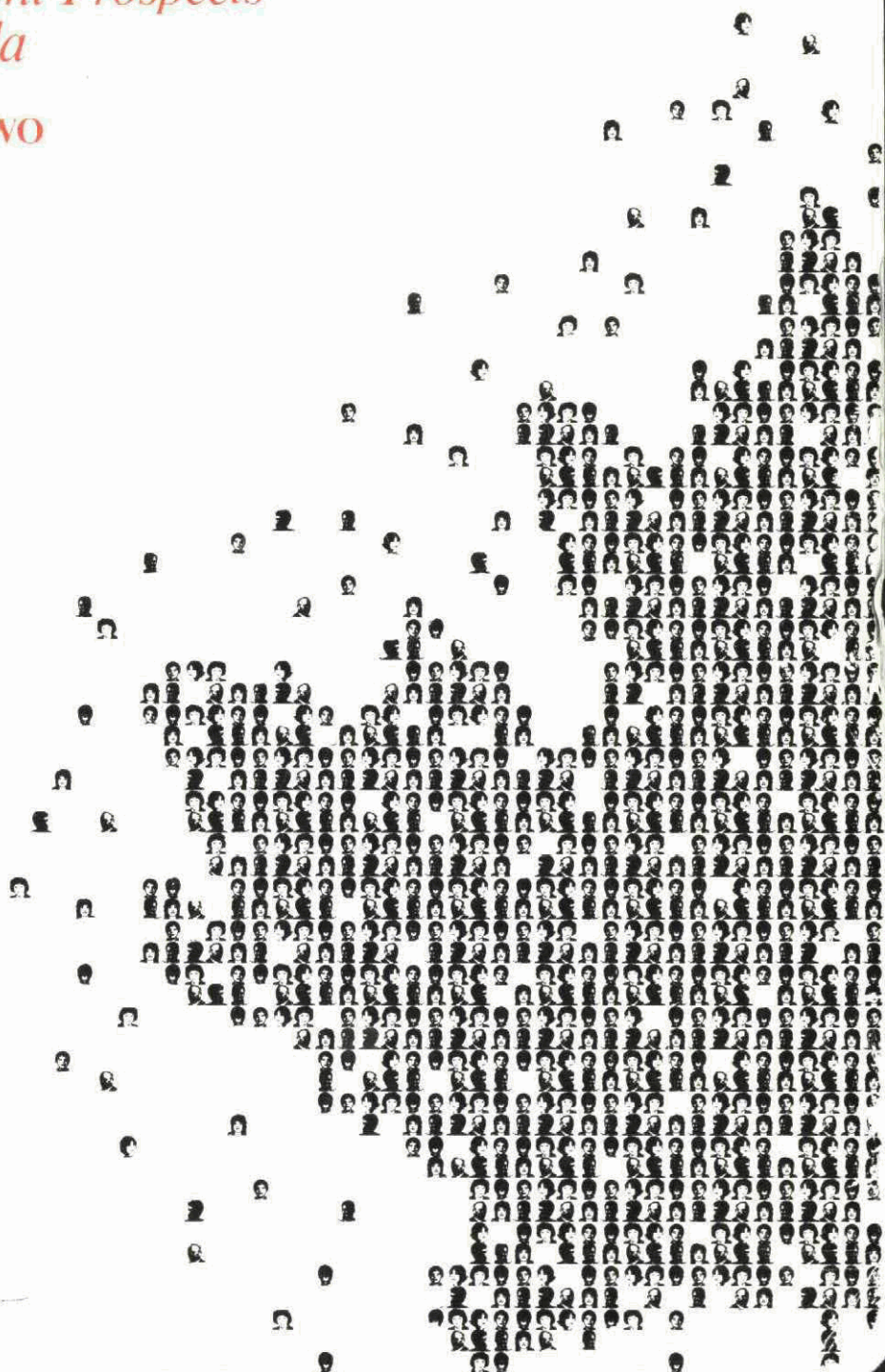


# Report

---

## *Royal Commission on the Economic Union and Development Prospects for Canada*

VOLUME TWO



Canada 

c.2

PROPERTY OF - PROPRIÉTÉ DU  
PRIVY COUNCIL OFFICE  
BUREAU DU CONSEIL PRIVÉ  
INFORMATION SYSTEMS & SERVICES  
SYSTÈMES & SERVICES D'INFORMATION



---

*Royal Commission on the Economic Union and  
Development Prospects for Canada*



# Report

---

*Royal Commission on the  
Economic Union and  
Development Prospects  
for Canada*

VOLUME TWO

*Minister of Supply and Services Canada*



*Copyright © Minister of Supply and Services 1985*

*All rights reserved*

*COVER DESIGN: Will Rueter*

*INTERIOR DESIGN: Brant Cowie*

*Available in Canada through authorized bookstore agents and other bookstores or by mail from  
Canadian Government Publishing Centre  
Supply and Services Canada  
Ottawa, Canada K1A 0S9*

*Also available in French*

*Printed in Canada*

*Catalogue No. Z1-1983/1-2E*

*ISBN 0-660-11852-1 (Vol. 2)*

*ISBN 0-660-11850-5 (Set)*

*Canada: \$45.00*

*Other countries: \$54.00*

*Price subject to change without notice.*

# CONTENTS

---



o

*Detailed Contents lists appear at the beginning of each chapter.*

## **VOLUME ONE**

FOREWORD *xi*

ACKNOWLEDGEMENTS *xv*

PREFACE *xvii*

### **PART I A NEW PERSPECTIVE 1**

**1 Canada: State, Society and Economy 3**

**2 Global Outlook 73**

*Conclusions and Recommendations 208*

### **PART II CANADIAN OPPORTUNITIES IN AN OPEN WORLD 211**

**3 Retrospective 213**

**4 Canada in the Global Economy: The Present Situation 231**

**5 Canada and the General Agreement  
on Tariffs and Trade 277**

**6 Freer Trade with the United States 297**

*Conclusions and Recommendations 378*

**VOLUME TWO****PART III GROWTH AND EMPLOYMENT 1****Introduction 3****7 Economic Performance and Prospects 5****8 Economic Growth, Investment, Technology,  
Management and Entrepreneurship 71****9 Industrial Policy 131****10 Short-Term Stability and High Employment 267***Conclusions and Recommendations 379***PART IV NATURAL RESOURCES AND ENVIRONMENT 393****Introduction 395****11 Resources and Canadian Economic Development 401****12 The Natural Resource Sectors 415****13 The Environment, Society and the Economy 505***Conclusions and Recommendations 529***PART V HUMAN RESOURCES AND SOCIAL SUPPORT 535****Introduction 537****14 The Evolution of Policy: Major Trends and Issues 543****15 Work and Pay: The Functioning of Labour Markets 583****16 Immigration Policy 657****17 Labour/Management Relations 669****18 Education and Training 733****19 The Income-Security System 769****20 Social Services 805***Conclusions and Recommendations 814*

### **VOLUME THREE**

#### **PART VI THE INSTITUTIONAL CONTEXT 1**

##### **Introduction 3**

**21 The Institutions of National Government 33**

**22 Federalism and the Canadian Economic Union 97**

**23 Citizens, Communities and the Federal State 275**

**24 The Canadian Constitutional System and  
Unresolved Community Issues 327**

*Conclusions and Recommendations 387*

**COMPENDIUM OF CONCLUSIONS AND RECOMMENDATIONS 409**

**SUPPLEMENTARY STATEMENTS 483**

**APPENDICES 557**

*Appendix A – Orders in Council and Exchange of  
Letters with the Prime Minister 559*

*Appendix B – Schedule of Written Submissions 575*

*Appendix C – Schedules of Government Consultations and  
Participants in Public Hearings 599*

*Appendix D – The Collected Research Studies 677*

*Appendix E – Staff of the Commission 691*

**ACRONYMS 695**

**PART III**



---

**GROWTH AND EMPLOYMENT**

# *Contents*

<b>Introduction</b>	<b>3</b>
<b>Chapter 7 Economic Performance and Prospects</b>	<b>5</b>
<b>Chapter 8 Economic Growth, Investment, Technology, Management and Entrepreneurship</b>	<b>71</b>
<b>Chapter 9 Industrial Policy</b>	<b>131</b>
<b>Chapter 10 Short-Term Stability and High Employment</b>	<b>267</b>
<b>Conclusions and Recommendations</b>	<b>379</b>



### Introduction

The broad issues of economic growth and employment are central to this Commission's mandate, and they were central concerns in the hearings we conducted across Canada. Key aspects of these issues, in particular trade, the development of our human resources, and the functioning of labour markets, are considered primarily in other parts of this Report. We are concerned in this part with the roles in economic growth of the capital stock, of technology, and of the organization of economic activity. We are also concerned with the role of policy and institutions in achieving high levels of employment and general economic stability.

Economic growth is fundamental to the maintenance of our standard of living. High employment is fundamental to the economic and social welfare of the great majority of families and individuals. Given that we Commissioners held our hearings at the outset of a rather shaky recovery from a very deep and traumatic recession, it is perhaps not surprising that many of the representations to this Commission expressed more worry about employment than they did about growth. One intervenor argued that:

*If there were no improvement in GNP . . . it would still be immensely important to have full employment. I think I would go so far as to say that if the GNP fell and [we] had full employment, it would be well worth the price. [We] would have a better and different kind of society.*

(John Weldon, Transcript, Montreal, May 30, 1984 [vol. 1], p. 44.)

A study<sup>1</sup> of public opinion surveys prepared for this Commission reveals that unemployment is a major concern to far more Canadians than the number actually unemployed at any point in time. But the current high levels of unemployment are at least partly a cyclical phenomenon, and our primary concern, under the terms of our mandate, is with the longer term. Thus we

shall deal with the issue of economic growth—that is, the potential productivity of our economy—before we turn to the issue of stability and the full use of that potential. In the course of Part III of this Report, we shall also explicate our belief that there is no basic conflict between growth and high employment: that they are, in fact, complementary, rather than competing, goals.

By way of introduction to both of these broad areas, Chapter 7 reviews the economic experience of the last several decades in terms of growth, of structural adjustment in our economy, and of the major indicators of economic instability: unemployment and inflation. This chapter also discusses the growing role of government, since this growth has been one of the most important structural changes in the economy, and since the remainder of Part III will be concerned, to a substantial extent, with what government can do to promote growth and economic stability.

Chapter 8 looks first at the various factors that contribute to growth and at the question of whether growth and, in particular, growth that results from technological change is likely to be consistent with the achievement of high employment. We then consider in more detail the contributions to economic growth of capital formation, technology, and management. In the course of this discussion, we consider the desirability of relying upon more or different government action to promote capital formation and technological development.

Chapter 9 deals with industrial policy in a broad sense. We consider a wide range of factors in the organization of economic activity and ask whether there are changes that might improve Canada's economic performance. We survey Canadian views on the role of government in industrial policy, review the evolution of both federal and provincial activities to promote economic development, and present an analysis of other countries' experience with industrial policy. Finally, we suggest a framework for industrial policy in the future, a framework that emphasizes productivity and competitiveness.

Chapter 10 deals with short-term economic stability and high employment. After setting out a framework for the analysis of the macro-economic functioning of the economy, we look at the strengths and the limitations of monetary policy and fiscal policy as means of achieving stability and high employment. We then consider the contribution that adoption of an incomes policy and other changes in the wage-determination system might make to economic stability and to an improved employment performance.

### *Note*

1. Richard Johnston, *Public Opinion and Public Policy in Canada*, vol. 35, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Toronto: University of Toronto Press, 1985).

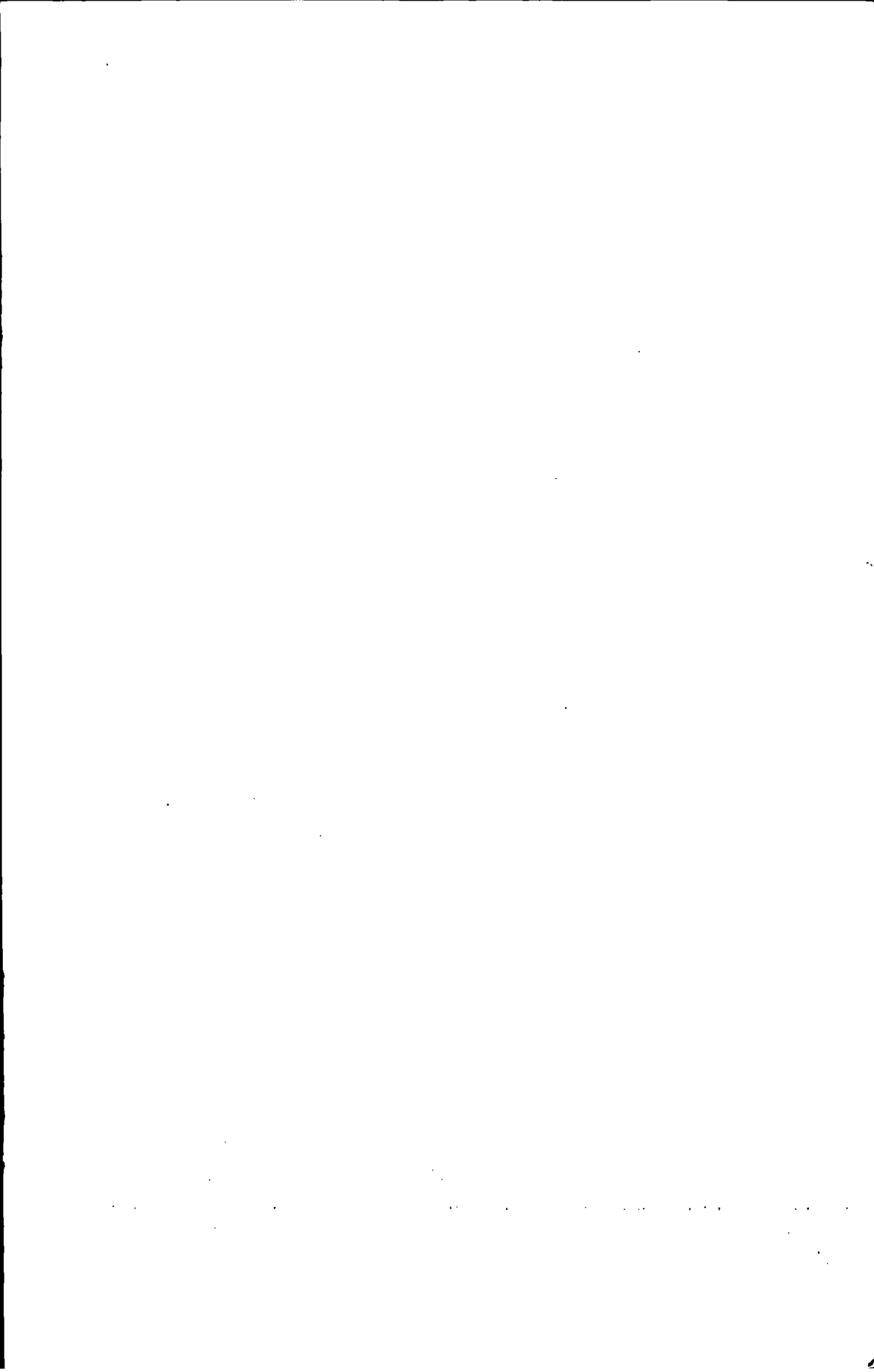




---

# Economic Performance and Prospects

<b>Main Structural Developments</b>	7
<i>Key Economic Indicators</i>	7
<i>Demographic and Labour-Force Trends</i>	10
<i>Capital Formation</i>	22
<i>Industrial Structure</i>	27
<i>Real Income and Productivity Growth</i>	28
<i>Government Expenditures and Employment</i>	32
<i>Notes</i>	42
<b>Business Cycles</b>	43
<b>The Recent Recession</b>	44
<b>The International Economic Environment and International Comparisons</b>	46
<b>General Observations on Recent Performance</b>	51
<b>Overall Prospects for the Economy</b>	52
<i>Population Projections, 1981–2030</i>	52
<i>Long-Term Economic Projections, 1984–2000</i>	60
<i>Notes</i>	70





---

# Economic Performance and Prospects



## Main Structural Developments

### Key Economic Indicators

Like the economies of most other developed countries, the Canadian economy, since the Second World War, has experienced both substantial growth in output and income and major structural change. In order to identify these major trends, it is useful to abstract from cyclical fluctuations. Since the war, there have been five major cycles. In order to avoid having reference years falling variously at the peak or bottom of these cycles, the average annual growth rates of selected demographic and economic indicators shown in Tables 7-1 and 7-2 are recorded between successive cyclical peak years. The post-1981 cyclical downturn is reviewed later. To provide a comparison with earlier trends, these tables also include average data for 1927–46. These averages, however, mask key features of the period, such as the high level of unemployment and the substantial decline in real output that occurred during the Great Depression.

As Table 7-1 shows, Canada's population increased at a relatively rapid rate over the first 20 years of the post-war period. Immigration contributed significantly to this growth, but natural increase was its predominant source. Immigration slowed after 1957, and the rate of natural increase dropped sharply as the birth rate fell after the early 1960s.

In retrospect, the period from the end of the Second World War to 1973 was something of a "golden age" of economic performance. Table 7-2 records that total output and output per person employed increased at rates higher than those that are generally thought to have prevailed before the Second World War, and at rates higher than those that have prevailed since 1973. This increase in output was reflected in a strong growth in the real income of Canadians as measured by real gross national expenditure (GNE) per capita.

**TABLE 7-1 Canadian Demographic Trends**

Population Growth	1927-46	1947-56	1957-66	1967-73	1974-81
	(average annual per cent rate of increase)				
Total	1.3	2.7 <sup>a</sup>	2.2	1.4	1.2
Natural	1.2	1.9	1.8	1.0	0.8
Net immigration	0.1	0.6	0.4	0.4	0.4

Source: Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), Table 1-6.

Note: Growth rates are average annual compound increases from the level in the year before the period specified to the level in the final year of the period specified.

a. The entry of Newfoundland into Confederation accounted for 0.3 percentage points of the average growth rate from 1947 to 1956.

**TABLE 7-2 Key Canadian Economic Indicators**

	1927-46	1947-56	1957-66	1967-73	1974-81
	(average annual per cent rate of increase)				
Employment <sup>a</sup>	1.4	1.8	2.5	3.0	2.9
Real output <sup>b</sup>	3.9	5.4	4.6	5.3	3.0
Real income <sup>c</sup> per capita	2.2	2.6	2.4	3.9	1.7
Productivity <sup>d</sup>	2.1	3.5	2.1	2.3	0.1
Inflation <sup>e</sup>	0.2	4.4	2.0	4.4	9.7
Unemployment rate <sup>f</sup>	8.1	3.2	5.5	5.2	7.3

Sources: Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), Tables 2.6, 9.1 and 9.2; and Finance Canada, *Economic Review*, April 1984 (Ottawa: Minister of Supply and Services Canada, 1984).

Note: Growth rates are average annual compound increases from the level in the year before the period specified to the level in the final year of the period specified.

a. Civilian employment: minor non-comparabilities in series occur in 1946 and 1966.

b. Real Gross National Expenditure (GNE).

c. Real GNE divided by population.

d. Real GNE per person employed.

e. As measured by Canada Price Index.

f. Minor non-comparabilities in series occur in 1946 and 1966.

Employment also grew rapidly between 1946 and 1973, and unemployment rates were generally lower than they had been before that period or than they have been since. In 1947, during the post-war adjustment period, inflation flared briefly into the double-digit range and made a similar rise at the outset of the Korean War. Generally, however, rates of price increase were low between 1946 and 1973. Even during this period of comparatively good

performance, public discussion gave considerable emphasis to the current problems: an upward creep in inflation from the mid-1950s; slow growth and relatively high unemployment in the late 1950s and early 1960s, reoccurring about 1970. In the late 1950s and early 1960s, there was much concern, just as there is today, that Canada might be facing an extended period of structural unemployment.

The period since 1973 has seen a deterioration in most aspects of performance, though the falling off has been more severe in some respects than in others. A sharp break in productivity growth appears to have occurred after 1973, and the situation may have worsened in the late 1970s.

A full and satisfactory explanation of the slow-down of productivity growth still eludes analysts. No doubt the increased degree of slack in the economy after 1973 helped to slow productivity growth. A sharp break in that growth in the oil and gas industry, reflecting both increased dependence on less productive wells and increased investment in exploration, also contributed to the decline in overall productivity, as did the impact of higher energy prices on energy-using industries. According to most analyses, however, these factors do not fully account for the decline in productivity growth from an average annual rate of 2.3 per cent, between 1967 and 1973, to virtually zero during the period from 1974 to 1981. Furthermore, investment and the resulting growth in capital stock, the age-sex composition of the labour force, and the industrial composition of output did not change in ways that would have caused any significant slow-down in productivity growth after 1973. Most analysts believe that in addition to weaker cyclical conditions and the energy shock, there was some decline in the "underlying" rate of productivity growth. This rate is presumably determined largely by the development and application of new technology.<sup>1</sup>

The cessation of productivity growth between 1974 and 1981 contributed to a slow-down in the growth of real income per capita. Table 7-3 shows the relative significance of each of the factors that account for the growth of real income per capita. From 1947 to 1956, productivity growth was strong (3.5 per cent), but demographic and labour-force developments dampened the growth of real income per capita. The population of labour-force age (over 15 years) grew less rapidly than total population, and labour-force participation declined as many women left wartime employment. Between 1957 and 1966, rising participation rates made a small contribution to real income growth per capita, offsetting the effect of a decline in productivity growth. The 1967-73 period saw remarkably rapid growth of real income per capita: almost 4 per cent per year, on average. The proportion of the population of labour-force age increased, and participation rates continued to rise. Annual productivity growth averaged over 2 per cent. The growth of real income per capita slowed markedly from 1974 to 1981, when an increase in the population of labour-force age and higher labour-force participation rates were offset by the cessation of productivity growth.

Inflation increased sharply in Canada after 1973, although some upward trend in the inflation rate had been evident since the mid-1960s. The drastic oil-price increases of 1973 and 1979-80, imposed by the Organization of Petroleum Exporting Countries (OPEC) were, of course, the most dramatic

**TABLE 7-3 Contribution of Various Factors to Real Income Growth per Capita in Canada**

	1947-56	1957-66	1967-73	1974-81
	(average annual per cent growth)			
1. Changes in population of labour-force age relative to total population	-0.62	0.02	1.10	0.87
2. Changes in labour-force participation rates	-0.28	0.30	0.83	1.03
3. Changes in employment relative to labour force	-0.01	-0.03	-0.31	-0.28
4. Total changes in employment relative to population <sup>a</sup>	-0.91	0.29	1.62	1.62
5. Productivity	3.46	2.08	2.29	0.07
6. Real income per capita <sup>b</sup>	2.55	2.37	3.91	1.69

Sources: Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), and calculations by the Commission.

- a. Row 4 represents the combined impact of rows 1, 2, and 3.
- b. Row 6 represents the combined impact of rows 1, 2, 3, and 5 (or of rows 4 and 5).

single factor in this upward trend. The rise in inflation also reflected the delayed impact of the strong demand conditions that developed in Canada and internationally in the late 1960s and early 1970s.

The average level of unemployment rose after 1973, even though employment continued to grow rapidly. However, the highest proportion of the initial increase in the unemployment rate in the 1967-73 period may be attributable to the effect of the 1971 changes in the Unemployment Insurance system on the behaviour of the unemployed and, to a lesser extent, to changes in the age-sex composition of the labour force. Inadequate growth in aggregate demand during the latter half of the 1970s and especially during the outset of the 1980s caused the cyclical component of unemployment to rise significantly.

### Demographic and Labour-Force Trends

Table 7-4 presents demographic data for each of the census periods from 1921 to 1981.<sup>2</sup> The table shows a continuous decline of the death rate and a parallel increase in life expectancy for both men and women, over the entire 1921-81 period. On the other hand, both the birth rate and the fertility rate varied substantially over this period, declining throughout the 1930s and 1940s, increasing in the 1950s and 1960s, and then declining steeply to 1976. Both rates have since declined further, but at a much slower pace. Net immigration has exhibited no clear trend; Part V of our Report explores this area in some detail.

**TABLE 7-4 Historical Demographic Data**

Year	Total Population						0 to 14		15 to 24		25 to 64		65+			
	Pop. (000s)	Average Annual Growth Rate <sup>a</sup>	Average Birth Rate <sup>a</sup>	Average Death Rate <sup>a</sup>	Average Immig. Rate <sup>a</sup>	Fer- tility Rate per Woman	Life Expectancy at Birth		Average Annual Growth Rate <sup>a</sup>	% of Pop.	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Average Annual Growth Rate <sup>a</sup>	% of Pop.		
			(per 1 000 pop.)			Male	Female									
1921	8 788	2.0	N.A.	N.A.	1.9	3.5	N.A.	N.A.	2.4	34.4	0.8	17.3	1.2	43.5	2.3	4.8
1931	10 377	1.7	25.2	11.1	2.8	3.2	60.0	62.1	0.8	31.6	2.6	18.8	1.8	44.0	3.2	5.6
1941	11 507	1.0	21.0	9.9	-0.8	2.8	63.0	66.3	-0.3	27.8	1.0	18.7	1.7	46.8	2.9	6.7
1951	14 009	2.0	26.1	9.5	1.3	3.5	66.3	70.8	2.9	30.3	0.0	15.3	1.9	46.6	3.5	7.8
1961	18 238	2.7	27.7	8.2	7.0	3.8	68.4	74.2	3.8	34.0	2.0	14.3	3.1	44.1	2.5	7.6
1971	21 568	1.7	20.2	7.5	3.6	2.2	69.3	76.4	0.3	29.6	4.4	18.6	1.6	43.8	2.3	8.1
1976	22 997	1.3	15.7	7.4	4.5	1.8	70.2	77.5	-1.6	25.6	2.3	19.5	2.4	46.1	2.8	8.7
1981	24 342	1.2	15.4	7.1	3.1	1.7	71.9	78.9	-1.5	22.5	0.8	19.1	2.2	48.6	3.4	9.7

*Sources:* Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), Tables 1.6 and 1.7, and *Historical Statistics of Canada*, 2d ed. (Ottawa: Statistics Canada, 1983), pp. B1-14, B15-22, B59-74; and Finance Canada, *Economic Review, April 1984* (Ottawa: Minister of Supply and Services Canada, 1984), p. 121.

*Note:* N.A. = not available.

a. For preceding ten years with the exception of 1976 and 1981; these last are for the preceding five years.

**TABLE 7-5 Sources of Labour-Force Growth**

	1955-66	1966-73	1973-79	1979-83
	(average annual per cent rates of growth)			
Source Population				
(Both sexes, aged 15 years and over)	2.2	2.6	2.2	1.7
Net immigration	0.5	0.4	0.4	0.3
Natural increase	1.7	2.2	1.9	1.4
Participation rate	0.4	0.7	1.0	0.3
Total labour force	2.6	3.3	3.3	2.1
Employment	2.6	2.8	2.9	0.8

*Sources:* 1956-1979 data from Canada, Employment and Immigration Canada, Task Force on Labour Market Development, *Labour Market Development in the 1980s* (Ottawa: Minister of Supply and Services Canada, 1981), p. 58. Employment data from Statistics Canada, *Historical Labour Force Statistics*, Cat. No. 71-201 (Ottawa, various years). 1980-1983 data recalculated using actual net immigration and employment data from Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), CANSIM data on source population (767284), labour force (both sexes, aged 15 years and over) (767285).

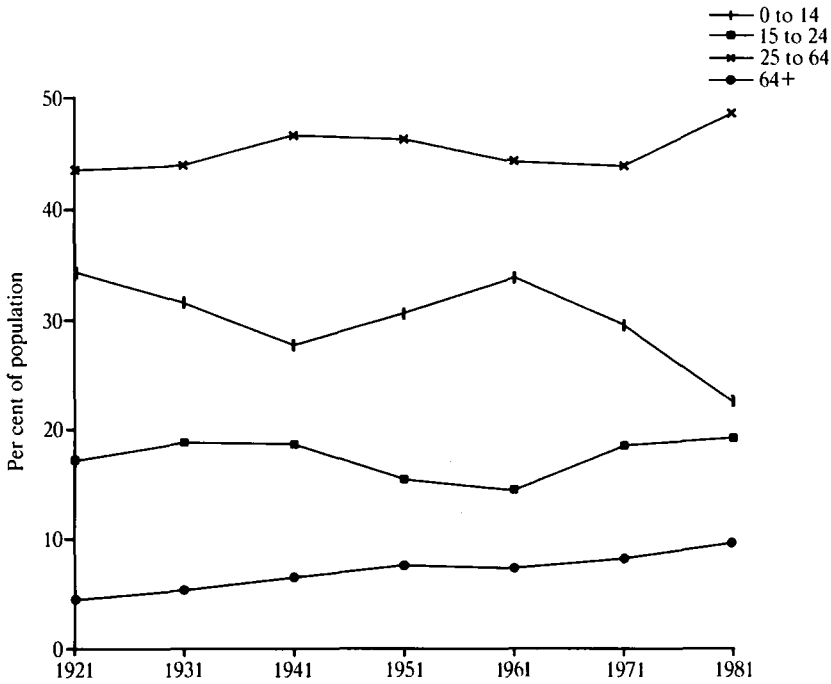
*Note:* All calculations of net immigration's contributions to the source population assume that 60% of immigrants are 15 years of age and over, a figure in the range of recent historical experience. (See T. Samuel and B. Woloski, "The Labour Market Experiences of Canadian Immigrants", mimeo, 1984.) The age distribution of emigrants is assumed to be the same.

Population growth reached a peak annual average rate of 2.7 per cent between 1951 and 1961, and by 1961 the population share of those aged 14 or under was almost as high as it had been in 1921. Between 1961 and 1971, population growth slowed to an average annual rate of 1.7 per cent. The proportion of the population represented by those 14 years old and younger declined significantly to 29.6 per cent. Meanwhile, the maturation of the "baby-boom" generation increased the proportion of those aged 15 to 24 from 14.3 per cent to 18.6 per cent.

The average annual population-growth rate continued to decline between 1971 and 1981, to approximately 1.2 per cent. This decline was associated with a further steep contraction of the share of the aged-14 and younger group to 22.5 per cent. The proportion of the population aged 15 to 24 rose until the mid-1970s and diminished thereafter, falling to 19.1 per cent by 1981. The aging of the baby-boom cohort led to a significant increase in the share of the population aged 25 to 64, while the share of the 65-years and older group continued its upward trend. During the 1970s, the share accounted for by the young was smaller than it had ever been before, and the share accounted for by the elderly was larger; more than two Canadians in three were of working age, and this proportion also represented a record high. Figure 7-1 illustrates the effect on population shares of the maturation of the baby-boom cohort.



**FIGURE 7-1 Percentage Share of Selected Age Groups, 1921–1981**



Source: Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), Table 1-7.

As Table 7-5 shows, the Canadian labour force has grown rapidly over the past three decades. Growth was especially rapid in the late 1960s and the 1970s. It has now slowed and, according to most predictions, will slow even further. This rapid development has reflected both a very substantial increase in the source population<sup>3</sup> and a more modest increase in the percentage of the source population that has participated in the labour force.<sup>4</sup>

Table 7-6 disaggregates the growth rate for the source population by age and sex. Much of the growth in the source population (and even more of the growth in the labour force) during the 1960s resulted from the maturation of the baby-boom generation. The number of 15- to 24-year-olds in the source population reached a peak of nearly 4 600 000 in 1980 and is now declining. The labour force of the near future will be aging as well as growing less rapidly.

**TABLE 7-6 Source Population Growth Rates, by Age-Sex Group, Canada, 1966-83 (Actual) and 1984-85 (Projected)**

Age	15-24		25-44		45-64		65 and over		Total		
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Both sexes
1966-67	5.3	4.8	1.6	1.2	2.3	3.1	1.4	3.1	2.7	2.8	2.7
1967-68	4.6	4.3	1.5	1.1	2.3	3.0	1.4	3.0	2.5	2.6	2.5
1968-69	3.9	3.6	1.5	1.2	2.3	3.0	1.8	3.2	2.4	2.5	2.5
1969-70	3.4	3.6	1.9	1.4	2.1	2.7	1.9	3.2	2.4	2.5	2.4
1970-71	2.8	3.2	2.0	1.7	1.8	2.2	2.3	3.3	2.2	2.4	2.3
1971-72	1.8	1.3	2.4	2.9	1.7	2.1	1.9	3.0	2.0	2.3	2.1
1972-73	2.0	2.0	2.5	2.6	1.7	2.0	2.1	3.0	2.1	2.3	2.2
1973-74	2.9	2.7	3.1	3.1	1.6	2.0	2.3	3.1	2.5	2.7	2.6
1974-75	2.6	2.7	2.9	3.0	1.7	2.0	2.4	3.2	2.5	2.7	2.6
1975-76	2.2	2.2	2.8	2.8	1.5	1.6	2.6	3.2	2.3	2.4	2.3
1976-77	1.5	1.5	2.6	2.8	1.4	1.4	2.8	3.4	2.0	2.2	2.1
1977-78	1.1	1.1	2.6	2.7	1.3	1.2	2.7	3.5	1.8	2.0	1.9
1978-79	0.7	0.6	2.8	3.0	1.0	0.9	3.0	3.7	1.8	1.9	1.9
1979-80	0.5	0.4	3.2	3.3	1.0	1.0	3.0	3.7	1.9	2.0	2.0
1980-81	-0.3	-0.4	3.1	3.3	1.3	1.1	2.6	3.5	1.7	1.8	1.8
1981-82	-1.0	-1.3	3.1	3.2	1.2	1.1	2.5	3.2	1.5	1.6	1.6
1982-83	-1.5	-1.8	2.8	3.0	1.2	1.2	2.3	2.8	1.3	1.4	1.4
1983-84	-2.2	-2.0	3.1	2.7	1.1	0.9	2.6	3.2	1.3	1.3	1.3
1984-85	-2.1	-2.1	2.4	2.6	0.5	0.8	2.5	3.1	0.9	1.2	1.0

Source: Economic Council of Canada, *In Short Supply: Jobs and Skills in the 1980s* (Ottawa: Minister of Supply and Services Canada, 1982), Table 4-8.  
 (Re-estimated for 1975-83, using Statistics Canada, *Labour Force Annual Averages, 1975-1983*, Cat. No. 71-529 (Ottawa: Minister of Supply and Services Canada, 1984), pp. 9-17.

