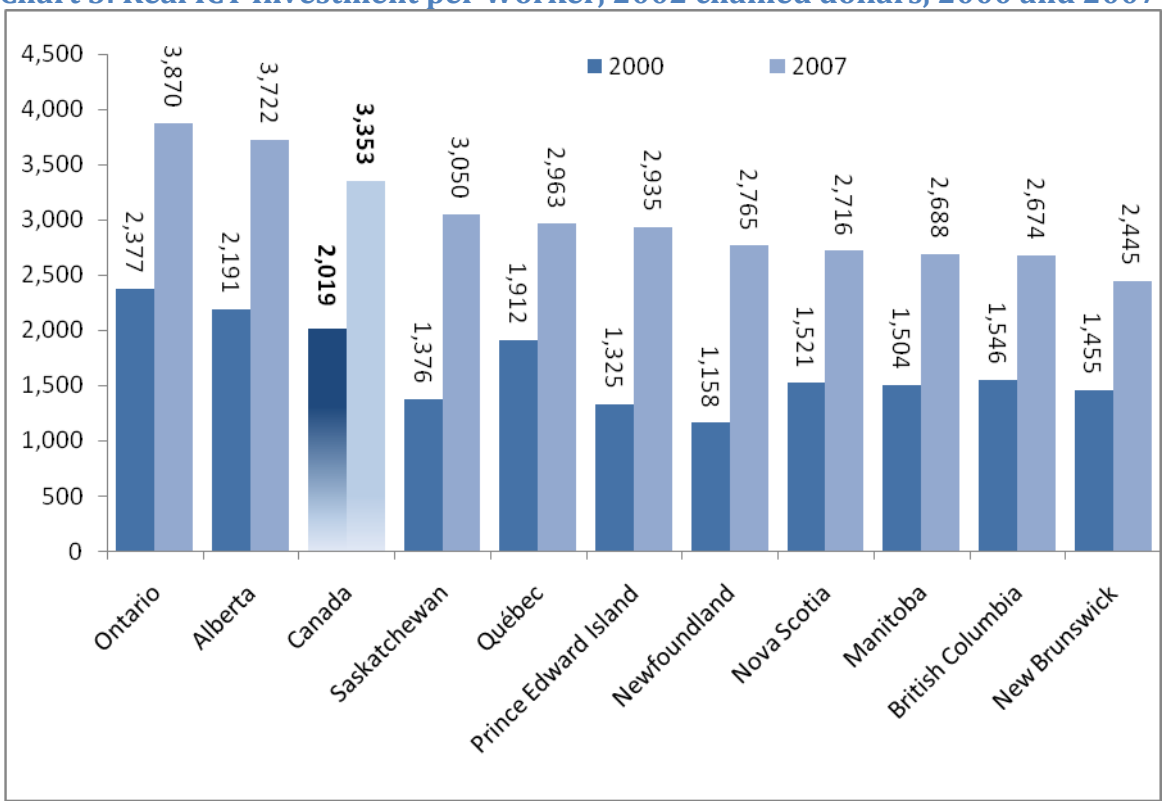
above the national average in 1996. In Alberta, ICT investment per worker was below the national average prior to 1995, but was 11.0 per cent above it in 2007. Meanwhile, New Brunswick and British Columbia had the lowest per-worker ICT investment in 2007, at 72.9 and 79.7 per cent of the national average respectively.

Summary Table 2: Real ICT Investment per Worker, Levels and as a Proportion of the National Average

	Canada	Newfoun-dland	PEI	Nova Scotia	New Brunswick	Québec	Ontario	Manitoba	Saskatch-ewan	Alberta	British Columbia
In chained $2002											
						Total ICT					
1990	525	497	345	515	466	448	629	371	375	515	443
2000	2,019	1,158	1,325	1,5 21	1,455	1,912	2,377	1,504	1,376	2,191	1,546
2007	3,353	2,765	2,935	2,716	2,445	2,963	3,870	2,688	3,050	3,722	2,674
CAGR: 1990-2000	14.4	8.8	14.4	11.4	12.1	15.6	14.2	15.0	13.9	15.6	13.3
CAGR: 2000-2007	7.5	13.2	12.0	8.6	7.7	6.5	7.2	8.6	12.0	7.9	8.1
						Telecommunication Equipment					
1990	340	461	347	445	315	250	389	289	279	403	287
2000	577	605	366	708	597	541	646	400	469	586	439
2007	628	732	445	763	675	507	677	610	657	678	563
CAGR: 1990-2000	5.4	2.8	0.5	4.7	6.6	8.0	5.2	3.3	5.3	3.8	4.4
CAGR: 2000-2007	1.2	2.8	2.8	1.1	1.8	-0.9	0.7	6.2	4.9	2.1	3.6
						Software					
1990	317	203	196	267	234	288	389	217	210	278	273
2000	823	316	484	470	567	756	960	603	562	1,105	599
2007	1,221	949	1,396	834	907	1,170	1,383	953	1,161	1,331	937
CAGR: 1990-2000	10.0	4.5	9.5	5.8	9.2	10.1	9.5	10.8	10.3	14.8	8.2
CAGR: 2000-2007	5.8	17.0	16.3	8.5	6.9	6.4	5.4	6.8	10.9	2.7	6.6
						Computers and Related Equipment					
1990	52	28	25	35	34	46	65	38	33	47	43
2000	621	252	470	349	300	619	774	501	366	502	496
2007	1,606	1,071	1,101	1,152	910	1,381	1,941	1,188	1,291	1,814	1,246
CAGR: 1990-2000	28.2	24.4	34.1	25.7	24.3	29.7	28.0	29.4	27.2	26.8	27.8
CAGR: 2000-2007	14.5	23.0	12.9	18.6	17.2	12.1	14.0	13.1	19.7	20.1	14.0
As a proportion of the national average											
						Total ICT					
1990	100	94.6	65.7	98.2	88.9	85.5	119.8	70.7	71.4	98.2	84.4
2000	100	57.4	65.6	75.4	72.1	94.7	117.8	74.5	68.2	108.5	76.6
2007	100	82.5	87.5	81.0	72.9	88.4	115.4	80.2	91.0	111.0	79.7
						Telecommunication Equipment					
1990	100	135.4	102.0	130.9	92.6	73.5	114.4	84.9	81.9	118.5	84.2
2000	100	104.8	63.4	122.6	103.4	93.8	112.0	69.3	81.2	101.6	76.1
2007	100	116.5	70.8	121.6	107.6	80.8	107.9	97.2	104.7	108.0	89.7
						Software					
1990	100	63.8	61.6	84.1	73.9	90.6	122.4	68.3	66.1	87.6	86.0
2000	100	38.4	58.8	57.2	69.0	91.8	116.7	73.3	68.3	134.3	72.9
2007	100	77.7	114.3	68.3	74.3	95.8	113.2	78.1	95.1	109.0	76.7
						Computers and Related Equipment					
1990	100	54.6	48.2	68.6	66.0	89.0	126.4	73.8	63.5	90.1	82.2
2000	100	40.5	75.7	56.3	48.3	99.8	124.6	80.7	58.9	80.9	80.0
2007	100	66.7	68.6	71.7	56.7	86.0	120.9	74.0	80.4	113.0	77.6

Between 2000 and 2007, there were only minor changes in the ranking of provinces in terms of real ICT investment per worker (Chart 3). Saskatchewan and Newfoundland performed particularly well, with real ICT per worker increasing a total of 122 and 139 per cent respectively in these two provinces. Saskatchewan thus went from eighth place in 2000 to third place in 2007, while Newfoundland went from last to sixth. The worst performing province was by far Quebec, whose real ICT investment per worker increased only $1,051 (chained 2002) or 55 per cent. While New Brunswick performed worst in absolute terms, with real ICT investment per worker increasing only $990, it performed much better in relative terms (68 per cent).

Chart 3: Real ICT Investment per Worker, 2002 chained dollars, 2000 and 2007



These disparities in the level and growth of ICT investment per worker across provinces may stem from many sources: lower levels of income, a lack of investment-friendly policies, policies favouring investment in other asset types or industrial structure. While a thorough investigation of the sources for ICT per worker differences across provinces is beyond the scope of this paper, the following section attempts to identify its proximate sources through a decomposition methodology..

III. A Decomposition of Provincial ICT Investment per Worker Gaps

There are several reasons why per-worker ICT investment may vary across provinces. From a static growth accounting perspective, the level of per-worker investment may be regarded as an outcome based on the following factor analysis:

$$\frac{ICT}{Worker} = \frac{GDP}{Worker} * \frac{Investment}{GDP} * \frac{ICT}{Investment} \qquad (1)$$

According to Equation (1), ICT investment per worker in a given province depends upon three variables: provincial GDP per worker, the share of total investment in provincial GDP, and the share of provincial investment spent on ICT.[4] All else equal, we would expect higher-income provinces to have higher ICT investment per worker because they have more resources to spend; provinces with high investment rates to have higher ICT per worker simply because they invest more in everything; and provinces with a high ICT share of total investment to invest more per worker in ICT because they focus more on ICT than other forms of investment.

Summary Table 3 gives provincial estimates for 2007 of GDP per worker, the share of non-residential investment in GDP, and the share of ICT investment in total non-residential investment. The product of these last two variables is the share of ICT investment in GDP, also given in the table.

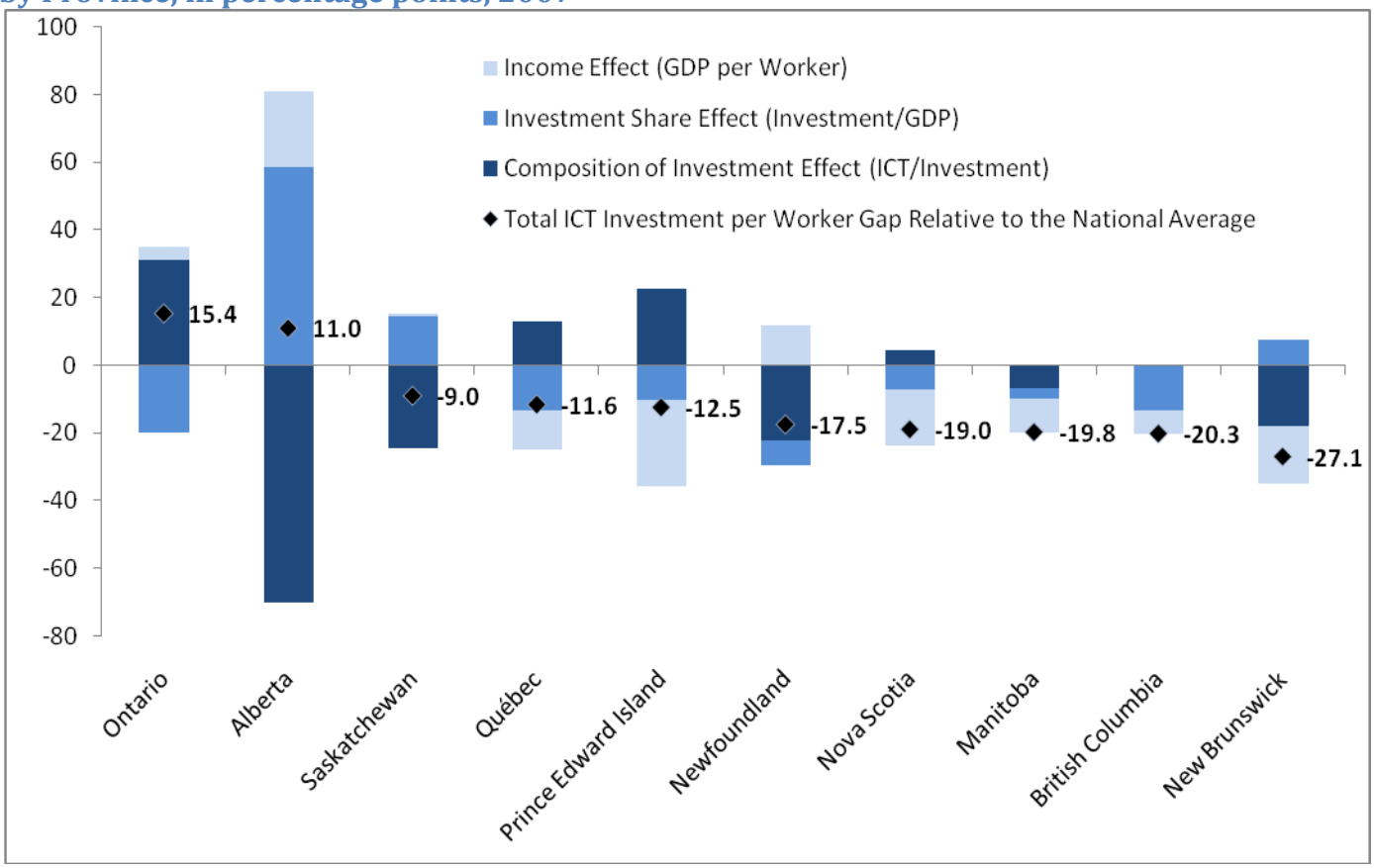
Summary Table 3: Productivity, Investment as a Share of GDP and ICT Investment as a Share of Investment by Province (chained 2002 dollars), 2007

	Productivity (GDP per Worker) Chained $2002	Investment Share (Investment/GDP) Per Cent	Composition of Investment (ICT/Investment) Per Cent	ICT Share of GDP (ICT/GDP) Per Cent
	A	B	C	D = B * C
Canada	$78,038	17.5	24.6	4.3
Newfoundland	89,065	16.1	19.3	3.1
Prince Edward Island	59,582	15.7	31.4	4.9
Nova Scotia	64,884	16.2	25.8	4.2
New Brunswick	63,983	19.1	20.0	3.8
Quebec	69,087	15.2	28.2	4.3
Ontario	80,810	14.6	32.9	4.8
Manitoba	69,814	16.8	22.9	3.9
Saskatchewan	78,717	20.4	19.0	3.9
Alberta	96,698	30.5	12.6	3.8
British Columbia	72,012	15.1	24.6	3.7

[4] See the Appendix for a mathematical representation of the decomposition formula.

In 2007, GDP per worker in Canada ranged from a high of $96,698 (2002 chain dollars) in Alberta to a low of $59,582 in Prince Edward Island. The non-residential investment shares ranged from a high of 30.5 per cent in Alberta to a low of 14.6 percent in Ontario. Alberta's high share was linked to the high level of energy-related investment. The ICT share of investment ranged from a high of 32.6 per cent of nominal GDP in Ontario to a low of 12.6 per cent in Alberta. The low share in Alberta is related to the very low proportion of ICT investment in mining and oil and gas extraction, less than 1 per cent (Table 12 at the end of the report).

Chart 4: Real ICT Investment per Worker Gap Relative to the National Average, Decomposition by Province, in percentage points, 2007



Summary Table 4 provides estimates of the relative size of the gap between ICT investment per worker by province and the national average. Only two provinces were above the national average, Ontario 15.4 per cent above and Alberta 11.0 per cent above. The other eight provinces were below the national average. New Brunswick had the lowest level of ICT investment per worker, 27.1 per cent below the national average.

Decomposing the provincial ICT investment per worker figures according to Equation (1) allows us to investigate the factors behind for the cross-province variation. Chart 4 and Summary Table 4 provide estimates of the impact of the three components in each province in 2007 relative to the national average.[5] It is clear that the cross-province

[5] See Tables 6a-6c for estimates for the 1981-2007 period.

variation in per-worker ICT investment reflects variation in the three components in Equation (1).

Above average ICT investment per worker in Ontario and Alberta stems from different factors.[6] In Ontario, it is mainly the higher ICT/GDP ratio, in turn due to the high ICT composition of investment, that explains the situation. Ontario's high ICT investment content reflects in part its industrial structure (Table 10 at the end of the report), as the province has above average output shares in a number of industries with high ICT investment/total investment ratios, such as finance, insurance and real estate, information and cultural industries, professional, technical and scientific services, and wholesale trade.

Summary Table 4: Real ICT Investment per Worker Gap Relative to the National Average, Decomposition by Province, 2007

	Total ICT Investment per Worker Gap	Income Effect (GDP per Worker)	ICT Investment Intensity (ICT/GDP)	Investment Intensity Effect (Investment/GDP)	Composition of Investment Effect (ICT/Investment)
	A = B + C	B	C = D + E	D	E
In Percentage Points					
Ontario	15.4	3.8	11.6	-19.8	31.4
Alberta	11.0	22.6	-11.6	58.5	-70.1
Saskatchewan	-9.0	0.8	-9.9	14.6	-24.5
Québec	-11.6	-11.5	-0.2	-13.2	13.1
Prince Edward Island	-12.5	-25.3	12.8	-10.1	22.9
Newfoundland	-17.5	12.0	-29.6	-7.6	-21.9
Nova Scotia	-19.0	-16.6	-2.4	-6.9	4.6
Manitoba	-19.8	-10.0	-9.8	-3.4	-6.5
British Columbia	-20.3	-7.2	-13.1	-13.1	0.0
New Brunswick	-27.1	-17.0	-10.1	7.8	-17.8
In Per Cent					
Ontario	100.0	24.4	75.6	-128.4	204.0
Alberta	100.0	205.7	-105.7	532.6	-638.3
Saskatchewan	100.0	-9.1	109.1	-161.2	270.3
Québec	100.0	98.4	1.6	113.7	-112.0
Prince Edward Island	100.0	202.4	-102.4	81.2	-183.6
Newfoundland	100.0	-68.5	168.5	43.4	125.1
Nova Scotia	100.0	87.5	12.5	36.4	-24.0
Manitoba	100.0	50.4	49.6	17.0	32.6
British Columbia	100.0	35.5	64.5	64.7	-0.2
New Brunswick	100.0	62.8	37.2	-28.7	65.8

In Alberta, by contrast, above average ICT investment per worker stems completely from high GDP per worker. While Alberta has a very high investment rate, a

[6] This decomposition was done using chained 2002 dollars estimates for ICT investment, total investment and GDP. The same decomposition using current dollar estimates showed no significant differences.

very small proportion of this investment is ICT investment. This means that ICT investment as a share of GDP in Alberta (3.8 per cent) is actually below the national average (4.3 per cent).

In terms of the eight provinces with ICT investment per worker below the national average, the income effect explains at least part of the gap in seven of the provinces (Saskatchewan was the exception) and was the most important factor (relative to ICT investment/GDP) in five provinces (Quebec, Prince Edward Island, Nova Scotia, Manitoba, and New Brunswick). In three provinces, Saskatchewan, British Columbia and Newfoundland, below average ICT investment/GDP ratios were the principal reason why the ICT investment per worker was below the national average. In Saskatchewan and Newfoundland this situation was explained by the low ICT content of investment, which was linked to the high proportion of investment in mining and oil and gas extraction. The situation in British Columbia was due to low investment/GDP ratio, at 15.1 per cent in 2007 the second lowest among the provinces.

IV. Conclusion

New data on ICT investment at the provincial level now make it possible to analyze ICT investment within Canada. We find that Ontario and Alberta are the only two provinces with above-average ICT per worker levels in 2007. New Brunswick (27.1 percent below average) and British Columbia (20.3 per cent below average) rank last and second to last in terms of ICT per worker in 2007. A simple decomposition shows that industrial structure, and particularly the importance of the mining and oil and gas extraction sector, have an effect on the provincial comparisons of ICT per worker. Yet, the significant differences in ICT investment between provinces suggest that policy differences may be important in driving ICT investment. Given the importance of ICT investment for productivity growth, identifying the underlying reasons behind provincial disparities in ICT investment intensity should rank high on any productivity research agenda.

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Table 1: Total Economy Investment in ICT, by province, millions of 2002 chained dollars, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	1,594	33	5	57	43	309	565	56	69	254	206
1982	1,569	31	5	56	46	298	578	55	57	228	214
1983	1,915	42	6	60	48	387	773	69	76	221	226
1984	2,333	49	8	85	60	492	950	87	88	246	264
1985	2,674	51	9	79	59	576	1,177	109	89	225	292
1986	3,270	84	13	112	77	710	1,413	125	114	283	332
1987	4,439	81	14	124	93	996	2,013	137	152	399	414
1988	5,021	80	14	140	107	1,137	2,289	154	144	458	477
1989	6,229	113	18	201	119	1,372	2,904	181	161	518	615
1990	6,866	103	19	199	140	1,408	3,265	190	170	658	691
1991	7,639	95	19	181	144	1,592	3,714	214	175	659	807
1992	8,968	109	23	188	198	1,928	4,401	204	204	813	877
1993	9,652	121	31	250	228	2,063	4,524	252	216	885	1,066
1994	11,007	115	33	308	202	2,275	5,054	241	255	1,217	1,275
1995	12,276	130	32	273	220	2,592	5,780	295	345	1,162	1,402
1996	14,276	145	37	297	280	3,124	6,867	351	366	1,245	1,525
1997	17,474	185	47	418	300	3,883	8,050	453	502	1,715	1,866
1998	21,080	221	45	409	358	4,822	8,920	523	501	2,829	2,358
1999	26,110	277	61	545	488	5,934	11,095	819	820	2,923	3,021
2000	29,809	229	83	626	482	6,506	13,830	831	652	3,471	2,986
2001	30,750	256	81	622	507	6,402	14,561	843	723	3,579	3,052
2002	30,114	270	92	633	505	6,430	13,826	941	729	3,345	3,204
2003	33,544	349	83	724	519	7,363	15,097	972	757	4,126	3,406
2004	38,358	410	98	754	637	8,439	17,276	1,111	847	4,716	3,911
2005	42,388	464	121	861	767	9,432	18,888	1,189	982	5,329	4,177
2006	48,003	511	154	988	757	10,050	21,383	1,346	1,430	6,086	5,120
2007	56,561	600	203	1,216	887	11,412	25,516	1,603	1,531	7,293	6,059
Compound Annual Growth Rates, per cent											
1981-2007	14.71	11.83	15.25	12.50	12.32	14.90	15.79	13.81	12.64	13.78	13.90
1981-2000	16.66	10.78	15.85	13.45	13.52	17.40	18.33	15.30	12.51	14.75	15.13
2000-2007	9.58	14.74	13.64	9.95	9.10	8.36	9.14	9.85	12.97	11.19	10.64

Source: Unpublished data, Investment and Capital Stock Division (ICSD), Statistics Canada

Table 1a: Total Economy Investment in Telecommunication Equipment, by province, millions of 2002 chained dollars, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	2,712	52	10	100	59	545	898	102	105	458	351
1982	2,471	43	8	80	58	510	808	102	93	372	367
1983	2,106	44	8	71	51	409	770	87	90	229	323
1984	2,320	50	9	103	58	465	867	102	80	228	336
1985	2,266	49	12	88	54	452	860	143	89	206	294
1986	2,472	67	15	110	62	500	948	129	100	197	323
1987	3,027	63	14	98	63	600	1,376	112	122	274	280
1988	3,578	64	15	119	76	726	1,588	127	127	344	358
1989	4,125	109	19	183	87	854	1,755	173	145	330	432
1990	4,451	95	19	172	95	785	2,020	148	126	515	447
1991	4,536	87	15	136	95	811	2,183	163	109	394	488
1992	4,907	89	16	123	118	1,037	2,380	102	118	416	478
1993	4,640	91	19	151	116	942	2,059	152	99	399	597
1994	4,448	77	27	165	114	903	1,888	100	115	435	589
1995	4,646	58	18	112	103	1,027	1,891	124	154	429	703
1996	4,690	53	15	94	170	1,058	2,001	149	150	412	562
1997	6,100	77	22	148	159	1,485	2,458	72	203	777	651
1998	5,510	63	5	103	96	1,691	2,393	45	165	432	452
1999	6,963	93	12	145	152	1,608	3,280	179	224	579	629
2000	8,523	120	23	291	198	1,842	3,760	221	222	929	848
2001	8,276	103	20	236	157	1,515	3,881	245	160	1,130	759
2002	7,463	113	26	238	197	1,462	2,844	329	191	1,065	917
2003	7,500	115	16	212	173	1,622	3,125	250	144	965	822
2004	8,087	131	19	196	195	1,672	3,282	325	220	927	1,061
2005	8,269	123	18	178	233	1,569	3,573	326	258	1,075	851
2006	8,974	128	21	241	190	1,663	3,738	309	358	1,150	1,115
2007	10,588	159	31	342	245	1,954	4,466	364	330	1,329	1,276
Compound Annual Growth Rates, per cent											
1981-2007	5.38	4.40	4.61	4.86	5.60	5.03	6.36	5.03	4.50	4.18	5.09
1981-2000	6.21	4.51	4.73	5.81	6.53	6.62	7.83	4.17	4.02	3.79	4.75
2000-2007	3.15	4.12	4.30	2.32	3.12	0.84	2.49	7.40	5.82	5.25	6.01