Note: The source population, as defined by the Labour Force Survey, includes the population, aged 15 years and over, residing in Canada, with the exception of residents of Yukon and the Northwest Territories, persons living on Indian reserves, inmates of institutions, and full-time members of Canada's armed forces.

As Figure 7-2 indicates, the modest overall increase in labour-force participation is the result of a dramatic rise in the participation rate for women aged 25 and over, a moderate decline in the rate for adult males, and a slight increase in the rate for youth. Figure 7-3 shows that the net result of these changes in demography and participation rates is that adult females' share of the labour force has become much larger since the mid-1960s, and adult males' share has become significantly smaller; youth's share has changed relatively little.

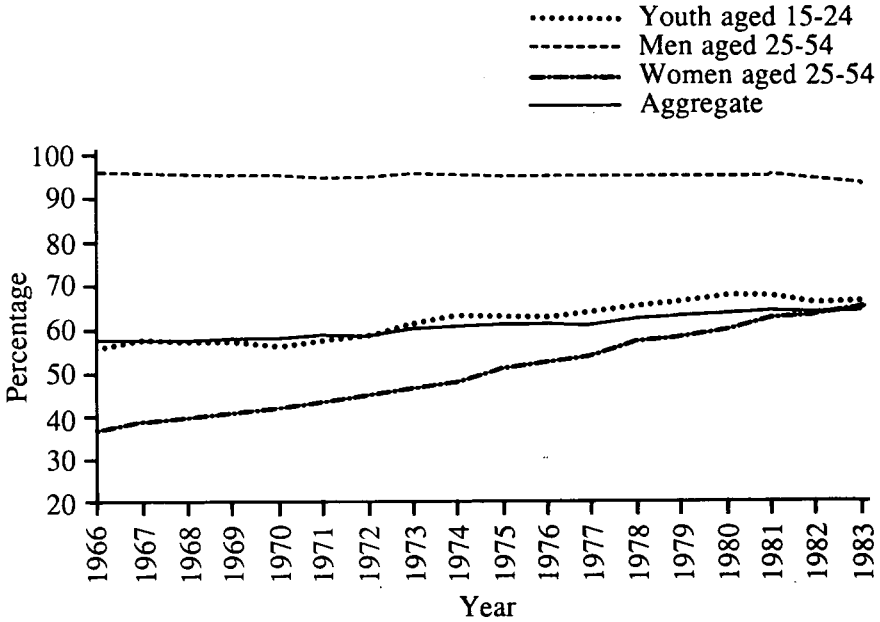
While more women of all ages have been joining Canada's work-force since 1956, the participation rate varies significantly from one female age group to another as Figure 7-4 illustrates. Participation rates by age group and the changes in such rates over time are conditioned by sociological, generational and attitudinal factors. The conditions of work and the availability of child care probably also influence female participation rates.

Not surprisingly, the dramatic nature of these major changes in the size and composition of the Canadian labour force has made them an important topic of national discussion. Other changes in the pattern of employment are scarcely less important. Employment in the service industries and, consequently, part-time and white-collar employment grew rapidly between 1956 and 1979, especially before 1973. (See Tables 7-7, 7-8, and 7-9.) The share of manufacturing in the labour market has declined since 1956, and so has the number of people employed in primary industries. While women continue to be employed principally in services, manufacturing and trade, the proportion of female employees, as Tables 7-10 and 7-11 show, has increased substantially in every industry group. Table 7-12 indicates that women and youths are far more likely than adult males to seek or to hold part-time jobs.

Another key labour-market trend is the rise in average unemployment rates, shown in Table 7-13. The increases in unemployment rates have been most pronounced for young people, particularly young men, but the unemployment rate has also increased substantially for both men and women over 25 years of age.

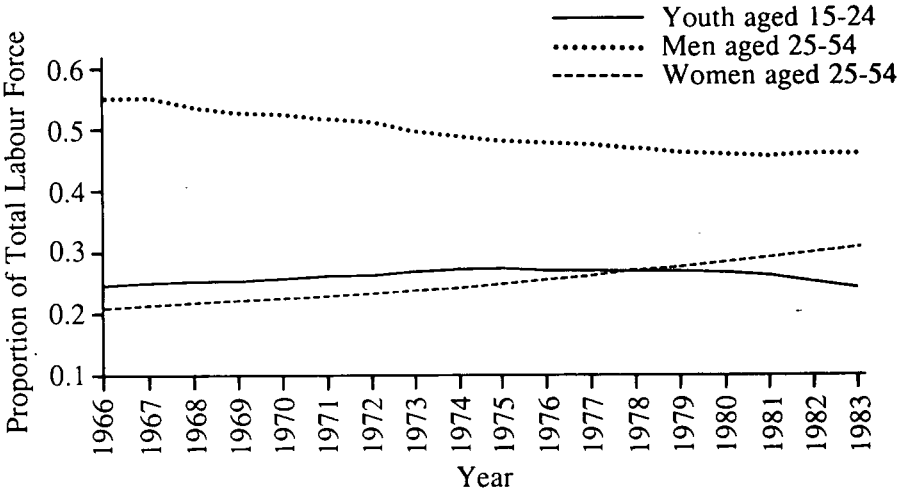
The dramatic increase in the unemployment rate from 7.5 per cent in 1980 to 11.9 per cent in 1983 is one measure of the intensity of the 1981-82 recession. Between 1980 and 1983, the total number of unemployed workers jumped by 69 per cent. The proportion of long-term unemployed, representing Canadians without work for six months or longer, almost doubled, as Table 7-14 records. While all age groups were hard hit by unemployment, men aged 25 to 44 were hardest hit because they tended to be concentrated in the industries, such as construction and manufacturing, that were most affected by the recession. (See Table 7-15.) High unemployment must be regarded as the most serious current economic problem. It will take a strong and sustained recovery to reduce the unemployment rate to its pre-recession level. Even if we achieve such a recovery, the problem of structural unemployment will still remain. The increase in unemployment in Canada over the two decades that preceded the recent recession can be attributed largely to structural factors such as changes in demography and social legislation. The demographic change that tended to raise the unemployment rate was the shift in the composition of the labour force towards young and female workers,

**FIGURE 7-2 Participation Rates among Certain Demographic Groups, 1966-1983**



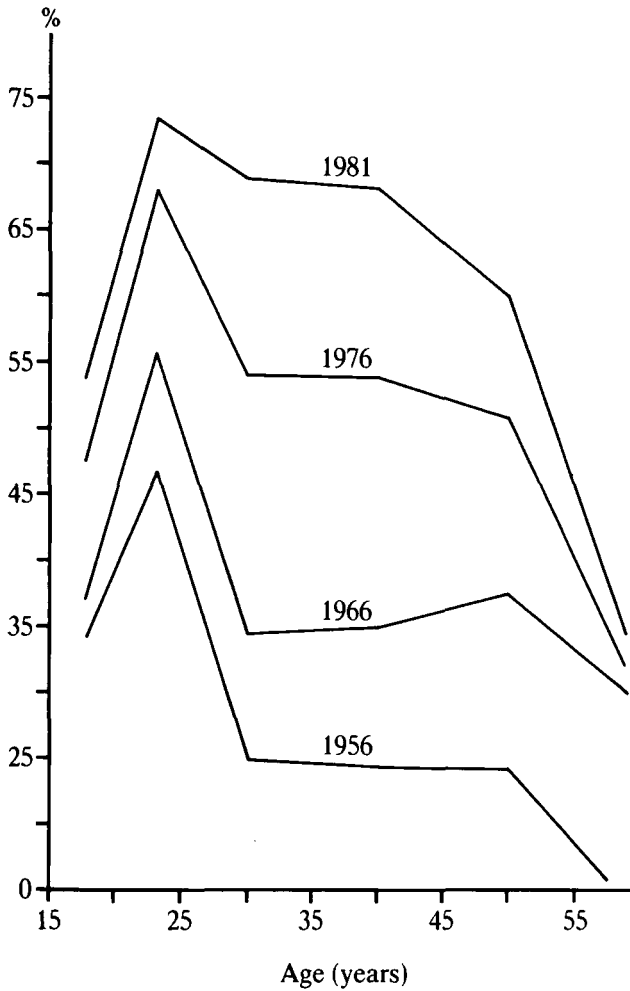
Source: Statistics Canada, *Historical Labour Force Statistics-Actual Data, Seasonal Factors, Seasonally Adjusted Data, 1983* (Ottawa: Minister of Supply and Services Canada, 1984).

**FIGURE 7-3 Labour Force Composition by Demographic Groups, 1966-1983**



Source: Statistics Canada, *Historical Labour Force Statistics-Actual Data, Seasonal Factors, Seasonally Adjusted Data, 1983* (Ottawa: Minister of Supply and Services Canada, 1984).

**FIGURE 7-4 Female Participation Rates by Age, Canada**



*Source:* David K. Foot, "The Impacts of Population Growth and Aging on the Future Canadian Labour Force", in *Canadian Labour Markets in the 1980s*, proceedings of a conference held at Queen's University, February 25-26, 1983 (Kingston: Queen's University, Industrial Relations Centre, 1983), p. 600.

who usually experience higher unemployment rates than adult males. The most relevant items of social legislation were the increases in the minimum wage in the early 1970s, and the 1971 revisions of the Unemployment Insurance Act, which increased the generosity of the scheme in several respects. We shall take a closer look, in Chapter 10, at factors that increase the structural unemployment rate.

**TABLE 7-7 Industrial Composition of Employment Growth**

	Average Annual Rates of Growth				Per Cent Contribution to Overall Employment Growth			
	1956-66	1966-73	1973-79	1979-83	1956-66	1966-73	1973-79	1979-83
<b>Primary goods</b>	-2.9	-1.7	1.2	0.0	-16.6	-5.4	2.9	-0.6
Mining	0.9	2.1	4.3	—	0.6	1.0	2.1	—
Other primary	-3.5	-2.4	0.4	—	-17.2	-6.4	0.7	—
<b>Secondary goods</b>	2.8	2.1	2.3	-2.5	32.5	20.4	19.4	-77.6
Manufacturing	2.6	2.1	1.8	-2.3	23.7	15.9	12.2	-54.6
Construction	3.5	2.2	3.8	-3.2	8.8	4.5	7.2	-23.0
<b>Services</b>	4.2	4.4	3.8	2.1	84.1	85.0	77.7	178.2
<b>Total</b>	2.6	3.1	3.2	0.8	100.0	100.0	100.0	100.0

Source: Based on Statistics Canada, *Labour Force Survey*.

**TABLE 7-8 Occupational Composition of Employment Growth**

	Average Annual Rates of Growth			Per Cent Contribution to Overall Employment Growth		
	1966-73	1973-79	1979-83	1966-73	1973-79	1979-83
White-collar occupations <sup>a</sup>	4.4	4.2	2.4	84.7	81.1	194.4
Blue-collar occupations <sup>b</sup>	1.0	1.6	-2.2	15.3	18.9	-94.9
Total economy	3.1	3.2	0.8	100.0	100.0	100.0

Sources: Based on Statistics Canada, *Labour Force Survey*, and *Labour Force Annual Averages, 1975-1983*, Cat. No. 71-529 (Ottawa: Minister of Supply and Services Canada, 1984), pp. 220-24, 239-42; and Employment and Immigration Canada, Task Force on Labour Market Development, *Labour Market Development in the 1980s* (Ottawa: Minister of Supply and Services Canada, 1981), Table 2-6.

a. Managerial, professional, clerical, sales and services occupations.

b. Primary occupations, processing, construction, transportation, materials handling and other crafts.

**TABLE 7-9 Part-Time/Full-Time Employment for Demographic Groups and Industries**

	Average Annual per Cent Rate of Growth			Percentage Contribution to Employment Growth		
	1966-73	1973-79	1979-83	1966-73	1973-79	1979-83
<b>Total employment</b>	2.7	3.4	0.8	100.0	100.0	100.0
Full-time	2.3	3.3	0.0	74.0	85.6	0.0
Part-time	6.9	4.0	6.1	26.0	14.4	100.0
<b>Part-time employment</b>	6.9	4.0	6.2	100.0	100.0	100.0
Youth	10.8	6.0	4.6	55.5	62.6	32.7
Adult women	4.8	3.6	6.5	35.9	43.5	48.9
Adult men	4.8	-2.6	12.3	8.6	-6.4	18.4
Goods-producing industries	3.7	0.2	6.2	10.2	1.0	7.7
Services-producing industries	7.6	4.7	6.4	89.8	99.0	92.3
<b>Full-time employment</b>	2.3	3.3	0.0	100.0	100.0	100.0
Youth	2.6	3.6	-5.2	26.2	23.9	—
Adult women	4.6	6.7	3.7	37.1	43.0	—
Adult men	1.4	2.0	0.2	36.7	33.0	—
Goods-producing industries	0.5	2.2	-2.2	10.0	25.1	—
Services-producing industries	3.5	4.0	1.1	90.0	74.9	—

*Sources:* Canada, Employment and Immigration Canada, Task Force on Labour Market Development, *Labour Market Development in the 1980s* (Ottawa: Minister of Supply and Services Canada, 1981), Table 2-7; and Statistics Canada, *Labour Force Annual Averages, 1975-1983*, Cat. No. 71-529 (Ottawa: Minister of Supply and Services Canada, 1984), pp. 301-5, 319-23.

**TABLE 7-10 Historical Composition of Employment of Men and Women by Industry**

Industry	(percentage of total industry employment)													Industry share of total employment		
	1956		1966		1973			1979			1983					
	Men	Women	Men	Women	Men	Women	Per cent of female employment	Men	Women	Per cent of female employment	Men	Women	Per cent of female employment	1973	1979	1983
Mining	96.6	3.4	95.6	4.1	94.3	5.7	0.2	89.8	10.2	0.4	77.8	22.2	3.7	1.4	1.6	7.0
Other primary	95.6	4.4	89.3	10.7	87.3	12.7	2.4	78.1	21.9	3.2				6.1	5.7	
Manufacturing	78.9	21.1	78.0	22.0	76.0	24.0	15.6	73.5	26.5	13.6	71.8	28.2	11.8	22.4	20.0	17.5
Construction	97.6	2.4	96.6	3.4	95.2	4.8	0.9	92.0	8.0	1.3	89.9	10.1	1.3	6.3	6.2	5.2
Transportation	86.1	13.9	85.5	14.5	83.2	16.8	4.3	79.3	20.7	4.6	76.0	24.0	4.6	8.9	8.7	8.1
Trade	70.9	29.1	67.2	32.8	62.4	37.6	18.7	57.9	42.1	18.9	56.7	43.3	17.8	17.1	17.4	17.2
Finance, insurance	54.9	45.1	52.3	47.7	45.3	54.7	7.5	40.7	59.3	8.2	41.2	58.8	7.9	4.7	5.3	5.6
Services	43.3	56.7	39.6	60.4	41.0	59.0	45.1	40.3	59.7	43.7	39.1	60.9	46.4	26.1	28.4	31.9
Public administration	77.2	22.8	77.3	22.7	72.7	27.3	5.3	65.3	34.7	6.1	63.0	37.0	6.4	6.7	6.7	7.3
Total	76.4	23.6	69.7	30.3	65.7	34.3	100.0	61.2	38.8	100.0	58.1	41.9	100.0	100.0	100.0	100.0

Source: Based on Statistics Canada, *Labour Force Survey*.



**TABLE 7-11 Occupational Contribution to Female Employment Growth by Industry, 1975-79**

	Agri- culture	Other Primary	Manufac- turing	Construc- tion	Transpor- tation, Communi- cations, Utilities	Trade	Finance, Insurance, Real Estate	Services	Public Adminis- tration	Total	
										Women	Men
	(per cent)										
Highly qualified occupations		55.3	23.5	39.7	28.4	14.5	32.5	29.0	74.1	28.0	42.9
Clerical	24.1	44.7	15.9	26.0	34.9	35.7	35.7	17.1	0.7	22.9	
Sales			5.9		11.0	42.4	21.2	3.3		12.5	-6.3
Service <sup>a</sup>			1.2		3.1	6.3	10.3	49.1	25.3	24.9	10.6
Primary occupations	75.9									1.6	5.4
Processing <sup>b</sup>			39.5			1.6		1.1		6.2	30.5
Construction				34.3						0.8	3.4
Transportation					22.6					1.3	7.9
Material handling			14.0					0.4		1.9	6.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Canada, Employment and Immigration Canada, Task Force on Labour Market Development, *Labour Market Development in the 1980s* (Ottawa: Minister of Supply and Services Canada, 1981), p. 26, based on Statistics Canada, *Labour Force Survey*.

Note: This table shows the extent to which employment of women increased over 1975-79 in various occupational categories. For example, in manufacturing industries, 23.5% of the total increase in employment of women occurred in highly qualified occupations.

a. Includes occupations such as waiters, chambermaids, janitors, dry-cleaning occupations.

b. Includes occupations in the processing of metal, rubber, plastic, food and beverages, wood and textiles.

**TABLE 7-12 The Composition of Employment and Unemployment  
by Type of Work Sought, Canada, 1981**

Sex and Age Group (Years)	Employment		Unemployment		Labour Force	
	Full- Time	Part- Time	Full- Time	Part- Time	Full- Time	Part- Time
<b>Male</b>	64.6	28.0	58.0	37.0	64.1	28.7
15-19	3.3	16.2	10.7	27.7	3.8	17.1
20-24	8.7	4.0	15.6	4.2	9.2	4.0
25-44	32.9	2.8	22.0	2.5	32.1	2.8
45-64	18.6	2.5	9.7	2.5	18.0	2.5
65+	1.0	2.4	0.1	0.0	1.0	2.3
<b>Female</b>	35.4	72.0	42.0	63.0	35.9	71.3
15-19	2.5	17.1	8.4	23.5	2.9	17.5
20-24	6.9	6.8	10.3	6.7	7.1	6.8
25-44	17.6	29.9	18.4	22.7	17.7	29.4
45-64	8.0	16.7	4.9	9.2	7.8	16.1
65+	0.3	1.6	0.0	0.8	0.3	1.5
<b>Total</b>	100.0	100.0	100.0	100.0	100.0	100.0

Source: Statistics Canada, *The Labour Force*, Catalogue No. 71-001 (Canada: Minister of Supply and Services Canada, monthly), December 1981, p. 100, and unpublished data with estimates and calculations by the author.

## Capital Formation

Capital formation has an important function in the growth process. As Table 7-16 shows, investment has been sufficient to cause our total capital stock and our capital stock per person employed to increase at a very rapid rate since the Second World War.

Capital stock grew slowly between 1926 and 1946, reflecting low investment during the Depression, as the result of low total demand, and throughout the Second World War, when investment in the private sector was "crowded out" by government borrowing. After 1946 and before the onset of the recent recession, capital investment in Canada increased at a relatively high rate. It grew somewhat more rapidly than employment, producing a substantial increase in real capital per person employed. While the growth rate of the latter measure decreased over time, there was no sharp step downward after 1973. This suggests that at least at the aggregate level, very little of the post-1973 slow-down in productivity can be attributed to insufficient investment.

**TABLE 7-13 Unemployment Rates by Sex and Age Groups<sup>a</sup>**

Year	Men			Women			Total		
	Total	14-24	25+	Total	14-24	25+	Total	14-24	25+
1953	3.4	6.0	2.8	1.6	2.4	1.2	3.0	4.6	2.5
1954	5.2	8.8	4.3	2.6	3.9	1.8	4.6	7.0	3.9
1955	5.0	8.6	4.2	2.6	3.7	1.9	4.4	6.8	3.7
1956	3.9	6.9	3.3	1.9	2.8	1.4	3.4	5.3	2.9
1957	5.4	9.7	4.4	2.3	3.6	1.6	4.7	7.4	3.9
1958	8.2	14.5	6.8	3.6	5.6	2.6	7.1	11.1	5.9
1959	7.0	12.3	5.8	3.0	5.2	2.0	6.0	9.6	5.0
1960	8.2	14.2	6.8	3.6	6.3	2.4	7.0	11.1	5.8
1961	8.4	14.1	7.2	3.8	6.4	2.5	7.2	11.0	6.2
1962	6.9	12.1	5.8	3.3	5.6	2.2	6.0	9.5	5.0
1963	6.4	11.7	5.2	3.3	5.9	2.1	5.6	9.4	4.5
1964	5.4	9.9	4.3	3.1	5.3	2.0	4.7	8.0	3.7
1965	4.5	7.7	3.6	2.7	4.8	1.7	4.0	6.5	3.1
1966	4.1	7.2	3.3	2.6	4.3	1.7	3.6	6.0	2.9
1967	4.6	8.2	3.7	3.0	5.1	1.9	4.1	6.9	3.2
1968	5.5	9.9	4.3	3.4	6.0	2.1	4.9	8.2	3.7
1969	5.2	9.5	4.0	3.6	5.9	2.4	4.7	8.0	3.6
1970	6.6	12.4	5.0	4.5	7.7	2.9	5.9	10.4	4.4
1966	3.3	6.3	2.6	3.4	4.8	2.7	3.4	5.6	2.6
1967	3.9	7.2	3.0	3.7	5.5	2.8	3.8	6.5	2.9
1968	4.6	8.7	3.5	4.4	6.5	3.3	4.5	7.7	3.4
1969	4.3	8.3	3.2	4.7	6.5	3.7	4.4	7.5	3.4
1970	5.6	11.2	4.1	5.8	8.6	4.4	5.7	10.0	4.2
1971	6.0	12.0	4.3	6.6	9.8	5.0	6.2	11.1	4.5
1972	5.8	11.9	4.1	7.0	9.6	5.7	6.2	10.9	4.6
1973	4.9	10.0	3.4	6.7	9.2	5.4	5.5	9.6	4.1
1974	4.8	9.6	3.3	6.4	8.9	5.1	5.3	9.3	3.9
1975	6.2	12.5	4.3	8.1	11.4	6.5	6.9	12.0	5.0
1976	6.3	13.2	4.2	8.4	12.1	6.6	7.1	12.7	5.1
1977	7.3	14.9	4.9	9.4	13.8	7.4	8.1	14.4	5.8
1978	7.5	15.0	5.2	9.6	13.8	7.7	8.3	14.5	6.1
1979	6.6	13.2	4.5	8.8	12.7	7.0	7.4	12.9	5.4
1980	6.9	13.7	4.8	8.4	12.6	6.5	7.5	13.2	5.4
1981	7.0	14.1	4.8	8.3	12.3	6.7	7.5	13.2	5.6
1982	11.1	21.1	8.2	10.9	16.1	8.8	11.0	18.8	8.4
1983	12.1	22.4	9.2	11.6	17.0	9.6	11.9	19.9	9.4

Source: Statistics Canada, *Historical Labour Force Statistics - Actual Data, Seasonal Factors, Seasonally Adjusted Data, 1973, 1983*, Cat. No. 71-201 (Ottawa: Minister of Supply and Services Canada, 1974, 1984).

a. The data up to 1970 reflect the concepts used in the "old" labour-force survey. The data from 1966 to 1983 are based on a "new" labour-force survey. The data for the years 1966 to 1970 provide for a period of overlap.

**TABLE 7-14 Percentage Distribution of Unemployment, by Duration, Canada, 1980 and 1983**

<b>Duration of Spell of Unemployment</b>	<b>1980</b>	<b>1983</b>
Less than 1 month	33.4	23.5
1 to 3 months	31.4	26.5
3 to 6 months	19.7	21.6
6 months or more	15.5	28.4
	100.0	100.0

*Source:* Economic Council of Canada, *Steering the Course*, Twenty-First Annual Review (Ottawa: Minister of Supply and Services Canada, 1984), p. 71.

**TABLE 7-15 Percentage Distribution of Long-Term Unemployment among the Demographic Groups, Canada, 1980 and 1983**

<b>Age-Sex Group</b>	<b>1980</b>	<b>1983</b>
<b>Men</b>		
15 to 24 years	19.2	20.5
25 to 44 years	23.1	30.0
45 years or older	13.8	13.9
<b>Women</b>		
15 to 24 years	16.2	11.4
25 to 44 years	18.5	17.1
45 years or older	9.2	7.4
	100.0	100.0

*Source:* Economic Council of Canada, *Steering the Course*, Twenty-First Annual Review (Ottawa: Minister of Supply and Services Canada, 1984), p. 71.

**TABLE 7-16 Canadian Non-Residential Net Capital Stock<sup>a</sup>**

Year	Level Billions 1971 \$	Average Annual Growth Rate (%)	Level Per Unit of Real GNE	Average Annual Rate of Change in Capital Stock/GNE Ratio (%)	Level Per Person Employed ('000 71\$)	Average Annual Growth Rate in Capital Stock/ Employment Ratio (%)
1926	32.8		2.33			
1946	43.2	1.4	1.53	-2.1	9.23	0.0
1956	78.6	6.2	1.65	0.8	14.1	4.3
1966	136.0	5.6	1.82	1.0	19.1	3.1
1973	192.7	5.1	1.73	-0.7	22.0	2.0
1981	278.4	4.7	2.05	2.2	25.3	1.8

Source: Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), Tables 4-2, 2-5 and 9-1.

a. Private and public.

Investment and savings are key dynamic factors in the growth of the economy's potential. They are also important determinants of aggregate demand and of the economy's cyclical performance. As Tables 7-17A and 17B show, total investment, business investment, and residential (housing) investment were all higher, on average, in the years from 1974 to 1980 than they were in the period from 1967 to 1973. Only government investment decreased as a share of GNE from one period to the other.<sup>5</sup>

The composition of investment did not change substantially between 1967-73 and 1974-80; at first sight, the composition of the matching savings shows more change. The overall increase in savings between 1974 and 1980 appears to have resulted from significant increases in the savings rates of the personal sector and the non-resident sector.<sup>6</sup> These increases were only partially offset by a decrease in government savings (government investment less the government deficit). Recorded savings, however, are distorted by inflation, and the distortion has been greater in the more recent periods because of the increase in the average inflation rate. The distortion of gross savings rates reflects the fact that no allowance is made for the decline in the real value (as a result of inflation) of assets and liabilities, the dollar values of which are fixed. (Net savings rates are distorted by the failure of conventional business or national accounts to adjust depreciation provisions for inflation.)

When savings ratios are adjusted for inflation, the compositional shifts are reduced, although the directions of change remain. Inflation adjustment reduces the savings of those sectors that are net holders of fixed-dollar assets: that is, the personal and non-resident sectors. It increases the (gross) savings

(or reduces the deficit) of sectors that are net debtors: that is, the corporate sector and the government sector. (The increase in corporate gross savings would not necessarily translate into an increase in corporate net savings, since depreciation allowances would also be adjusted upwards.) For the economy as a whole, the inflation adjustments are exactly offsetting; thus total domestic savings, which include savings provided to Canada by non-residents, are not affected.

**TABLE 7-17A Average Ratios of Investment to GNP in Canada, 1967-1980**

Gross Investment	1967-73	1974-80
	(%)	(%)
Government gross fixed capital formation	3.9	3.2
Private gross fixed capital formation:		
Residential construction	18.1	20.1
Business construction <sup>a</sup>	4.9	5.8
Inventory investment	13.2	14.3
Total investment <sup>b</sup>	0.8	0.8
	22.8	24.0

Source: Statistics Canada, National Accounts data; and "Inflation-adjusted Gross and Net Sector and Subsector Savings" (Ottawa, 1985).

- a. Non-residential construction plus machinery and equipment.  
 b. Includes energy investment equal, on average, to 3.0% of GDP (1967-73) and 3.8% of GNP (1974-80).

**TABLE 7-17B Average Ratios of Savings to GNP in Canada, 1967-1980**

Gross Savings Recorded	1967-73 (%)	1974-80 (%)	Inflation Adjusted	
			1967-73 (%)	1974-80 (%)
Private sector:	17.7	20.5	17.7	20.8
Personal sector	7.5	10.5	4.6	6.2
Corporate sector	10.2	10.0	13.0	14.6
Government sector <sup>a</sup>	4.7	1.5	5.6	2.8
Federal government	0.8	-2.1	1.2	-1.1
Non-residents	0.3	2.0	-0.5	0.5
Total national savings <sup>b</sup> (excludes non-residents)	22.4	22.0	23.2	23.6
Total domestic savings <sup>c</sup>	22.7	24.1	22.7	24.1

Sources: Statistics Canada, National Accounts data, and "Inflation-adjusted Gross and Net Sector and Subsector Savings" (Ottawa, 1985).

- a. Government-sector savings equal the government surplus plus government gross fixed-capital formation.  
 b. Excludes non-residents.  
 c. Total investment equals total domestic savings except for residual error of estimate.

Overall, then, modestly larger shares of the total output of the Canadian economy were devoted to total investment and to business investment in the seven years before the 1981–82 recession than were so directed in the preceding seven years. The resources for this investment were provided by a small increase, given inflation-adjusted figures, in the ratio of personal savings to GNP, and larger increases in the ratios of corporate and non-resident savings to GNP, with a partially offsetting reduction in the savings provided by the government sector.

## **Industrial Structure**

Table 7-18 shows the distribution of current dollar or nominal output by industry in 1947, 1963 and 1981. The sharp decline in the proportion of output in agriculture, from 11.7 per cent in 1947 to 3.3 per cent in 1981, is one striking feature of the post-war industrial landscape. An even more important feature is the relative decline of manufacturing and the rise of the service sector. The manufacturing sector's share of total output fell from 28.5 per cent in 1947 to 20.4 per cent in 1981; meanwhile the share of output of finance, insurance and real estate climbed from 8.5 per cent to 11.3 per cent, and the share of other services jumped from 10.4 per cent to 21.5 per cent. This shift corresponds to developments in other industrialized countries and is usually cited as a fundamental change in industrial structure with wide-ranging implications. In fact, however, the change in the composition of nominal industrial output is not a very satisfactory indicator of structural change, since it incorporates differential sectoral price trends as well as underlying real changes. The trends in real shares are portrayed in Table 7-19.

The largest changes in real gross domestic product (GDP) have occurred in the primary sectors. By 1981, their combined share of GDP had fallen by more than half of its 1947 level. This relative decline in the primary GDP share was offset by increases in all other sectors, except manufacturing and public administration. The manufacturing sector rose in relative importance in the 1960s, and then returned to approximately its 1947 share in 1981. This pattern contrasts with the steady decrease in manufacturing's share of nominal GDP, which is accounted for, in part, by the fact that prices for manufactured goods have increased less than average prices. The real share of public administration decreased after 1963 as the increase in the nominal share slowed down. The difference between the trends in the nominal and real shares of this sector reflects the assumed lack of productivity growth in the sector, in which output is measured primarily in terms of inputs.

Perhaps the most notable feature of Table 7-19—one that contradicts popular belief—is the absence of a substantial gain in the shares of non-goods-producing sectors relative to the goods-producing sectors. In fact, in real terms, the GDP share of the goods-producing sector declined only slightly, from 38.8 per cent in 1947 to 37.2 per cent in 1981.

**TABLE 7-18 Share Distribution of Canada's Nominal GDP**

	1947	1963 (per cent of total)	1981
Agriculture	11.7	5.6	3.3
Forestry, fishing, and trapping	2.9	1.2	1.0
Mines <sup>a</sup>	3.6	4.0	5.9
Manufacturing	28.5	26.2	20.4
Construction	5.1	5.6	6.3
Utilities	2.2	2.8	3.5
Transportation, storage, and communications	10.2	9.2	8.2
Trade	12.0	12.4	10.9
Finance, insurance, and real estate <sup>b</sup>	8.5	11.4	11.3
Other services	10.4	14.7	21.5
Public administration	4.9	6.9	7.6

Source: Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), Table 12.2.

- a. The share of oil in GDP for mining was 56.4 per cent in 1981.
- b. The share of imputed rent or owner-occupied housing in GDP in Finance, Insurance and Real Estate was 30 per cent in 1981.

## Real Income and Productivity Growth

The conventional approach to analysing the sources of economic growth has been to focus on increases in the quantity and the quality of the inputs used to produce output. This approach, which is called "growth accounting",<sup>7</sup> also considers the degree to which the inputs are employed and the efficiency with which they are used. Economic studies devoted to growth accounting usually calculate indirectly changes in the efficiency of input use (including efficiency gains derived from technological change); that is, the efficiency gain is what remains after all other contributions to the growth process have been quantified. This section presents some elementary growth-accounting calculations for Canada.

Table 7-20 provides estimates of the relative contributions made by various factors to economic growth over the periods 1962 to 1973 and 1973 to 1981. The average annual growth of real gross national expenditure fell from 5.7 per cent in 1962-73 to 3.0 per cent in 1973-81. To gain an understanding of the causes of this slow-down in real growth, it is useful to refer to an output measure called "gross output of the non-energy sector at factor cost". This measure differs from real GNE in that it excludes the final output of the energy sector and includes all income generated in Canada, rather than all income accruing to Canadian residents from domestic and foreign sources.



**TABLE 7-19 Share Distribution of Canada's Real GDP**

	1947	1963	1981
	(per cent of total)		
Agriculture	6.4	4.7	2.5
Forestry, fishing, and trapping	1.8	1.2	0.8
Mines <sup>a</sup>	1.9	3.7	2.9
Manufacturing	21.8	22.2	21.6
Construction	5.8	7.3	6.2
Utilities	1.1	2.2	3.2
Transportation, storage, and communications	8.5	8.3	10.5
Trade	12.1	11.5	12.5
Finance, insurance, and real estate <sup>b</sup>	11.9	12.3	13.2
Other services	19.4	18.2	19.7
Public administration	8.9	8.9	6.7

Source: Michael Charette, Robert R. Henry, and Barry Kaufman, "The Evolution of the Canadian Industrial Structure: An International Perspective", in *Canadian Industry in Transition*, vol. 2, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Toronto: University of Toronto Press, 1985).

- a. The share of oil in GDP for mining was 36.4 per cent in 1981.  
 b. The share of imputed rent or owner-occupied housing in GDP in Finance, Insurance and Real Estate was 30 per cent in 1981.

We have chosen to examine the gross output of the non-energy sector because the energy sector itself experienced a decline in productivity growth over the 1973–81 period. Consequently, this approach also allows us to identify the effect of the changing level of use of energy inputs on productivity in the non-energy sector.

As Table 7-20 indicates, the gross output of the non-energy sector at factor cost grew more slowly than GNE in the 1962–73 period and more quickly than GNE in the 1973–81 period. The difference arises largely from the fact that the growth of energy output was relatively high in the first period and declined sharply in the second. This leaves to be explained by other factors a slow-down of 2.2 percentage points in the average annual growth of output. When allowance is made for a decrease in the average annual rate of growth of employment in the non-energy sector of 0.2 percentage points (from 3.1 per cent in the 1962–73 period to 2.9 per cent in the 1973–81 period), average annual labour productivity growth declines by 1.8 percentage points (from 2.4 per cent per year in the first period to 0.6 per cent in the second period).

A significant portion of the decline in output and productivity growth between the two periods considered is a result of the weaker cyclical conditions after 1973. If output and employment are adjusted to eliminate the effect of the business cycle, then the average annual slow-down in the rate of

**TABLE 7-20 Components of Economic Growth in Canada, 1962-81**

	1962-73	1973-81	Change from 1962-73 to 1973-81
	(average annual rates of change)		
Gross national expenditure	5.7	3.0	-2.7
Gross output of non-energy sector (at factor cost)	5.6	3.4	-2.2
Employment (non-energy sector)	3.1	2.9	-0.2
Labour productivity	2.4	0.6	-1.8
Cyclically adjusted gross output of non-energy sector (at factor cost)	5.1	4.2	-0.9
Employment (non-energy sector)	2.8	3.0	0.2
Labour productivity	2.2	1.1	-1.1
Labour productivity resulting from cyclical factors	0.3	-0.5	-0.8
Capital (non-energy sector)	4.5	4.3	-0.2
Capital/labour ratio	1.3	1.4	0.1
Capital/labour substitution <sup>a</sup>	0.4	0.4	0.0
Energy	7.0	2.7	-4.3
Energy/labour ratio	3.8	-0.2	-4.0
Energy/labour substitution <sup>b</sup>	0.3	0.0	-0.3
Total factor productivity	1.7	0.2	-1.5
Total factor productivity excluding impact of cyclical factors	1.5	0.7	-0.8
Changes to labour composition			
Sex-age mix	-0.2	-0.2	0.0
Education	0.5	0.8	0.3
Employment shifts	-0.1	-0.3	-0.2
Final residual	1.3	0.5	-0.8

Source: Estimates by Commission staff.

a. Capital/labour ratio weighted by the capital-income share.

b. Energy/labour ratio weighted by the energy-income share.

growth of output of the non-energy sector is only 0.9 percentage points; the change in annual average employment growth in the non-energy sector becomes a gain of 0.2 percentage points. The slow-down in average annual productivity growth on a cyclically adjusted basis of 1.1 percentage points is significantly less than the actual slow-down of 1.8 percentage points. This analysis indicates that cyclical factors raised the growth of labour productivity by 0.3 percentage points per year between 1962 and 1973, and lowered it by 0.5 percentage points between 1973 and 1981, thus accounting for 0.8 percentage points of the slowing in productivity growth.<sup>8</sup>

A change in the capital intensity of the economy is one factor that can affect the growth of labour productivity. Table 7-20 shows that the capital stock grew an average of 4.5 per cent per year, from 1962 to 1973, and 4.3 per cent per year from 1973 to 1981. This rate was faster than that of employment growth in both periods; the result was that the capital/labour ratio rose by 1.3 per cent per year, on average, from 1962 to 1973, and by 1.4 per cent per year from 1973 to 1981. Multiplying the change in the capital/labour ratio by the share of capital income in total output provides an estimate of the change in labour productivity that derives from the substitution of capital for labour. This change amounted to an increase of about 0.4 percentage points per year in both periods and therefore did not contribute to the slow-down in the growth of labour productivity.

Another factor that can affect the growth of labour productivity is change in the level of energy use. Energy input grew by a hefty 7 per cent per year, on average, from 1962 to 1973, a period when energy was relatively cheap; its growth rate fell to 2.7 per cent per year from 1973 to 1981, a period that included two rounds of major increases in world oil prices. Viewed in relation to employment, the shift is even more dramatic. The energy/labour ratio increased by an average of 3.8 per cent per year from 1962 to 1973, and fell by 0.2 per cent per year from 1973 to 1981. According to our rough estimates, the substitution of energy for labour added 0.3 percentage points per year to the growth of labour productivity from 1962 to 1973, and had an insignificant negative effect from 1973 to 1981. This shift accounts for roughly 0.3 percentage points per year of the slow-down in labour-productivity growth between 1973 and 1981.

If one takes into account the growth of the economy's capital stock and the growth in energy use, their total factor productivity rose by 1.7 per cent per year from 1962 to 1973, and by 0.2 per cent from 1973 to 1981. The decline in the growth of total factor productivity of 1.5 percentage points was only slightly less than the decline in labour-productivity growth of 1.8 percentage points.

Cyclically adjusted total factor productivity increased by 1.5 per cent per year between 1962 and 1973, and by 0.7 per cent per year from 1973 to 1981. Thus the decline in cyclically adjusted total factor-productivity growth was 0.8 percentage points per year.

Some observers argue that the increase in the number of women and young people as new entrants to the work-force has reduced productivity growth, since members of these groups are likely to be less productive than long-term workers. However, less experience in the work-force and greater emphasis on part-time work are explanations for this alleged lower productivity of new labour-force entrants. To test the contention that the reduced productivity growth stems, in part, from the changing sex-age mix of the labour force, Commission researchers broke the labour force down into six age groups by sex and used the relative wage of each age-sex group as a measure of differences in productivity. The results of this analysis suggest that the increase in the proportion of women and young people in the work-force has reduced the growth of productivity by about 0.2 percentage points per year

between 1962 and 1973, and by the same amount between 1973 and 1981. Thus the changing sex-age mix of employment does not help to explain the post-1973 change in the rate of productivity growth.

Commissioners took a similar approach in estimating the effect of an increasingly better-educated work force on productivity growth. Again, we used relative earnings as a rough index of productivity differences. The analysis indicates that the improvement in the educational level of workers added 0.5 percentage points per year to productivity growth over the 1962-73 period and 0.8 percentage points from 1973 to 1981, thus raising productivity growth by 0.3 percentage points per year from one period to the next.

A final factor is the effect on productivity of employment shifts among industries. The sectors used for this analysis were agriculture, manufacturing, other commercial goods-producing industries, commercial service-producing industries, and non-commercial industries. The analysis shows that the shift, mainly out of relatively high-productivity manufacturing into lower-productivity commercial services, depressed the growth of productivity by 0.1 percentage points per year from 1962 to 1973, and by 0.3 percentage points per year from 1973 to 1981. Consequently, this factor explains 0.2 percentage points of the average annual slow-down in growth after 1973.

Even if allowance is made for all of the factors mentioned above, a significant proportion of the post-1973 productivity slow-down is left unexplained. If the effects of the business cycle are eliminated, the unexplained residual amounts to 1.3 percentage points per year in the 1962-73 period and 0.5 percentage points per year in the 1973-81 period, a decline of 0.8 percentage points per year.

This residual is sometimes taken to be an indicator of the contribution of technological change to growth, though it is hard to believe that the contribution of this factor diminished by the amount suggested by the change in the residual, especially at a time when casual empiricism suggests a quickening of the pace of change.

The slow-down in the growth of productivity is a matter of considerable concern, affecting, as it does, all Canadians' prospects for an improvement in living standards.

## **Government Expenditures and Employment**

An important development in the post-war period has been the growth in the size of government. Spending at all levels of government has increased relative to the size of the economy, as has spending on almost all major government functions. A few aggregate statistics cannot provide an adequate view of the changes in size and role of government. Given the importance of these changes, it is necessary to examine in more detail the evolution of government expenditure over the post-war period.

The ratio of total government expenditure to gross national product (GNP) is frequently used as an indicator of the size of government. It is important,

however, to be aware that the ratio does not actually measure the proportion of the economy's output that is absorbed or consumed by government. Total government expenditure includes a number of items, such as transfer payments to persons and public debt interest, that have no counterpart in GNP. Thus the ratio of government expenditure to GNP provides only a rough indication of growth in government spending in relation to growth of the economy.

Table 7-21 starts with this overall indicator of the size of government. Figures for the years shown, 1926 (a pre-Depression year and the first year for which National Accounts data are available), 1950, 1960, 1970, and 1980, allow identification of the general trends. They do not, however, mark certain interesting turning points, such as the virtual cessation in growth of the relative size of government from 1975 until 1981. A subsequent further increase in the relative size of government is mainly the result of the recent recession, which has led to an increase in Unemployment Insurance and welfare expenditure and reduced GNP growth.

Government expenditure as a percentage of GNP was somewhat higher in 1950, after the post-war adjustment period, than it had been immediately before the Depression. It grew rapidly between 1950 and 1975. This growth was not concentrated in any one of the major areas of expenditure. Table 7-21 also presents a number of indicators that are, in some respects, more

**TABLE 7-21 Relative Size of Government**

	1926	(national accounts basis)			
		1950	1960	1970	1980
Expenditures of total government sector as share of GNP <sup>a</sup>	15.7	22.1	29.7	36.4	41.8
Government current expenditure on goods and services as % of consumer plus government current expenditures on goods and services	10.0	13.4	17.2	24.8	25.9
Government fixed capital formation as % of total fixed capital formation	13.0	13.5	18.4	17.6	12.0
Government transfer payments to persons as % of total personal income	1.8	7.2	10.4	10.5	12.6
Government wages and salaries as % of total wages & salaries <sup>b</sup>	10.1	11.7	16.0	22.9	24.2

*Sources:* Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), Tables 2.1, 2.16, 2.9 and 5.2; and *National Income and Expenditure Accounts*, vol. 1, Cat. No. 13-531 (Ottawa: Minister of Supply and Services Canada, 1984).

a. Net of intergovernmental transfers.

b. Wages, salaries and supplementary labour income (including military pay and allowances).

meaningful than the expenditure-to-GNP ratio. We shall review these indicators in conjunction with the information on government expenditure by type and function provided in Tables 7-22 and 7-23.

**TABLE 7-22 Government Expenditures by Type and Budget Balances**

National Accounts Categories (% of GNP)	(national accounts basis)				
	1926	1950	1960	1970	1980
<b>Total government sector</b>					
Current goods and services and capital formation	9.6	13.1	17.7	23.1	22.9
Transfers to persons	1.4	5.5	8.1	8.2	10.3
Subsidies and capital assistance	—	0.4	0.9	1.0	2.8
Transfers to non-residents	0.1	0.1	0.2	0.3	0.3
Interest on the public debt	4.5	2.9	2.8	3.8	5.6
Total	15.7	22.1	29.7	36.4	41.9
For reference: surplus or deficit	1.1	3.0	-1.7	0.9	-2.5
<b>Federal government sector</b>					
Current goods and services and capital formation	2.5	5.4	6.9	5.9	5.0
Transfers to persons	0.8	3.3	5.1	4.7	5.6
Subsidies and capital assistance	—	0.3	0.8	0.8	2.1
Transfers to non-residents	0.1	0.1	0.2	0.3	0.3
Interest on the public debt	2.5	2.3	2.0	2.2	3.3
Transfers to provincial/local governments	0.3	1.4	2.6	4.0	4.3
Total	6.2	12.8	17.6	17.8	20.6
For reference: surplus or deficit	1.3	3.5	-0.6	0.3	-3.3
<b>Provincial, local and hospital sectors</b>					
Current goods and services and capital formation	7.2	7.7	10.8	17.2	17.9
Transfers to persons	0.7	2.2	2.9	3.3	3.9
Subsidies and capital assistance	—	0.1	0.1	0.2	0.7
Interest on the public debt	2.0	0.6	0.9	1.6	2.3
Total	9.8	10.6	14.7	22.4	24.8
For reference: surplus or deficit	-0.2	-0.5	-1.2	-0.8	-0.1
<b>CPP/QPP sector</b>					
Transfers to persons	—	—	—	0.1	0.7
Total	—	—	—	0.2	0.7
For reference: surplus or deficit	—	—	—	1.4	1.0

Sources: Statistics Canada, *National Income and Expenditure Accounts 1926-1974*, vol. 1, Cat. No. 13-531 (Ottawa: Minister of Supply and Services Canada, 1976); and Finance Canada, *Economic Review, April 1984* (Ottawa: Minister of Supply and Services Canada, 1984).

Note: The inclusion of the hospital sector as part of the government sector after 1961 gives rise to some non-compatibility. In 1950 and 1960, provincial and local transfers to hospitals, equal respectively to 0.5 per cent and 1.3 per cent of GNP, were included in transfers to persons. From 1961 on, total operating expenditures by hospitals were included in government (provincial-local-hospital) expenditures on current goods and services.

**TABLE 7-23 Government Expenditures by Function**

Functional Categories	(based on financial management accounting system)				
	1937	1950	1960	1970	1980
	(as % of GNP)				
<b>Consolidated government sector</b>					
General government	n.a.	1.3	1.4	2.3	3.1
National Defence	0.6	3.3	4.0	2.0	1.7
Other protection of persons and property	n.a.	0.4	1.2	1.6	1.8
Health	0.8	1.3	2.2	5.0	5.0
Social Welfare	4.7	5.0	6.1	6.8	9.7
Education	2.2	2.4	4.1	7.0	6.2
Transportation & Communications	3.1	2.6	3.8	3.7	3.7
Foreign Affairs (including aid)	—	0.1	0.2	0.3	0.4
Debt charges	6.1	3.1	2.8	3.1	4.7
Other	n.a.	3.9	4.1	4.9	7.8
Total	22.7	23.3	29.9	36.7	44.0
<b>Federal sector</b>					
General government	0.7	1.1	0.7	1.2	1.2
National Defence	0.6	3.3	4.0	2.0	1.7
Other protection of persons and property	0.2	0.2	0.2	0.4	0.5
Health	—	0.2	0.7	1.5	1.5
Social Welfare	2.4	4.1	5.3	5.2	7.3
Education	0.1	0.1	0.2	1.0	0.8
Transportation & Communications	0.6	0.6	1.0	1.2	1.4
Foreign Affairs (including aid)	—	0.1	0.2	0.3	0.4
Debt charges	3.4	2.4	2.1	1.4	2.5
Unconditional transfers to other levels	0.4	0.7	1.5	1.5	1.5
Other	1.5	2.4	2.4	2.5	4.2
Total	10.1	15.1	18.3	18.4	22.9
<b>Consolidated provincial-local sector</b>					
General government	n.a.	n.a.	0.7	1.2	1.9
Other protection of persons and property	n.a.	n.a.	1.0	1.3	1.4
Health	0.8	1.2	2.1	4.8	4.9
Social Welfare	2.9	1.4	1.0	2.0	3.2
Education	2.2	2.3	3.8	6.8	6.1
Transportation & Communications	2.5	1.9	2.9	2.7	2.3
Debt charges	2.7	0.6	0.8	1.6	2.2
Other	n.a.	2.0	1.7	2.7	3.8
Total	13.8	9.5	14.0	23.0	25.7

*Source:* Statistics Canada data on Gross General Expenditures for 1970 and 1980, and on Net General Expenditures for 1937, 1950, and 1960. The latter figures have been adjusted by Commission staff to provide approximate historical comparability.

*Note:* Federal sector and consolidated provincial-local sector do not add to total, as federal transfers to provinces are included with federal, but not netted out of provincial-local. Consolidated total government-sector data are net of all intergovernmental transfers.

Total expenditures on the financial management-system basis are slightly higher than on the national accounts system basis used in most other tables. (Certain tax credits are counted as expenditures under the financial management system, but serve to reduce tax revenues under the national accounts system).

The ratio of government expenditures on current goods and services, termed "government-operating expenditures", to the sum of consumer expenditures, plus these government expenditures (total consumption in the economy) was slightly higher in 1950 than it had been in 1926, largely because defence expenditures were higher. The ratio rose substantially from 1950 to 1960, reflecting growth in most categories of government operations, but particularly in education. It increased again in the 1960s, in spite of a decline in defence expenditures relative to GNP, largely because of further growth in education expenditures and the government's adoption of major new roles in the hospital and Medicare areas. Government consumption showed only modest further growth relative to total consumption in the 1970s.

Government capital spending has actually been lower in the last few years, relative to total capital spending in the economy, than it was immediately before the Depression. From the mid-1950s to the mid-1970s, however, the period of major government investment in highways, schools and hospitals, it, too, stood at much higher levels.

The fraction of total personal income provided by government-transfer payments to persons, through programs such as the Old Age Security (OAS), Guaranteed Income Supplement (GIS), Unemployment Insurance (UI), Family Allowance, and welfare payments, has increased in each post-war decade, though it, too, levelled off between 1975 and 1981, before increasing again during the recent recession. The upward trend reflected the successive introduction of major new programs: Unemployment Insurance in 1942, Family Allowances in 1945, old-age pensions in 1952, the Canada/Quebec Pension Plans (CPP/QPP) in 1967, and the Guaranteed Income Supplement (GIS). It also reflected the enrichment of some programs in real terms, notably the changes in the UI system that took effect in 1972, the gradual growth in the proportion of retired persons eligible for full rates of CPP/QPP benefits, and the liberalization of provincial/municipal welfare systems, especially from the mid-1960s onward.

Finally, Table 7-21 shows that the proportion of total wages and salaries originating in the government sector was somewhat higher in 1950 than it had been in 1926. That proportion increased sharply between 1950 and 1960, reflecting the general growth in government operations, especially in education; it increased again, after 1961, when hospitals came to be treated as part of the government sector. By 1980, government employment provided about one-quarter of total wages in the economy. Government wages do not include wages in the post-secondary education sector or doctors' fees: these payments are treated respectively as transfers to non-profit institutions and purchases of services. The provincial, local and hospital sectors accounted for some 80 per cent of total wage payments by government in 1980.

Other categories of expenditures, which cannot be readily related to particular bases, have also increased relative to the size of the economy. (See Table 7-23.) Subsidies and capital assistance increased moderately relative to GNP until the 1970s, when expenditure in this category ballooned, especially with the introduction of the oil-import subsidy program. Growth in foreign aid is reflected in growth in transfers to non-residents.



The cost of interest on the public debt fell relative to the size of the economy from the end of the Second World War to the 1960s, reflecting the decline in debt relative to GNP during a period of stable interest rates. Debt interest then increased because of the rising trend of interest rates and, after 1975, the rising ratio of federal debt to GNP. The interpretation of debt costs is clouded, however, during an inflationary period. While inflation tends to cause high nominal interest rates and thus an escalation of interest charges, it also erodes the real value of the existing debt stock. The standard government and national accounts allow only for the first effect. "Inflation-adjusted" debt costs would show substantially less increase, relative to the size of the economy, over the last two decades.

Table 7-24 ranks the three orders of government by their shares of total government spending. If inter-governmental transfers are counted as part of the expenditure of the government making the transfer, the post-war growth of government expenditure, relative to the economy, has been most rapid for the provincial order and least rapid for the local order. If intergovernmental transfers are not included as part of the expenditures of the government providing the transfer, the provincial sector still shows the most growth, but it is now followed by the local sector, rather than by the federal government.

**TABLE 7-24 Shares of Total Government Spending by Order of Government**

	(national accounts basis)				
	1926	1950	1960	1970	1980
<b>Before intergovernmental transfers<sup>a</sup></b>					
Federal	39.6	58.1	59.3	49.0	49.1
Provincial-hospital	20.5	23.8	22.4	34.8	37.8
Local	39.9	18.2	18.3	15.8	10.9
CPP/QPP	—	—	—	0.4	2.1
Total	100.0	100.0	100.0	100.0	100.0
<b>After intergovernmental transfers<sup>b</sup></b>					
Federal	37.8	51.9	50.5	38.1	38.8
Provincial-hospital <sup>c</sup>	20.2	26.0	24.8	35.7	39.1
Local	42.0	22.1	24.7	25.8	20.0
CPP/QPP	—	—	—	0.4	2.1
Total	100.0	100.0	100.0	100.0	100.0

Source: Statistics Canada, National Income and Expenditure Accounts 1926-1974, Vol. 1 Cat. No. 13-531 (Ottawa: Minister of Supply and Services Canada, 1976); and Finance Canada, *Economic Review*, April 1984 (Ottawa: Minister of Supply and Services Canada, 1984).

- a. Expenditures net of intergovernmental transfers received.
- b. Expenditures net of intergovernmental transfers paid to other levels.
- c. Includes the "hospital" sector, starting in 1961.

The changes in the shares of the various orders of government shown in Table 7-24 reflect the pattern of relative growth in the different functions of government. Health and education, two important functions that have experienced rapid growth over the post-war period as a whole, are carried out by the provincial or the provincial-local orders. While spending on one important federal function, that of defence, has declined quite substantially, on balance, since 1950, spending on most other federal functions has increased relative to the size of the economy. Federal transfers to the provinces have increased substantially since 1950. This generalization applies both to federal transfers that finance a portion of health, education and welfare expenditures in all provinces, and to transfers under the equalization program, which provides unconditional financial support to provinces with less-than-average fiscal capacity.

Tables 7-25 and 7-26 show expenditure and revenue-growth rates for the federal government and selected provincial governments during selected periods from 1962 to 1982. While there was a major increase in the provincial share of total government expenditures during the 1960s and the early 1970s, and a corresponding decline in the federal share, there was little further change after 1976. Indeed, since 1976, both orders of government have exercised a significant degree of restraint.

Table 7-27 looks at the growth of public sector employment, one direct indicator of the growth of "bureaucracy". Again growth was considerably greater at the provincial level until the mid-1970s. Federal employment as a percentage of the labour force declined over the entire two decades, and total government employment stayed relatively constant.

**TABLE 7-25 Expenditure Growth Rates of Government  
for Selected Intervals, 1962–82: Constant Dollar Terms**

	(average annual per cent increase <sup>a</sup> )		
	1962–68	1969–75	1976–82
Federal	3.5	6.7	2.0
Alberta	8.5	9.0	8.3
British Columbia	5.8	11.5	3.3
Nova Scotia	8.1	7.4	3.9
Ontario	10.2	9.2	0.0
Quebec	13.0	8.5	3.4

*Source:* Allan M. Maslove, Michael J. Prince, and G. Bruce Doern, *Federal and Provincial Budgeting*, vol. 41, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Toronto: University of Toronto Press, 1985). Calculated from Tables A-4, A-6, A-7, A-10, A-11, A-14, and A-24 in the Appendix.

a. Averages are calculated on the basis of the annual percentage change of gross general expenditure in constant dollars (1971) for each government in each of the interval periods.

**TABLE 7-26 Revenue Growth Rates of Governments for Selected Intervals,  
1969–82: Constant Dollar Terms**

	1969–75	1976–82
	(average annual per cent increase <sup>a</sup> )	
Federal	8.3	0.4
Alberta	16.8	7.3
British Columbia	11.0	3.3
Nova Scotia	8.1	1.2
Ontario	8.9	0.0
Quebec	10.3	2.1

*Source:* Allan M. Maslove, Michael J. Prince, and G. Bruce Doern, *Federal and Provincial Budgeting*, vol. 41, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Toronto: University of Toronto Press, 1985). See Tables A-30, A-32, A-33, A-36, A-37 and A-40. We cannot include the 1962–68 interval, as in Table 7-27, because data on total provincial revenue from own sources is not available for years before 1967.

a. Averages are calculated on the basis of the annual percent change of total revenue from own sources in constant dollars for the provincial governments and the gross general revenue in constant dollars for the federal government.

**TABLE 7-27 Total Government Employment**

	1960	% LF	1965	% LF	1970	% LF	1975	% LF	1980	% LF	1982	% LF
Labour force (000s)	6 430	—	7 185	—	8 329	—	9 923	—	11 522	—	11 743	—
<b>Federal</b>												
General <sup>a</sup>	203 013	3.2	211 913	3.0	251 237	3.0	323 902	3.3	335 375	2.9	351 295	3.0
Enterprise	131 118	2.0	129 916	1.8	123 906	1.5	132 046	1.3	157 988	1.4	138 281	1.2
Total	334 131	5.2	341 829	4.8	375 143	4.5	455 948	4.6	493 363	4.3	489 576	4.2
<b>Provincial</b>												
General <sup>b</sup>	139 434	2.2	168 536	2.3	216 475	2.6	288 937	2.9	311 634	2.7	317 407	2.7
Enterprise	63 444	1.0	70 281	1.0	95 520	1.1	134 513	1.4	148 105	1.3	159 260	1.4
Total	202 878	3.2	238 817	3.3	311 995	3.7	423 450	4.3	459 739	4.0	476 667	4.1
<b>Local<sup>c</sup></b>												
General	149 403	2.3	162 901	2.3	201 425	2.4	247 199	2.5	274 126	2.4	287 103	2.4
Enterprise	23 718	0.4	25 860	-0.4	31 976	0.4	39 242	0.4	43 517	0.4	45 577	0.4
Total	173 121	2.7	188 761	2.7	233 401	2.8	286 441	2.9	317 643	2.8	332 680	2.8
<b>Total government</b>												
General	491 850	7.6	543 350	7.6	669 137	8.0	860 038	8.7	921 135	8.0	955 805	8.1
Enterprise	218 280	3.4	226 057	3.2	251 402	3.0	305 801	3.1	349 610	3.0	343 118	2.9
Total	710 130	11.0	769 407	10.8	920 539	11.0	1 165 839	11.8	1 270 745	11.0	1 298 923	11.0

Education sector												
Teaching <sup>d</sup>	160 800	2.5	211 463	2.9	291 624	3.5	313 341	3.1	328 975	2.9	314 201	2.7
Non-teaching <sup>e</sup>	99 696	1.6	131 107	1.8	180 807	2.2	194 271	2.0	203 965	1.8	194 805	1.7
Total	260 496	4.1	342 570	4.7	472 431	5.7	507 612	5.1	532 940	4.7	509 006	4.4
Hospital sector <sup>f</sup>	183 189	2.8	251 511	3.5	319 826	3.8	339 517	3.4	299 388	2.6	297 195	2.5
Grand total	1 153 815	17.9	1 363 488	19.0	1 712 796	20.5	2 012 968	20.3	2 103 073	18.3	2 105 124	17.9

Source: Sharon L. Sutherland and G. Bruce Doern, *Bureaucracy in Canada: Control and Reform*, vol. 43, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Toronto: University of Toronto Press, 1985), Table 3.26.

Note: LF = labour force.

- a. Excludes federal hospital-care workers. They are included in the hospital-sector totals.
- b. Excludes provincial hospital-care workers. They are included in the hospital-sector totals.
- c. Local general employment totals for 1960 and 1965 are estimated. Local enterprise totals are estimated for 1960–82.
- d. Figures for 1960 and 1965 do not include community-college teachers.
- e. Non-teaching personnel are estimated for 1960–82.
- f. The 1979–80 hospital statistics were used for 1980 total. The 1980–81 statistics were used as estimates for 1982 total.

## Notes

1. A research study undertaken for this Commission by John Helliwell of the University of British Columbia provides an important exception to this view. See John Helliwell, Mary E. MacGregor, and Tim Padmore, "Economic Growth and Productivity in Canada: 1955 to 1990", in *Economic Growth: Prospects and Determinants*, vol. 22 (Toronto: University of Toronto Press, 1985). Helliwell's analysis, in the Commission study and elsewhere, suggests that the bulk of the post-1973 slow-down in productivity growth can be attributed to weaker cyclical conditions and the energy-price increase. Thus Helliwell sees little basis for the implication that the "underlying" rate of productivity growth decreased after 1973.
2. A fuller discussion of historical and projected demographic trends may be found in this Commission's research study by Douglas S. Green, Judith Gold, and John Sargent, "A Note on Demographic Projections for Canada: Review and Implications", in *Economic Growth: Prospects and Determinants*, vol. 22 (Toronto: University of Toronto Press, 1985).
3. Roughly speaking, the civilian, non-institutional population 15 years of age and over, excluding inhabitants of the Territories and of Indian Reserves, who are not covered by the Labour Force Survey.
4. Roughly speaking, those who work or seek to work.
5. The slight increase in the investment-to-GNE ratio during the latter period is not inconsistent with the slight decrease in the growth rate of the capital stock between these two periods shown in Table 7-16. The larger the initial level of the capital stock relative to GNE, the higher is the ratio of investment to GNE required just to offset depreciation, and the higher is the ratio of net investment to GNE required to maintain a constant growth rate of the capital stock.
6. The savings of the non-resident sector include all forms of investment in Canada, such as non-residents' purchases of bonds, as well as direct investment.
7. Edward F. Denison, *Accounting for Slower Economic Growth: The United States in the 1970s* (Washington, D.C.: Brookings Institution, 1979), and earlier studies.
8. Our analysis of the impact of cyclical factors on labour productivity and total factor productivity depends on our particular assumptions about the extent of the cyclical shortfall in output in 1981. The estimates we use are based on those made by the Department of Finance for purposes of its cyclically adjusted, budget-balance calculations. We believe that they are in the range which would be considered reasonable by a majority of analysts. However, some students of the productivity slow-down, notably John Helliwell of the University of British Columbia, argue that the cyclical shortfall of output in 1981 is much larger than we have assumed and, correspondingly, that the slow-down in cyclically adjusted productivity after 1973 is much less than that shown in our estimates. Hence, as we mentioned in note 1, Helliwell sees little or nothing puzzling about the post-1973 decline in productivity growth.

## Business Cycles

Since the Second World War, there have been nine distinct economic growth cycles of varying duration and intensity, including the most recent recession and the ongoing recovery. A growth cycle differs from the classical cycle of ups and downs in the level of activity in that it represents deviations in real economic activity from longer-term trends. A “peak” is thus defined as the maximum deviation above the long-term/growth path and a “trough” as the maximum deviation below. Table 7-28 presents some key data on the post-war growth cycles.

The period from 1947 to early 1953, when the economy converted from a wartime to a peacetime footing, was one of strong and sustained expansion. It was followed by the sharp recession of 1953–54. The brief but vigorous expansion that began in the third quarter of 1954 and ended in the fourth quarter of 1956 was driven primarily by an investment boom. The subsequent recession, which lasted until the third quarter of 1958, was moderate.

**TABLE 7-28 Summary of post-War Canadian Growth Cycles**

Phase	Date	Duration in Quarters	(change between turning points)		
			Real GNE		Unemploy- ment Rate
			Cumu- lative	Average Quarterly	
Expansion	1947Q4–53Q2	23	39.1	1.4	—
Contraction	1953Q2–54Q3	5	–1.2	–0.2	2.5
Expansion	1954Q3–56Q4	9	21.5	2.2	–2.1
Contraction	1956Q4–58Q3	7	2.6	0.4	4.3
Expansion	1958Q3–59Q3	4	4.1	1.0	–1.8
Contraction	1959Q3–61Q1	6	1.4	0.2	2.0
Expansion	1961Q1–66Q2	21	41.6	1.7	–4.5
Contraction	1966Q2–68Q1	7	6.0	0.8	1.3
Expansion	1968Q1–69Q1	4	7.9	1.9	–0.2
Contraction	1969Q1–70Q4	7	3.7	0.5	1.8
Expansion	1970Q1–74Q4	13	26.4	1.8	0.9
Contraction	1974Q1–75Q3	6	1.2	0.2	1.8
Expansion	1975Q3–76Q2	3	6.1	2.0	0.0
Contraction	1976Q2–77Q3	5	1.7	0.3	1.3
Expansion	1977Q3–79Q3	8	7.0	0.8	–1.1
Contraction	1979Q3–80Q3	4	0.1	0.0	0.3
Expansion	1980Q3–81Q2	3	4.9	1.6	–0.3
Contraction	1981Q2–82Q4	6	–6.6	–1.1	5.6
Average					
Expansion		9.8	17.6	1.6	–1.4
Contraction		5.9	1.0	0.1	2.3

Source: Calculations by the Commission from National Accounts data.