Source: Unpublished data, Investment and Capital Stock Division (ICSD), Statistics Canada

Table 1b: Total Economy Investment in Software, by province, millions of 2002 chained dollars, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	765	11	2	25	14	142	306	24	32	115	87
1982	913	13	3	31	20	168	382	29	28	132	97
1983	1,080	17	3	31	21	229	461	37	39	132	101
1984	1,327	19	4	39	25	293	575	47	47	144	124
1985	1,533	29	4	36	29	331	690	54	49	141	160
1986	1,956	41	6	50	31	431	908	72	64	170	169
1987	2,303	36	7	55	46	503	1,067	74	74	203	226
1988	2,925	37	8	69	56	653	1,379	91	76	265	275
1989	3,507	47	10	96	62	784	1,672	97	80	297	343
1990	4,155	42	11	103	70	904	2,018	111	95	355	426
1991	4,462	39	13	100	66	938	2,218	123	102	373	472
1992	4,983	38	12	95	82	1,088	2,458	124	114	461	494
1993	6,084	49	14	157	126	1,320	2,943	155	134	558	604
1994	7,089	57	17	156	106	1,540	3,392	183	141	697	775
1995	7,263	72	17	142	115	1,559	3,500	195	176	675	777
1996	8,214	65	19	169	120	1,817	4,046	201	184	709	850
1997	9,462	74	23	213	121	2,026	4,514	287	276	846	1,047
1998	10,904	89	21	178	162	2,062	5,363	198	189	1,456	1,161
1999	12,081	158	17	239	239	2,946	4,689	441	396	1,359	1,558
2000	12,146	62	30	193	188	2,571	5,583	333	266	1,750	1,158
2001	13,242	88	37	249	228	2,823	6,045	304	345	1,574	1,518
2002	12,881	81	35	230	205	2,771	6,193	312	251	1,462	1,308
2003	14,816	99	40	260	212	3,478	6,666	394	344	1,849	1,421
2004	15,626	130	43	269	241	3,738	7,201	391	333	1,753	1,470
2005	16,565	153	56	294	281	4,070	7,347	438	357	1,957	1,548
2006	18,600	183	79	340	309	4,252	8,126	512	553	2,299	1,877
2007	20,598	206	97	373	329	4,506	9,118	569	583	2,608	2,123
Compound Annual Growth Rates, per cent											
1981-2007	13.50	11.98	15.68	11.01	12.85	14.22	13.95	12.90	11.81	12.76	13.09
1981-2000	15.66	9.64	14.83	11.44	14.57	16.47	16.51	14.78	11.79	15.42	14.62
2000-2007	7.84	18.59	18.01	9.85	8.34	8.35	7.26	7.95	11.86	5.86	9.05

Source: Unpublished data, Investment and Capital Stock Division (ICSD), Statistics Canada

Table 1c: Total Economy Investment in Computers and Related Equipment, by province, millions of 2002 chained dollars, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	87	1	0	2	2	17	35	3	3	13	10
1982	83	1	0	2	2	16	36	2	2	11	10
1983	138	2	0	3	2	29	63	5	4	16	13
1984	179	3	0	5	3	39	80	6	6	19	17
1985	229	2	0	5	3	53	115	7	6	17	21
1986	295	5	1	8	5	67	136	10	8	27	26
1987	479	5	1	11	7	118	222	14	14	43	42
1988	475	5	1	10	7	118	224	14	10	41	43
1989	651	6	1	14	7	146	332	15	12	55	61
1990	677	6	1	14	10	145	340	20	15	60	66
1991	864	5	2	15	13	196	424	23	18	78	89
1992	1,171	11	3	22	22	239	593	32	25	110	113
1993	1,213	12	6	23	21	251	587	33	28	118	133
1994	1,551	11	4	45	18	286	729	33	39	211	175
1995	2,022	17	6	48	25	390	1,028	49	58	195	201
1996	2,676	29	9	56	29	554	1,346	69	67	230	284
1997	3,393	37	11	83	44	723	1,634	127	82	289	360
1998	5,269	58	18	118	91	1,209	1,791	232	145	867	720
1999	7,319	36	29	151	99	1,527	3,261	217	212	903	849
2000	9,165	50	29	144	99	2,108	4,501	277	173	795	959
2001	9,271	66	25	139	121	2,071	4,660	292	222	875	781
2002	9,770	77	31	165	104	2,197	4,788	299	286	818	978
2003	11,216	135	27	253	135	2,252	5,308	327	267	1,314	1,164
2004	14,849	148	37	291	204	3,063	6,871	399	295	2,099	1,400
2005	18,093	188	47	402	262	3,908	8,219	426	378	2,374	1,845
2006	21,197	195	52	410	260	4,300	9,957	533	526	2,711	2,202
2007	27,081	232	76	515	330	5,319	12,801	708	648	3,555	2,824
Compound Annual Growth Rates, per cent											
1981-2007	24.72	22.82	26.12	23.88	21.87	24.68	25.46	23.91	22.55	24.06	24.40
1981-2000	27.80	22.16	30.66	25.34	23.05	28.80	29.09	27.62	23.23	24.14	27.37
2000-2007	16.74	24.61	14.57	20.01	18.70	14.14	16.10	14.38	20.74	23.86	16.69

Source: Unpublished data, Investment and Capital Stock Division (ICSD), Statistics Canada

Table 2: Total Economy Investment in ICT, by province, thousands of current dollars, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	5,699	83	15	168	121	1,136	2,134	189	221	930	669
1982	5,796	81	15	172	133	1,137	2,247	197	187	864	724
1983	6,202	101	17	168	123	1,294	2,591	220	225	738	687
1984	7,147	112	21	229	146	1,553	2,989	263	247	775	770
1985	7,613	111	22	200	137	1,682	3,414	312	235	661	800
1986	8,594	174	31	267	167	1,905	3,753	337	283	770	852
1987	10,759	164	32	283	191	2,444	4,932	346	352	965	998
1988	11,539	154	31	303	210	2,629	5,324	370	319	1,049	1,089
1989	13,006	203	38	402	215	2,869	6,126	398	330	1,076	1,277
1990	13,641	179	38	381	243	2,793	6,546	401	334	1,303	1,366
1991	13,507	151	35	316	224	2,796	6,617	403	307	1,163	1,424
1992	14,823	168	39	310	290	3,158	7,323	359	337	1,339	1,446
1993	15,686	185	53	406	329	3,319	7,400	435	350	1,431	1,732
1994	17,190	170	56	481	282	3,522	7,941	400	397	1,885	1,990
1995	17,941	180	51	398	289	3,755	8,504	461	499	1,677	2,050
1996	19,255	187	55	398	352	4,199	9,266	509	490	1,658	2,074
1997	22,568	219	66	528	364	5,042	10,311	618	644	2,282	2,405
1998	25,656	265	60	498	423	5,859	10,959	661	613	3,290	2,906
1999	29,116	310	71	603	530	6,615	12,557	923	915	3,068	3,380
2000	31,866	250	91	666	509	6,953	14,962	899	701	3,512	3,203
2001	32,086	275	87	654	529	6,656	15,337	888	761	3,572	3,203
2002	30,114	270	92	633	505	6,430	13,826	941	729	3,345	3,204
2003	30,455	327	77	660	480	6,677	13,774	889	687	3,620	3,129
2004	31,642	344	82	617	538	6,985	14,310	921	697	3,751	3,263
2005	32,343	360	94	649	603	7,250	14,457	914	749	3,905	3,222
2006	34,045	367	110	687	558	7,164	15,208	964	1,013	4,178	3,659
2007	35,652	384	129	749	590	7,265	16,071	1,025	967	4,451	3,853
Compound Annual Growth Rates, per cent											
1981-2007	7.31	6.07	8.70	5.93	6.28	7.40	8.07	6.71	5.84	6.21	6.97
1981-2000	9.48	5.97	10.07	7.53	7.85	10.00	10.79	8.55	6.26	7.25	8.59
2000-2007	1.62	6.34	5.07	1.70	2.13	0.63	1.03	1.88	4.71	3.44	2.68

Source: Unpublished data, Investment and Capital Stock Division (ICSD), Statistics Canada

Table 2a: Provincial Shares of Total Economy ICT Investment (current dollars), in per cent, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	100.0	1.5	0.3	2.9	2.1	19.9	37.5	3.3	3.9	16.3	11.7
1982	100.0	1.4	0.3	3.0	2.3	19.6	38.8	3.4	3.2	14.9	12.5
1983	100.0	1.6	0.3	2.7	2.0	20.9	41.8	3.5	3.6	11.9	11.1
1984	100.0	1.6	0.3	3.2	2.0	21.7	41.8	3.7	3.5	10.8	10.8
1985	100.0	1.5	0.3	2.6	1.8	22.1	44.8	4.1	3.1	8.7	10.5
1986	100.0	2.0	0.4	3.1	1.9	22.2	43.7	3.9	3.3	9.0	9.9
1987	100.0	1.5	0.3	2.6	1.8	22.7	45.8	3.2	3.3	9.0	9.3
1988	100.0	1.3	0.3	2.6	1.8	22.8	46.1	3.2	2.8	9.1	9.4
1989	100.0	1.6	0.3	3.1	1.7	22.1	47.1	3.1	2.5	8.3	9.8
1990	100.0	1.3	0.3	2.8	1.8	20.5	48.0	2.9	2.4	9.6	10.0
1991	100.0	1.1	0.3	2.3	1.7	20.7	49.0	3.0	2.3	8.6	10.5
1992	100.0	1.1	0.3	2.1	2.0	21.3	49.4	2.4	2.3	9.0	9.8
1993	100.0	1.2	0.3	2.6	2.1	21.2	47.2	2.8	2.2	9.1	11.0
1994	100.0	1.0	0.3	2.8	1.6	20.5	46.2	2.3	2.3	11.0	11.6
1995	100.0	1.0	0.3	2.2	1.6	20.9	47.4	2.6	2.8	9.3	11.4
1996	100.0	1.0	0.3	2.1	1.8	21.8	48.1	2.6	2.5	8.6	10.8
1997	100.0	1.0	0.3	2.3	1.6	22.3	45.7	2.7	2.9	10.1	10.7
1998	100.0	1.0	0.2	1.9	1.6	22.8	42.7	2.6	2.4	12.8	11.3
1999	100.0	1.1	0.2	2.1	1.8	22.7	43.1	3.2	3.1	10.5	11.6
2000	100.0	0.8	0.3	2.1	1.6	21.8	47.0	2.8	2.2	11.0	10.1
2001	100.0	0.9	0.3	2.0	1.6	20.7	47.8	2.8	2.4	11.1	10.0
2002	100.0	0.9	0.3	2.1	1.7	21.4	45.9	3.1	2.4	11.1	10.6
2003	100.0	1.1	0.3	2.2	1.6	21.9	45.2	2.9	2.3	11.9	10.3
2004	100.0	1.1	0.3	2.0	1.7	22.1	45.2	2.9	2.2	11.9	10.3
2005	100.0	1.1	0.3	2.0	1.9	22.4	44.7	2.8	2.3	12.1	10.0
2006	100.0	1.1	0.3	2.0	1.6	21.0	44.7	2.8	3.0	12.3	10.7
2007	100.0	1.1	0.4	2.1	1.7	20.4	45.1	2.9	2.7	12.5	10.8
Compound Annual Growth Rates, per cent											
1981-2007	-	-1.15	1.30	-1.29	-0.95	0.08	0.72	-0.56	-1.37	-1.02	-0.32
1981-2000	-	-3.21	0.53	-1.79	-1.49	0.48	1.20	-0.85	-2.94	-2.04	-0.81
2000-2007	-	4.65	3.40	0.08	0.51	-0.97	-0.58	0.26	3.04	1.80	1.04