Note: The dating of growth cycles, except for the 1947Q4 to 1953Q2 expansion, follows the dating in *Royal Bank Trendicator Report* (December 1982).

However, it was not followed by a vigorous recovery, partly, at least, because of the relatively restrictive stance of Canadian monetary policy.

A long and buoyant expansion began in the first quarter of 1961 and continued through the 1960s, with a minor interruption in 1966 and 1967. A mild slow-down in 1969–70 yielded to a period of strong expansion that continued until the first quarter of 1974, when the sharp worldwide recession of 1974–75 took hold in response to the quadrupling of the international price of oil. The recovery from this recession was interrupted by a period of cyclical weakness in 1976 and 1977. Recovery resumed in 1977 and carried on into 1979.

While the brief recession of 1979–80 was relatively mild, the recession of 1981–82 was by far the deepest of the post-war period. Both recessions followed dramatic increases in interest rates. In the earlier of the two, the interest-rate run-up was quickly reversed. The increase in interest rates that triggered the latter recession persisted for an extended period.

Overall, the average expansion lasted about 10 quarters and the average downturn about six quarters. During expansions, the average cumulative increase in real gross national expenditure was 17.6 per cent, or 1.6 per cent per quarter. During contractions, the average cumulative increase fell to 1.0 per cent, or only just above zero per quarter.

The unemployment rate declined by an average of 1.4 percentage points during expansions and rose by 2.3 percentage points during contractions. A troubling feature of the cycles since 1966 has been the small decline in the unemployment rate during expansions and the much larger increases in the unemployment rate during contractions. While a certain proportion of this overall rise in the unemployment rate can be attributed to structural factors, such as the changing age-sex composition of the labour force and the adverse effects on the incentive to work of more generous Unemployment Insurance benefits, a significant share must be attributed to the unsatisfactory cyclical position of the Canadian economy.

## **The Recent Recession**

In order to make a clearer identification of longer-term trends in the economy, our review to this point has excluded the impact of the severe economic downturn that started in the second half of 1981. However, the recent recession has also had an important influence on perceptions about the principal economic issues facing Canada. As we have noted, the 1981–82 downturn was by far the most severe recession Canadians have experienced since the Second World War. Real gross national expenditure (GNE) fell by 4.2 per cent between 1981 and 1982; the only other post-war instance of an absolute decline in output, on an annual basis, occurred in 1954, when real GNE fell by 1.2 per cent during the recession that followed the Korean War. The unemployment rate rose from an annual average of 7.5 per cent in 1981 to 11.9 per cent in 1983, an increase of 4.4 percentage points. This rise compares with an increase of 1.6 percentage points between 1953 and 1954, of 3.7 percentage points between 1969 and 1971, and of 3.1 percentage points between 1974 and 1978.



Furthermore, the recession was much more severe in Canada than it was in the United States, where real GNE fell by only about 2 per cent between 1981 and 1982, and the unemployment rate rose by 2 percentage points. Most of the earlier post-war recessions were milder in Canada than they were in the United States. While other member countries of the Organisation for Economic Co-operation and Development (OECD) also experienced a less-severe annual decline in real output over the 1979–83 period, taken as a whole, than did Canada, the cumulative decline in the United Kingdom over 1980 and 1981 approached the extent of the 1982 decline in Canada. Many Western European countries experienced as large, or larger, increases in unemployment over the 1979–83 period. In fact, some of the smaller European countries, notably Belgium and the Netherlands, now have unemployment rates well above Canadian levels, whereas their rates were, on average, well below Canadian levels throughout the 1960s and 1970s. During and after the recession, inflation fell sharply in the United States, the United Kingdom, and Canada, and declined somewhat from lower initial levels in Germany and Japan. France and Italy have made comparatively less progress to date in bringing down inflation.

While a full analysis of the reasons for the greater severity of the recession in Canada is beyond the scope of this review, a number of the more important reasons should be mentioned. There was a sharp tightening of monetary policy and some tightening of fiscal policy after 1979, in both Canada and the United States. Canada, however, appears to have experienced a stronger inflationary boom in late 1980 and early 1981 than did the United States; this boom became apparent in a speculative rise in housing prices in a number of Canadian cities, in a wave of business take-overs in Canada, and in a greater build-up of inventories in Canada than in the United States. Thus the Canadian economy had further to fall when monetary curbs finally took hold. The overextension of certain sectors added to the severity of the adjustment. Prices and wages did not respond as quickly in Canada as they did in the United States to the increased slack in the economy, with the result that the restraint did more initially to reduce real output. In part, the smaller initial decline in Canada's inflation reflected the unfortunate coincidence that the delayed rise in energy prices in Canada was concentrated in the recession and immediate pre-recession periods. The slower decline may also indicate that prices and wages are inherently less flexible in Canada than they are in the United States. In any event, rates of price and wage increase in Canada have now declined very sharply.

The severity of the recession, coupled with the projection by most analysts of only a gradual decline in unemployment from the current high levels, has made unemployment Canada's single most important, public economic concern. Canadians fear that employment in a number of industries will not return to pre-recession levels, and that the "shake-out" forced on these industries will result in future loss of jobs, thus further slowing any return to high employment. At this early stage, it is still very difficult to distinguish the effects of the recession from more fundamental changes. So far there is little hard evidence of any increase in the pace of technological change and job displacement for the economy as a whole. If anything, the slow-down in

productivity growth over the past decade has tended to retard job displacement.

## **The International Economic Environment and International Comparisons**

As we have noted in Chapter 2, most developed market economies have experienced the same broad trends during the post-war period as those we have outlined for Canada: relatively rapid real growth of output and productivity, on average, until 1973, followed by a slow-down; higher unemployment and inflation rates over the last decade; a decline in the relative importance of the agricultural sector and an increase in the importance of the service sector; and an increase in the openness of the economy, as measured by the ratio of international trade to gross national product (GNP).

Table 7-29 shows the ratios of trade to GNP for 19 OECD countries. Openness has increased less in Canada since the pre-war era than in most other countries because Canada's ratio of trade to GNP was already high before the war. Canada is one of the more open, larger economies, although the Federal Republic of Germany, Italy and the United Kingdom now have similar ratios of trade to GNP. The ratios of several of the smaller European countries, especially those that belong to the European Community, are substantially higher than Canada's. Nonetheless, Canada may be considerably more vulnerable to international developments than the countries mentioned above, since it is unique among Western industrialized nations (except for Australia) in not having secure access to a market of 100 million people or more.

The international trends are of interest both because they exert major influences on the Canadian economy, and because they provide an international perspective on Canadian performance. The relatively rapid growth in the economies of Canada's trading partners before 1973 was critical to our favourable economic performance over that period. The slower world growth served to lower Canada's growth possibilities. Although our flexible exchange rate precluded any direct link between Canadian inflation and foreign inflation, it is clear that an increasingly inflationary world environment and, particularly, the international oil-price shocks added to the inflationary pressures in Canada.

Table 7-30 shows changes in the main economic indicators for Canada, the other six largest Western industrialized countries, and the OECD as a whole over the periods 1960-68, 1968-73, and 1973-79; it also provides annual data for the years from 1980 to 1984. In the years preceding 1973, Canada's real growth was above both the average for the seven largest OECD countries and the average for the OECD as a whole. Our growth in employment was the highest of all OECD nations, and our productivity growth, while somewhat below the OECD average, compared favourably with that of the United States. Canadian unemployment rates were higher than those in most OECD countries, but similar, on average, to U.S. rates. Inflation tended to be lower

**TABLE 7-29 International Comparisons of Foreign Trade in Goods and Services as a Percentage of GNP in 19 OECD Countries, 1929, 1938, and 1976-78<sup>a</sup>**

	1929	1938	Avg. 1976-78
Australia <sup>b</sup>	19.3	18.3	17.1
Austria	N.A.	17.6 <sup>c</sup>	35.6
Belgium	N.A.	28.2	56.3
Canada	29.0	24.3	26.4
Denmark	N.A.	26.2	33.5
France	N.A.	13.1	21.9
Germany	N.A.	16.5 <sup>d</sup>	26.3
Greece	N.A.	17.8	21.2
Iceland	N.A.	46.8	42.1
Ireland	N.A.	25.5	57.7
Italy	N.A.	7.6	26.8
Japan	19.4	19.7	12.3
Netherlands	N.A.	28.1	49.0
Norway	33.6	29.2 <sup>e</sup>	48.6
Portugal	N.A.	13.0	26.6
Sweden	N.A.	20.1 <sup>f</sup>	30.2
Switzerland	N.A.	17.9	35.9
United Kingdom	N.A.	16.9	32.2
United States	6.3	4.3	10.1
All countries <sup>g</sup>	N.A.	20.6	32.1

Source: United States, Congress, Joint Economic Committee, *The Business Cycle and Public Policy, 1929-80* (Washington, D.C.: U.S. Government Printing Office, 1980) p. 83.

Note: N.A. = not available.

- a. Percentages are based on data in current prices. Trade is defined as one-half of the sum of exports and imports of goods and services, including merchandise, non-monetary gold, freight, other transportation, travel, investment income in gross amounts received and paid, and other current public and private services.
- b. Fiscal years ending June 30.
- c. 1937.
- d. 1936.
- e. 1939.
- f. Based on GNP for fiscal year.
- g. Unweighted averages of percentages for all countries.

in Canada and the United States than in the other OECD countries. There was virtually universal increase in inflation between the 1960-68 and 1968-73 periods, and there was a notable decline in productivity growth in the United States between these two periods.

As we have remarked, economic performance throughout the world tended to deteriorate after 1973. While Canada maintained high employment growth in relative terms—a circumstance that reflected our high labour-force growth—our productivity performance declined slightly more than the average. If 1980 and 1981 are added to the 1973-79 period, productivity growth in Canada actually fell below the U.S. average.

**TABLE 7-30 International Comparisons: Main Economic Indicators**

	1960– 1968	1968– 1973	1973– 1979	1980	1981	1982	1983	1984
	(annual average)							
<b>Growth in real GNE/GDP</b>								
United States	4.5	3.3	2.6	-0.2	2.5	-2.1	3.7	6.8
Japan	10.5	8.8	3.6	4.9	4.0	3.3	3.0	5.8
Germany	4.2	4.9	2.4	1.8	-0.2	-1.1	1.3	2.5
France	5.4	5.9	3.1	1.1	0.2	2.0	0.7	1.8
United Kingdom	3.1	3.1	1.4	-2.6	-1.5	2.5	3.2	2.0
Italy	5.7	4.6	2.6	3.9	0.1	-0.4	-1.2	3.0
Canada	5.6	5.6	3.4	1.0	3.3	-4.4	3.3	4.3
Total OECD	5.1	4.8	2.7	1.3	1.7	-0.3	2.6	4.8
<b>Growth in productivity*</b>								
United States	2.6	1.2	0.2	-0.7	1.4	-1.3	2.4	2.5
Japan	8.9	7.7	2.9	3.9	3.2	2.2	1.3	5.3
Germany	4.3	4.1	3.0	0.8	0.6	0.7	3.1	3.0
France	4.9	4.8	2.9	1.1	1.0	1.8	1.5	2.8
United Kingdom	2.7	3.0	1.2	-2.4	2.0	4.1	3.6	1.0
Italy	6.3	4.9	1.6	2.4	-0.3	0.0	-1.3	3.0
Canada	2.7	2.7	0.5	-1.9	0.5	-1.2	2.5	2.0
Total OECD	4.1	3.5	1.6	0.6	1.4	0.2	2.2	3.3
<b>Employment growth</b>								
United States	1.8	2.1	2.5	0.5	1.1	-0.9	1.3	4.3
Japan	1.5	0.9	0.7	1.0	0.8	1.0	1.7	0.5
Germany	-0.1	0.7	-0.6	1.0	-0.8	-1.8	-1.7	-0.3
France	0.4	1.0	0.2	-	-0.8	0.1	-0.8	-1.0
United Kingdom	0.3	0.2	0.2	-0.3	-3.4	-1.5	-0.4	1.0

Italy	-0.6	-0.2	1.0	1.5	0.5	-0.4	0.1	0.0
Canada	2.8	2.8	2.9	3.0	2.8	-3.3	0.8	2.3
Total OECD	1.0	1.2	1.1	0.7	0.4	-0.5	0.4	1.5
<b>Standardized unemployment rates<sup>b</sup></b>								
United States	5.0	4.6	6.7	7.0	7.6	9.7	9.6	7.5
Japan	1.2	1.2	1.9	2.0	2.2	2.4	2.6	2.7
Germany	0.6	1.0	3.2	3.0	4.4	6.1	8.0	8.1
France	1.7	2.5	4.5	6.3	7.3	8.0	8.0	8.9
United Kingdom	2.5	3.5	5.3	6.9	10.6	12.3	13.1	13.2
Italy	5.1	5.7	6.5	7.4	8.3	8.9	9.7	10.6
Canada	4.8	5.4	7.2	7.5	7.5	11.1	11.9	11.5
Total OECD	2.7	3.2	4.9	5.8	6.7	8.2	8.7	8.3
<b>Consumer price inflation</b>								
United States	2.0	5.0	8.5	13.5	10.4	6.1	3.2	4.2
Japan	5.7	7.0	10.0	8.0	4.9	2.7	1.9	2.3
Germany	2.7	4.6	4.7	5.5	6.3	5.3	3.3	1.5
France	3.6	6.1	10.7	13.6	13.4	11.8	9.6	7.1
United Kingdom	3.6	7.5	15.6	18.0	11.9	8.6	4.6	4.7
Italy	4.0	5.8	16.1	21.2	17.8	16.6	14.6	9.9
Canada	2.4	4.6	9.2	10.2	12.5	10.8	5.9	3.8
Total OECD	2.9	5.6	10.0	12.9	10.5	7.8	5.3	5.0
<b>Total government expenditures as a percentage of GNP/GDP<sup>c</sup></b>								
United States	28.8	31.7	33.7	35.0	35.3	37.6	—	—
Japan	19.0	20.4	28.5	32.4	34.5	34.5	—	—
Germany	35.8	39.8	47.5	48.3	49.3	49.4	—	—
France	37.4	39.0	43.7	46.4	49.2	50.7	—	—
United Kingdom	34.8	39.8	44.6	45.4	48.0	47.4	—	—
Italy	31.9	36.0	42.9	46.1	51.2	53.7	—	—
Canada	29.8	35.3	39.7	41.0	41.5	45.8	—	—
Total OECD	29.9	32.9	37.7	40.2	40.9	42.5	—	—

TABLE 7-30 (cont'd.)

	1960— 1968	1968— 1973	1973— 1979	1980	1981	1982	1983	1984
	(annual average)							
<b>Total government-budget balances as a percent- age of GNP/GDP</b>								
United States	—	—	—	-1.2	-0.9	-3.8	-4.1	-3.2
Japan	—	—	—	-4.5	-4.0	-3.4	-3.3	-2.2
Germany	—	—	—	-3.1	-3.8	-3.4	-2.7	-1.7
France	—	—	—	0.2	-1.8	-2.5	-3.4	-3.5
United Kingdom	—	—	—	-3.8	-3.1	-2.4	-3.3	-3.1
Italy	—	—	—	-8.0	-11.9	-12.7	-11.8	-13.5
Canada	—	—	—	-2.7	-1.6	-5.0	-6.2	-6.0
Total OECD	—	—	—	-2.4	-2.7	-4.1	-4.4	-3.8

Sources: Organisation for Economic Co-operation and Development, *Historical Statistics, 1960-81* (Paris: OECD, 1983), p. 41; *Historical Statistics, 1960-1982* (Paris: OECD, 1984), pp. 26, 39, 41, 44, 47, 64, 83; and *Economic Outlook, December 1984* (Paris: OECD, 1984), pp. 29, 43, 50, 51, 68, 173, 175, 177.

Note: Average growth rates are compound annual rates from level in year before first year of period specified to level in final year of period specified.

- a. Productivity increased as real GNP/GDP per member of the civilian labour force.
- b. Standardized unemployment rates for all but United States and Canada. United States and Canada are actual, which correspond closely to the OECD standardized concept. Figures for 1984 are estimates based on gap between actual and standardized unemployment rates in 1983. Average standardized unemployment rates are for 1960-67, rather than 1960-68.
- c. Data are for 1960-67, rather than 1960-68.

The percentage rise in unemployment in Canada after 1973 was similar to that experienced elsewhere, as was the increase in the average rate of inflation. In both instances, however, there was some deterioration relative to the performance of the United States. The structural changes in our Canadian Unemployment Insurance system may explain most of the increase in our unemployment rate relative to that of the United States. Germany, Austria, the Netherlands and Switzerland managed to avoid much increase in the rate of inflation.

Comparisons with other OECD countries indicate that the economic problems experienced in Canada since 1973 have been widely shared. However, there is at least a hint of a tendency for Canadian performance to deteriorate relative to the OECD average, especially in the areas of productivity growth and inflation. This possible tendency is all the more disturbing because Canada's energy self-sufficiency meant that we were not as adversely affected by the energy shock as were most other OECD countries. On the other hand, our improvement in relative inflation performance in 1984 augurs well for the future.

Government expenditure as a proportion of GNP has risen somewhat more in Canada since 1973 than it has in the OECD countries considered as a group; the difference between the two ratios was especially great during the 1981-82 recession. The increase in Canada since 1973 has been much greater than the increase in the United States. The level of government spending in relation to GNP is higher in Canada than it is in the United States and Japan, but lower than it is in Germany, France, the United Kingdom and Italy.

Canada has experienced a marked increase in the total government deficit as a percentage of GNP. In 1984, our percentage was twice that of the United States. The only major industrialized country with a proportionately larger deficit in 1984 was Italy.

## **General Observations on Recent Performance**

Over the post-Second World War period, Canada has adjusted to major structural changes in the economy. We have also enjoyed broadly distributed gains in economic welfare. One of the economy's most notable achievements has been its provision of a high rate of employment growth in the face of a high rate of growth in labour-force supply. While the economy has not created jobs for all new entrants to the labour force, until the recession struck in 1981, it had at least created jobs for the great majority. Few of the economic projections made in the late 1950s and early 1960s anticipated the extent to which employment (or the labour force) would grow in the 1960s and 1970s. Except for the "supply siders", who believe that supply creates its own demand, economists do not claim to have fully satisfactory empirical models of the process by which jobs are created and the relationship of that process to labour-force growth. We shall consider this issue further in Chapter 8.

Although economic progress during the post-war period has been impressive, and the economy has been successful in making major adjustments to changing conditions, a number of developments over the past decade

have given rise to concern. If productivity growth were to stay at the low level of the past decade, Canadians could not look forward to any appreciable further gains in their standard of living. Inflation has proved to be very stubborn, confronting Canadians with the difficult choice between living with a relatively high rate of inflation, with all of its potential long-term social and economic dangers, and paying the heavy short- to medium-term costs of achieving lower inflation. Although the growth of employment in Canada during the post-war period has substantially exceeded that of most other industrial countries, our level of unemployment has generally been at the high end of the range of international experience. The introduction of restrictive monetary and fiscal policies in order to curtail inflation has driven unemployment even higher.

Recent developments have altered the emphasis that Canadians give to each of these concerns. Before the recession, most observers held that the most disturbing aspects of Canadian economic performance were the low rate of productivity growth and the stubbornness of inflation. Especially worrisome was the apparent deterioration in Canada's performance relative to the performances of the United States and many other countries. Nevertheless, productivity growth since 1981 has not been as low as might have been expected, given the severity of the recession, and a major reduction in inflation has occurred. On the other hand, unemployment has become an ever-more-pressing concern.

## **Overall Prospects for the Economy**

### **Population Projections, 1981–2030**

A good understanding of likely demographic developments is a necessary first step in forming a view about our Canadian economy's long-term prospects, though our demographic future is only somewhat less uncertain than our economic future. To provide an indication both of our demographic prospects and of the degree of uncertainty about these prospects, we shall consider four recent official Statistics Canada demographic projections for the period from 1981 to 2030. These projections differ in their assumptions about the fertility rate, the mortality rate, and net immigration. We shall also consider very long-run demographic projections to the year 2100, underlying the Statutory Actuarial Report No. 8 of the Canada Pension Plan.

The four Statistics Canada demographic projections are as follows:

- *A low-fertility,<sup>1</sup> low-immigration case.* It assumes that the fertility rate will decline to 1.4 by 1996, dropping from the 1981 level of 1.7, and that thereafter it will remain constant. Net immigration is set at 50 000 entrants per year throughout the projection period.
- *A medium-fertility, low-immigration case.* It assumes a fertility rate of 1.6 throughout the entire projection period and the same net immigration postulated in the first projection.
- *A medium-fertility, high-immigration case.* It uses the same fertility rate as the second projection and assumes that net immigration will increase



from 45 000 in 1983 to 100 000 in 1994 by increments of 5000; after 1994, immigration will remain constant.

- *A high-fertility, high-immigration case.* It assumes a fertility rate of 1.6 until 1985, increasing to 2.2 by 1996, and remaining constant thereafter; net immigration remains the same as it was in the third projection.

All the projections use the same mortality rate. They assume that the rate will decrease more slowly than it did between 1976 and 1981. They also assume that the difference between male and female life expectancy at birth will narrow slightly: life expectancy will rise by 1996 to 74.9 years for males (from 71.9 in 1981) and to 81.5 for females (from 78.9 in 1981).

The Canada Pension Plan (CPP) projection assumes that the fertility rate will increase to approximately 2.0 by 1999 and remain constant thereafter. It further assumes that net immigration throughout the entire projection period will equal 0.32 per cent of the total population, and that the mortality rate will decline moderately.

A cursory examination of the five projections, which are set out in Tables 7-31 to 7-35, reveals a number of similarities among them:

- The proportion of Canadians aged 65 and older rises continuously in all of the projections from 1981 to 2030, with particularly large increases from 2010 to 2030. This represents a continuation of the trend in the 1921–81 period. The share of the aged-65 and older group increases substantially over the 1980s. In the 1990s, the rate of increase in this group's share declines as a result of the births to the baby-boom generation and the advance to retirement age of the relatively small age cohort born in the 1930s. After 2010, as the baby-boom generation reaches the age of retirement, the proportion of those aged 65 and older within the total population again expands significantly.
- All projections indicate that the shares of the population represented by the two younger-age categories (0–14 years and 15–24 years) will decline continuously, or virtually continuously, until the year 2030.
- The share of the population aged 25–64 increases until the year 2010 and declines thereafter, except in the high-fertility, high-net/immigration case, where this share decreases slowly and steadily after 1990.
- In none of the projections is the proportion of the working-age population (15–64 years) smaller than it was in 1961; for three of the four Statistics Canada projections, this proportion falls below the 1971 proportion only in 2030.

Of course, the extent and the rapidity of these trends vary significantly with the assumptions that underlie each projection. In the low-fertility, low-immigration projection for 2030, for example, the share of those aged 14 and under is 12.2 per cent, while in the high-fertility, high-immigration projection, the corresponding figure is 20.7 per cent. The fertility-rate assumptions determine most, but not all, of this difference: the immigration assumptions also play a part, since the immigrant population is younger than the population as a whole. This point becomes clear when we compare the medium-fertility, high-immigration projection with the medium-fertility, low-immigration projection. In the first projection, the population share of

**TABLE 7-31 Population Projections by Age Group Level, Rate of Growth and Percentage Share: Low Fertility, Low Immigration**

Year	Total		0 to 14			15 to 24			25 to 64			65+		
	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.
1981	24 343	1.2	5 481	-1.5	22.5	4 659	1.5	19.1	11 842	2.3	48.6	2 361	3.1	9.7
1990	26 428	0.9	5 404	0.1	20.4	3 842	-2.1	14.5	14 097	2.0	53.3	3 086	3.0	11.7
2000	27 741	0.5	4 730	-1.3	17.1	3 716	-0.8	13.4	15 462	0.9	55.7	3 830	2.2	13.8
2010	28 203	0.2	4 006	-1.6	14.2	3 435	-0.8	12.2	16 315	0.5	57.9	4 449	1.5	15.8
2020	28 004	-0.1	3 755	-0.6	13.4	2 797	-2.0	10.0	15 725	-0.4	56.2	5 733	2.6	20.5
2030	26 948	-0.4	3 285	-1.3	12.2	2 663	-0.5	9.9	13 950	-1.2	51.8	7 064	2.1	26.2

Sources: Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), Table 1.7, and *Population Projections for Canada, Provinces and Territories 1984 to 2006* (Ottawa: Minister of Supply and Services Canada, forthcoming), Projection Series Number 1.

a. For the preceding 10 years, with the exception of 1990, which is for the preceding 9 years.

**TABLE 7-32 Population Projections by Age Group Level, Rate of Growth and Percentage Share: Medium Fertility, Low Immigration**

Year	Total		0 to 14			15 to 24			25 to 64			65+		
	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.
1981	24 343	1.2	5 481	-1.5	22.5	4 659	1.5	19.1	11 842	2.3	48.6	2 361	3.1	9.7
1990	26 558	1.0	5 534	0.1	20.8	3 842	-2.1	14.5	14 097	2.0	53.1	3 086	3.0	11.6
2000	28 397	0.7	5 377	-0.3	18.9	3 727	-0.3	13.1	15 462	0.9	54.5	3 831	2.2	13.5
2010	29 447	0.4	4 884	-1.0	16.6	3 789	0.2	12.9	16 325	0.5	55.4	4 449	1.5	15.1
2020	30 005	0.2	4 817	-0.1	16.1	3 369	-1.2	11.2	16 086	-0.1	53.6	5 733	2.6	19.1
2030	29 839	-0.1	4 587	-0.5	15.4	3 315	-0.2	11.1	14 873	-0.8	49.8	7 064	2.1	23.7

Sources: Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), Table 1.7, and *Population Projections for Canada, Provinces and Territories 1984 to 2006* (Ottawa: Minister of Supply and Services Canada, forthcoming), Projection Series Number 1.

a. For the preceding 10 years, with the exception of 1990, which is for the preceding 9 years.

**TABLE 7-33 Population Projections by Age Group Level, Rate of Growth and Percentage Share: Medium Fertility, High Immigration**

Year	Total		0 to 14			15 to 24			25 to 64			65+		
	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.
1981	24 343	1.2	5 481	-1.5	22.5	4 659	1.5	19.1	11 842	2.3	48.6	2 361	3.1	9.7
1990	26 648	1.0	5 561	0.2	20.9	3 859	-2.1	14.5	14 144	2.0	53.1	3 084	3.0	11.6
2000	29 011	0.9	5 565	0.0	19.2	3 814	-0.1	13.1	15 822	1.1	54.5	3 811	2.1	13.1
2010	30 730	0.6	5 229	-0.6	17.0	3 988	0.4	13.0	17 108	0.8	55.7	4 404	1.5	14.3
2020	32 034	0.4	5 290	0.1	16.5	3 682	-0.8	11.5	17 365	0.1	54.2	5 696	2.6	17.8
2030	36 672	0.2	5 193	-0.2	15.9	3 711	0.1	11.4	16 647	-0.4	51.0	7 122	2.3	21.8

Sources: Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), Table 1.7, and *Population Projections for Canada, Provinces and Territories 1984 to 2006* (Ottawa: Minister of Supply and Services Canada, forthcoming), Projection Series Number 1.

a. For the preceding 10 years, with the exception of 1990, which is for the preceding 9 years.

**TABLE 7-34 Population Projections by Age Group Level, Rate of Growth and Percentage Share: High Fertility, High Immigration**

Year	Total			0 to 14			15 to 24			25 to 64			65+		
	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	
1981	24 343	1.2	5 481	-1.5	22.5	4 659	1.5	19.1	11 842	2.3	48.6	2 361	3.1	9.7	
1990	26 749	1.1	5 662	0.4	21.2	3 859	-2.0	14.4	14 144	2.0	52.9	3 084	3.0	11.5	
2000	29 967	1.1	6 519	1.4	21.8	3 814	-0.1	12.7	15 822	1.1	52.8	3 811	2.1	12.7	
2010	32 690	0.9	6 736	0.3	20.6	4 440	1.5	13.6	17 109	0.8	52.3	4 406	1.5	13.5	
2020	35 360	0.8	7 177	0.6	20.3	4 669	0.5	13.2	17 815	0.4	50.4	5 599	2.6	16.1	
2030	37 846	0.7	7 818	0.9	20.7	4 830	0.3	12.8	18 071	0.1	47.8	7 127	2.3	18.8	

Sources: Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), Table 1.7, and *Population Projections for Canada, Provinces and Territories 1984 to 2006* (Ottawa: Minister of Supply and Services Canada, forthcoming), Projection Series Number 1.

a. For the preceding 10 years, with the exception of 1990, which is for the preceding 9 years.

**TABLE 7-35 Population Projections by Age Group Level, Rate of Growth and Percentage Share: CPP 'Case' Projection**

Year	Total		0 to 14			15 to 24			25 to 64			65+		
	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.	Pop. ('000)	Average Annual Growth Rate <sup>a</sup>	% of Pop.
1981	24 342	1.2	5 477	-1.5	22.5	4 649	1.5	19.1	11 830	2.3	48.6	2 361	3.1	9.7
1990	27 333	1.3	5 935	0.9	21.7	3 966	-1.7	14.5	14 463	2.3	52.9	2 969	2.6	10.9
2000	29 991	0.9	6 319	0.6	21.1	4 059	0.2	13.5	16 042	1.0	53.5	3 571	1.9	11.9
2010	32 352	0.8	6 345	0.0	19.6	4 477	1.0	13.8	17 349	0.8	53.6	4 181	1.6	12.9
2020	34 666	0.7	6 726	0.6	19.4	4 461	0.0	12.9	17 881	0.3	51.6	5 598	3.0	16.2
2030	36 688	0.6	7 043	0.5	19.2	4 694	0.5	12.8	17 762	-0.1	48.4	7 189	2.5	19.6
2040	38 424	0.5	7 277	0.3	18.9	4 977	0.6	13.0	18 615	0.5	48.4	7 555	0.5	19.7
2050	40 134	0.4	7 673	0.5	19.1	5 111	0.3	12.7	19 618	0.5	48.9	7 732	0.2	19.3
2060	41 895	0.4	8 006	0.4	19.1	5 387	0.5	12.9	20 352	0.4	48.6	8 150	0.5	19.5
2070	43 811	0.5	8 346	0.4	19.1	5 641	0.5	12.9	21 337	0.5	48.7	8 487	0.4	19.4
2080	45 827	0.5	8 754	0.5	19.1	5 862	0.4	12.8	22 335	0.5	48.7	8 876	0.4	19.4
2090	47 890	0.4	9 136	0.4	19.1	6 155	0.5	12.9	23 281	0.4	48.6	9 318	0.5	19.5
2100	50 069	0.4	9 548	0.4	19.1	6 429	0.4	12.8	24 381	0.5	48.7	9 711	0.4	19.4

Sources: Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), Table 1.7, and *Population Projections for Canada, Provinces and Territories 1984 to 2006* (Ottawa: Minister of Supply and Services Canada, forthcoming), Projection Series Number 5.

a. For the preceding 10 years with the exception of 1990, which is for the preceding 9 years.

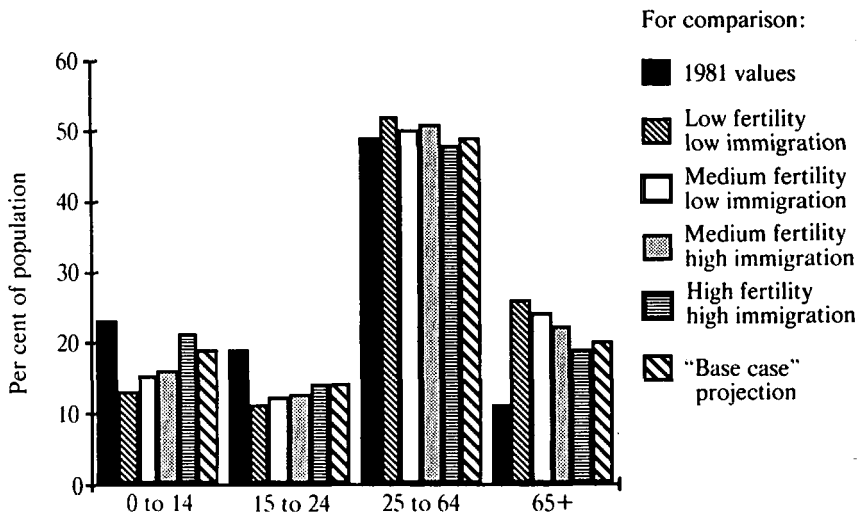
Canadians under 65 in 2030 is 78.3 per cent; in the second projection, their share is 76.3 per cent. Figure 7-5 illustrates the distribution of the age groups in 2030, under each of the Statistics Canada projections, and provides a comparison with the situation in 1981.

The projections also differ substantially in their conclusions about total population growth. In the low-fertility case, the total population starts to decline after 2010; the medium-fertility, low-immigration case shows a slight decline after 2020. The other cases project continuing, though modest, growth of total population.