Source: Table 2

Table 3a: ICT Investment as a Share of Total Investment (2002 chained dollars) by Province, in per cent, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	1.7	2.0	2.3	2.5	2.3	2.0	2.3	2.0	1.2	1.1	1.7
1982	1.9	1.6	2.3	2.1	2.3	2.2	2.6	2.5	1.3	1.1	2.2
1983	2.5	2.1	2.9	2.1	3.1	2.9	3.4	3.0	1.7	1.3	2.5
1984	2.9	2.2	3.5	3.2	3.5	3.3	3.9	3.1	1.9	1.6	3.0
1985	3.1	2.5	3.6	3.2	3.3	3.5	4.3	3.5	1.9	1.4	3.0
1986	3.7	4.0	5.1	4.5	4.5	4.2	4.5	3.7	2.6	1.9	3.9
1987	4.7	4.4	5.1	5.3	5.0	5.2	5.7	4.2	3.2	2.6	4.4
1988	4.7	4.2	4.3	5.0	5.0	5.3	5.7	4.4	2.9	2.6	4.3
1989	5.4	5.9	5.4	6.4	4.7	5.8	6.8	5.1	3.5	3.1	4.7
1990	6.0	5.8	6.2	6.8	5.7	5.9	7.9	5.2	3.5	3.8	5.2
1991	6.8	5.0	4.9	6.5	6.0	7.0	9.0	6.2	3.4	4.0	5.9
1992	8.6	5.4	6.8	7.9	8.8	8.9	11.5	6.0	4.6	5.1	7.0
1993	9.3	5.0	9.5	10.5	11.2	9.6	12.7	7.5	5.0	5.0	8.5
1994	9.7	4.1	8.0	12.4	10.1	10.2	13.1	7.3	5.3	5.9	8.6
1995	10.6	4.4	6.9	11.6	9.4	11.8	14.2	8.3	6.9	5.6	9.7
1996	12.1	6.6	7.6	12.6	11.3	14.0	15.8	9.4	6.6	6.0	11.0
1997	12.8	7.4	13.5	12.8	13.5	16.1	16.7	10.0	6.7	6.4	11.7
1998	14.8	8.9	11.9	11.2	13.5	18.3	17.9	11.5	7.8	9.4	15.7
1999	17.0	8.3	13.9	12.0	13.9	20.5	20.1	16.8	12.5	10.1	18.6
2000	18.6	7.8	18.7	16.5	14.1	21.7	24.6	17.5	10.0	10.1	17.8
2001	18.8	9.2	17.4	15.8	19.0	22.1	26.0	17.4	11.4	9.5	17.3
2002	18.9	9.9	18.8	14.8	19.4	22.0	24.9	19.4	12.4	9.5	19.0
2003	19.7	12.0	16.4	17.3	17.6	23.7	25.6	18.7	11.8	10.6	18.9
2004	20.8	12.5	19.4	18.6	19.8	24.4	28.1	20.2	13.2	10.8	19.8
2005	20.9	13.1	22.4	20.0	21.6	27.3	28.7	21.8	13.0	10.0	19.0
2006	21.8	14.5	25.4	21.3	19.9	27.5	29.8	21.4	17.5	10.5	21.2
2007	24.6	19.3	31.4	25.8	20.0	28.2	32.9	22.9	19.0	12.6	24.6

Source: CSLS calculations from unpublished data, Investment and Capital Stock Division (ICSD), Statistics Canada

Table 3b: ICT Investment as a Share of GDP (2002 chained dollars) by Province, in per cent, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	0.2	0.4	0.2	0.4	0.4	0.2	0.2	0.2	0.3	0.3	0.2
1982	0.2	0.3	0.2	0.3	0.4	0.2	0.2	0.2	0.2	0.3	0.3
1983	0.3	0.4	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3
1984	0.3	0.5	0.3	0.5	0.4	0.3	0.3	0.3	0.4	0.3	0.3
1985	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3
1986	0.4	0.8	0.5	0.6	0.5	0.4	0.5	0.4	0.4	0.3	0.4
1987	0.6	0.8	0.5	0.6	0.6	0.6	0.6	0.5	0.6	0.5	0.5
1988	0.6	0.7	0.5	0.7	0.7	0.6	0.7	0.5	0.6	0.5	0.5
1989	0.8	1.0	0.7	1.0	0.7	0.7	0.8	0.6	0.6	0.5	0.6
1990	0.8	0.9	0.7	1.0	0.9	0.8	1.0	0.6	0.6	0.7	0.7
1991	0.9	0.8	0.7	0.9	0.9	0.9	1.1	0.7	0.6	0.7	0.8
1992	1.1	0.9	0.8	0.9	1.2	1.1	1.4	0.7	0.8	0.8	0.8
1993	1.2	1.0	1.1	1.2	1.4	1.1	1.4	0.9	0.7	0.8	1.0
1994	1.3	1.0	1.1	1.5	1.2	1.2	1.5	0.8	0.8	1.1	1.1
1995	1.4	1.0	1.0	1.3	1.3	1.3	1.6	1.0	1.1	1.0	1.2
1996	1.6	1.2	1.1	1.4	1.6	1.6	1.9	1.1	1.2	1.0	1.3
1997	1.8	1.5	1.5	1.9	1.7	1.9	2.1	1.4	1.5	1.3	1.5
1998	2.1	1.7	1.3	1.8	2.0	2.3	2.2	1.6	1.5	2.1	1.9
1999	2.5	2.1	1.7	2.2	2.5	2.7	2.6	2.4	2.4	2.1	2.4
2000	2.7	1.6	2.3	2.5	2.4	2.8	3.0	2.3	1.9	2.4	2.3
2001	2.7	1.8	2.3	2.4	2.5	2.7	3.1	2.3	2.1	2.4	2.3
2002	2.6	1.6	2.5	2.3	2.4	2.7	2.9	2.6	2.1	2.2	2.3
2003	2.9	2.0	2.2	2.6	2.4	3.0	3.1	2.6	2.1	2.7	2.4
2004	3.2	2.4	2.5	2.7	2.9	3.4	3.5	2.9	2.3	2.9	2.7
2005	3.4	2.7	3.1	3.0	3.5	3.7	3.7	3.0	2.5	3.1	2.7
2006	3.7	2.9	3.8	3.5	3.3	3.9	4.1	3.3	3.7	3.3	3.2
2007	4.3	3.1	4.9	4.2	3.8	4.3	4.8	3.9	3.9	3.8	3.7

Source: CSLS calculations from unpublished data, Investment and Capital Stock Division (ICSD), Statistics Canada

Table 3c: Total Investment as a Share of GDP (2002 chained dollars) by Province, in per cent, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	14.1	17.3	10.5	14.2	15.6	9.8	9.8	11.5	23.7	28.5	14.0
1982	13.1	20.6	9.9	15.7	16.0	9.1	9.2	9.4	19.0	26.3	12.1
1983	12.0	21.1	9.1	17.2	11.6	8.8	8.8	9.6	19.2	21.0	11.4
1984	11.7	21.9	9.4	14.8	12.5	9.3	8.9	10.7	18.9	18.5	11.1
1985	12.0	20.2	9.9	13.2	13.0	10.0	9.6	11.3	19.4	18.6	11.2
1986	12.0	20.8	10.1	12.8	11.5	10.1	10.6	12.2	16.7	17.1	9.8
1987	12.5	17.6	10.6	11.7	11.8	11.1	11.2	11.4	18.2	17.4	10.4
1988	13.4	16.8	12.5	13.7	13.6	11.7	12.1	12.4	19.6	18.8	11.5
1989	13.9	16.3	12.7	15.1	15.9	13.0	12.5	12.4	17.5	17.3	13.1
1990	13.8	15.2	11.5	14.2	15.6	12.9	12.3	12.3	17.7	17.7	13.1
1991	13.8	16.3	14.4	13.7	15.3	12.7	12.8	12.0	18.1	16.7	13.5
1992	12.8	17.5	12.0	11.5	13.9	12.0	11.7	11.7	16.4	15.8	12.1
1993	12.4	20.7	11.8	11.4	12.4	11.7	10.8	11.5	15.1	16.6	11.5
1994	12.9	23.2	14.2	11.8	11.9	11.6	11.0	10.9	16.0	18.0	13.3
1995	12.9	23.6	14.8	11.1	13.5	11.2	11.3	11.8	16.3	17.6	12.7
1996	12.9	18.4	15.1	11.0	14.1	11.3	11.9	12.0	17.6	17.2	11.8
1997	14.4	20.8	10.9	14.6	12.5	11.8	12.7	14.0	23.2	20.8	13.1
1998	14.4	19.6	11.2	15.7	14.4	12.6	12.5	13.5	19.0	22.3	12.3
1999	14.7	25.2	12.6	18.5	18.0	13.0	12.8	14.3	19.3	21.2	12.8
2000	14.6	20.9	12.5	15.0	17.2	12.9	12.3	13.3	18.6	23.8	12.6
2001	14.6	19.5	13.2	15.2	13.2	12.3	12.1	13.5	18.4	25.5	13.2
2002	13.8	16.6	13.2	15.8	12.3	12.1	11.6	13.3	17.1	23.4	12.2
2003	14.5	16.6	13.5	15.2	13.6	12.7	12.2	14.0	17.8	25.1	12.7
2004	15.2	19.1	13.0	14.5	14.6	13.8	12.4	14.4	17.2	26.7	13.5
2005	16.3	20.7	13.7	15.2	16.0	13.5	12.9	14.0	19.5	31.1	14.4
2006	17.2	19.9	15.0	16.2	16.7	14.1	13.8	15.6	21.2	31.6	15.2
2007	17.5	16.1	15.7	16.2	19.1	15.2	14.6	16.8	20.4	30.5	15.1

Source: CSLS calculations from unpublished data, Investment and Capital Stock Division (ICSD), Statistics Canada