Given constant age-specific rates of fertility, mortality and immigration, a population will eventually approach a “steady state” characterized by a roughly constant growth rate and constant age-group shares. Most of the projections assume something like constancy in fertility rates, mortality rates and net immigration rates after 2000; in the very long-term CPP projection shown in Table 7-35, a steady state appears to set in after about 2030, by which time there would be relatively few survivors of the baby-boom cohort of the 1940s to 1960s.

Whether such steady-state projections show continuing growth or decline in total population depends, subject to a qualification for immigration, on whether the fertility rate exceeds or falls short of the “replacement value” of

**FIGURE 7-5 Percentage Share of Selected Age Groups, 1981 and Alternative Projections for 2030**



Source: *Historical Compendium*, 1.7, Statistics Canada; *Components of Population Growth, 1983-2006*, Statistics Canada, Demography Division; *Components of Population Growth, 1983-2031*, Statistics Canada, Demography Division (Unpublished); and Department of Insurance.

2.1 children per woman.<sup>2</sup> In the CPP projection illustrated in Table 7-35, the assumed fertility rate of 2.0 per cent is marginally below the replacement value, but this difference is more than offset by the assumption that net immigration will occur at an annual rate of 0.32 per cent.

Several general conclusions about Canada's population outlook can be drawn from the demographic projections we have just reviewed. The medium-fertility assumption of 1.6 children per woman is very close to the latest observed rate, but it is clearly possible that fertility will either drop below the rate of 1.4 per cent projected in the low-fertility case or rise above the assumed rate of 2.2 per cent in the high-fertility case. Even so, the following generalizations can be offered:

- A substantial increase over the next 50 years in the population share of those aged 65 and over is a virtual certainty; but the increase in this share by 2030 could range from a doubling to somewhat less than a tripling relative to the current ratio. The most dramatic increase in the share will occur between 2010 and 2030.
- A period of several decades of virtually continuous decline in the absolute numbers of the 0–14 and 15–24 age groups – and hence a more dramatic decline in their shares – is a very real possibility.
- If fertility and net immigration rates stabilize in the near future, the population will approach a “steady state” configuration by about 2030; that is, age-group shares will remain, thereafter, at approximately their 2030 levels.
- Canada's total population will almost certainly continue to grow, but at continuously declining rates, until at least 2010, when it will probably have reached a range of 28 million to 32 million. Given low fertility, the total population will then tend to decline slowly. Given medium fertility, which is still below the replacement rate, the total population will eventually start to decline if the net immigration rate (relative to total population) is lower than the average rate over the post-war period. Total population will stabilize or continue to grow very slowly if the net immigration rate continues at the average post-war rate.

### **Long-Term Economic Projections, 1984–2000**

Many government agencies and private sector consulting firms regularly provide projections and analyses of the Canadian economy's short- and longer-term growth prospects. This Commission decided that it would be more efficient to draw on this available expertise and to make use of existing sources of information than to develop its own independent forecasting capability. In any event, the latter course would have required much more time and resources than were available for the task.

As part of our effort to gather information on the longer-term outlook, this Commission convoked a conference of forecasters. Three leading, private sector, forecasting groups were invited to present their current views of likely long-term/growth paths for the economy. These groups were Data Resources Incorporated, Informetrica Limited, and the Institute for Policy Analysis at the University of Toronto. A number of specialists in particular sectors of the



economy were also asked to attend in order to comment on the prospects for their sectors. The material presented at this conference, as up-dated in late 1984 and augmented by a long-term projection prepared by Chase Econometrics Canada, provides a reasonable indication of the general nature of economic projections currently available from expert analysts.<sup>3</sup>

Before we discuss the prospects for the economy, it is useful to consider the nature of long-term projections. Experience with medium- and long-term projections prepared by the Royal Commission on Canada's Economic Prospects (the Gordon Commission), the Economic Council of Canada, and a number of other agencies in more recent years, as well as experience in other countries, suggests that while carefully prepared projections provide some basis for identifying likely future trends, such projections are subject to substantial margins of error.

There are some noteworthy examples of the failure of projections to anticipate major new developments. Both the post-war rise in birth rates and their decline in the late-1960s came as surprises to Canadians. Neither the dramatic rises in oil prices of 1973 and 1979-80, nor the significant decline in real oil prices from 1980-81 peak levels were built into short-term forecasts, to say nothing of long-term projections. Finally, it was the common practice in the early 1970s to project the continuation of experience approximating the average productivity growth of the 1950s and 1960s.

In spite of their shortcomings, however, long-term projections are useful. They represent considered and consistent views of future developments. Thus they are likely to be closer to the mark than less-sophisticated and less-systematic methods of anticipating future developments. The future is inherently unknowable, but it is necessary to have some forward view. In developing such a view, it is important to take advantage of the best information available. It is in this spirit that Commissioners consider long-term projections here. These projections assume a continuation of existing policies and programs. They also assume that there will be no major changes in the external environment facing the Canadian economy.

The average of the four long-term projections considered by this Commission is presented in Table 7-36. The annual growth rate of real gross national expenditure (GNE) is expected to decline from about 3 per cent, on average, over the late-1980s, to 2.6 per cent in the 1990s, as Figure 7-6 illustrates. This rate of decline is significantly slower than the annual growth of 4.25 per cent achieved, on average, over the 1956-81 period. Projected real growth for the late 1980s is roughly similar to the growth forecast for this period by the Minister of Finance, in November 1984, in *A New Direction for Canada: An Agenda for Economic Renewal*.

The growth of real GNE depends on the growth of employment and productivity, among other factors, as shown in Figure 7-7. Employment growth is expected to decline from an annual average of 2.8 per cent over the 1966-81 period to 2.1 per cent in the late 1980s, and to 1.4 per cent in the 1990s. Annual productivity growth is expected to average about 1 to 1.5 per cent for the balance of the century, a moderately higher rate than the average rate for the past decade. This means that declining employment growth alone will be more than sufficient to account for the projected decline in Canada's real output growth.

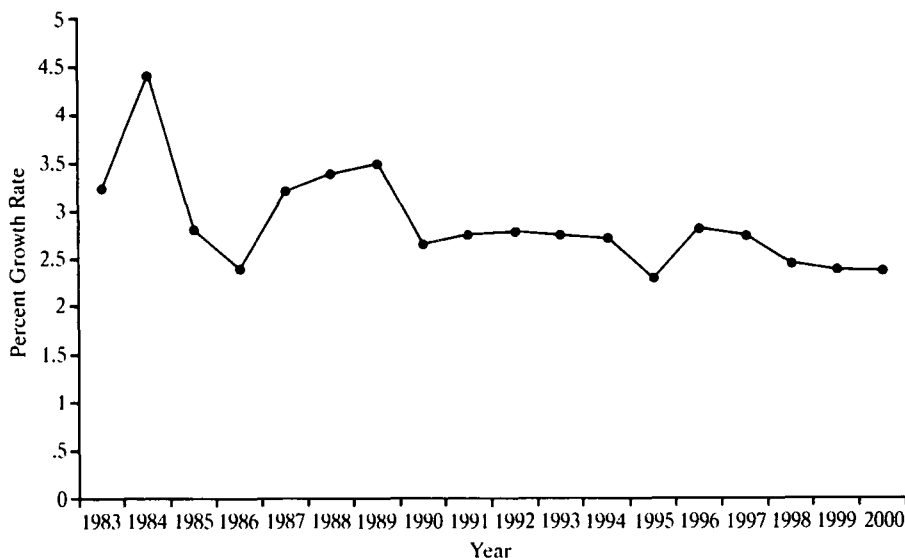
**TABLE 7-36 Average of Four Long-Term Projections: Main Economic Indicators, 1984–2000**

	1984–90	1990–2000
Real GNE	3.0	2.6
Employment	2.1	1.4
Unemployment rate (level)	9.7	7.5
Consumer price index	4.9	5.1

Sources: Peter Dungan, "Outlook for the Canadian Economy Through 2005" (Toronto: University of Toronto, Institute for Policy Analysis, 1983); T.W. McCormack, "The Next 25 Years", *Canadian Review* (Fall 1983); Informetrica, "Post II-83 Reference Forecast" (Ottawa: Informetrica, National Forecast Service, 1984); and Chase Econometrics Canada.

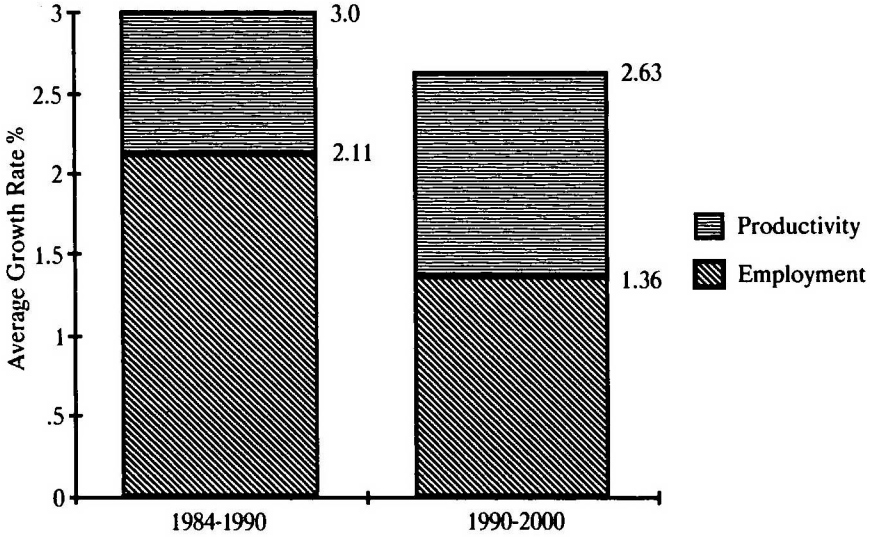
The anticipated sources of the decreased employment growth are present in Figure 7-8. One factor is an anticipated decline in population growth from an average of about 0.9 per cent per year in the late 1980s, to 0.7 per cent in the 1990s. Forecasters also expect a slight slowing of growth in the labour-force/participation rate as a consequence of less-rapid growth in the female participation rates and some long-term decline in the male participation rate.<sup>4</sup> Employment growth is expected to exceed labour-force growth by a small but significant margin for the balance of this century.

**FIGURE 7-6 Real Gross National Product: Average of Four Projections**



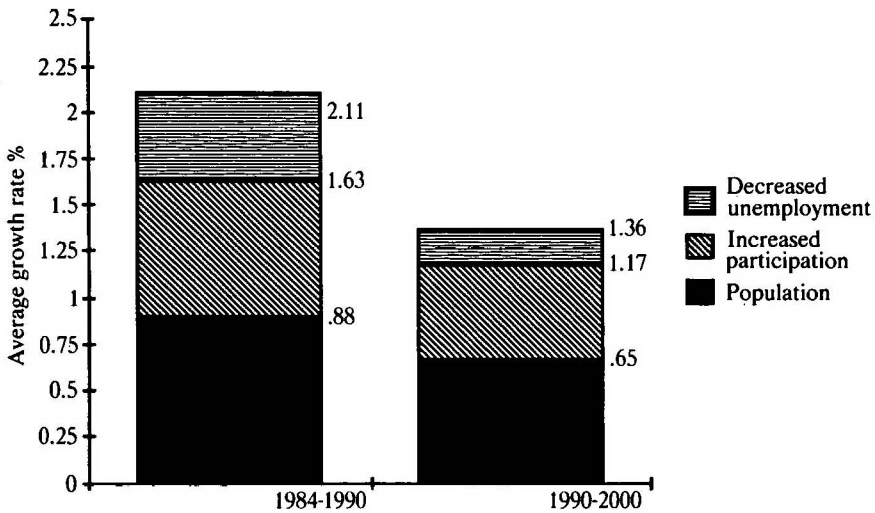
Sources: Chase Econometrics; Data Resources Inc.; Informetrica; and Institute for Policy Analysis, University of Toronto.

**FIGURE 7-7 Sources of Growth of Real Gross National Expenditure**



Sources: Chase Econometrics; Data Resources Inc.; Informetrica; and Institute for Policy Analysis, University of Toronto.

**FIGURE 7-8 Sources of Growth of Employment**



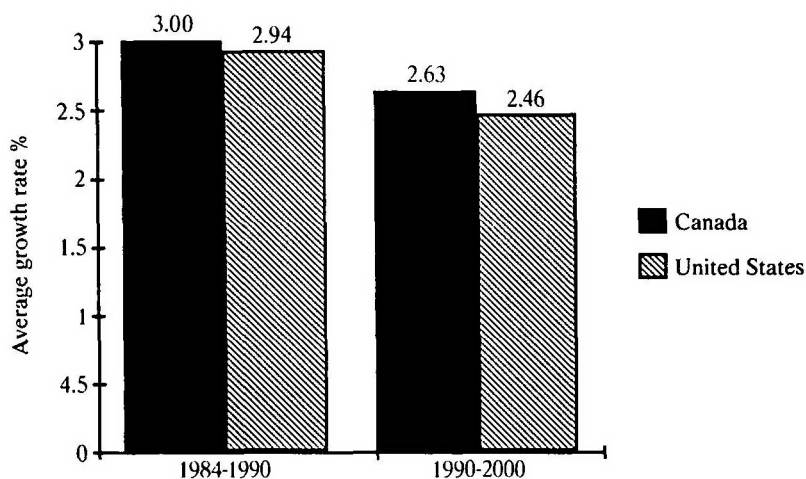
Sources: Chase Econometrics; Data Resources Inc.; Informetrica; and Institute for Policy Analysis, University of Toronto.

The unemployment rate is expected to decrease only very gradually from its current high level. It is projected to average 9.7 per cent in the late 1980s, and 7.5 per cent in the late 1990s. In November 1984, the Minister of Finance projected that the unemployment rate would average 9.25 per cent over the rest of the 1980s.

Inflation is expected to diminish only slightly, until 2000, from its current level of about 5 per cent. This figure is in line with average inflation over the 1956-81 period and well down from the double-digit levels of much of the 1970s and early 1980s. The Minister of Finance has predicted a lower rate of inflation, an average below 4 per cent, for the remainder of the decade.

Canadian prospects are critically dependent on developments in the United States. Figure 7-9 compares the average real growth rate for the Canadian economy projected by the four forecasting groups and the average real growth projected for the United States. During the late 1980s and 1990s, real growth is expected to be only marginally higher in Canada. This projection stands in contrast with the 1 per cent differential in real growth rates in Canada's favour that was characteristic of the 1956-81 period.

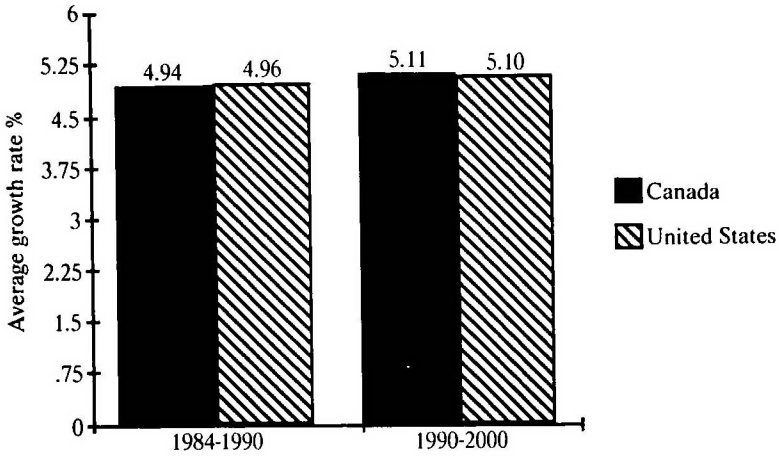
**FIGURE 7-9 Projected Real Gross National Product in Canada and the United States**



Sources: Chase Econometrics; Data Resources Inc.; Informetrica; and Institute for Policy Analysis, University of Toronto.

As Figure 7-10 indicates, inflation rates in Canada are also expected to be very similar to those in the United States. Inflation is expected to average about 5 per cent in both countries. With a floating Canadian dollar, it is possible, in theory, for inflation to differ widely between Canada and the United States. Experience has not borne out this theory because monetary policy in Canada has been similar to that practised in the United States.

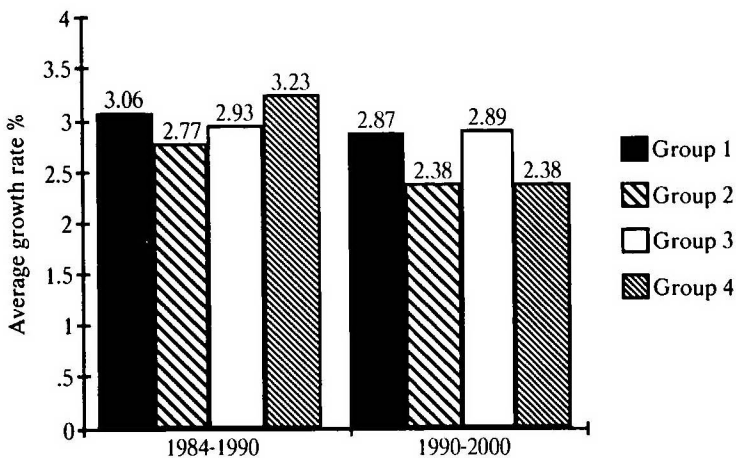
**FIGURE 7-10 Projected Consumer Price Index in Canada and the United States**



Sources: Chase Econometrics; Data Resources Inc.; Informetrica; and Institute for Policy Analysis, University of Toronto.

The projection considered so far represents an average of the four projections reviewed by this Commission. The extent to which the four forecasting groups differ in their views of the prospects for real growth is indicated in Figure 7-11. The projections for both the late 1980s and the 1990s vary within a range of only about 0.5 percentage points.

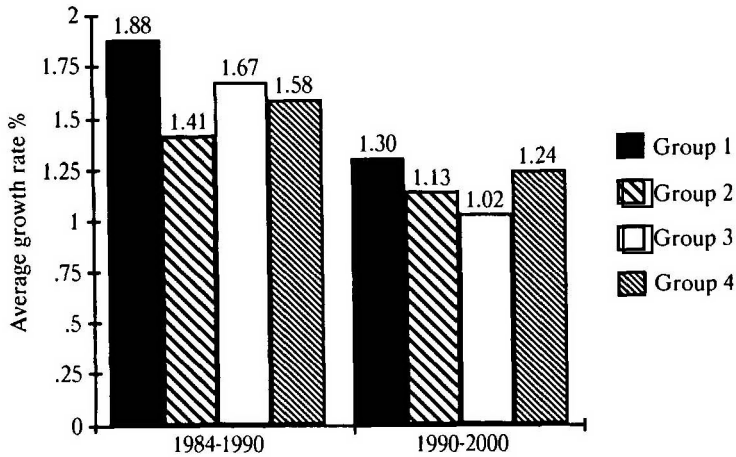
**FIGURE 7-11 Real Gross National Product: Projections of Four Forecasting Groups**



Sources: Chase Econometrics; Data Resources Inc.; Informetrica; and Institute for Policy Analysis, University of Toronto.

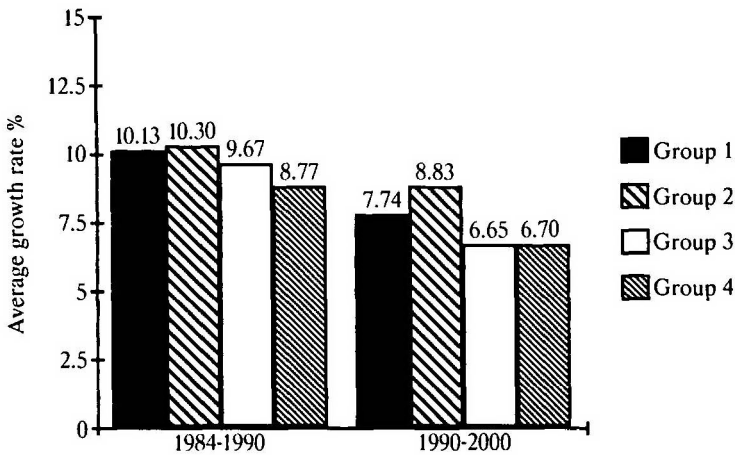
As Figure 7-12 shows, the range of views about the likely growth of Canada's labour force is even narrower. For the late 1980s, the average annual growth rates of the labour force, projected by the forecasting agencies, range from 1.4 per cent to 1.9 per cent; for the 1990s, the range is from 1.0 per cent to 1.3 per cent.

**FIGURE 7-12 Labour Force: Projections of Four Forecasting Groups**



Sources: Chase Econometrics; Data Resources Inc.; Informetrica; and Institute for Policy Analysis, University of Toronto.

**FIGURE 7-13 Unemployment Rate: Projections of Four Forecasting Groups**

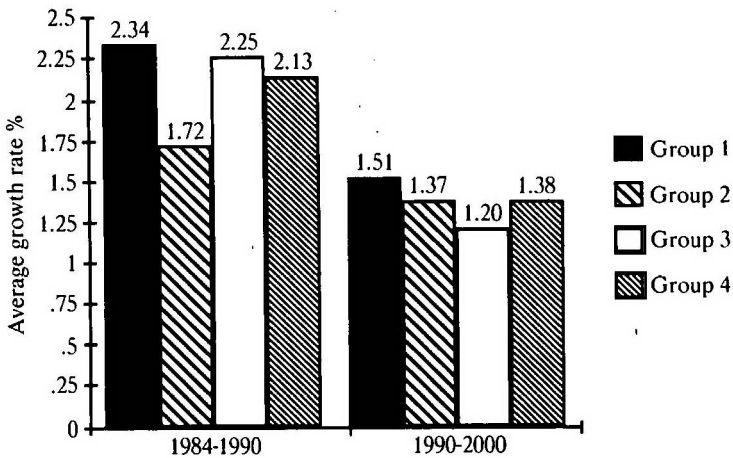


Sources: Chase Econometrics; Data Resources Inc.; Informetrica; and Institute for Policy Analysis, University of Toronto.

Views about the likely path of the unemployment rate differ more significantly, as Figure 7-13 shows. For the late 1980s, the low projection for the average unemployment rate is 8.8 per cent, the high projection is 10.3 per cent, and the mean of the four forecasts is 9.7 per cent. For the 1990s, the low forecast is 6.7 per cent, the high forecast is 8.8 per cent, and the mean of the four forecasts is 7.5 per cent.

Figure 7-14 shows the range of projections for employment growth. The low projection for average employment growth in the late-1980s is 1.7 per cent, the high projection is 2.3 per cent, and the mean forecast is 2.1 per cent. For the 1990s, the low projection is 1.2 per cent, the high projection is 1.5 per cent, and the mean projection is 1.4 per cent.

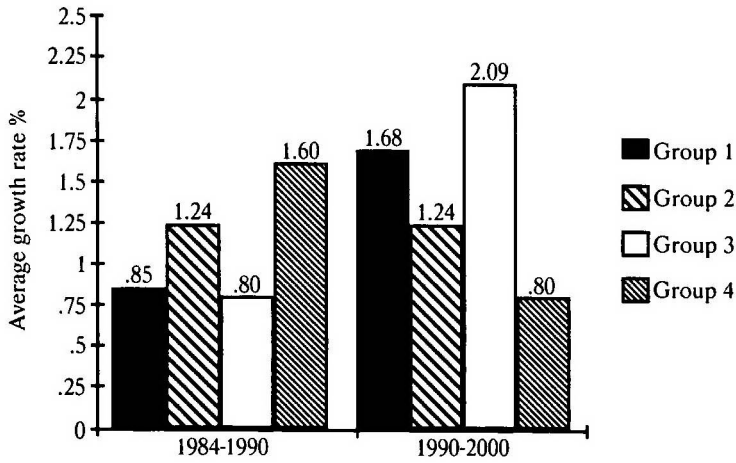
**FIGURE 7-14 Employment: Projections of Four Forecasting Groups**



Sources: Chase Econometrics; Data Resources Inc.; Informetrica; and Institute for Policy Analysis, University of Toronto.

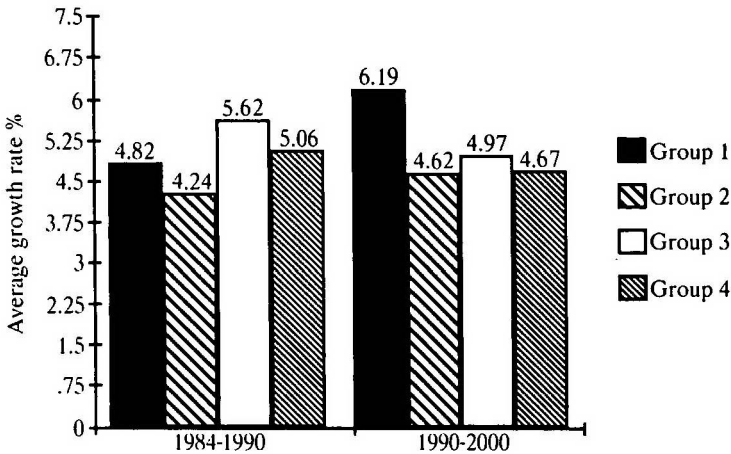
There is less agreement about productivity growth than there is about labour-force and employment growth. (See Figure 7-15.) The divergence in the projections stems, in part, from differences of opinion about the causes of the post-1973 slow-down in productivity, and about the extent to which the slow-down can be expected to continue. The mean projection for average annual productivity growth in the late 1980s is 1.1 per cent, while the low projection is 0.8 per cent, and the high projection is 1.6 per cent. For the 1990s, the mean forecast for average annual productivity growth is 1.5 per cent, the low forecast is 0.8 per cent, and the high forecast is 2.1 per cent.

**FIGURE 7-15 Productivity: Projections of Four Forecasting Groups**



Sources: Chase Econometrics; Data Resources Inc.; Informetrica; and Institute for Policy Analysis, University of Toronto.

**FIGURE 7-16 Consumer Price Index: Projections of Four Forecasting Groups**



Sources: Chase Econometrics; Data Resources Inc.; Informetrica; and Institute for Policy Analysis, University of Toronto.

The forecasters express a fairly wide range of views about the prospects for inflation, although none of them expects a return to double-digit inflation. (See Figure 7-16.) Projections of average annual inflation in the late-1980s vary from 4.2 per cent to 5.6 per cent. Inflation projections for the 1990s



range from 4.6 per cent to 6.2 per cent. This is a remarkably compact range for a monetary phenomenon such as inflation which, in the long run, could vary quite widely, depending on the rate of growth of the money supply. It reflects the judgements of the various forecasting groups about the likely profile of monetary policy in Canada and the United States.

The range defined by the projections of the four forecasting groups is indicative of our economy's probable performance if there are no major unanticipated events or changes in behaviour. However, it is not representative of the full range of possible outcomes. There are risks and uncertainties associated with any forecast. In order to take these into account, forecasters often prepare optimistic and pessimistic scenarios to accompany their "best-guess" projections. While Commissioners have not followed this practice here, in order to restrict to manageable proportions the number of forecasts we have considered, it is useful to mention at least a few of the most important risks.

One significant risk is the possibility of another run-up in interest rates. The future of interest rates depends on the stance of monetary policy in the United States and on the resolution of the U.S. deficit problem. Any severe tightening of U.S. monetary policy could have a disastrous impact on the global economy, given the debt overhang of many developing countries and the vulnerability of leading banks in the industrialized world. Nor can other disruptive international developments be ruled out. The memory of the energy shocks of 1973-74 and 1979-80 should serve to reinforce this point.

There are also domestic risks. While long-term projections tend to be driven, primarily, by expectations about supply, the forecasters voiced some concern that demand might not be strong enough to elicit the potential supply. A specific worry was that investment spending might not, in fact, be as strong as projected in the light of present and anticipated excess capacity and of the expected financial position of the corporate sector. There was also concern that consumers might not be willing to reduce their rate of savings, thereby causing consumer spending to be less than forecast.

In spite of recent experience, not all the uncertainties involve unfavourable outcomes. It is not outside the realm of possibility that inflation will continue to slow, leading to a new era of international price stability. Real interest rates could decline world wide, spurring a global surge in domestic consumer and investment spending, and in exports. This eventuality would have the felicitous effect of restoring the world's economy, including Canada's, to relatively full employment much more quickly than is now expected.

This review has focused on the broad outlines of the macro-economic prospects of Canada's economy. The projections prepared for this Commission also contained detail relating to industry. All of the projections anticipate relatively weak growth for natural-resource/based production, exports and relative prices, with the possible exception of energy and agricultural products. This weakness, which is especially pronounced in the areas of mining and forestry, reflects a number of factors, including slower average growth in overall world demand than in the pre-1974 period; increased dependence on higher-cost sources of supply in Canada; and increased international competition, particularly from developing countries that may

still have the benefit of large, relatively untapped, and lower-cost sources of supply. The resources sector is considered in detail in Part IV of this Report, where a number of very fundamental sectoral policy reforms are recommended to ensure that any further relative decline cannot be attributed to mismanagement.

### *Notes*

1. The fertility rate is the number of live births per woman over her child-bearing years.
2. The "replacement value" is slightly higher than 2 live births per woman over her child-bearing years because slightly more than half of live births are males, and because some females die before they reach child-bearing age.
3. John Sargent, *Long-term Economic Prospects for Canada: A Symposium*, vol. 23, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Toronto: University of Toronto Press, 1985).
4. Chase Econometrics, one of the four forecasting groups, projects that the aggregate participation rate will rise from 64.7 per cent in 1984 to 66.9 per cent in 1990, and to 67.6 per cent in 2000. The basis of this projected increase is a forecast that the female participation rate will rise from 53.4 per cent in 1984, to 57.6 per cent in 1990, and to 61.2 per cent in 2000; and that the male participation rate will increase only marginally from 76.5 per cent in 1984, to 76.7 per cent in 1990, and then decrease to 74.4 per cent in 2000.



---

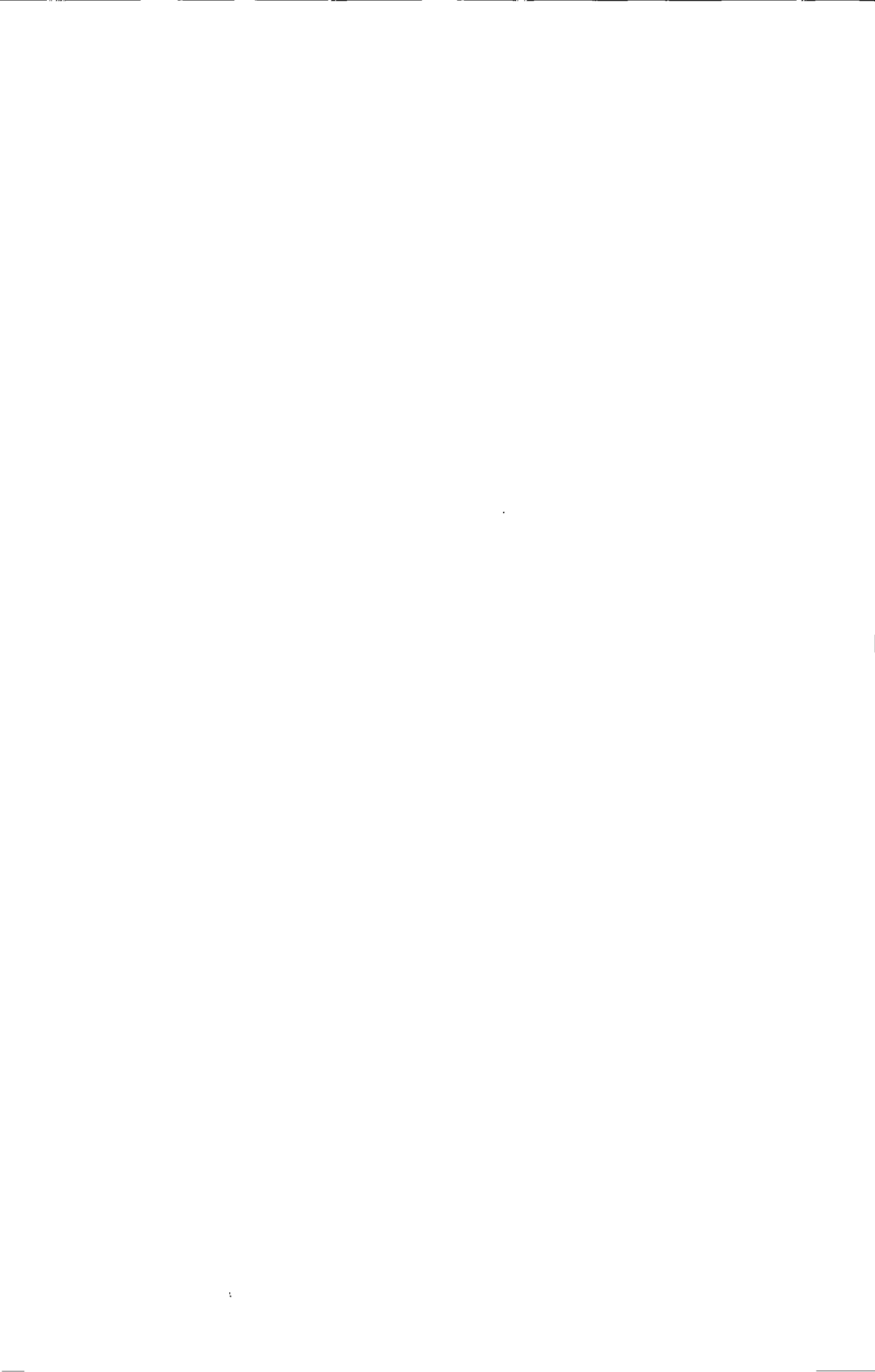
# Economic Growth, Investment, Technology, Management and Entrepreneurship

**The Relation between Jobs, Productivity, Technological Change  
and Real Growth in the Longer Term 73**  
*The Theoretical Arguments 74*  
*Historical Evidence 77*  
*Qualifications 79*  
*Faster Productivity Growth and Employment 82*  
*Conclusions 83*  
*Notes 84*

**Capital Formation 85**  
*Notes 88*

**Technological Progress 89**  
*Technological Improvements in Perspective 89*  
*The Nature, Sources and Rate of Technological Change 89*  
*The Rate and Pattern of Technical Change 90*  
*International Diffusion of Technology 92*  
*Diffusion of New Technologies within Canada 93*  
*Technology Diffusion and Public Policy 95*  
*The Generation of New Technologies: R&D Spending 96*  
*Notes 106*

**The Role of Entrepreneurship and Management 108**  
*Managerial Techniques, Quality and Organization 108*  
*Entrepreneurship 118*  
*Encouraging Entrepreneurship 123*  
*Venture Capital 123*  
*Other Forms of Finance 127*  
*Small Business 128*  
*Notes 129*





---

## **Economic Growth, Investment, Technology, Management and Entrepreneurship**

This is the first of two chapters devoted to considering means of achieving higher levels of real income over the longer term. In this chapter, Commissioners' primary concerns are the contributions made to economic growth by capital formation, technological progress, management and entrepreneurship. By way of introduction, we address first the concern that technological progress – or a more efficient allocation of the economy's resources across different activities – may produce not economic growth, but unemployment.