Table 4: ICT Investment Implicit Chained Prices Deflators, by province, 2002=100, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1980	384.5	268.1	303.8	311.9	301.4	396.5	408.9	366.0	341.6	392.1	348.4
1981	357.4	253.0	289.9	294.6	279.6	368.2	377.9	341.1	318.8	365.7	325.5
1982	369.5	264.1	304.1	307.7	288.9	381.2	388.5	354.8	330.7	379.0	337.9
1983	323.9	237.1	276.6	278.3	256.3	334.6	334.9	317.0	296.2	333.5	303.3
1984	306.4	227.2	267.0	267.8	245.1	315.8	314.7	301.9	281.5	315.0	291.1
1985	284.7	217.7	254.6	254.5	231.7	292.2	290.0	285.2	264.4	294.2	274.3
1986	262.8	206.6	242.7	239.8	217.2	268.3	265.6	269.0	248.1	272.1	256.4
1987	242.4	202.6	234.6	227.7	205.8	245.3	245.0	252.6	231.8	241.6	241.0
1988	229.8	193.9	225.4	216.9	196.2	231.2	232.6	240.5	222.1	228.9	228.3
1989	208.8	180.1	207.8	199.5	181.0	209.1	210.9	220.3	204.8	208.0	207.8
1990	198.7	174.4	200.0	192.1	173.5	198.3	200.5	210.7	196.3	198.1	197.7
1991	176.8	159.6	183.8	174.2	155.8	175.6	178.1	188.1	175.7	176.3	176.4
1992	165.3	154.1	173.7	164.5	146.8	163.8	166.4	175.8	164.8	164.6	165.0
1993	162.5	152.6	170.7	162.2	144.6	160.9	163.6	172.7	162.1	161.8	162.4
1994	156.2	147.4	166.9	156.2	139.7	154.8	157.1	166.2	155.8	154.9	156.0
1995	146.2	139.0	160.8	145.6	131.6	144.9	147.1	156.0	144.9	144.3	146.2
1996	134.9	129.0	148.5	134.1	125.7	134.4	134.9	144.8	133.9	133.1	136.0
1997	129.2	118.7	139.9	126.4	121.2	129.8	128.1	136.4	128.3	133.1	128.9
1998	121.7	120.4	134.2	121.8	117.9	121.5	122.9	126.3	122.3	116.3	123.3
1999	111.5	111.8	117.2	110.7	108.7	111.5	113.2	112.7	111.6	105.0	111.9
2000	106.9	108.9	109.7	106.3	105.6	106.9	108.2	108.3	107.5	101.2	107.3
2001	104.3	107.5	106.3	105.0	104.4	104.0	105.3	105.4	105.2	99.8	105.0
2002	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2003	90.8	93.5	92.2	91.1	92.5	90.7	91.2	91.4	90.8	87.7	91.9
2004	82.5	84.1	83.6	81.9	84.5	82.8	82.8	82.9	82.4	79.5	83.4
2005	76.3	77.6	77.2	75.3	78.7	76.9	76.5	76.9	76.3	73.3	77.1
2006	70.9	71.8	71.1	69.6	73.6	71.3	71.1	71.6	70.8	68.6	71.5
2007	63.0	64.0	63.3	61.6	66.6	63.7	63.0	63.9	63.2	61.0	63.6
Compound Annual Growth Rates, per cent											
1981-2007	-6.46	-5.15	-5.68	-5.84	-5.37	-6.53	-6.66	-6.24	-6.04	-6.65	-6.09
1981-2000	-6.16	-4.34	-4.99	-5.22	-4.99	-6.30	-6.37	-5.86	-5.56	-6.54	-5.67
2000-2007	-7.27	-7.32	-7.54	-7.50	-6.39	-7.13	-7.44	-7.25	-7.32	-6.97	-7.20

Source: Table 1 and Table 2

Table 5: Real ICT per Worker by Province, $2002 chained dollars, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	141	176	108	173	168	111	132	118	161	215	156
1982	143	170	103	174	186	113	138	120	132	196	171
1983	174	235	129	186	190	144	182	148	174	195	182
1984	206	276	158	251	233	178	215	182	198	216	212
1985	230	280	170	229	226	203	258	225	197	191	229
1986	273	451	244	318	284	242	299	251	248	239	250
1987	360	425	254	347	331	330	411	271	328	336	301
1988	395	398	255	373	368	369	450	304	310	375	333
1989	479	548	332	528	400	439	559	352	353	414	408
1990	525	497	345	515	466	448	629	371	375	515	443
1991	594	464	357	476	488	516	740	422	386	513	512
1992	704	558	421	511	666	634	892	409	456	635	542
1993	754	627	571	683	759	681	916	500	481	686	639
1994	843	596	599	826	676	735	1,008	474	560	919	731
1995	923	668	557	727	714	827	1,133	571	753	851	785
1996	1,064	773	623	788	915	998	1,329	679	801	886	840
1997	1,275	981	808	1,094	971	1,224	1,521	863	1,077	1,182	1,003
1998	1,501	1,146	754	1,034	1,137	1,480	1,636	979	1,065	1,874	1,269
1999	1,812	1,380	1,013	1,348	1,498	1,783	1,968	1,512	1,739	1,893	1,595
2000	2,019	1,158	1,325	1,521	1,455	1,912	2,377	1,504	1,376	2,191	1,546
2001	2,057	1,255	1,280	1,499	1,535	1,861	2,457	1,520	1,572	2,195	1,588
2002	1,967	1,304	1,422	1,497	1,472	1,801	2,292	1,658	1,556	2,002	1,630
2003	2,140	1,644	1,259	1,679	1,512	2,029	2,430	1,705	1,591	2,404	1,691
2004	2,405	1,911	1,464	1,704	1,818	2,293	2,735	1,926	1,765	2,683	1,896
2005	2,621	2,167	1,776	1,944	2,188	2,537	2,952	2,049	2,031	2,987	1,961
2006	2,912	2,368	2,250	2,235	2,131	2,669	3,293	2,294	2,910	3,253	2,332
2007	3,353	2,765	2,935	2,716	2,445	2,963	3,870	2,688	3,050	3,722	2,674
Compound Annual Growth Rates, per cent											
1981-2007	12.96	11.17	13.55	11.16	10.85	13.48	13.89	12.76	11.98	11.59	11.56
1981-2000	15.04	10.42	14.11	12.11	12.03	16.19	16.45	14.31	11.96	13.00	12.84
2000-2007	7.52	13.24	12.03	8.63	7.69	6.46	7.21	8.65	12.04	7.86	8.14

Source: Table 1 and Labour Force Survey

Table 5a: Real ICT per Worker (chained $2002) as a Proportion of the National Average, in per cent, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	100.0	124.9	76.5	122.9	119.1	78.4	93.3	84.0	114.1	152.4	110.4
1982	100.0	118.3	71.6	121.1	129.6	78.8	96.1	84.0	91.8	136.6	119.2
1983	100.0	135.2	74.0	106.9	109.5	82.9	104.8	85.3	100.3	112.4	104.7
1984	100.0	133.7	76.5	121.9	113.1	86.2	104.3	88.1	96.0	104.8	102.9
1985	100.0	121.9	73.9	99.7	98.1	88.2	112.0	98.0	85.7	83.2	99.5
1986	100.0	165.5	89.6	116.7	104.2	88.8	109.5	92.2	90.9	87.7	91.8
1987	100.0	118.1	70.4	96.3	92.0	91.6	114.2	75.3	91.2	93.4	83.5
1988	100.0	100.8	64.6	94.5	93.1	93.4	114.0	76.9	78.5	94.9	84.2
1989	100.0	114.3	69.3	110.2	83.4	91.5	116.6	73.5	73.7	86.3	85.0
1990	100.0	94.6	65.7	98.2	88.9	85.5	119.8	70.7	71.4	98.2	84.4
1991	100.0	78.1	60.1	80.2	82.1	86.9	124.6	71.1	64.9	86.4	86.1
1992	100.0	79.2	59.8	72.5	94.5	90.1	126.7	58.0	64.8	90.2	77.0
1993	100.0	83.1	75.6	90.5	100.6	90.2	121.4	66.2	63.8	91.0	84.7
1994	100.0	70.7	71.1	98.0	80.3	87.2	119.6	56.3	66.5	109.0	86.8
1995	100.0	72.3	60.3	78.7	77.3	89.6	122.7	61.9	81.5	92.2	85.0
1996	100.0	72.7	58.6	74.1	86.1	93.8	124.9	63.8	75.3	83.3	78.9
1997	100.0	77.0	63.4	85.8	76.2	96.0	119.3	67.7	84.5	92.7	78.7
1998	100.0	76.4	50.2	68.9	75.7	98.6	109.0	65.2	70.9	124.8	84.6
1999	100.0	76.2	55.9	74.4	82.7	98.4	108.6	83.4	96.0	104.5	88.0
2000	100.0	57.4	65.6	75.4	72.1	94.7	117.8	74.5	68.2	108.5	76.6
2001	100.0	61.0	62.2	72.9	74.6	90.5	119.4	73.9	76.4	106.7	77.2
2002	100.0	66.3	72.3	76.1	74.9	91.6	116.5	84.3	79.1	101.8	82.9
2003	100.0	76.8	58.8	78.5	70.7	94.8	113.5	79.7	74.3	112.3	79.0
2004	100.0	79.4	60.8	70.9	75.6	95.3	113.7	80.1	73.4	111.6	78.8
2005	100.0	82.7	67.8	74.2	83.4	96.8	112.6	78.2	77.5	113.9	74.8
2006	100.0	81.3	77.3	76.8	73.2	91.7	113.1	78.8	99.9	111.7	80.1
2007	100.0	82.5	87.5	81.0	72.9	88.4	115.4	80.2	91.0	111.0	79.7

Source: Table 5

Table 6a: Contribution of Real ICT as a Share of Real Total Investment (chained $2002) to the Real Provincial ICT per Worker Gap Relative to the National Average, in percentage points, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	-	16.8	23.7	40.3	30.1	13.4	26.6	10.7	-35.8	-59.0	-0.5
1982	-	-20.8	14.5	13.1	23.6	12.4	29.1	23.7	-36.7	-65.2	17.3
1983	-	-21.1	15.0	-18.9	24.1	13.8	33.5	17.2	-38.8	-64.7	0.9
1984	-	-30.6	15.3	9.7	20.6	11.5	28.5	6.0	-40.9	-60.2	1.8
1985	-	-24.3	13.4	1.7	5.4	11.9	33.8	11.6	-47.7	-74.9	-2.1
1986	-	8.5	28.9	20.6	19.2	11.5	18.8	-0.9	-34.0	-62.4	4.9
1987	-	-7.1	7.2	13.3	7.3	9.7	21.6	-8.0	-36.5	-56.1	-5.9
1988	-	-9.4	-6.6	7.8	6.8	12.6	21.9	-4.6	-42.6	-58.2	-7.8
1989	-	9.6	-0.7	18.0	-13.0	5.7	24.3	-6.3	-36.9	-52.2	-13.6
1990	-	-4.1	1.6	11.4	-5.3	-1.8	29.2	-11.9	-47.2	-46.9	-13.5
1991	-	-28.2	-25.4	-4.3	-12.1	2.1	31.1	-7.7	-55.8	-50.4	-13.9
1992	-	-41.5	-17.7	-6.9	2.9	3.9	32.9	-27.4	-50.2	-48.7	-18.2
1993	-	-56.4	1.4	11.5	17.9	2.8	34.1	-17.9	-51.0	-60.3	-8.2
1994	-	-73.0	-16.4	23.8	3.2	4.7	32.9	-21.7	-49.8	-51.7	-11.9
1995	-	-74.4	-33.2	7.7	-10.9	10.5	32.5	-19.5	-38.3	-61.2	-8.5
1996	-	-51.2	-36.1	3.4	-6.0	14.3	30.4	-20.0	-52.1	-63.5	-8.2
1997	-	-48.1	4.4	0.1	4.9	22.8	28.9	-20.2	-60.0	-66.0	-7.6
1998	-	-44.2	-15.3	-22.9	-7.7	21.4	20.2	-20.2	-54.2	-50.3	5.4
1999	-	-62.9	-15.3	-29.6	-18.3	18.7	17.8	-1.1	-29.8	-53.2	8.7
2000	-	-66.3	0.5	-10.0	-23.6	15.1	30.7	-5.1	-51.0	-63.9	-3.6
2001	-	-56.5	-6.2	-15.4	0.8	15.3	35.1	-7.1	-44.2	-70.5	-7.5
2002	-	-53.0	-0.4	-21.6	2.1	14.6	29.8	2.2	-37.3	-69.4	0.3
2003	-	-43.1	-14.2	-11.4	-9.5	18.0	28.0	-4.3	-43.9	-65.6	-3.5
2004	-	-45.6	-5.5	-9.5	-4.4	15.4	32.1	-2.7	-39.1	-69.3	-4.5
2005	-	-42.5	5.9	-3.6	5.7	26.6	33.8	3.7	-41.6	-78.8	-8.1
2006	-	-37.1	13.4	-2.0	-7.8	22.3	33.3	-1.8	-21.7	-77.2	-2.3
2007	-	-21.9	22.9	4.6	-17.8	13.1	31.4	-6.5	-24.5	-70.1	0.0
Average											
1990-2000	-	-50.0	-13.8	-1.4	-5.0	10.4	29.2	-15.7	-49.0	-56.0	-7.2
2001-2007	-	-42.8	2.3	-8.4	-4.4	17.9	31.9	-2.3	-36.0	-71.6	-3.7

Source: Appendix Table 14b, 14c and 16a

Table 6b: Contribution of Real Total Investment as a Share of Real GDP (chained $2002) to the Real Provincial ICT per Worker Gap Relative to the National Average, in percentage points, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	-	22.6	-25.7	0.6	10.7	-32.4	-35.6	-18.8	55.6	87.6	-0.8
1982	-	49.3	-23.4	19.8	22.7	-32.3	-34.4	-30.7	35.6	81.7	-8.6
1983	-	66.0	-23.4	37.5	-3.1	-28.0	-31.4	-20.2	47.1	59.5	-5.4
1984	-	73.2	-19.0	26.6	7.0	-20.7	-27.6	-8.1	47.3	47.4	-5.6
1985	-	57.3	-16.5	8.9	7.5	-17.8	-24.0	-6.6	44.0	39.8	-7.6
1986	-	72.2	-15.6	7.4	-3.9	-16.2	-12.8	1.7	32.0	33.6	-18.9
1987	-	37.7	-13.7	-6.2	-5.1	-11.3	-11.0	-8.0	36.0	32.1	-16.9
1988	-	22.4	-6.0	2.0	1.4	-13.0	-11.2	-7.3	33.7	32.7	-14.2
1989	-	17.1	-7.7	8.8	12.0	-6.8	-11.8	-10.2	19.8	20.2	-5.5
1990	-	9.7	-14.9	3.3	11.5	-6.0	-12.3	-9.9	21.1	25.0	-4.9
1991	-	14.6	3.2	-1.2	9.0	-8.0	-9.2	-12.3	21.8	17.6	-2.3
1992	-	27.7	-5.1	-9.2	8.2	-6.5	-9.8	-6.8	19.8	19.9	-5.4
1993	-	47.0	-4.3	-8.2	-0.2	-5.6	-15.1	-5.8	16.1	28.0	-7.1
1994	-	49.3	8.2	-8.6	-7.5	-10.2	-17.4	-13.0	17.3	34.5	2.6
1995	-	51.6	10.7	-13.4	3.9	-13.0	-14.8	-7.2	21.5	30.2	-1.6
1996	-	30.3	12.1	-14.0	8.0	-12.9	-9.6	-6.3	26.9	26.1	-8.3
1997	-	32.8	-21.8	1.5	-11.9	-18.8	-13.6	-2.1	44.1	35.7	-8.0
1998	-	26.9	-18.2	7.1	0.1	-13.7	-15.2	-5.5	23.4	48.8	-14.8
1999	-	47.0	-12.0	19.6	18.4	-12.2	-14.3	-2.9	26.6	37.5	-13.0
2000	-	27.6	-12.9	2.3	14.0	-11.9	-18.2	-8.0	20.3	51.1	-12.6
2001	-	23.0	-7.7	3.5	-8.8	-16.3	-20.3	-6.7	20.6	57.9	-8.6
2002	-	14.9	-3.8	11.9	-9.9	-12.8	-18.7	-3.6	18.8	53.1	-11.1
2003	-	12.0	-5.9	4.3	-5.7	-12.8	-18.6	-3.3	17.7	57.9	-11.7
2004	-	20.5	-12.7	-3.8	-3.8	-9.5	-22.1	-4.6	10.4	59.4	-10.8
2005	-	21.7	-14.3	-6.0	-1.6	-18.5	-24.8	-13.5	16.1	69.0	-11.0
2006	-	13.5	-11.8	-5.1	-2.6	-19.2	-23.7	-8.4	21.1	64.5	-10.8
2007	-	-7.6	-10.1	-6.9	7.8	-13.2	-19.8	-3.4	14.6	58.5	-13.1
Average											
1990-2000	-	33.1	-5.0	-1.9	4.9	-10.8	-13.6	-7.3	23.5	32.2	-6.9
2001-2007	-	14.0	-9.5	-0.3	-3.5	-14.6	-21.1	-6.2	17.0	60.0	-11.0

Source: Appendix Table 14b, 14c and 16b

Table 6c: Contribution of Real GDP per Worker (chained $2002) by Province to the Real Provincial ICT per Worker Gap Relative to the National Average, in percentage points, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Québec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	-	-14.5	-21.4	-18.1	-21.7	-2.6	2.2	-7.9	-5.7	23.8	11.7
1982	-	-10.2	-19.4	-11.8	-16.7	-1.2	1.4	-9.0	-7.1	20.1	10.6
1983	-	-9.6	-17.6	-11.8	-11.5	-2.9	2.7	-11.7	-8.1	17.6	9.2
1984	-	-8.9	-19.9	-14.4	-14.5	-4.6	3.5	-9.7	-10.4	17.7	6.7
1985	-	-11.1	-23.0	-10.9	-14.8	-5.9	2.2	-7.0	-10.6	18.3	9.2
1986	-	-15.2	-23.7	-11.3	-11.2	-6.5	3.5	-8.7	-7.0	16.5	5.7
1987	-	-12.5	-23.1	-10.8	-10.2	-6.8	3.7	-8.8	-8.3	17.4	6.3
1988	-	-12.2	-22.9	-15.3	-15.1	-6.2	3.3	-11.2	-12.6	20.4	6.1
1989	-	-12.4	-22.3	-16.7	-15.6	-7.4	4.1	-10.0	-9.3	18.3	4.2
1990	-	-10.9	-21.0	-16.5	-17.3	-6.7	2.9	-7.6	-2.6	20.2	2.8
1991	-	-8.3	-17.6	-14.3	-14.7	-7.3	2.7	-9.0	-1.1	19.1	2.3
1992	-	-7.0	-17.4	-11.3	-16.6	-7.3	3.6	-7.8	-4.8	19.0	0.6
1993	-	-7.5	-21.4	-12.8	-17.1	-7.0	2.4	-10.1	-1.2	23.3	0.1
1994	-	-5.5	-20.7	-17.2	-15.4	-7.2	4.1	-9.1	-1.0	26.2	-3.9
1995	-	-4.9	-17.1	-15.6	-15.8	-7.9	5.0	-11.4	-1.7	23.2	-4.8
1996	-	-6.4	-17.4	-15.4	-15.9	-7.6	4.1	-9.8	0.5	20.7	-4.6
1997	-	-7.7	-19.3	-15.8	-16.8	-7.9	4.0	-10.0	0.3	23.0	-5.7
1998	-	-6.3	-16.2	-15.3	-16.7	-9.1	4.0	-9.1	1.7	26.3	-6.1
1999	-	-8.0	-16.8	-15.6	-17.4	-8.1	5.1	-12.6	-0.9	20.2	-7.7
2000	-	-4.0	-22.0	-17.0	-18.3	-8.5	5.3	-12.3	-1.1	21.3	-7.2
2001	-	-5.6	-23.9	-15.3	-17.4	-8.5	4.6	-12.4	0.0	19.3	-6.7
2002	-	4.4	-23.5	-14.2	-17.3	-10.3	5.5	-14.3	-2.4	18.1	-6.2
2003	-	8.0	-21.0	-14.4	-14.1	-10.4	4.2	-12.8	0.6	20.0	-5.8
2004	-	4.5	-21.0	-15.8	-16.2	-10.6	3.6	-12.6	2.1	21.5	-5.9
2005	-	3.4	-23.9	-16.2	-18.2	-11.3	3.6	-12.1	3.0	23.8	-6.1
2006	-	4.9	-24.3	-16.1	-16.4	-11.4	3.4	-11.1	0.5	24.5	-6.8
2007	-	12.0	-25.3	-16.6	-17.0	-11.5	3.8	-10.0	0.8	22.6	-7.2
Average											
1990-2000	-	-7.0	-18.8	-15.2	-16.6	-7.7	3.9	-9.9	-1.1	22.1	-3.1
2001-2007	-	4.5	-23.3	-15.5	-16.7	-10.6	4.1	-12.2	0.7	21.4	-6.4

Source: Appendix Table 14b, 14c and 16c

Table 7: Real Telecommunications Equipment per Worker by Province, $2002 chained dollars, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	240	279	202	303	230	195	209	217	244	388	266
1982	226	236	164	249	233	193	192	221	216	320	293
1983	191	246	174	219	203	153	181	186	207	202	260
1984	205	281	179	302	229	168	197	212	181	200	270
1985	195	267	228	257	207	159	188	295	198	176	231
1986	206	359	294	314	230	171	201	258	217	167	243
1987	245	331	263	273	226	199	281	221	263	231	203
1988	282	320	273	319	260	236	312	252	275	281	250
1989	317	528	338	479	293	273	338	337	318	264	287
1990	340	461	347	445	315	250	389	289	279	403	287
1991	353	427	288	357	320	263	435	322	240	307	310
1992	385	455	298	332	396	341	483	203	262	325	296
1993	363	471	355	413	386	311	417	302	220	309	358
1994	341	397	484	442	381	292	377	197	253	329	338
1995	349	296	306	298	336	328	371	239	336	314	394
1996	349	285	257	249	556	338	387	288	328	293	310
1997	445	409	369	388	516	468	465	137	435	535	350
1998	392	327	91	261	306	519	439	85	350	286	243
1999	483	462	198	358	466	483	582	331	476	375	332
2000	577	605	366	708	597	541	646	400	469	586	439
2001	554	505	307	568	477	440	655	442	347	693	395
2002	487	543	401	562	573	410	472	581	409	637	467
2003	479	541	243	492	504	447	503	438	303	562	408
2004	507	609	277	443	558	454	520	564	459	527	514
2005	511	577	262	401	663	422	559	562	533	602	400
2006	544	594	313	546	535	442	576	527	729	615	508
2007	628	732	445	763	675	507	677	610	657	678	563
Compound Annual Growth Rates, per cent											
1981-2007	3.77	3.78	3.07	3.61	4.22	3.74	4.62	4.07	3.89	2.18	2.92
1981-2000	4.73	4.16	3.16	4.56	5.13	5.52	6.12	3.28	3.51	2.20	2.67
2000-2007	1.21	2.76	2.82	1.09	1.79	-0.93	0.67	6.23	4.94	2.10	3.62

Source: Table 1a and Labour Force Survey

Table 7a: Real Telecommunications Equipment per Worker (chained $2002) as a Proportion of the National Average, in per cent, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	100.0	116.1	84.4	126.4	96.1	81.4	87.2	90.3	101.6	161.5	110.9
1982	100.0	104.5	72.8	110.4	103.4	85.6	85.2	98.1	95.8	141.6	129.6
1983	100.0	128.7	91.0	114.8	106.4	79.8	94.8	97.2	108.2	105.7	135.9
1984	100.0	137.1	87.1	147.1	111.5	82.0	95.8	103.4	88.2	97.4	131.5
1985	100.0	136.9	117.2	131.7	106.4	81.6	96.6	151.5	101.8	90.2	118.3
1986	100.0	173.9	142.4	152.4	111.5	82.8	97.2	125.1	105.4	80.8	117.9
1987	100.0	135.1	107.2	111.3	92.2	80.9	114.5	90.1	107.3	94.1	82.9
1988	100.0	113.8	97.0	113.3	92.4	83.7	111.0	89.4	97.7	99.9	88.6
1989	100.0	166.5	106.3	150.9	92.4	86.0	106.4	106.2	100.2	83.1	90.3
1990	100.0	135.4	102.0	130.9	92.6	73.5	114.4	84.9	81.9	118.5	84.2
1991	100.0	121.1	81.5	101.2	90.8	74.6	123.4	91.3	68.1	87.0	87.8
1992	100.0	118.1	77.2	86.2	102.7	88.6	125.2	52.8	68.1	84.4	76.7
1993	100.0	129.8	97.9	113.8	106.4	85.7	115.0	83.3	60.6	85.3	98.6
1994	100.0	116.6	142.2	129.8	111.8	85.7	110.6	57.7	74.3	96.5	99.2
1995	100.0	84.8	87.6	85.3	96.2	93.8	106.1	68.5	96.3	90.0	112.7
1996	100.0	81.6	73.6	71.4	159.1	96.7	110.8	82.3	93.9	83.9	88.6
1997	100.0	92.0	83.0	87.2	115.9	105.2	104.4	30.8	97.7	120.2	78.6
1998	100.0	83.4	23.2	66.7	77.9	132.3	111.9	21.7	89.3	72.9	62.0
1999	100.0	95.7	40.9	74.1	96.5	100.0	120.4	68.6	98.4	77.6	68.7
2000	100.0	104.8	63.4	122.6	103.4	93.8	112.0	69.3	81.2	101.6	76.1
2001	100.0	91.1	55.4	102.6	86.1	79.5	118.3	79.8	62.7	125.1	71.4
2002	100.0	111.4	82.2	115.2	117.5	84.0	96.7	119.1	83.8	130.8	95.8
2003	100.0	113.1	50.7	102.8	105.2	93.4	105.1	91.6	63.3	117.5	85.2
2004	100.0	120.1	54.6	87.3	110.0	89.6	102.5	111.2	90.5	104.0	101.4
2005	100.0	112.8	51.2	78.4	129.7	82.5	109.2	109.9	104.2	117.8	78.1
2006	100.0	109.1	57.5	100.3	98.3	81.1	105.7	96.8	133.8	112.9	93.3
2007	100.0	116.5	70.8	121.6	107.6	80.8	107.9	97.2	104.7	108.0	89.7