### **The Relation between Jobs, Productivity, Technological Change and Real Growth in the Longer Term**

While improvements in productivity provide the foundation for increases in real incomes over time, many submissions to this Commission expressed concern that greater efficiency in production might result in job losses. Some see technological advances, such as the development of robots and other creations of the micro-electronic "revolution", as displacing workers or slowing the creation of new jobs. Furthermore, the increase of economic growth expected from freer trade could demand extensive rationalization of industry, again at the expense of jobs. The fundamental issue, therefore, is whether or not there is a trade-off between growth in employment and growth in output, productivity and incomes.

The view of most economists is that there is little or no trade-off of this type in the longer run of, say, a decade or more. Most economists believe that over the long run, growth of employment and increases in productivity evolve independently to a considerable degree. In other words, if technological change or industrial rationalization produced higher productivity, there would be little net effect on total employment; rather, there would be higher output

and higher real incomes, but little, if any, change in the number of jobs, although the mix of jobs might well change.

Underlying this conviction is the belief that in the long run, factors relating to the supply of goods and services determine levels of employment and real income.<sup>1</sup> “Demand-side” factors, resulting from cyclical developments and policies of demand management, tend to average out or lose significance over time.<sup>2</sup> The range of variations in the economy over the course of the “business cycle” is normally much smaller than the cumulative impact on economic growth of supply-side changes if these extend over a period of ten or more years.

It is difficult, if not impossible, to prove that the concern about adverse effects of technological change on total employment is groundless. It is, however, possible to assess the strength of logical arguments and historical evidence in favour of the economists’ view, advanced above, of the relation between productivity, real growth and employment.<sup>3</sup> Since many people feel deep concern about the possible connection between technological change and unemployment, the following sections explore both the theoretical and the empirical arguments that relate to this issue.

## **The Theoretical Arguments**

In a “closed” (non-trading) economy, productivity growth secures not only an increase in the potential supply of output, but also an increase in real income and, consequently, in potential real purchasing power. The spending of that increased purchasing power will create an increased demand for goods and services that should approximately match the increased supply resulting from the increased productivity. If we consider, rather than a closed economy, a small open economy such as Canada’s, the additional potential output made possible by improved productivity would generally sell on the world market at prices little lower than those current before the increase in productivity. In either case, demand growth will match the output growth made possible by greater productivity, at least over the long run. Nevertheless, there will be adjustment problems to consider.

Sometimes adjustment to the increase in productivity can take place with minimal disruption in employment patterns. This will tend to occur where the “new” production processes make use of workers with skills similar to those associated with old processes, and when the demand for the product is “price elastic” (that is, the volume of demand increases by more, in percentage terms, than the reduction in price). Then, as costs decline with the growth in productivity and prices fall, sales and, therefore, output increase more than proportionately. Given the resulting increase in output, employment in the industry need not fall and may rise. Examples of this possibility include the communications industry over much of its history and, more recently, the computer industry. In these cases, the relative price reductions resulting from labour-saving innovations—sometimes coupled with growth in demand as general levels of real income have risen—have led, as a rule, to sufficiently large growth in sales to ensure a substantial increase in employment.

Nevertheless, adjustment to an increase in productivity often involves both disruption and reduction in employment in particular industries. This can occur when either the skills demanded by the new production processes are different from those required for the old, and/or the demand for the product is relatively “price inelastic” (that is, percentage increase in volume demanded is less than the percentage reduction in price). The latter situation is typical of the demand conditions for many agricultural products. As a result, the major increase in agricultural productivity that began in the eighteenth century and accelerated rapidly after the Second World War led to a dramatic decline absolutely and relatively in employment in farming.<sup>4</sup> In this sector, productivity increases led to an increase in real income and real spending, but the objects of that expenditure and, hence, the new jobs created were not in agriculture but in other industries, some of them in agriculture-supporting industries such as the manufacture of farm machinery or fertilizer. As consumers spent a smaller fraction of their budgets on food, because of the drop in relative cost, they were able to spend more on consumer durables and services, which resulted in the creation of new jobs.

If one looks only at total employment (or unemployment) statistics for North America and Western Europe in the period after the Second World War, it is, in fact, hard to see much evidence of difficulty in adjusting to the huge decline in agricultural employment. This is not to deny that many people and communities had to make difficult and far-reaching adjustments. In Canada, hundreds of thousands of individuals left farming and generally had to relocate; hundreds of communities declined in size, and some of them became ghost towns; one province, Saskatchewan, experienced extended periods of population decline.<sup>5</sup> Despite all this, the massive adjustments imposed by the dramatic increases in agricultural productivity did not produce substantial unemployment in the regions concerned, nor did they initiate extended periods of unemployment for most of those dislocated.

The introduction of new technologies can result in a decline in demand for workers experienced in older production processes who find it difficult to re-establish themselves in expanding industries requiring different skills. Adjustment can be extremely difficult for such workers, particularly if the shift in demand takes place rapidly. If this happens, adjustment often requires learning new skills—frequently a time-consuming process—and possibly accepting a lower wage, temporarily or permanently. These problems tend to be especially acute for older workers.

This simplified outline of the varying effects on employment of improved productivity leads to several broad conclusions. First, to the extent that productivity increases result in employment losses in one area, there are powerful economic mechanisms at work to generate a comparable number of jobs elsewhere. Secondly, the effectiveness of these mechanisms depends, to a considerable extent, on the responsiveness of the price and wage system to market forces. Declines in price are needed to encourage the purchase of a larger volume of products where productivity has increased and, if the demand response is low, to permit declines in aggregate spending on those items so that purchasing power may be transferred elsewhere. In the same

circumstances, increases in average real wages (which will tend automatically to accompany productivity growth if prices are flexible) are also needed to permit increased real spending. Increases in relative wages for certain occupational groups are required to draw workers to areas where new employment opportunities are available. Declines must occur in relative and, quite possibly, in absolute wages for occupational groups in declining industries in order to cushion the drop in demand for their services. A reduction in relative wages in geographic areas where the demand for labour has fallen can help to minimize unemployment. As a general rule, the effectiveness of these adjustment mechanisms will decline to the extent that impediments occur to the necessary adjustment of prices and/or wages in response to market forces. Such impediments will reduce the ability of an economy experiencing improved productivity to sustain employment. Thirdly, even though average real incomes will increase with improved productivity, some individuals will face difficult adjustments that may involve a change of jobs, the undertaking of a new occupation, a move to a new community, and/or a temporary or permanent decline in income.

Most economists would subscribe, in general terms, to the preceding description of the processes by which our economic system adjusts to the ongoing technological and other changes that contribute to productivity growth. Canadians looking back over the post-Second World War period would recognize that on the whole, our economy has adjusted extraordinarily well to dramatic changes in its structure. Some, however – particularly those who are or may soon become victims of change – may not find the case either convincing or comforting. These people might well ask whether the massive unemployment of the 1930s and even the high levels being experienced today, not only in Canada but also in Western Europe, are consistent with a “self-equilibrating system”. What explanation – or solution – is there for the significant portion of unemployment that exists today in certain occupations and regions that seems to be the result of major structural changes in our economy? Are today’s technological changes of a different order of magnitude than any experienced in the past? The answers to such questions are not easy, and they involve issues of widespread concern.

There is no significant evidence that the massive unemployment of the 1930s or of the present day resulted from technological change. Most of those examining both periods would agree that the sharp rise in unemployment resulted from the fact that total demand for goods and services in the economy fell considerably short of the economy’s ability to produce them. One or more forces in the system may produce wide swings in real and nominal demand.<sup>6</sup> Substantial unemployment may occur if monetary or fiscal policy is not adjusted sufficiently to offset a decline in aggregate demand. A similar outcome may result if the general level of wages and prices does not adjust sufficiently to ensure that nominal demand produces sufficient real demand to match the economy’s capacity to supply goods and services. If, for example, nominal demand increases as a result of a change in fiscal or monetary policy, there will be no increase in real demand if prices and wages increase by the same amount. The issues of short-run economic stability and demand-management policy are the subject of Chapter 10 of this Report.



Over the period for which we have reasonable data on the composition of unemployment, there is no evidence that structural unemployment caused by technological change has ever accounted for a major share of total unemployment over a large geographic area and during extended periods of time. Structural unemployment caused by technological change can be significant in smaller regions and for certain groups of workers (especially older workers), but it has not been a major contributor to the long-term pattern of national unemployment in Canada or in other comparably industrial countries.

These arguments may not have convinced the sceptical reader. Will the economic mechanisms described above and, particularly, the price/wage mechanisms that are nowadays widely thought to be subject to many inflexibilities and imperfections work smoothly enough to provide jobs for those displaced by technological change and for new entrants to the labour force? It is, after all, easier to see where Canadians have lost or are likely to lose jobs as a result of technological change than to recognize where the working of the economy has created or will create them.

Commissioners' assumption that these mechanisms do work and will continue to work rests, in part, on the reasoning outlined earlier. It rests, as well, on the historical evidence, to which we now turn, that such mechanisms have operated more or less satisfactorily in recent decades. The weight of evidence is, we believe, compelling.

## **Historical Evidence**

Both in Canada and in a number of other countries, historical evidence strongly suggests that over the longer run, growth in the supply of labour (the labour force) primarily determines employment growth. Underlying productivity trends primarily determine real wage growth which, in turn, broadly determines real growth in per capita income. Growth in employment and growth in productivity are, to a considerable degree, independent of each other, although this statement requires some significant qualifications which we shall review below.

Let us consider first Canada's experience since 1926, the first year for which national accounts data are available as indicated in Table 8-1. Trends in growth of employment during the periods shown match within a few tenths of a percentage point the trends of growth of the labour force. The growth of the labour force stems primarily from such independent factors as population, age structure and social forces. Thus, it is the growth of the labour force that should be considered as the factor causing employment rather than the reverse. Table 8-1 also provides significant evidence that growth of employment and productivity are, to a considerable extent, independent of each other over time. Between 1926 and 1946, for instance, productivity grew moderately, but the labour force and employment experienced low levels of growth. Between 1946 and 1956, productivity increased substantially, but the labour force and employment grew little. Between 1956 and 1973, productivity increased moderately to quickly, while the labour force and employment

**TABLE 8-1 Longer-Term Trends in Employment and Productivity, Canada**

Time Period	Average Annual % Growth Rates		
	Labour Force	Employment	Productivity
1926-46	1.4	1.4	2.1
1946-56	1.8	1.8	3.5
1956-66	2.5	2.5	2.1
1966-73	3.1	2.8	2.5
1973-81	3.2	2.9	0.1
(1973-82) <sup>a</sup>	2.9	2.2	-0.1

Source: Statistics Canada, *National Income and Expenditure Accounts* (Ottawa: Minister of Supply and Services Canada, various years).

- a. The 1973-82 period is not even roughly cyclically neutral, as 1973 was a very strong year and 1982 a very weak year. Over an interval as short as nine years, this can cause the average growth rate of employment to diverge appreciably from the average growth rate of labour force, thus causing unemployment to change substantially.

also grew substantially. After 1973, productivity remained virtually static, while the labour force and employment grew quickly.

Let us look next at the average record for the highly developed OECD economies over the period from 1960 to 1982.<sup>7</sup> Table 8-2 presents basic data relating to this record, as reflected in changes in the labour force, employment and productivity. Figure 8-1 further illustrates the relation between changes in the labour force and employment, and between changes in employment and productivity. The data support and reinforce the evidence noted for Canada: there is a very close long-term correlation between growth in the labour force and growth in employment. There is no marked relationship between growth of productivity and growth of employment; but such a relationship as there is probably stems from the tendency of high labour-force growth to result in lower growth of productivity, rather than vice versa.

International evidence, then, does not suggest that rapid growth in productivity causes employment to lag behind growth in the labour force for long periods of time. Demand for workers tends to keep up with growth in the labour force, whatever the rate of productivity growth. In other words, the demand for output of goods and services tends to keep up with the increase in potential supply brought about by an increase in productivity and/or the labour force.

Governments have helped to promote this growth in employment over the short to medium term through the exercise of macro-economic policies. Since the Second World War, growth in nominal aggregate demand has been significantly more stable than it was in earlier years; to a considerable measure, this was the result of a concerted exercise of fiscal and monetary policies. It cannot be claimed, however, that the demand-management

**TABLE 8-2 Average Annual Per Cent Change in the Labour Force, Civilian Employment and Productivity, OECD, 1960–82**

	Labour Force	Civilian Employment	Productivity <sup>a</sup>
United States	2.1	1.9	1.2
Japan	1.1	1.1	6.2
Germany	0.2	-0.2	3.4
France	0.7	0.6	3.8
United Kingdom	0.4	0.0	2.2
Italy	0.2	0.1	3.9
Canada	2.8	2.6	1.6
Austria	0.1	0.0	3.9
Belgium	0.7	0.3	3.4
Finland	0.6	0.3	3.6
Iceland	2.2	2.2	2.1
Ireland	0.6	0.4	3.6
Netherlands	1.3	0.8	2.7
Sweden	0.8	0.7	2.3
Switzerland	0.5	0.5	2.1
Australia	2.3	2.0	1.8
New Zealand	1.9	1.8	0.8
Total OECD	1.2	1.0	2.8

Source: Organisation for Economic Co-operation and Development, *Historical Statistics 1960-1982* (Paris: OECD, 1984), Tables 1.3, 1.7, 3.7.

a. Real GDP per person employed.

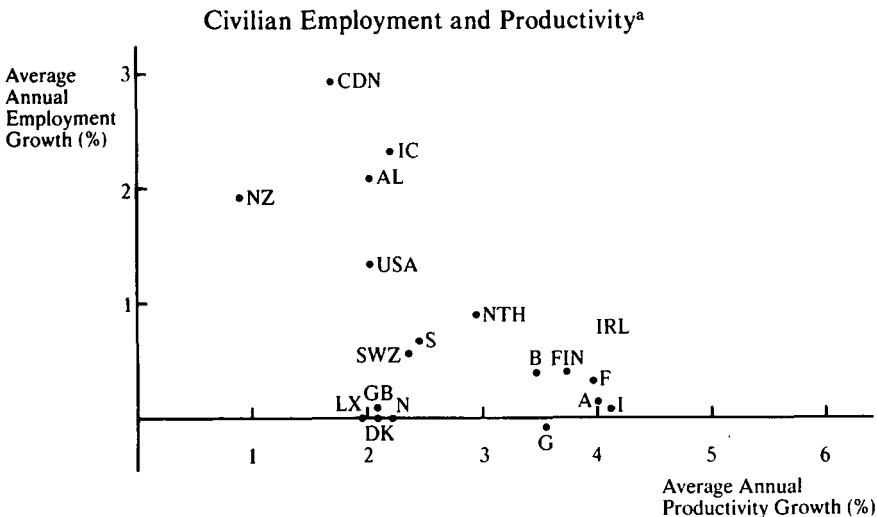
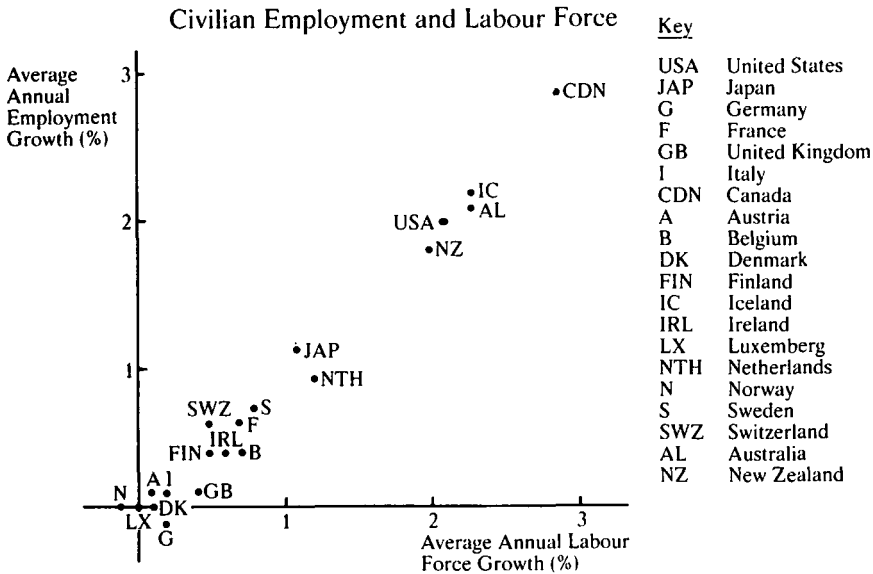
policies of individual countries have been very closely correlated to their particular patterns of productivity and employment growth. It is reasonable, therefore, to assign the primary role in achieving this rough match between employment and labour-force growth over the longer run, in the face of quite different productivity experiences, to the self-correcting adjustment mechanisms described earlier.

## Qualifications

Commissioners have argued that labour-force growth tends to be the “independent” or “driving” factor in the creation of employment. We wish, however, to qualify this causal relationship and the related concept that employment growth is substantially independent of productivity:

- Independent growth in employment opportunities can occur—where a region or industry opens up, for example, as in the Alberta oil boom—and can increase the labour force, directly or indirectly, by drawing previous non-participants into the labour force and by encouraging immigration.
- Rapid growth in productivity is probably more difficult to achieve when the labour force and employment are growing quickly, since rapid growth demands high rates of investment just to keep constant the amount of

**FIGURE 8-1 Average Annual Rates of Growth:  
Advanced OECD Countries, 1960-1981**



Source: Organisation for Economic Co-operation and Development, *Historical Statistics 1960-1982* (Paris: OECD, 1984).

a. Real GDP per person employed.

capital per employee (as compared with the capital investment required to increase productivity), and since a larger share of the labour force is inexperienced.<sup>8</sup> The evidence of some tendency toward an inverse relation between productivity and employment growth probably reflects this point.

- While rapid growth in productivity is unlikely, in the long run, to slow employment growth significantly, it will disrupt the economy more and

necessitate more extensive readjustment. Somewhat greater “frictional unemployment”, on average, might result from an increase in job changes brought about by improvement in productivity: employment might grow in line with the labour force, but the margin between them might be higher. This is the most important qualification to the general assertion that faster technological change is not expected to have much effect on employment.

In the short term, qualifications and interdependencies involving changes in the labour force, employment and productivity become still more important. The reasons are as follows:

- Aggregate demand can vary substantially, from the peak to the trough of the business cycle, in relation to change in the economy’s potential productive capacity. The variations can be noticeable over several years and quite sharp in any given year. Thus, employment growth can depart quite sharply from labour-force growth over shorter periods, and substantial swings in unemployment can and do occur.
- In the short run, swings in employment opportunities often induce similar, though weaker, swings in labour-force participation. When employment opportunities decline during periods of recession or slow growth, so-called “discouraged workers” (unemployed persons not actively engaged in job search) withdraw from the labour force, thus reducing the level of recorded unemployment below the “real” figure. Conversely, the revival of economic growth will draw previous non-participants into the labour force, thus tempering, to some extent, the decline in recorded unemployment that would otherwise take place.
- Fluctuations in demand tend to cause both employment and productivity to move in the same direction as falling demand leads to a decline in employment and productivity, and vice versa. This tendency substantially qualifies, in the short run, the longer-term independence of employment and productivity.
- Under some circumstances, the relation between productivity and real wages can “get out of line”. If, for example, real wages become too high in relation to underlying productivity, then a downward adjustment in real wages may help achieve higher employment. This would constitute short-run divergence between real wages/income and productivity, and an inverse relation between real income and employment. Acceptance of a downward adjustment in real wages, but not in the continuing rate of real wage growth, would lead to an increase in employment, but not in its continuing rate of growth.
- Over the short to medium term, the rate of technological change may affect the strength of demand. The famous economist and student of business cycles, Joseph Schumpeter<sup>9</sup> (1883–1950) suggested that the growth of technological innovations does not follow a perfectly even path; instead, periods of “bunching” of major innovations can occur. In general, application of innovations requires investment in new machinery and equipment; bunching of new innovations ready for implementation would stimulate demand for investment. The investment in new, more productive processes tends to increase productivity. Thus there may be extended

periods, lasting a decade or more, of above-average investment demand, and employment and productivity growth. Periods of weak investment, total demand, and employment and productivity growth might follow if the stimulus caused by one "bunching" of major technological innovations had tended to disappear, and if no equivalent new innovations had yet appeared. This view suggests that all other factors being equal, periods of above-average technological change and productivity growth will tend to produce above-average employment growth, rather than below-average employment growth, as many Canadians fear.

While Commissioners previously emphasized the view held by most economists that there is little or no relation, over the long run, between technological change and levels of employment, some connection may be formed over the medium term, as Schumpeter suggested; this relation may occur between the pace of technological change and the growth both of productivity and of employment. Indeed, such dynamic forces may override the qualification, noted above, that rapid growth of the labour force and employment make the rapid growth of productivity difficult to achieve at the same time. The kind of circumstance described by Schumpeter could offset the qualification that higher rates of technological change tend to cause higher levels of "frictional" unemployment, which result from the process of adjustment in the economy.

### **Faster Productivity Growth and Employment**

As Commissioners have already stressed, there is no evidence from the post-Second World War period that quicker productivity growth has slowed growth of employment over any extended period. Technological change has not increased the level of structural unemployment as might be expected if a substantial percentage of those who lost jobs experienced prolonged difficulty in finding new jobs. Nevertheless, rapid productivity growth could raise the level of unemployment: if the "creative destruction" of existing jobs increases with faster productivity growth, the higher turnover of employment could cause more frictional unemployment.

In order to illustrate the working of this mechanism, let us assume that annual productivity increases involve a loss of jobs equal to 3 per cent of the labour force and the creation of an equal number of new jobs, the productivity of which exceeds that of the old jobs by 33.3 per cent. It follows from these assumptions that productivity will increase by 1 per cent each year. Assume further that each time a worker loses a job, it takes him or her an average of four months to find a new one.<sup>10</sup> These circumstances will produce additional frictional unemployment equal to 1 per cent of the labour force, representing 3 per cent of workers, each one unemployed, on average, for four months of a year.

Would slowing productivity growth reduce unemployment? We could, in principle, discourage implementation of productivity changes that involve job losses. This would seem undesirable, however, since to avoid an increase in unemployment of 1 percentage point would sacrifice a cumulative gain in real

income of 1 per cent per year, which works out to a gain of 28 per cent over 25 years. Furthermore, this frictional unemployment might be reduced by other means, such as facilitating job searches by displaced workers.

Even if we discouraged job-displacing productivity changes, we might not alter employment levels. Measures to discourage companies from taking advantage of potential productivity gains could prove to be counter to the intent of maintaining employment. Employers could, for example, be required to make large severance payments to all laid-off workers; it would be difficult to distinguish between lay-offs resulting from productivity changes and lay-offs for other reasons. Employers might respond to such a measure in various ways. They might become more willing to retrain employees for new jobs and less eager to implement job-displacing productivity changes. To hire a new employee, however, would involve substantially more risks, including an inability to introduce productivity measures which would eliminate the need for that employee. The risks would also include the possibility of incurring larger losses if the demand for the new output fluctuated, or if the employee proved unsuitable for the job. Employers might become much more selective in their hiring, recruiting only employees who were likely to carry out well a particular job or a number of jobs. Such selective recruiting would tend to raise frictional unemployment; it would lengthen the time required to find a job, and it might make some higher-risk candidates virtually unemployable, especially if minimum wages were in effect. Thus such action might not lower unemployment, although it might well slow growth in productivity and real income.

## **Conclusions**

Economic theory and history provide very little evidence that over the longer run, growth and employment are in conflict to any significant degree. This conclusion is essential to Commissioners' subsequent discussion in this Part of our Report and, indeed, throughout our Report. First, given reasonable confidence that improvements in productivity will not increase unemployment, we can consider on their own merits measures for achieving such improvements. However, measures to improve productivity and other sources of economic change can threaten particular jobs, and the job prospects and income of particular individuals. We shall keep this consideration very much in mind.

Secondly, the conclusion that improvements in productivity do not increase unemployment reinforces Commissioners' confidence in considering separately issues involving economic efficiency (including productivity) and maintenance, on a stable basis, of high levels of employment and low levels of inflation. The former issues are the subject of Chapters 8 and 9 of Part III, and of several other Parts of this Report. The latter issue is the subject of Chapter 10 of Part III.

Thirdly, while some observers have suggested that cumulative growth in structural unemployment caused by technological change would compel Canadians as a nation to develop "new types of work" in order to provide people with "something to do" and/or "ways of separating work and income",

Commissioners' conclusions about technology and unemployment indicate that these developments are not likely to be problems for Canada in the foreseeable future.

## Notes

1. In referring to the economic effect of factors on the supply side, we Commissioners do not intend to associate our remarks with the views of "supply-side" advocates of the Laffer curve, who contend that a reduction in tax levels will generate sufficient increase in economic output and tax revenue to compensate for any initial loss of tax revenues. Rather, we suggest that factors influencing potential supply such as labour-force growth and productivity trends, and not "demand-side" factors, primarily determine longer-run trends in such economic variables as employment and real income levels.
2. The Depression of the 1930s represents an important exception and the 1981–82 recession may be a partial exception. Apart from fluctuations in demand, such as those caused by the factors cited in the text, real demand tends to grow at the same rate as real supply over the longer run.
3. See Robert C. Allen, "The Impact of Technical Change on Employment, Wages, and the Distribution of Skills: A Historical Perspective", in *Adapting to Change: Labour Market Adjustment in Canada*, vol. 18, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Toronto: University of Toronto Press, 1985).
4. The fact that the demand for many agricultural products is also relatively "income inelastic" (that is, percentage increase in volume demanded is less than percentage increase in real income) helps to explain the relatively slow growth in real demand for agricultural products.
5. Saskatchewan experienced an absolute decline in population virtually continuously from 1936 to 1946 and from 1968 to 1974.
6. Nominal demand is total spending in current dollar terms at actual prices; real demand is total spending in real terms at constant prices.
7. 1960–81 is an approximately cyclically neutral period. The period 1960–82 would generally show wider divergences in rates of growth of labour force and employment because 1982 was a year of severe recession in practically all of the countries considered, whereas 1960 was generally a year of closer-to-average levels of economic activity.
8. Some analysts, however, have suggested that relatively high labour-force growth may increase productivity by making it easier, over time, to reallocate the labour force to sectors/regions of higher potential growth. Under these circumstances, to concentrate the flow of new entrants in areas of higher potential can produce substantial reallocation without requiring or inducing people to change from their current jobs.
9. See, for example, Joseph A. Schumpeter, *Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and Business Cycles* (New York: Oxford University Press, 1961), and *Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Approach* (New York: McGraw-Hill, 1939).
10. Commissioners are not suggesting that the job losers necessarily find employment in the new, higher-productivity jobs. Associated with the 3 per cent assumed change in the composition of employment, there would probably be substantially larger flows between jobs, but many of the changes would not involve a spell of unemployment. See Part III, Chapter 10 for a fuller consideration of the nature of unemployment.



## Capital Formation

While the pace of capital formation did not contribute significantly to the post-1973 slow-down in productivity growth,<sup>1</sup> it is not clear whether accelerated capital formation can help to restore productivity growth. The real capital stock increased on average about 5 per cent per year from 1962 to 1981.<sup>2</sup> The growth in capital stock reflects the amount of investment or, in the language of the national accounts, gross fixed capital formation.

Table 8-3 provides an international comparison of gross fixed capital formation as a percentage of gross domestic product (GDP). The share of total output devoted to investment in Canada has been higher than the comparable share in the United States or the United Kingdom, much lower than that share in Japan, and similar to the levels for the other major Western European countries. In Japan and the four largest Western European countries, the average investment/GDP ratios fell moderately after 1973. The ratio remained constant in the United States and rose in Canada. A higher ratio of energy investment to GDP after 1973 was the most important factor in the rise in Canada's overall investment ratio, but the ratio of non-energy investment to GDP also increased slightly.

Many people believe that Canada needs more capital per unit of output per employee than most other countries because of our colder climate, which requires higher investment in construction; our lower-density population, which requires higher investment in transportation infrastructure; the larger share of our output in such capital-intensive industries as agriculture, mining (including oil and gas), and hydro-electric/power generation; and our smaller-scale production runs in manufacturing, which may make less efficient use of plant and equipment. Furthermore, our rapid employment growth requires a higher ratio of investment just to provide the same growth in capital per

**TABLE 8-3 Capital Investment, Major OECD Countries, 1960-1982**

Gross Fixed Capital Formation as % of Gross Domestic Product	Averages				
	1960-67	1968-73	1974-79	1960-82	1980-82
United States	18.0	18.3	18.3	18.1	17.6
Japan	31.3	34.7	32.0	32.3	31.0
Germany	25.2	24.4	20.9	23.4	21.7
France	22.3	23.5	22.7	22.6	21.1
United Kingdom	17.5	18.6	18.7	18.0	16.2
Italy	21.7	20.6	20.0	20.7	19.7
Canada	22.1	21.6	22.9	22.3	22.5
Total: above	20.3	21.6	21.6	21.0	20.9
Total: OECD	20.7	21.9	21.8	21.4	21.0

Source: Organisation for Economic Co-operation and Development, *Historical Statistics 1960-1982* (Paris: OECD, 1984), Table 6.8.

worker as do other countries. Most experts consider growth in capital per worker a major factor in productivity growth.

Nevertheless, given that after 1973, investment was higher in Canada than in any of the other countries except Japan, our investment performance relative to other countries appears adequate, at least before the 1981–82 recession. However, there may at present be cause for concern. Real investment in Canada suffered a sharp decline during the recession and has not yet begun to recover significantly; investment in the United States, on the other hand, has since rebounded sharply.

Another recent source of anxiety has been the deteriorating financial position of corporations during the 1981–82 recession. Table 8-4 presents a few of the financial ratios most frequently used to describe the position of industrial corporations. The ratio of internal funds to capital outlays<sup>11</sup> shows the extent to which corporations had fewer internal funds to draw on to finance investment during 1981 and 1982. The decline in the ratio of current assets and current assets less inventories to current liabilities provides a measure of the erosion of corporate liquidity after 1980. The increase in the debt/equity ratio made corporations more vulnerable to fluctuations in interest rates. There was a pronounced compression of profit margins in 1981 and 1982. The financial position of the corporate sector began to improve in 1983, and improvement continued in 1984. However, this process has necessarily entailed some retrenchment of investment. It is only after corporations have rebuilt their balance sheets that investment can be expected to strengthen. As long as the build-up does not take too long, however, it should not be a source of undue concern.

Some observers expressed misgivings about the effects of the tax system on incentives to invest. In particular, there is worry about the degree to which inflation might have raised and distorted effective corporate tax rates, thus creating a disincentive for investment. Calculations made by the Economic

**TABLE 8-4 Selected Financial Ratios of Large Canadian Industrial Corporations, 1980–83**

	1980	1981	1982	1983
	(ratio)			
Internal funds/capital outlays	0.76	0.46	0.41	0.84
Current assets/liabilities	1.60	1.52	1.41	1.43
Current assets less inventories/liabilities	0.89	0.83	0.76	0.81
Total debt/equity	1.26	1.38	1.53	1.42
	(per cent)			
Pre-tax profit margin on sales	9.8	8.1	4.5	6.3
Interest burden	27.4	40.2	65.1	49.6

Source: Canada, Finance Canada, *Economic Review*, April 1984 (Ottawa: Minister of Supply and Services Canada, 1984), p. 27.