Source: Table 7

Table 8: Real Software per Worker by Province, $2002 chained dollars, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	68	58	47	75	55	51	71	52	74	97	66
1982	83	70	62	97	80	64	91	62	65	114	77
1983	98	92	65	94	85	85	109	78	89	116	81
1984	117	108	85	115	97	106	130	97	106	126	100
1985	132	161	87	104	111	117	151	110	108	120	126
1986	163	221	108	143	115	147	192	144	140	143	127
1987	187	191	134	152	164	166	218	146	159	171	164
1988	230	185	149	185	193	212	271	180	165	217	192
1989	270	227	189	250	210	250	322	189	176	237	227
1990	317	203	196	267	234	288	389	217	210	278	273
1991	347	190	252	262	223	304	442	244	225	290	299
1992	391	194	230	258	277	358	498	248	255	360	306
1993	476	254	258	428	422	435	596	307	299	433	362
1994	543	296	299	419	354	498	677	360	310	527	444
1995	546	372	291	379	373	497	686	377	385	494	435
1996	612	345	314	448	394	581	783	389	403	504	468
1997	690	395	384	558	393	639	853	545	592	583	563
1998	776	461	354	450	513	633	983	370	401	964	625
1999	839	786	280	592	734	885	832	814	840	880	822
2000	823	316	484	470	567	756	960	603	562	1,105	599
2001	886	430	587	599	690	821	1,020	549	749	965	790
2002	841	390	535	544	596	776	1,027	550	537	875	666
2003	945	468	612	602	617	958	1,073	691	723	1,077	705
2004	980	607	647	607	689	1,016	1,140	679	695	998	712
2005	1,024	713	826	663	802	1,095	1,148	755	739	1,096	726
2006	1,128	849	1,155	770	869	1,129	1,252	873	1,124	1,229	855
2007	1,221	949	1,396	834	907	1,170	1,383	953	1,161	1,331	937
Compound Annual Growth Rates, per cent											
1981-2007	11.77	11.32	13.97	9.69	11.38	12.82	12.08	11.86	11.15	10.59	10.76
1981-2000	14.05	9.28	13.11	10.13	13.06	15.26	14.67	13.79	11.23	13.65	12.34
2000-2007	5.81	17.04	16.34	8.53	6.94	6.44	5.36	6.77	10.94	2.69	6.58

Source: Table 1b and Labour Force Survey

Table 8a: Real Software per Worker (chained $2002) as a Proportion of the National Average, in per cent, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	100.0	86.3	68.8	111.1	81.3	75.1	105.3	76.5	109.7	143.4	97.0
1982	100.0	84.3	74.2	116.8	95.8	76.2	109.2	74.3	78.2	136.1	92.9
1983	100.0	93.8	66.2	96.3	86.3	87.2	110.8	79.9	90.5	118.4	82.6
1984	100.0	92.2	72.5	98.3	82.5	90.3	111.0	82.7	90.6	107.7	85.2
1985	100.0	122.4	66.0	78.6	84.4	88.4	114.6	83.6	81.9	90.9	95.5
1986	100.0	135.4	66.3	87.7	70.5	90.2	117.7	88.2	85.6	87.9	78.1
1987	100.0	102.3	71.5	81.4	87.6	89.1	116.7	78.3	85.4	91.5	88.0
1988	100.0	80.4	64.9	80.5	84.1	92.0	117.9	78.3	71.7	94.2	83.2
1989	100.0	84.2	70.0	92.8	77.8	92.8	119.2	70.1	65.3	87.8	84.3
1990	100.0	63.8	61.6	84.1	73.9	90.6	122.4	68.3	66.1	87.6	86.0
1991	100.0	54.8	72.7	75.4	64.2	87.6	127.4	70.2	65.0	83.6	86.1
1992	100.0	49.6	58.7	65.9	70.7	91.5	127.3	63.3	65.1	92.0	78.1
1993	100.0	53.4	54.2	89.9	88.7	91.6	125.3	64.5	62.9	91.0	76.2
1994	100.0	54.5	55.0	77.3	65.1	91.7	124.6	66.3	57.1	97.0	81.8
1995	100.0	68.0	53.3	69.3	68.3	91.0	125.6	69.0	70.4	90.5	79.7
1996	100.0	56.4	51.4	73.3	64.3	94.9	127.9	63.5	65.8	82.4	76.5
1997	100.0	57.3	55.7	80.9	56.9	92.5	123.6	79.0	85.8	84.4	81.5
1998	100.0	59.4	45.6	57.9	66.1	81.5	126.7	47.7	51.7	124.2	80.5
1999	100.0	93.8	33.3	70.6	87.5	105.5	99.2	97.1	100.1	105.0	98.1
2000	100.0	38.4	58.8	57.2	69.0	91.8	116.7	73.3	68.3	134.3	72.9
2001	100.0	48.5	66.3	67.6	77.9	92.6	115.1	61.9	84.5	108.9	89.2
2002	100.0	46.4	63.6	64.6	70.9	92.2	122.0	65.3	63.8	104.0	79.1
2003	100.0	49.5	64.8	63.7	65.2	101.4	113.5	73.0	76.5	113.9	74.6
2004	100.0	61.9	66.0	62.0	70.3	103.7	116.3	69.3	70.9	101.8	72.7
2005	100.0	69.6	80.7	64.8	78.3	106.9	112.1	73.7	72.2	107.0	70.9
2006	100.0	75.2	102.3	68.3	77.1	100.1	110.9	77.4	99.7	108.9	75.8
2007	100.0	77.7	114.3	68.3	74.3	95.8	113.2	78.1	95.1	109.0	76.7

Source: Table 8

Table 9: Real Computers and related Equipment per Worker by Province, $2002 chained dollars, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	8	6	4	6	7	6	8	6	8	11	7
1982	8	6	4	6	8	6	9	5	6	10	8
1983	12	12	7	9	9	11	15	10	10	14	10
1984	16	14	9	13	13	14	18	13	14	17	13
1985	20	11	8	13	12	19	25	15	12	14	16
1986	25	27	16	22	20	23	29	19	18	23	20
1987	39	29	18	31	24	39	45	28	29	36	31
1988	37	25	16	28	23	38	44	28	22	34	30
1989	50	27	23	37	24	47	64	30	27	44	40
1990	52	28	25	35	34	46	65	38	33	47	43
1991	67	27	29	39	42	64	85	45	40	60	57
1992	92	55	59	59	74	79	120	64	55	86	70
1993	95	61	105	63	71	83	119	65	63	91	80
1994	119	54	75	119	60	93	145	64	86	159	100
1995	152	88	105	127	81	124	202	95	126	143	113
1996	199	154	150	147	95	177	260	134	146	164	156
1997	248	196	190	216	143	228	309	241	177	199	193
1998	375	303	304	298	288	371	328	435	309	574	387
1999	508	180	487	374	305	459	579	401	450	585	448
2000	621	252	470	349	300	619	774	501	366	502	496
2001	620	322	388	334	365	602	786	527	481	537	406
2002	638	370	487	391	303	615	794	528	611	490	498
2003	716	637	401	586	392	620	854	573	561	765	578
2004	931	689	546	658	583	832	1,088	692	616	1,194	679
2005	1,119	877	694	907	747	1,051	1,285	735	781	1,330	866
2006	1,286	904	752	928	732	1,142	1,534	908	1,070	1,449	1,003
2007	1,606	1,071	1,101	1,152	910	1,381	1,941	1,188	1,291	1,814	1,246
Compound Annual Growth Rates, per cent											
1981-2007	22.82	22.09	24.26	22.41	20.28	23.14	23.40	22.77	21.84	21.68	21.84
1981-2000	26.02	21.76	28.71	23.86	21.44	27.46	27.04	26.52	22.62	22.24	24.84
2000-2007	14.54	22.98	12.94	18.57	17.17	12.13	14.04	13.13	19.74	20.15	14.05

Source: Table 1c and Labour Force Survey

Table 9a: Real Computers and related Equipment per Worker (chained $2002) as a Proportion of the National Average, in per cent, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	100.0	77.8	50.7	78.2	97.6	80.3	106.9	74.8	99.1	144.1	95.5
1982	100.0	78.6	49.1	85.0	104.9	77.7	112.5	70.4	72.7	128.6	102.3
1983	100.0	94.1	52.6	74.2	74.6	86.2	118.3	77.6	80.9	111.9	82.5
1984	100.0	89.4	59.5	84.0	82.2	90.1	115.0	79.6	86.9	106.2	83.6
1985	100.0	53.3	42.2	68.3	59.8	95.2	128.2	73.9	62.9	72.2	82.9
1986	100.0	111.0	67.0	90.0	81.9	93.6	117.1	79.2	71.9	92.4	80.4
1987	100.0	73.9	47.6	80.4	60.7	100.8	116.8	71.3	75.2	93.7	79.2
1988	100.0	66.2	41.6	73.6	62.5	102.6	118.0	75.3	60.0	90.4	79.6
1989	100.0	54.6	46.7	74.5	48.1	93.2	127.4	60.3	53.5	87.4	80.3
1990	100.0	54.6	48.2	68.6	66.0	89.0	126.4	73.8	63.5	90.1	82.2
1991	100.0	39.8	42.5	58.2	63.1	94.7	125.9	67.7	59.6	90.0	84.3
1992	100.0	59.5	64.3	64.1	80.5	85.4	130.6	69.8	59.9	93.8	75.9
1993	100.0	64.3	111.0	66.3	74.4	87.5	125.3	68.2	66.5	96.2	84.1
1994	100.0	45.8	63.2	100.6	50.5	77.9	122.4	54.2	72.0	134.0	84.6
1995	100.0	57.9	68.9	83.5	53.5	81.9	132.6	62.3	82.8	93.9	74.1
1996	100.0	77.3	75.1	73.9	47.7	88.7	130.7	67.1	73.4	82.1	78.5
1997	100.0	79.1	76.7	87.4	57.8	92.1	124.8	97.5	71.4	80.3	78.1
1998	100.0	80.9	81.0	79.5	76.9	98.9	87.6	115.9	82.3	153.1	103.3
1999	100.0	35.4	95.8	73.6	60.1	90.3	113.9	78.9	88.6	115.1	88.2
2000	100.0	40.5	75.7	56.3	48.3	99.8	124.6	80.7	58.9	80.9	80.0
2001	100.0	52.0	62.5	53.9	58.9	97.0	126.8	85.0	77.6	86.5	65.5
2002	100.0	58.0	76.3	61.3	47.5	96.4	124.4	82.7	95.7	76.7	78.0
2003	100.0	89.0	56.1	81.9	54.8	86.7	119.4	80.0	78.4	106.9	80.7
2004	100.0	74.0	58.6	70.7	62.7	89.4	116.8	74.3	66.1	128.3	72.9
2005	100.0	78.4	62.1	81.1	66.7	94.0	114.8	65.7	69.8	118.9	77.4
2006	100.0	70.3	58.5	72.2	57.0	88.8	119.3	70.6	83.2	112.7	78.0
2007	100.0	66.7	68.6	71.7	56.7	86.0	120.9	74.0	80.4	113.0	77.6