Council of Canada seem to suggest that this has occurred. According to these estimates, the real effective tax rate in the non-farm/non-financial sector rose from 37.2 per cent in 1963–65 to 44.3 per cent in 1978; in the manufacturing sector, it rose, during the same period, from 42.6 per cent to 47.2 per cent.<sup>3</sup> Other data show that the real tax rate rose considerably over the period 1966–78 and actually exceeded the statutory nominal rate in 1975–77.<sup>4</sup> Other economists, however, have raised questions about the interpretation of the data; if we exclude corporations that are in a loss position, no upward trend appears in the effective tax rate for the non-resource sector as a whole or for the manufacturing sector.

An important factor countering the effect of inflation on the effective tax rate or, at the very least, mitigating the extent of any increase has been the introduction of a number of Canadian corporate tax provisions. These include the 50 per cent rate of capital-consumption allowance and the lower corporate-tax rate for manufacturing and processing; the investment tax credit; and the 3 per cent inventory allowance. More generally, rates of capital-consumption allowance have been higher than required to offset depreciation.

Taking these various incentives into account, a recent study concluded:

*Despite the lack of indexing of the tax system, inflation does not seem to have significantly affected the incentive to invest or the effective tax rate, except for investment in inventories. Similarly . . . the corporate tax structure itself does not much affect the marginal investment decision, with the exception of inventories.<sup>5</sup>*

The stock of capital kept growing strongly through the period 1973–81 and thus did not contribute to the apparent decline in productivity growth after 1973.

Would it be beneficial to encourage even higher rates of investment and capital formation than existed prior to 1981 (which might be possible after full cyclical recovery)? Conventional economic analysis does not suggest that additions to the capital stock would produce dramatic gains in output. One calculation that relates output to the quantity of labour and capital inputs estimates that an increase in investment equal to 3 per cent of GNP (an increase in investment which amounted to more than 20 per cent in 1983) would only raise the total capital stock of the nation by 1 per cent and would raise output by the relatively small amount of 0.3 per cent. More sophisticated calculations, which assume that technical change is embodied in the capital stock, also indicate that it would take a massive increase in investment spending to manage even a relatively moderate increase in output and productivity. We should harbour no illusions that modest increases in investment will result in huge increases in productivity in the short or medium run.

An increase in investment raises only the level of output and not its growth rate over time. Higher growth occurs only in the interim, between the time of investment and the point when the economy reaches the new increased level of output. Moreover, to maintain the new level of output, it is necessary to

devote an increased proportion of output to investment; otherwise, the economy will eventually return to its original growth path.

However, the benefits from increased investment, while not dramatic, might still be worthwhile.<sup>6</sup> It might be possible to improve economic welfare and raise living standards by increasing investment as long as the pre-tax return on capital exceeds the after-tax rate of return on savings.

One policy prescription to stimulate investment is to reduce the taxation of capital. Another is for the government to increase savings available to finance investment by reducing its own deficit. Some of the discussion of policy alternatives, particularly in the United States, has focused on the desirability of fully funding social security pension plans; this action, of course, would increase the level of savings for this purpose and, in all likelihood, the total level of national savings.

While international comparisons of investment performance and a review of the treatment of investment in the existing Canadian tax system do not suggest a strong case for increasing the long-run level of investment, there are theoretical grounds for believing that such an increase might offer net benefits. Perhaps the main immediate concern, however, is whether investment will recover quickly and sufficiently from its present cyclically weak level. If it does not, governments may need to induce more investment.

## Notes

1. See Chapter 7.
2. Canada, Finance Canada, *Economic Review, April 1984* (Ottawa: Minister of Supply and Services Canada, 1984), p. 125.
3. Abraham Tarasofsky and H. Bert Waslander, "Inflation-Adjusted Rates of Return and Effective Tax Rates, by Aggregate and Industry Groups", in *Peering under the Inflationary Veil*, edited by Patrick Grady, Proceedings of an Economic Council of Canada Conference on Inflation-Induced Distortions in Financial Reporting and Taxation, Toronto, October 15–16, 1981, pp. 26–27.
4. *Ibid.*, p. 28.
5. Robin Boadway, Neil Bruce, and Jack Mintz, "Taxation, Inflation, and the Effective Marginal Tax Rate on Capital in Canada", *Canadian Journal of Economics* 17 (February 1984), p. 78.
6. In the United States the leading proponent of this view has been Martin Feldstein of the National Bureau of Economic Research. This same case has been stated for Canada. Robin W. Boadway and W. Steven Clark, "The Government Budget, the Accumulation of Capital, and Long-run Welfare", in *Fiscal and Monetary Policy*, vol. 21, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Toronto: University of Toronto Press, 1985).

# **Technological Progress**

## **Technological Improvements in Perspective**

The rate of growth of our income per capita – a measure of our wealth as a nation – ultimately depends on the rate of productivity growth of labour and capital. The rate of productivity growth depends, to a considerable extent, on the rate of technical advance or progress. While a number of authors<sup>1</sup> have attempted to quantify the various sources of technical progress, the term continues to describe a residual category of economic developments about which we know relatively little.

Fundamentally, technical progress embraces any innovation that improves the way we do things. Thus, innovations in the political decision-making process or improvements in the organizational design of corporations or non-profit organizations have no less potential to increase wealth than has the discovery of a better carburetor. We must keep in mind that technological change involves a broad process of improvement in products, methods of production, organizational design and management, and, indeed, in the organization of political institutions and the operation of the political process.

Most discussions of technological change concentrate on improvements in products and processes, and on formal research and development. This tendency can be seen in the frequently-voiced concern that Canada is devoting far too few resources to research and development. A few analysts have argued that we have mechanisms in place to develop new products and processes, but that as a society, we have neglected to encourage innovative activity in the field of managerial techniques and organizational design.

One observer contends that political innovation is necessary if technological innovation is to continue.<sup>2</sup> In his view, a society's ability to adopt new technologies depends on its ability to limit the political power of special-interest groups or to induce these groups to act in ways more conducive to the general good. Political innovation is not only productive in its own right, the argument goes, but it also increases the return on more conventional types of innovative activity.

## **The Nature, Sources and Rate of Technological Change**

A discussion of the evolution of industrial structure would obviously be incomplete without some analysis of changes in the extent, nature and sources of improvement in technology. Unfortunately, the process of technological change does not yield easily to such analysis. One approach, however, is to measure rates of growth in total factor productivity within various industries and to accept the result as the rate of technical advance. While there has been considerable progress in making such measurements, this approach has yet to convey much insight into the causes and nature of technical change. A number of econometric studies have suggested that the rate of technical change in a number of industries in the late 1970s was negative. This does not seem likely; it suggests merely that we still do not define or measure technical change very well. Another approach is to attempt to draw conclusions from

actual experience in particular cases. This involves identifying “major innovations” and, subsequently, drawing inferences from their characteristics of “areas of strength”, or appropriate managerial or public policies. This approach, too, entails problems.

One analyst has argued that one-half, perhaps more, of observed increases in total factor productivity are the result of “prosaic, unremarkable improvements”.<sup>3</sup> Technical change, according to this view, is generally a consequence, not of some great leap forward, but of continual small changes – learning by doing and by using.

During a meeting organized in 1984 by this Commission and the Conference Board of Canada, an executive of the Dominion Foundries and Steel Company (Dofasco) outlined examples of small, yet discernible, improvements resulting in technical change:

*We have entered into a study with Nippon Steel which extended over about a six month period where they sent a team of fifteen people to our plant and examined all our operations and they went back home to Japan and analysed that work. We sent about fifteen people over there to work with them. They came back for about another month or so and then they went back.*

*Anyway what they told us, there is no quick fix to management. It is something that you have to work on continuously, and they were all basic fundamental things they told us that we could improve. And we are a pretty efficient steel company, and they said: “Why are you taking a half inch side trim on that coil?” I don't know. Somebody started doing that and we continued to do it. “Well, you should only take a quarter inch and that would give you a certain percent yield improvement. Why are you moving that coil from here to here? . . . The forklift truck has to pick it up and you get a damaged edge. Do your workers know where you are going?”*

(Ben Ciprietti, at Royal Commission and Conference Board of Canada, Meeting of Council of Corporate Planning Executives, Transcript, May 10, 1984, pp. 58–59.)

The changes described involved neither new technology nor formal research and development (R&D), yet they unquestionably enhanced productivity. Formal R&D is important, but we should not emphasize it to the exclusion of other productivity-enhancing policies, including the timely adoption or adaptation of technological advances initiated elsewhere.

## **The Rate and Pattern of Technical Change**

Is the rate of technical change accelerating? In the opinion of many observers, it is. For example, the recent federal Task Force on Micro-Electronics and Employment concluded in a brief to this Commission:

*It is worth repeating that this wave of new technologies differs radically from that of the past. Previous technological changes have typically come into public use in isolation and in series. Today the rate and breadth of technological change [are] so great that the interactions between old and new technologies have further-reaching, more complex implications than any time at least since World War II.*

*Technology is now rapidly changing on a global scale. In fact, we are witnessing nothing less than a transformation of the whole manufacturing system of the world. The geopolitical map of the world is being rewritten in front of our eyes.*

(Task Force on Micro-Electronics and Employment, Brief, November 28, 1983, p. 3.)

The Canadian Manufacturers' Association sees the matter in similar terms:

*The challenge for Canada is not only to find ways of riding the current wave of technological innovation but, given that the rate of change is accelerating, we must also find ways of remaining on the wave of technological innovation. To do so, our industrial system must be flexible and quickly self-adjusting.*

(Canadian Manufacturers' Association, Brief, September 6, 1983, p. 5.)

The Calgary Council for Advanced Technology voiced the same opinion:

*Never has time been so critical as it has been with high technology. The product that is viable today is literally obsolete tomorrow.*

(Calgary Council for Advanced Technology, Transcript, Calgary, November 9, 1983 [vol. 43], pp. 8833-34.)

During the 1984 meeting sponsored by this Commission and the Conference Board of Canada, participants asked members of the Conference Board's panel of corporate planners whether the rate of technical change is accelerating. Their responses were to the effect that technical change occurs in waves, affecting different industries at different times. Although change is rapid in some sectors, it is not necessarily taking place on a broad front. One participant concluded:

*In terms of technical change, I would come back and say that you can look at some areas that are under a phenomenal rate of change now. The micro-electronic area: tremendously rapid rate of change. And the company I work for has one business venture, one in which we measure the life span of the technology in months. But if you look at the oil refining area, I would argue that the rate of change was far faster in 1950 for fundamental process changes . . .*

*So I think in the oil industry, the rate of process change is not particularly high; micro-electronics is very high; pharmaceuticals and the whole biochemical process [has] a very high rate of change; [for] the chemical and plastic business, in my mind, the rate of change was faster in the sixties than it is now.*

(Peter Flynn, at Royal Commission and Conference Board of Canada, Meeting of Council of Corporate Planning Executives, Transcript, May 10, 1984, pp. 98-99.)

Attempts to measure the acceleration of the rate of technical change using various indices of inventive activity produced results that did not accord with the public perception. After surveying the econometric evidence, indices of patenting activity, and other measures of inventive activity, an American economist concluded that these measures provide "evidence that the rate of technological innovation may have slowed down in the 1970s and early 1980s."<sup>4</sup> He concedes that the available studies are somewhat out of date and notes recent significant increases in resource and development (R&D)

spending in the United States and Canada. Thus, at least one index of technical change is on the rise.

## **International Diffusion of Technology**

Which nations are the major contributors to the world-wide pool of technologies on which Canada and other nations draw heavily? The United States has been and remains the most important source of new technologies, but its relative contribution has declined in recent years. Two studies bear on this record. First, a National Science Foundation study on the sources of significant technological innovations showed that the U.S. share had declined from 80 per cent during the period 1953–58, to 57 per cent for the period 1965–73,<sup>5</sup> while the Japanese share had risen from zero to 10 per cent. Secondly, a U.S. survey confirmed that while the United States retains world leadership in most fields, the greatest improvements in technological expertise over the period 1968–83 occurred for the most part in Japan and occasionally in West Germany.<sup>6</sup>

Patent data graphically illustrate the decline in the U.S. share and the increase in the Japanese share of world-wide inventive activity. The U.S. share of patents granted to “own nationals” by seven leading industrial countries fell from 49 per cent in 1970 to 34 per cent in 1980, while the Japanese share increased from 22 per cent to 42 per cent. The West German share edged up slightly, while the Canadian share held constant. Changes in the world-wide distribution of R&D spending show that Japanese and German R&D spending have risen more quickly than that in the United States.

There have also been changes in the extent to which new technologies become adopted internationally and in the speed with which this development occurs. New technologies now find their way to more countries and travel more quickly in the process than they did 25 years ago. There is now little or no time lag between reception of a new technology in industrialized countries and its reception in less-developed or newly industrialized countries (NICs).

Researchers are in general agreement that new technologies are transferred abroad earlier in their “life cycle” and more frequently than was usual prior to 1970. One analyst concludes that the product cycle—during which a technology has a period of solely domestic exploitation, with exports serving foreign markets, before it is transferred abroad—has been compressed to the point of non-existence.<sup>7</sup>

Another analyst provides additional evidence on the extent to which new technologies are spreading around the world.<sup>8</sup> He calculated changes in shares of world market for industries of selected countries ranked by relative expenditures on R&D between 1967 and 1981. The results clearly showed that the NICs such as Hong Kong, Singapore, South Korea, Taiwan and, of course, Japan have increased their relative market shares in the more R&D-intensive product classes, while the reverse is generally true of Western Europe and the United States. The implication is that the NICs are moving toward specialization in export industries involving extensive R&D spending (and presumably new technology) and away from exports involving low R&D expenditure (and



presumably older technology). To do this, they must also be acquiring the latest technologies in one way or another, and much sooner, comparatively speaking, than they ever did before.

Canada appears generally to have received new technologies as quickly as other industrialized countries, although the evidence is mixed. The Economic Council of Canada has interpreted the evidence as indicating that technology diffuses slowly into Canada.<sup>9</sup> Table 8-5 summarizes the evidence from three large sample surveys, including that of the Economic Council. As the table illustrates, transfers within multi-nationals generally involve newer technologies. One of the benefits of foreign investment is the access it brings to the most recent technological developments.

### **Diffusion of New Technologies within Canada**

Do new technologies spread as rapidly through Canadian industry as they do through the industries of foreign countries? The leading investigators in the field have concluded that new technologies spread more slowly within Canadian manufacturing industries than in other countries.

*The evidence from the various case studies cited is consistent in demonstrating slower adoption of capital-embodied innovations in Canada than in several other developed countries. In cases where the innovation was more capital intensive than existing techniques, thus requiring longer product lengths of run for efficient use, slower adoption reflected the impact of the domestic tariff on plant level production conditions. The experience of the carpet industry suggests that the anti-competitive effects of the tariff might retard the adoption of new techniques even when the innovations are less capital intensive than existing techniques.<sup>10</sup>*

Acquisition costs related to identification and evaluation may discourage Canadian firms, especially if they are small, from applying new technologies. Even though a new technology might require little capital to implement, significant acquisition costs might delay its adoption. Acquisition costs, however, tend to decline over time; hence delayed diffusion is more common than limited or zero diffusion, such as one would expect with capital indivisibilities.

Tariffs, quotas and other forms of trade protection seriously impede technological diffusion. Protection sustains small producers who find the new technologies uneconomic, and it reduces the "competitive pressure" to lower costs. Some economists have proposed the remedy of a decrease in trade protection. In their view, trade liberalization would lead to specialization and longer production runs, which would enable producers to spread the costs of new technologies over a larger output. This procedure would make it more feasible for them to adopt new technologies early and more costly to postpone such adoptions.<sup>11</sup>

The Economic Council of Canada has echoed these same concerns:

*Our general finding is that new technology diffuses slowly into Canada from other countries. It also diffuses slowly from firm to firm and from region to*

**TABLE 8-5 Three Estimates of the Mean Lag Years for Diffusion of New Technology, 1960-1979**

**Multinational Enterprise Database:**

	Canada			Europe		
	Intra-corporate	Arm's Length	Both	Intra-corporate	Arm's Length	Both
Mean lag	6.93	10.0	7.11	10.27	10.86	10.42
No. cases surveyed	115	7	122	340	116	456

**Economic Council of Canada:**

	Canada		
	Intra-corporate	Arm's Length	Both
Mean lag	5.8	8.8	6.94
No. cases surveyed	37	19	56

**Mansfield and Romeo (1960-1978):**

	Overseas Developed Countries <sup>a</sup>		Less-Developed Countries
	Intra-corporate	Licensing/ Joint Venture	Intracorporate
Mean lag	5.8	13.1	9.8
No. cases surveyed	27	26	12

*Sources:* Multinational Enterprises Database, Economic Council Database and E. Mansfield and A. Romeo, "Technology Transfer to Overseas Subsidiaries by U.S.-Based Firms", *Quarterly Journal of Economics* (December 1980): 737-50.

a. Including Canada.

*region within the country. By "new technology" we mean new and improved products, processes, and organizational structures. Although there are some exceptions, case studies show that often the process of diffusion of technical change into and throughout Canada occurs more slowly than in other Western developed nations, and not only in the manufacturing sector but in the service sector as well. Substantial benefits could be realized if the diffusion process into and throughout Canada were to be speeded up. We find that scope does exist for policies designed to achieve this.<sup>12</sup>*

The Economic Council attributed the problem in the service industries to organization size, lack of technological receptiveness and, in public-sector service organizations such as hospitals and libraries, lack of managerial incentives.

## Technology Diffusion and Public Policy

Public policy can affect the rate of adoption of new technologies in a number of ways. Government policies on trade and on foreign investment fundamentally affect the rate of adoption. Liberalization of trade would increase the rate at which Canadian firms adopt new technologies, as would lowering of barriers to direct foreign investment, at least in technology-oriented areas. Public policy on education and the gathering and dissemination of information also affects the diffusion of technology. The universities provide training in science and engineering for a technological society. Many Canadians believe that still further emphasis on science, engineering and business may be necessary. Northern Telecom, for instance, has recommended that:

1. *Canada's education system must emphasize the development of a literate population armed with the tools needed to communicate in a world increasingly dependent on the production and transfer of information.*
2. *A high priority must be the development of world class post-secondary centers of excellence in mathematics, computer science and the general sciences.*

(Northern Telecom, Brief, November 2, 1983, p. 29.)

Universities can also assist the diffusion process. In Ontario, the University of Waterloo has been operating the highly successful Canadian Industrial Innovation Centre and Innovation Place, both of which assist in the commercialization of inventions and the incubation of fledgling high-technology firms.

A number of new initiatives have also taken place in the gathering and dissemination of information. In 1981, the National Research Council (NRC) combined its Industrial Research Assistance Program (IRAP) and its Technical Information Service and began an expansion of the combined programs. As of 1984, its field staff of industrial technology advisers totalled 121 persons, of whom 74 worked for provincial or other research institutes under contract to the NRC.<sup>13</sup> During fiscal 1983–84, the combined programs gave support to 2540 projects and dealt with over 37 000 queries from industry. At the same time, the federal government announced a series of technology centres, and the Ontario government set up six technology centres (with a total budget of over \$100 million over five years) to provide information on currently available technologies to small companies.<sup>14</sup>

Representatives of the Canadian Manufacturers' Association testified before the Senate Committee on National Finance that both corporations and industry associations are disseminating the latest developments in manufacturing technology. Indeed, the Senate Committee commented:

The Committee is concerned about the proliferation of technology centres in Canada supported by federal or provincial governments that may not be meeting identified needs. It recommends that the federal government, as a matter of urgency, examine its policies with respect to the support of technology centres, taking into account provincial government initiatives in this area, with a view to ensuring that the centre it supports clearly meets existing or potential needs of industry.<sup>15</sup>

Several quarters have suggested expansion of government activity in the area of international information gathering. The Senate Committee recommended that the government review the activities of Canada's science counsellors in six Canadian missions abroad in gathering technical intelligence.<sup>16</sup> In 1984, the Science Council of Canada recommended expansion of, and increased support for, this network of science counsellors.<sup>17</sup> According to another authority, technology brokers, contract-research organizations and long-term technology "think-tanks" have greatly helped other countries acquire technology. These resources are lacking in Canada, he notes, and governments should assist in establishing them.<sup>18</sup>

### **The Generation of New Technologies: R&D Spending**

Any analysis of technology turns, sooner or later, to the adequacy of the various individual components of the national R&D effort. Commissioners have attempted to put this in perspective, noting that innovation includes political and social developments. Much technological innovation represents an accumulation of small changes resulting from ongoing improvement to product performance and production methods, based on experience rather than on formal R&D.

Nevertheless, R&D is important, and we must look at the adequacy and efficiency of Canadian R&D spending. The standard measure of the extent of the national R&D effort is the ratio of gross expenditures on research and development (GERD) to gross national product (GNP). Table 8-6 reports this ratio. As the table indicates, this ratio bottomed out at 0.96 per cent in 1976 and has since increased steadily. By 1985, it may reach 1.5 per cent, the revised target set by the federal government in 1981. Table 8-6 reports also the recent experience of the United States. The U.S. GERD/GNP ratio hit its low point in 1977-78 and has increased steadily since then. Thus, the two countries have had the same experience with the GERD/GNP ratio. However, most of the decline in the U.S. GERD/GNP ratio during the 1970s resulted from a decrease in space research, which fell from 0.6 per cent of GNP in 1965, to 0.2 per cent in 1977. As the table indicates, non-defence R&D in the United States declined only marginally during the early 1970s.

At present, the ratio of Canadian non-defence R&D to GNP is approximately 73 per cent of the U.S. ratio of non-defence and space R&D to GNP. How does the Canadian R&D effort compare with that of other countries? Table 8-7 reports the R&D intensities of selected OECD countries. There is considerable year-to-year variation in national R&D intensities. Except for the Japanese figures, which clearly move upward over the period 1971-81, the R&D intensities show no clear trend. Canada's R&D intensity is consistently the lowest of those of the countries listed. Other comparisons show that Canadian industrial R&D intensity is above that of Norway, Denmark and Italy; still other data rank Canada above Australia. The United States is not the only country to devote a significant proportion of its R&D effort to defence. France devotes approximately one-third of its R&D effort to defence and space, and Britain, one-quarter.

**TABLE 8-6 Gross Expenditures on Research and Development as a Percentage of Gross National Product, U.S. and Canada, 1965-1983**

Year	Canada	Canada non-Defence <sup>a</sup>	U.S. Total	U.S. non-Defence and non-Space
1965	1.20	1.06	2.9	1.3
1966	1.22	1.12	2.9	1.4
1967	1.29	1.19	2.9	1.5
1968	1.25	1.17	2.8	1.5
1969	1.26	1.18	2.7	1.5
1970	1.24	1.17	2.6	1.5
1971	1.22	1.16	2.5	1.5
1972	1.13	1.08	2.4	1.4
1973	1.04	0.99	2.3	1.4
1974	1.02	0.97	2.3	1.5
1975	1.02	0.98	2.3	1.5
1976	0.96	0.92	2.3	1.5
1977	0.98	0.94	2.2	1.5
1978	1.02	0.98	2.2	1.5
1979	1.03	0.99	2.3	1.6
1980	1.09	1.06	2.4	1.7
1981	1.17	1.13	2.5	1.7
1982 <sup>b</sup>	1.34	1.31	2.6	1.8
1983 <sup>b</sup>	1.36	1.32	2.7	1.8

Sources: Statistics Canada, *R&D Expenditures in Canada 1963-1983* (Ottawa: Statistics Canada, Science Statistics Centre, 1983), p. 6, and *Federal Government Expenditures on Activities in the Natural Sciences 1963-64 to 1983-84* (Ottawa: Statistics Canada, Science Statistics Centre, 1983), Table 17; and data from the U.S. National Science Foundation.

a. Calculated as total expenditures less expenditures by the Department of National Defence.

b. Preliminary data.

Those looking for hopeful signs for Canada from the GERD/GNP data would note that the Canadian ratio is rising, although it is not keeping pace with the growth in Japan, for example; that Canada ranks above a number of small, high-income countries in industrial R&D intensity; and that Canada's R&D intensity looks better relative to countries such as the United States, Britain and France when we exclude space and defence R&D from the comparison. The fact remains, however, that Canada is not as R&D intensive as countries

**TABLE 8-7 Gross Expenditures on Research and Development (GERD)  
as a Percentage of Gross Domestic Product (GDP)  
of Selected OECD Countries**

Country	1971	1973	(%)		1979	1981
			1975	1977		
Canada	1.35	1.12	1.11	1.07	1.12	1.25
France	1.91	1.78	1.80	1.76	1.81	1.97
Germany	2.19	2.09	2.22	2.14	2.40	—
Japan	1.83	1.87	2.94	1.91	2.10	2.40
Netherlands	2.17	2.01	2.12	1.99	1.88	1.90
Sweden	1.48	1.60	1.15	1.87	1.88	—
Switzerland	2.33	2.25	2.40	2.29	2.40	—
U.S.A	2.68	2.50	2.44	2.39	2.37	2.54

Source: Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985), Table 16.6.

such as Sweden, Switzerland and the Netherlands. What, if anything, should we do about this situation? Should we have a national target for R&D expenditures in relation to GNP? In 1978, the federal government set a GERD/GNP target for 1983 of 1.5 per cent. In 1981, it postponed the target year to 1985. As we have said, it appears that we shall reach this latter target.

Recent commentaries, including those of the Economic Council of Canada, the Task Force on Federal Policies and Programs for Technology Development (the Wright Task Force),<sup>19</sup> and the Doody Committee,<sup>20</sup>—have cautioned that the principal merit of a GERD/GNP target is to increase public awareness of the importance of R&D. It is a device to motivate and focus debate; it is not an end in itself, nor is it of much use as a planning tool. The three studies listed concluded that we should worry less about the quantity of R&D than about its quality and effectiveness. The Wright Task Force concluded about Canada's low GERD/GNP ratio:

*This is not necessarily grounds for concern. The effectiveness with which our R&D funds are deployed, in the context of our particular circumstances, is more important than how much we spend. If we doubled R&D spending tomorrow, the economic impact of that increase would be quite marginal. Spending more on R&D makes no sense unless it's spent in a culture that feels compelled to compete. Such competitive environments create a need for innovation, which generates demands for still more research. This self-reinforcing pattern is the hallmark of all vigorously growing economies.<sup>21</sup>*

The Senate Committee noted that the "ideal" GERD/GNP ratio for any country depends on its industrial structure, the importance of defence-related

research, its market size, and its ability to gain access to, and use the results of, R&D performed elsewhere:

*Investment in advanced technology must continue to be an important area of government concern, not only in terms of the level of that investment but more important . . . in terms of the quality of that investment.*<sup>22</sup>

In the view of these observers (and of Commissioners as well), a willingness to compete and to face competition is essential. Canadians must do whatever is necessary to meet the competition. Some think that to meet this necessity requires much more R&D and more government support. Others think that more or more relevant R&D will be a consequence of a more direct orientation to trade. There is apparent agreement, however, that the willingness to face international competition is essential.

If we are not to set national expenditure targets, at least as a planning device, what are we to do? The alternative is to assess various types of R&D activity on their respective merits as investments. One analyst would focus on the quality and composition of R&D, rather than the amount:

*What that suggests in turn is that the focus of the policy issue should shift from R&D levels to the portfolio of R&D projects an industry tends to generate. This entails turning our attention toward the incentive effects of policies and institutional structures and toward considerations of access, secrecy, and information flow. In practice, some kinds of R&D projects will tend to be "underfunded" and some to be "overfunded"; and a simple R&D subsidy is not the sort of policy such a situation demands.*<sup>23</sup>

To attempt to determine the merits of various types of R&D is difficult. It involves, where possible, an assessment of past social rates of return for industrial R&D; it requires a judgement of the discrepancy between the private and the social rates of return: that is, benefits from R&D to the nation as a whole rather than just to particular companies or industries.

Let us begin with research and development performed by the government. This support at present accounts for approximately 29 per cent of all R&D performed in Canada. This proportion is down markedly from the levels for the 1960s and early 1970s, when the government undertook or funded over one-third of all Canadian R&D. A comparison of the most recent Canadian figures with the 1977 figures for OECD countries indicates that government in Canada continues to undertake proportionately much more R&D than the governments of the United States, Germany, Switzerland, Japan and Belgium. Our government, however, performs a smaller proportion of R&D than the governments of Australia, Finland, Italy and France.

The decline in the proportion of Canadian R&D undertaken by government occurred largely because business R&D spending grew faster than that of government. Attempts to contract out government R&D have not altered the government share significantly. The federal Department of Agriculture accounts for some 20 per cent of the government R&D effort, and the National Research Council is responsible for another 20 per cent. Atomic Energy of Canada and the Departments of Environment, Fisheries and

Oceans, National Defence and Energy, Mines and Resources account for roughly 10 per cent each.<sup>24</sup>

The Professional Institute of the Public Service included the following government-research achievements in its 1983 survey:<sup>25</sup>

- *Rapeseed (canola)*. R&D expenditures, \$12 million; annual value of crop, \$600 million.
- *Spring wheat*. R&D cost of rust resistant, hard, red spring wheat, \$450 000; value of crop losses avoided, \$200 million.
- *Hybrid corn*. R&D cost, \$32 million; value of increased yield, \$2.6 billion (over the 1959–78 period).
- *The development of styroblock containerized seedlings* for reforestation, resulting in wage savings of millions of dollars.
- *The development of forest fire information systems* that has resulted in the saving of millions of dollars per year in fire suppression and damage costs.
- *Fisheries research* that has resulted in an increase of 80 per cent in the value of British Columbia coho salmon catch and a new snow-crab fishery off New Brunswick with an annual value of \$40 million.
- *Remote sensing technology*.
- *The development of an efficient hydro-cracking process for heavy oils*, to be used at Lloydminster and Cold Lake and in the Athabasca tar sands.
- *A retrofit oil burner kit* that achieves 20 per cent fuel savings.
- *The CRV-7 Rocket system*.
- *Advances in the treatment of pulp and paper effluent*.
- *Telidon*, an advanced video-technology system for facilitating multi-purpose access to diverse computer data-bank resources.

This partial list conveys the essence of the case made by the Professional Institute: government research has yielded significant returns, especially in the resource and environment sectors.

Instances of evidence of a more systematic nature also exist. U.S. studies show high rates of return on agricultural research. Two corresponding Canadian studies also show high rates of return. Researchers at the University of Saskatchewan<sup>26</sup> found that research leading to the improvement of canola from the original strains of rapeseed grown in Poland and Argentina has yielded an annual rate of return of 101 per cent.<sup>27</sup> The rates of return on successful projects will not, of course, represent the return on the entire research effort. Existing evidence, however, suggests that agricultural research has been a good investment for Canada. The Science Council of Canada<sup>28</sup> has suggested that a greater investment in forestry research would also bring relatively high returns.

A large portion of government research over the last 25 years has focused on nuclear power, specifically the CANDU reactor. A recent study put the R&D cost of the CANDU at approximately \$7 billion.<sup>29</sup> Another study, which used an alternative costing method, concluded:

*Evidently, to this point in time the CANDU project has been a commercial failure that has cost Canadians between \$16 and \$18 billion (1981) dollars. The benefit, largely to citizens of Ontario, totals about \$2 billion (1981) dollars.<sup>30</sup>*



Other cost/benefit calculations on Canada's nuclear reactor expenditures are more favourable. While there is dispute over savings resulting from the use of CANDU (as compared with coal or the U.S. light-water/moderated reactors), calculations done for this Commission indicate that there is a range of reasonable assumptions regarding reactor and fuel costs and real discount rates, over which the net advantage of the CANDU may be sufficient to cover its R&D costs.

Whatever the past record, the Wright Task Force believes that as currently managed, government laboratories will not make the contribution their resources would suggest:

*Canada's federal laboratories are justly proud of their long tradition of excellence and innovation . . . We believe, however, that these traditions of excellence are being undermined by a growing atmosphere of irrelevance and an excessively bureaucratic management style.<sup>31</sup>*

The Task Force suggests the remedy of greater use of peer review and contracting out: government laboratories need better management, not more money.

R&D performed in Canadian universities totalled \$1 billion in 1983, a sum amounting to approximately 20 per cent of all Canadian R&D. This represents a decline of some six percentage points from the level in the early 1970s: a consequence of the growth of industrial R&D. Canada performs more R&D in universities than does the United States, which devoted 8.6 per cent of its 1983 R&D spending to university projects, but Canadian activity is not out of line with that of other OECD countries.

The Wright Task Force has argued that the universities, representing a crucial link in the innovation chain, have a function beyond basic research. Some universities have seized the initiative in this area, most notably the University of Waterloo, which described some of its activities as follows:

*The University formed the Waterloo Research Institute to coordinate the research activities and to assist industry in matching their research needs to the expertise resident within the Faculty. Industrial sponsored research at Waterloo now totals more than [that] of any other Canadian University. Contract research this year has experienced a 57% increase over last year.*

*Waterloo pioneered the concept of "Open Computing" by creating the world-famous WARFOR fast fortran computer in the late 1960's and has moved along this innovative path continuously with the most recent endeavour in this area being the Waterloo-IBM accord to sell MICRONET, an educational computer networking system (Oct. 24, 1983). Waterloo developed software sales last year exceeded those of MIT [Massachusetts Institute of Technology] and Stanford [University] combined.*

*Research activities have been highlighted this year by the recent award to the VLSI research group of the highest-ever NSERC [National Science and Engineering Research Council] Strategic Grant Award (\$1.6M/3 years).*

*Waterloo initiated the concept of what has now become the Canadian Industrial Innovation Centre/Waterloo. The aim of the centre is to turn innovative ideas into marketable new products or services.*

(University of Waterloo, Brief, November 2, 1983, p. 3 of Introduction.)