Source: Table 9

Table 10a: Industrial Composition of GDP by Province, Current Dollars, 2004

	Industry Share of GDP in Aggregate GDP (Current Dollars, 2004)										
	Canada	Newfoun-dland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatche-wan	Alberta	British Columbia
Agriculture Forestry Fishing and Hunting	2.2	2.5	8.3	2.8	3.8	2.1	1.0	4.6	9.2	2.4	3.2
Mining and Oil and Gas Extraction	7.1	31.9	0.0	4.6	1.5	0.7	0.8	2.6	20.8	29.7	5.1
Utilities	2.6	3.3	1.2	2.4	3.8	3.9	2.3	3.3	2.5	1.9	2.0
Construction	5.6	4.2	5.1	5.8	5.8	5.5	5.2	4.1	4.7	7.1	5.8
Manufacturing	15.7	5.0	11.5	11.6	15.3	19.7	19.7	13.6	7.4	7.9	11.0
Wholesale Trade	5.2	2.9	3.0	4.4	5.1	5.3	6.0	5.5	4.9	4.2	4.7
Retail Trade	5.5	5.0	6.9	6.7	6.4	6.0	5.6	6.4	4.8	4.0	6.1
Transportation and Warehousing	4.5	2.8	2.5	3.7	5.2	4.3	3.9	6.7	5.4	4.8	5.8
Information and Cultural Industries	3.6	2.9	3.2	3.3	3.1	3.7	4.0	3.3	2.4	2.5	3.8
F.I.R.E.	18.6	11.5	17.9	19.4	16.5	16.7	21.5	18.2	14.1	13.5	21.8
Professional Scientific and Technical Services	4.5	2.3	2.3	3.1	2.7	4.3	5.5	2.6	1.8	4.3	4.3
Administrative and Support	2.4	1.0	1.7	2.2	2.4	2.6	2.9	1.8	1.0	1.8	2.0
Educational Services	4.7	5.6	6.9	5.7	5.6	5.2	4.6	5.4	5.0	3.6	5.0
Health Care and Social Assistance	6.4	7.7	9.7	8.4	7.6	7.6	6.2	8.6	6.0	4.1	6.8
Arts Entertainment and Recreation	1.0	0.3	1.0	0.7	0.7	1.1	1.0	1.0	0.8	0.6	1.2
Accommodation and Food Services	2.3	1.8	3.5	2.5	2.3	2.3	2.1	2.2	1.9	2.0	3.1
Other Services(except Public. Admin.)	2.5	2.0	2.7	2.4	2.6	2.6	2.5	3.0	2.4	2.1	3.0
Public Administration	5.6	7.3	12.8	10.1	9.5	6.4	5.3	7.1	5.0	3.4	5.2

Table 10b: Composition and Importance of Investment by Industry in Canada, Current Dollars

	ICT Industry Investment as a Share of Total Industry Invesment (Current Dollars, 2004)	Total Industry Investment as a Share of Industry GDP (Current Dollars, 2004)	Industry ICT Investment as a Share of Industry GDP (Current Dollars, 2004)	Industry Share of Total Investment (Current Dollars, 2007)
	A	B	C = A * B	D
Agriculture Forestry Fishing and Hunting	2.73	16.63	0.45	2.60
Mining and Oil and Gas Extraction	0.81	61.51	0.50	20.69
Utilities	4.85	65.75	3.19	7.18
Construction	4.38	7.15	0.31	2.24
Manufacturing	13.12	10.68	1.40	10.31
Wholesale Trade	34.65	8.39	2.91	2.43
Retail Trade	19.17	11.93	2.29	4.60
Transportation and Warehousing	8.32	29.79	2.48	6.04
Information and Cultural Industries	68.08	23.84	16.23	5.72
F.I.R.E.	23.33	11.65	2.72	14.63
Professional Scientific and Technical Services	70.67	5.78	4.09	1.83
Administrative and Support	26.33	4.05	1.07	0.61
Educational Services	12.68	13.46	1.71	3.51
Health Care and Social Assistance	8.88	9.45	0.84	3.04
Arts Entertainment and Recreation	12.11	20.14	2.44	0.91
Accommodation and Food Services	6.22	10.39	0.65	1.33
Other Services(except Public. Admin.)	30.25	5.06	1.53	0.93
Public Administration	13.41	43.65	5.85	11.29
Total Economy	17.75	13.81	2.45	100

Note: Investment estimates exclude residential investment. Only non-residential investment is taken into account.

Table 11: Real GDP per Worker by Province, in 2002 chained dollars, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	57,260	50,322	44,841	48,660	46,962	55,607	58,578	52,536	54,279	69,318	64,021
1982	57,459	52,312	45,730	51,607	49,638	56,669	58,270	52,099	53,379	68,179	63,287
1983	58,602	53,955	47,807	52,284	52,495	56,785	60,162	51,618	54,054	69,188	64,121
1984	60,474	56,000	48,202	53,083	52,786	57,546	62,561	54,569	54,375	71,857	64,605
1985	61,591	55,707	47,183	55,209	53,049	57,816	62,894	57,368	54,941	75,266	67,551
1986	61,191	54,433	47,620	55,111	54,845	57,133	63,249	55,917	56,835	73,002	64,959
1987	62,001	55,265	47,154	55,529	55,740	57,769	64,160	56,049	56,850	74,206	66,417
1988	63,157	55,944	47,619	53,987	54,010	59,242	65,115	55,633	54,801	77,864	67,492
1989	63,382	56,461	48,545	54,070	53,450	58,693	65,808	56,399	56,917	77,137	66,304
1990	63,067	56,365	48,766	53,403	52,521	58,688	64,732	57,666	61,191	77,289	65,022
1991	62,847	57,230	50,187	53,600	53,425	58,139	64,381	56,500	61,985	77,210	64,401
1992	64,027	59,215	51,266	56,078	53,981	59,260	66,075	57,878	60,313	78,191	64,442
1993	65,208	60,036	51,007	56,985	54,978	60,596	66,638	57,638	64,207	83,236	65,272
1994	66,949	62,724	52,460	56,286	56,386	61,967	69,512	59,427	66,110	86,026	64,218
1995	67,603	63,843	54,336	56,725	56,533	62,198	70,743	58,573	66,336	86,100	64,191
1996	68,053	63,120	54,346	56,922	57,313	62,922	70,593	60,267	68,448	85,336	64,656
1997	69,456	63,617	54,643	58,576	57,302	64,061	72,048	61,535	69,683	88,203	65,131
1998	70,551	65,650	56,376	58,715	58,252	64,379	73,287	63,115	71,983	89,244	66,060
1999	72,590	66,284	58,173	60,599	59,932	66,920	76,232	63,258	71,959	88,473	66,886
2000	74,539	70,773	56,938	61,337	60,136	68,290	78,258	64,653	73,537	91,468	68,647
2001	74,945	69,838	55,535	62,707	61,339	68,552	78,188	64,940	74,923	90,376	69,423
2002	75,302	79,426	57,202	64,039	61,699	67,634	79,213	64,455	73,335	90,133	70,327
2003	74,947	82,049	57,156	63,692	63,436	67,356	77,954	64,982	75,448	90,499	70,202
2004	75,917	79,874	58,191	62,949	63,036	68,108	78,557	65,961	77,763	93,005	71,086
2005	77,168	80,145	57,845	63,949	63,264	68,770	79,832	67,312	79,830	96,417	71,912
2006	77,783	82,146	59,023	64,728	64,274	69,022	80,344	68,693	78,179	98,023	72,118
2007	78,038	89,065	59,582	64,884	63,983	69,087	80,810	69,814	78,717	96,698	72,012
Compound Annual Growth Rates, per cent											
1981-2007	1.20	2.22	1.10	1.11	1.20	0.84	1.25	1.10	1.44	1.29	0.45
1981-2000	1.40	1.81	1.26	1.23	1.31	1.09	1.54	1.10	1.61	1.47	0.37
2000-2007	0.66	3.34	0.65	0.81	0.89	0.17	0.46	1.10	0.98	0.80	0.69

Source: Appendix Table 8c and 9

Table 11a: Index Real GDP per Worker (in 2002 chained dollars) by Province, Canada = 100, 1981-2007

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1981	100.0	87.9	78.3	85.0	82.0	97.1	102.3	91.8	94.8	121.1	111.8
1982	100.0	91.0	79.6	89.8	86.4	98.6	101.4	90.7	92.9	118.7	110.1
1983	100.0	92.1	81.6	89.2	89.6	96.9	102.7	88.1	92.2	118.1	109.4
1984	100.0	92.6	79.7	87.8	87.3	95.2	103.5	90.2	89.9	118.8	106.8
1985	100.0	90.4	76.6	89.6	86.1	93.9	102.1	93.1	89.2	122.2	109.7
1986	100.0	89.0	77.8	90.1	89.6	93.4	103.4	91.4	92.9	119.3	106.2
1987	100.0	89.1	76.1	89.6	89.9	93.2	103.5	90.4	91.7	119.7	107.1
1988	100.0	88.6	75.4	85.5	85.5	93.8	103.1	88.1	86.8	123.3	106.9
1989	100.0	89.1	76.6	85.3	84.3	92.6	103.8	89.0	89.8	121.7	104.6
1990	100.0	89.4	77.3	84.7	83.3	93.1	102.6	91.4	97.0	122.6	103.1
1991	100.0	91.1	79.9	85.3	85.0	92.5	102.4	89.9	98.6	122.9	102.5
1992	100.0	92.5	80.1	87.6	84.3	92.6	103.2	90.4	94.2	122.1	100.6
1993	100.0	92.1	78.2	87.4	84.3	92.9	102.2	88.4	98.5	127.6	100.1
1994	100.0	93.7	78.4	84.1	84.2	92.6	103.8	88.8	98.7	128.5	95.9
1995	100.0	94.4	80.4	83.9	83.6	92.0	104.6	86.6	98.1	127.4	95.0
1996	100.0	92.8	79.9	83.6	84.2	92.5	103.7	88.6	100.6	125.4	95.0
1997	100.0	91.6	78.7	84.3	82.5	92.2	103.7	88.6	100.3	127.0	93.8
1998	100.0	93.1	79.9	83.2	82.6	91.3	103.9	89.5	102.0	126.5	93.6
1999	100.0	91.3	80.1	83.5	82.6	92.2	105.0	87.1	99.1	121.9	92.1
2000	100.0	94.9	76.4	82.3	80.7	91.6	105.0	86.7	98.7	122.7	92.1
2001	100.0	93.2	74.1	83.7	81.8	91.5	104.3	86.6	100.0	120.6	92.6
2002	100.0	105.5	76.0	85.0	81.9	89.8	105.2	85.6	97.4	119.7	93.4
2003	100.0	109.5	76.3	85.0	84.6	89.9	104.0	86.7	100.7	120.8	93.7
2004	100.0	105.2	76.7	82.9	83.0	89.7	103.5	86.9	102.4	122.5	93.6
2005	100.0	103.9	75.0	82.9	82.0	89.1	103.5	87.2	103.5	124.9	93.2
2006	100.0	105.6	75.9	83.2	82.6	88.7	103.3	88.3	100.5	126.0	92.7
2007	100.0	114.1	76.3	83.1	82.0	88.5	103.6	89.5	100.9	123.9	92.3
Compound Annual Growth Rates, per cent											
1981-2007	0.00	1.01	-0.10	-0.08	0.00	-0.36	0.05	-0.10	0.24	0.09	-0.74
1981-2000	0.00	0.41	-0.13	-0.17	-0.09	-0.31	0.14	-0.30	0.21	0.07	-1.02
2000-2007	0.00	2.66	-0.01	0.15	0.23	-0.49	-0.20	0.44	0.32	0.14	0.03

Source: Table 11