The Task Force and participants in this Commission's seminar on emerging technologies judged that the National Science and Engineering Research Council (NSERC) and the Medical Research Council (MRC) are performing well. They recommended that R&D support be changed to cover not only direct costs of particular projects, but also all indirect costs associated with the establishment and maintenance of the relevant facilities and services: in other words, the establishment of "full-cost" funding. While this need not involve an increase in total support of university R&D, it would ultimately lead to specialized research-oriented universities, which many Canadians believe our country requires.

A number of observers have noted the lack of business support for university research in Canada. Some have suggested extension of R&D tax incentives to apply to contributions made by firms in support of university R&D. Given probable substantial national benefits from this type of research, it would seem a candidate for preferential tax treatment.

Canadian R&D expenditures by industry in 1984 amounted to about \$2.7 billion: over 55 per cent of total R&D expenditures in the country. This represents an increase of more than 14 percentage points over the level in the 1960s: business R&D spending has grown faster than government R&D spending. Canada continues to perform less of its R&D in the business sector than do the United States, Switzerland, West Germany, Japan, France and Belgium, but more than do the Netherlands, Norway, Finland and Australia.

The essential features of the Canadian R&D effort by industry, as of 1982, were as follows.

- There were 1296 firms engaged in formal R&D activities, of which 379 were foreign controlled.
- Two hundred and thirty-one firms spent more than \$1 million on R&D.
- Canadian-owned firms accounted for 57 per cent of industrial R&D expenditures; foreign-owned firms made up the balance.
- Seventy-one per cent of the funding for industrial R&D came from the performing firm, and some 13 per cent (excluding tax incentives) came from either the federal or provincial governments.
- The average ratio of R&D to sales was 1.2 per cent, a 50 per cent increase over 1975. Both foreign- and domestically-owned firms increased their R&D/sales ratios. As a group, Canadian-owned firms tend to spend a higher proportion on R&D in relation to sales than do foreign-owned firms operating in this country.
- R&D/sales ratios tended to be highest in the aircraft, communications equipment and engineering-services industries. Some 28 per cent of industrial R&D occurred in the communications-equipment industry, 12 per cent in wells and petroleum products, and 10 per cent in aircraft and parts.<sup>32</sup>

Direct government support for industrial R&D currently takes the form of subsidies, contracts and tax concessions. The largest subsidy programs are the Defence Industry Productivity Program (DIPP), of which expenditures totalled \$169.2 million in 1983-84; the Industrial and Regional Development Program (IRDP), with expenditures of \$102.7 million in 1983-84; and the

Industrial Research Assistance Program (IRAP), which spent \$48 million in 1983–84. Government R&D contracts totalled \$268 million in 1983. Tax concessions at present take the form of a 100 per cent write-off of current R&D expenses; a 100 per cent write-off of capital R&D expenditures; 20 per cent tax credit which reduces the cost base for capital consumption allowances; and a flow-through provision for unused deductions and credits, the Scientific Research Tax Credit (SRTC), which the government has substantially tightened.<sup>33</sup>

Table 8-8 outlines the support for R&D provided by the tax incentives in effect between 1978 and 1982. The incentives consisted of a 10 per cent (taxable) tax credit and an allowance equal to 50 per cent of the increase in current-period R&D expenditures over a three-year/average base. As indicated, these incentives had a value (tax cost) of approximately \$178 million in 1981 and \$203 million for 1982. Tables 8-9 and 8-10 present additional information concerning the degree of government support for R&D.

When we compare the various types of R&D support both over time and across countries, it is important to note that R&D contracts generally do not involve the same level of support to industry as a subsidy or a tax measure. The Canadian government retains the rights to *all* technology developed under federal contract; the contractor generally has the status of a non-exclusive licensee of any technology it wishes to use. Of course, technology developed with the assistance of a subsidy or a tax measure is the exclusive property of the firm involved.

The comparison of support levels internationally hinges on the weight that we assign to R&D work done under contract for governments. That is, if we view a contract as equivalent, dollar for dollar, with a subsidy or a tax credit,

**TABLE 8-8 Tax Incentives for Research and Development and their Cost**

Year	(\$ millions)					Total Saving
	Credit Claimed	Effective <sup>a</sup> Credit Rate	After-Tax <sup>b</sup> Value	Allowance	Tax Saving Implied	
1978	28	4.8	13.4	50	21.0	34.4
1979	58	7.5	27.8	128	53.8	81.6
1980	80	7.9	38.4	188	79.0	117.4
1981	125	8.5	60.0	282	118.4	178.4
1982	142.3 <sup>c</sup>	8.5	68.2	322	135.2	203.4 <sup>c</sup>

Source: Statistics Canada, *Industrial Research and Development Statistics, 1982*, Cat. No. 88-202 (Ottawa: Minister of Supply and Services Canada, 1984), Table 2.1, and Appendix III, Table 23.

- a. Credit claimed ÷ R&D expenditures of claimants.
- b. Assuming recipients are taxed at 42 per cent.
- c. Estimated by Commission staff.

**TABLE 8-9 Federal Payments to Canadian Industry for R&D<sup>a</sup>**

Fiscal Year	Contracts	Contributions	Fellowships	Total
1977-78	85.9	100.4	1.2	187.6
1978-79	101.0	76.3	1.5	178.8
1979-80	99.1	103.4	1.5	204.0
1980-81	100.2	113.7	1.6	215.5
1981-82	126.8	153.5	1.9	282.2
1982-83	165.1	197.3	2.2	364.6
1983-84	190.2	268.2	3.1	461.5

Source: Statistics Canada, *Federal Government Expenditures on Activities in the Natural Sciences 1963-64 to 1983-84* (Ottawa: Statistics Canada, Science Statistics Centre, 1983), p. 33.

a. Natural Sciences R&D.

**TABLE 8-10 R&D Support, Canada, 1978-1982**

Year	Tax Saving	Grants and Contracts	Grants and Contracts after Tax <sup>a</sup>	Total Support	Support ÷ R&D Performed in Business Sector
1978	34.4	178.8	123.7	157.6	15.7
1979	81.6	204.0	150.2	231.8	18.2
1980	117.4	215.5	156.4	273.8	17.5
1981	178.4	282.2	202.4	380.8	19.0
1982	203.4 <sup>b</sup>	364.4	322.0	525.4	20.4

Source: Statistics Canada, *Industrial Research and Development Statistics, 1982*, Cat. No. 88-202 (Ottawa: Minister of Supply and Services Canada, 1984).

a. Grants assumed taxed at 42%.

b. Estimated by Commission staff.

then R&D support in the United States, Britain, France, West Germany and Sweden is higher than it is in Canada. If we view an R&D contract as something less than a 100 per cent subsidy, Canadian support comes much closer to the level of those countries.

If we wish to evaluate industrial R&D on its merits, we should ask not only whether the Canadian support is comparable with those of other countries, but also what it should be ideally. The issue here turns on the so-called "externality considerations": the extent to which society's return on R&D exceeds the return earned by the firm that engages in it.

The Economic Council of Canada concluded that R&D spending in Canada was too low, and that more public and private R&D spending was necessary.<sup>34</sup> The Council did not indicate whether the additional government spending should be in support of industrial R&D or in other areas. The Senate Committee recommended against further tax incentives and did not suggest any change in subsidies or contracts. The Wright Task Force recommended reviewing all subsidy programs and gradually phasing out those that fail to win the endorsement of clients. It recommended more contracting-out of existing government R&D, but not more overall R&D by government. It concluded that the Canadian R&D tax incentives are "generous", and that any alterations should be in the direction of broadening the definition of R&D.

A study done for this Commission on industrial strategy<sup>35</sup> contends that the social return on R&D is much higher than most people realize, and it supports much more generous funding for R&D in Canada. Not only does R&D result in innovations that bestow benefits on society in excess of the compensation paid the innovator (the "spill-over" effect), but also the workers producing new products acquire skills on the job that enable them to command higher wages. These higher wages are, according to this study, an additional positive spill-over from R&D.

*Estimates of the social return to industrial R&D based on a closed economy assumption are quite high—often in the 30 to 50 percent range. Yet these estimates do not include any of the returns to domestic labour which would be earned if R&D was the means by which a technology gap is maintained. In an open economy context if the basic idea of the technology gap theories is correct, the national social returns to R&D which allow the maintenance of a gap may be far in excess of the conventional estimates.<sup>36</sup>*

This study encourages "support" for R&D through any one of a variety of tax, subsidy, loan guarantee or procurement policies.<sup>37</sup> The level of support would be much higher than at present; the argument is made that Canada's target of R&D expenditures, equal to 1.5 per cent of GNP, is probably too low:

*If Canada is to have its share of the technologically progressive industries, it will have to devote resources closer to the proportion spent in the major industrial countries. In 1977, these shares within the manufacturing sector were closer to 5 and 6 percent.<sup>38</sup>*

This conclusion indicates the possibility that greater support of some kind should be forthcoming.

Thus, insofar as federal funding of R&D is concerned, there is consensus that the federal government need not increase its R&D activities, but might, in some situations, usefully shift them to private contractors. University R&D should receive more support from the business sector, and tax incentives to achieve this end are desirable. A greater proportion of federal assistance to universities should take the form of grants in aid of R&D.

There is no such consensus regarding the support of industrial R&D. Had the Scientific Research Tax Credit remained in force as originally established, the Canadian system would be very generous by any standard. As it is,

the system's relative generosity turns on the degree of support attributed to R&D work contracted out by government.

Relative support levels notwithstanding, the study on industrial strategy done for this Commission argues for *much more* generous support. Its arguments require attention, but not necessarily an immediate policy response. The federal government, however, should consider reformulating the Scientific Research Tax Credit. It might refund part of expenditures for R&D undertaken by firms lacking sufficient taxable income to benefit from the tax credit, that is, employ a form of negative income tax. Reliance on the tax system is preferable to a grants program, which tends to be cumbersome and might invalidate basic market indicators of those sectors where R&D expenditure would yield the best returns.

### Notes

1. Edward Denison is the most prominent. See *The Sources of Economic Growth in the United States and the Alternatives Before Us* (New York: Committee for Economic Development, 1962).
2. Mancur Olson, *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities* (New Haven: Yale University Press, 1982).
3. Nathan Rosenberg, *Inside the Black Box: Technology and Economics* (London: Cambridge University Press, 1982), pp. 62–70.
4. Edwin Mansfield, "Technological Change and the International Diffusion of Technology: A Survey of Findings", in *Technological Change in Canadian Industry*, vol. 3, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Toronto: University of Toronto Press, 1985).
5. National Science Foundation, *Science Indicators, 1974* (Washington, D.C.: U.S. Government Printing Office, 1975).
6. Edwin Mansfield, "International Technology Gaps and the Intelligence-Gathering Activities of Firms" (Pittsburgh: University of Pennsylvania, 1984).
7. Raymond Vernon, *Storm over the Multinationals: The Real Issues* (Cambridge, Mass: Harvard University Press, 1977).
8. Bruce R. Scott, "American Competitiveness: Concepts, Performance and Implications", paper presented to the Harvard Business School 75th Anniversary Colloquium on United States Competitiveness in the World Economy, 1984.
9. Economic Council of Canada, *The Bottom Line: Technology, Trade, and Income Growth* (Ottawa: Minister of Supply and Services Canada, 1983).
10. D.J. Daly and S. Globerman, *Tariff and Science Policies: Applications of a Model of Nationalism* (Toronto: University of Toronto Press for Ontario Economic Council, 1976), pp. 97–98.
11. *Ibid.*, p. 95.
12. Economic Council, *The Bottom Line*, p. 61.
13. National Research Council, *NRC Annual Report 1983–1984* (Ottawa: Minister of Supply and Services Canada, 1984), pp. 18–20.
14. Ontario maintains technology centres in Ottawa (micro-electronics), Peterborough (robotics), Cambridge (CAD/CAM), Sudbury (resource machinery), Chatham (farm machinery and food processing), and St. Catharines (automotive parts).
15. Canada, Senate, Standing Committee on National Finance, *Federal Government Support for Technological Advancement: An Overview* (Ottawa: Minister of Supply and Services Canada, 1984), p. 43 (emphasis in original).

16. *Ibid.*, p. 34.
17. Science Council of Canada, *The Canadian Science Counsellors, Council Statement* (Ottawa: Minister of Supply and Services Canada, 1984).
18. Z.P. Zeman, "Towards Technology Acquisition Policy: Six National Approaches", paper prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Toronto, 1984).
19. Canada, Ministry of State for Science and Technology, Task Force on Federal Policies and Programs for Technology Development, *Report* (Ottawa: Minister of Supply and Services Canada, 1984) (Douglas Wright, Chairman).
20. Canada, Senate, Standing Committee on National Finance (C. William Doody, Chairman).
21. Task Force on Federal Policies and Programs for Technology Development, *Report*, p. 3.
22. Standing Committee on National Finance, *Federal Government Support for Technological Advancement*, p. 13.
23. Richard R. Nelson and Richard N. Langlois, "Industrial Innovation Policy: Lessons from American History", *Science* 219 (February 18, 1983), p. 815.
24. Statistics Canada, *Canadian Science Indicators, 1983*, Cat. No. 88-201 (Ottawa: Minister of Supply and Services Canada, 1983), p. 23.
25. Professional Institute of the Public Service of Canada, *Intramural Research and Development: Problems and Remedies*, a discussion paper (Ottawa: The Institute, 1983), pp. 4-6.
26. J.G. Nagy and W.H. Furtan, "The Socio-economic Costs and Returns from Rapeseed Breeding in Canada" (Saskatoon: University of Saskatchewan, Department of Agricultural Economics, 1977).
27. Another widely quoted study is B.E. Prentice and G.L. Brinkman, *The Value of Agricultural Research in Ontario* (Guelph: University of Guelph, Ontario Agricultural College, 1982).
28. Science Council of Canada, *Canada's Threatened Forests* (Ottawa: The Council, 1983).
29. Kristian S. Palda, *Industrial Innovation: Its Place in the Public Policy Agenda* (Vancouver: Fraser Institute, 1984), p. 108.
30. George Lermer, "AECL - An Evaluation of a Crown Corporation as a Strategist in an Entrepreneurial, Global Scale Industry", paper presented to the Research Conference on Government Enterprise, sponsored by the Economic Council of Canada, held at the University of Toronto, November 21-22, 1984, p. 7.
31. Task Force on Federal Policies and Programs for Technology Development, *Report*, p. 25 (emphasis in original).
32. Statistics Canada, *Industrial Research and Development Statistics, 1982 (with 1984 forecasts)*, Cat. No. 88-202 (Ottawa: Minister of Supply and Services Canada, 1984), p. 26.
33. Canadian Tax Foundation, *The National Finances, 1983-84* (Toronto: The Foundation, 1984), p. 243.
34. Economic Council, *The Bottom Line*, p. 83.
35. Richard G. Harris, *Trade, Industrial Policy and International Competition*, vol. 13 (Toronto: University of Toronto Press, 1985).
36. *Ibid.*
37. *Ibid.*
38. *Ibid.*

## **The Role of Entrepreneurship and Management**

The development and growth of Canada's economy depend on our human, capital and natural resources, together with the technology that uses those resources. But our economic well-being depends, also, on two other critically important factors: the bringing together of all these elements to form a productive enterprise, which is the essence of entrepreneurship, and the ongoing process of efficiently organizing and managing each of these facets.

Most people think of entrepreneurs as a few innovative individuals who dare to take risks in pursuit of profit, individuals most often associated with small and medium-sized firms, rather than with large corporations. While individual entrepreneurship continues to be most evident in smaller enterprises, entrepreneurship is also the critical element that has permitted many of today's corporations to develop and maintain large-scale operations. A sophisticated system of management is vital to the efficient operation of such large corporations and, in most instances, is provided by a professional management team concerned with every phase of the business, from production to advertising, marketing and distribution. However, if these larger enterprises are to survive and thrive, their professional managers must also provide an element of entrepreneurship, which may manifest itself in many forms, such as the development of new technologies or new products, the introduction of new marketing methods, or the take-over of another enterprise as a means of increasing the efficiency of operations.

While there are differences in concept, it is often difficult, in practice, to draw a clear distinction between entrepreneurship and management, particularly when the former is exemplified in the ongoing process of change and innovation of existing enterprises as contrasted with the launching of new ventures. Although Commissioners propose to focus initially on management and then look at entrepreneurship, some overlap is unavoidable.

### **Managerial Techniques, Quality and Organization**

The Canadian Federation of Deans of Management and Administrative Studies has outlined the critical role played by management in the development of a nation's economy:

*Management itself must be regarded as a national resource alongside technical, natural, financial, labour and other resources, as it is both the catalyst and the "glue" in assembling, organizing and mobilizing these resources.*

*Increased international competition for markets at home and abroad clearly demands that we produce world-class management talent if we are to achieve economic success and support the attainment of our other social goals. Assuring the availability of such talent should rank high in the nation's priorities.*

(Canadian Federation of Deans of Management and Administrative Studies, Brief, November 30, 1983, p. 1.)

With regard to managerial techniques, quality and organization in Canada, several questions arise: How does the overall quality of Canadian management rate by international standards? Does the Canadian managerial



approach differ significantly from that of other countries? How does the quality of Canadian managers rate by international standards? Have our managers had as much formal education or an education of the same quality as their foreign counterparts? Have they had the same experience in critically important management functions as their foreign counterparts?

The United States developed most of the concepts and practices that made possible the efficient management of large-scale corporate organizations. Canadian management methods and practices parallel those of the United States, though ours may be less effective in some important respects. Recently there has been considerable discussion as to whether U.S. management, which once set the standard for the world, has fallen behind. This Commission examined the debate over U.S. managerial ideas and practice as part of its research;<sup>1</sup> it may be useful to note some of the issues that have emerged south of the border.

One of the foremost critics of U.S. economic organization contends that the American economy has been “slowly unravelling” since the late 1960s.<sup>2</sup> This process is a result of political disarray and of the failure of U.S. corporations to move out of mass production methods that they originally pioneered into other, more competitive forms of production and organization:

*The rigid management-centered organization has become inappropriate to an America now linked to an integrated world economy. That pattern of organization can be duplicated anywhere on the globe, including areas with lower-wage labor and cheaper access to raw materials and emerging markets. Since 1970, therefore, the economies of America and every other industrialized nation have undergone a profound structural change, as the high-volume industries that underpinned these economies in the previous half-century—steel, textiles, automobiles, rubber, shipbuilding, and chemicals—have become less competitive in world markets. The only way industrialized nations can increase their citizens' standards of living in the future is to concentrate on the high-value niches within these industries and to seize and keep world leadership in new industries based on advanced and emerging technologies. This requires a different form of organization, one far more flexible and adaptable than the structures designed to support high-volume, standardized production.<sup>3</sup>*

In the view of this observer, managers of the U.S. corporate system have responded in a variety of ways to the new challenges confronting them, but not in ways likely to prove beneficial over the longer term:

*The innovations have not been technological or institutional. Rather, they have been based on accounting, tax avoidance, financial management, mergers, acquisitions, and litigation. They have been innovations on paper. Gradually, over the past fifteen years, America's professional managers have become paper entrepreneurs.<sup>4</sup>*

Paper entrepreneurship, the critic contends, can be a ruthless game in which those who win do so at the expense of others: investors, taxpayers or consumers. While the game can be lucrative for those who play it well, “it does not create new wealth . . . It merely rearranges industrial assets. And it has hastened our collective decline.”<sup>5</sup>

Paper entrepreneurship is an umbrella covering a number of the failures or imperfections of democratic societies with market economies. It appears to be another term for "rent seeking", a process which involves the use of real resources in an attempt to extract wealth from other members of society. Since the early 1970s, the problem of rent seeking has been central to discussion of the economic difficulties faced by Western industrial democracies.<sup>6</sup> Paper entrepreneurship is, in part, rent seeking in the corporate sector. An example is the large public- and government-relations staffs that corporations maintain to assist in rent seeking. Members of these staffs may lobby governments to protect existing benefits or secure new ones. In some industries, profitability may depend less on the quality of the technology and production techniques employed than on the manner in which the government manipulates the general and sectoral economic environment. As a member of the Conference Board of Canada's panel of corporate planners observed:

*You have to look on an industry by industry basis, and say: What is the cutting edge? But in micro-electronics, if you spend all your time flying to Ottawa, you have missed the point.*

*In the energy industry if you spend all your time flying to Ottawa you have exactly the point because that is where the money gets made.*

(Peter Flynn, at Royal Commission and Conference Board of Canada, Meeting of Council of Corporate Planning Executives, Transcript, May 10, 1984, p. 100.)

Paper entrepreneurship attempts to influence government in order to alter or defend the existing distribution of income. It also seeks ends quite apart from government: these include mergers of companies, which some critics consider socially unproductive, particularly when they lead to creation of large conglomerates. As Commissioners see the situation, however, mergers may benefit one of three groups: society as a whole; the owners of one or both of the firms involved, at the expense of society; the managers of those firms; or a group of "insiders", at the expense of all or some owners and of society as a whole.

Mergers benefit society as a whole when they allow the firms involved to take advantage of economies of scale, which in turn, simply effect a better matching of talents and capabilities with opportunities. Mergers that facilitate increased specialization, larger-scale production, or better use of management or marketing capabilities may increase efficiency and lower costs. We would expect to see and, indeed, have seen, a flurry of acquisitions and divestitures in an economy that is in the process of rationalizing its production arrangements as a consequence of trade liberalization or of a broadly based change in technology.

A merger may benefit the owners of the firms involved at the expense of society if it confers on the new entity additional market power, such as an ability to earn monopoly profits. This result will be unlikely in industries characterized by relatively free trade or by an absence of regulatory or other impediments to the entry of new competitors.

Sometimes a merger will bring about both economies of resource use and increased market power. The consensus of those who have examined this

possibility is that the beneficial effects of the economies will generally offset the harmful effects of the additional market power.

A merger, as well as many other arrangements, will benefit the owners, but not society, if it occurs simply to make use of otherwise unusable tax deductions and credits. This type of activity might be less common if the tax system provided for the transfer or refund of at least some unused deductions and credits. In addition, mergers may be undertaken in order to distort earnings results and to pump up stock prices for the benefit of insiders, promoters or management, at the expense of other investors and perhaps of society as a whole. This latter type of outcome is part of the essence of paper entrepreneurship.

A recent study of the extent, disposition and source of the gains from merger activity in the United States concluded:

*Corporate takeovers generate positive gains, that target firm shareholders benefit, and that bidding firm shareholders do not lose. The gains created by corporate takeovers do not appear to come from the creation of market power.<sup>7</sup>*

Thus, at least in the United States, mergers may generate gains in wealth that are a consequence of economies of resource use, creation of more efficient management, or realization of tax benefits. The last element would not be wealth increasing from the standpoint of society as a whole.

Because the make-up of the Canadian economy differs from that of the United States, the conclusion about the possible contribution of mergers to the U.S. economy—even if the conclusions were accepted as valid—might not apply to the Canadian economy. In Canada, during the past decade or so, large conglomerate organizations have emerged. Do they represent counter-productive paper entrepreneurship? In its 1978 *Report*, the Royal Commission on Corporate Concentration found that conglomerates had facilitated the transfer of resources from old static industries to newer and more dynamic ones, and that they had also promoted increased Canadian ownership. Nevertheless, the Commission concluded:

*On balance . . . conglomerate diversification has probably decreased the efficiency of resource allocation in the Canadian economy, although not seriously. Firms that have followed a strategy of conglomerate diversification have, in general, given their shareholders and given their investors below-average returns in the market. Over a long period, therefore, the practice of unrelated diversification is likely to cease through the force of competition.<sup>8</sup>*

Continued conglomerate diversification since 1978 belies the conclusion that competition would discourage the practice. Most conglomerates have diversified out of unattractive base industries, a procedure which perhaps represents the best strategy available. Whether it would have been more efficient for the shareholders to diversify on their own behalf is open to debate.

Other criticisms of American, perhaps North American, managerial theory and practice also relate to the same factors that reputedly give rise to paper entrepreneurship. These include preoccupation with short-term earnings

performance at the expense of long-term growth and development and neglect of the so-called “real side” of business operations. Modern-day business operations demand managerial concern for the advancement of production techniques and technologies, new product development, “zero-defect” quality control, “just-in-time” inventory management, and reduction in the hierarchical structure prevalent in most large North American corporations, which tends to be costly and to work against the motivation of employees.

Some observers contend that the limited period that individual managers tend to spend on any given job exacerbates short-term focus of many North American corporations. This creates an incentive for the manager to produce visible results quickly enough so that he or she, rather than a successor, can garner the credit. According to a number of observers, Japanese firms take a longer-term approach. They may have a lower cost of capital, with perhaps a longer period in which to pay back their investment. The lifetime employment provided by many Japanese firms and the absence of stock-market pressures and take-over threats may also permit Japanese managers to take a longer view.

A recent U.S. study<sup>9</sup> found that more successful American companies also take the long view. Similarly, a study of Canadian companies with a reputation for excellence reports that these, too, operate from a similar perspective:

*Continuity in the CEO [chief executive officer] and management teams of these companies, together with their symbiotic relationships with their boards, help give them the confidence and experience to sacrifice short-term advantage for long-term benefits. While the pressure from financial analysts, the stock market, and shareholders for increases in quarterly earnings is a matter of considerable importance and concern, the excellent companies seem to be able to strike the appropriate balance . . .*

*In achieving this careful balance between the company's short- and long-term interests, they seem to have avoided the malaise that media and academic commentators in North America cite as the cause of the decline of North American industry: an overemphasis on today's profitability by managers anxious to show quick impact before they move on to another job, and commensurate failure to invest in the future through commitments to developing new products, better technology and modern facilities.<sup>10</sup>*

Two studies<sup>11</sup> note that companies with a reputation for good management share a number of common characteristics. These include: a clear definition of the business they are in—and not in; an explicit commitment to leadership, which they seek to achieve through the provision of good value to their customers, and through the identification and exploitation of their competitive edge; and adoption of organizational structures and operational approaches that motivate employees to contribute to the achievement of company goals by instilling a sense of participation. According to a study undertaken for this Commission,<sup>12</sup> certain Canadian steel firms have become world leaders in productivity and productivity growth by confining their interests to a single industry and pursuing a business strategy strongly influenced by technological considerations.

A 1984 survey of 28 countries ranked Canada seventh in overall competitiveness.<sup>13</sup> Canada ranked eleventh in 1983 and sixth in 1982. In 1984, Canada ranked first in natural endowments, third in financial dynamism, fifth in human resources, and sixth in market dynamics. In other categories, however, it fared considerably less well. We ranked eleventh in economic dynamism, fourteenth in both industrial efficacy and socio-political consensus and stability, fifteenth in outward and innovative forward orientation, and sixteenth in terms of state interference in the economy. The countries that ranked ahead of Canada in overall competitiveness were the United States, which held the first position, Switzerland, Japan, Germany, Denmark and Sweden.

At the time of writing, detailed comparisons of production performance in 1984 were not yet available. In 1983, Canada fared poorly in product quality, design and styling, product safety, on-time delivery and after-sales service. Canadian performance was also poor in the categories of innovation in production techniques and product lines, readiness to exploit inventions, and industrial flexibility. Over the period 1977–82, Canadian employees ranked last in productivity growth; moreover, they compared unfavourably in their willingness to work efficiently and to accept labour-saving devices. Canadian management ranked poorly in managerial drive and entrepreneurship.

A number of other observers have commented on the lack of Canadian managerial entrepreneurship. One brief to this Commission noted:

*I have found the average Canadian to be as entrepreneurial as any other national—within the limits of his resources. Canadians in general are not to blame. Rather the entrepreneurial spirit of a few hundred people in the management of our big companies must be questioned.*

*In some cases the low quotient of entrepreneurship is because the company is simply a “branch plant” and lacks the skills and, more importantly, the mandate for diversification and further processing. In other cases the cause is not so obvious. A comfortable niche conferred on the company by ownership of a rich mine or of a rich forest licence or being shielded from the pressures of competition may be contributing factors.*

(H.N. Halvorson Consultants Ltd., Brief, August 19, 1983, p. 3.)

Others have questioned the entrepreneurial capacities of many of Canada's smaller firms:

*New product development in [threshold] firms is essentially an exercise in intra-corporate entrepreneurship, dependent more on marketing expertise than its technological capability.*

*The ability to discover, design and develop products in the face of changing technology and markets is the essence of entrepreneurship. And it is precisely in doing so that Canada's firms have apparently failed.<sup>14</sup>*

There is no shortage of opinion to the effect that Canadian managers and managements are very good. A member of the Conference Board of Canada's panel of corporate planners said to this Commission:

*I have worked with managements all over the world and I do not for a moment accept that Canadian management is not as good as anything I know of in the world, and I include in this the Japanese and German and all of the other rightfully praised managements.*

(Arthur Earle, at Royal Commission and Conference Board of Canada, Meeting of Council of Corporate Planning Executives, Transcript, May 10, 1984, pp. 87-88.)

But a presentation to this Commission's symposium on small business gave a less optimistic opinion:

*We are second to none in terms of technology, but we are second to a lot of people in management and marketing. Having managed a multinational company and having been exposed to the U.S. management, I am perhaps not as critical of our Canadian management. I sent five vice-presidents down to the parent company [during the] years that I ran Digital, so it speaks for something. I will admit that we lack the discipline that multinational companies will force upon themselves, particularly discipline relative to marketing.*

(Denzil Doyle, at Royal Commission, Small Business Seminar, Transcript, October 15, 1984, p. 130.)

As a number of submissions to this Commission have suggested, the apparent lack of emphasis on managerial entrepreneurship may be a product of the relatively protected environment in which many Canadian firms have operated. As protection decreases, the inducement to adapt, to innovate and generally to perform the entrepreneurial function will increase, and experience will sharpen our entrepreneurial skills:

*Management education had a role to play in [upgrading] the quality of management, but much less than one might suppose in terms of making it adaptable to change. Adaptation to change, I am quite convinced, derives from industrial experience rather than from a teachable scientific body of thought.*

(Arthur Earle, at Royal Commission and Conference Board of Canada, Meeting of Council of Corporate Planning Executives, Transcript, May 10, 1984, pp. 62-63.)

In this view, then, the development of the appropriate skills will be a consequence of a greater exposure to competition. Governments can encourage this development by shunning protective policies and measures that perpetuate managements that are unable to meet the competitive challenge.

Another policy issue suggests reorientation of assistance programs for small business:

*Entrepreneurship and marketing are the major weaknesses, not R&D support. Perhaps our greatest failing in attempting to manage the growth of Canada's technology-producing sector is in over-estimating the importance of technology and under-estimating the importance of entrepreneurship and marketing.<sup>15</sup>*

As we saw above, the 1983 survey ranked Canada sixteenth out of the 22 OECD countries in product design and styling. Governments could well pay closer attention to the way in which the arts and cultural community contribute to Canadian economic performance. Canadian sculptor William McElcheran told this Commission:

*What possible connection could there be between art and the economy? To answer this question properly, it is necessary to see the word "art" in a much larger sense than most people are used to.*

*If "art" means that precious activity indulged in by very special people for a limited audience of well to do culture seekers, the connection with the main stream of society is extremely tenuous. If, however, the word "art" means the use of human intelligence, imagination and creativity in the making of things generally, I believe that a case can be made for the importance of art in the economic life of the nation.*

*It is in seeing the relationship between people who make sculpture and painting, etc. and people who make more ordinary, useful things, that the importance of art can be appreciated in the economic sense. We need to see a return to quality and individuality in the environment we create for ourselves and this cannot happen unless pride of workmanship is reborn. When workmen are proud of their work, they are artists of sorts.*

*When price and quantity are the only criteria, it is natural that the cheapest, mass-produced products will have the advantage. In producing low-priced products of very advanced technology, Canada will always be at a disadvantage because of extremely high research and development costs, a small domestic market and a high wage scale relative to Asian countries. When low-priced Japanese goods are also of very high quality it becomes very difficult to compete, even for the U.S. The international race to produce super computers and robotized production systems reads like a life or death winner-take-all struggle which powerful western nations could lose.*

*There are a tremendous number of things which do not necessarily have to be produced in huge factories but which can generate a great deal of employment (and enjoyment). I know that this sounds like a return to the past, but I believe that it is actually a prediction of the future.*

(William McElcheran, Brief, June 18, 1983, pp. 1-2.)

There is, then, another aspect to culture, namely good taste, good design and creative innovation, that should enable smaller industrial economies to compete effectively in the world market. As a country with an even better forest endowment than Sweden, why are we importing Swedish furniture? The answer, of course, is design, which has enabled the Swedes, and the Danes, to sell higher-quality products on world markets. Another example is Italian shoes, particularly for women. Shoemakers in Italy earn less than in North America, but shoemakers in the Far East earn less than those in Italy. It is creative design that has kept Italy a leader in the shoe market.

This Commission suggests that Canadians as consumers should demand high quality and creative innovation in goods produced in this country. They can thus help to create a more competitive Canadian manufacturing sector. In this endeavour, higher quality implies an organic relationship between business and engineering, on the one hand, and design and craftsmanship, on the other. This relationship is hard to establish. In countries that have achieved such success, it has resulted from artists, business persons and engineers working together. In some situations, this co-operation appears to have happened "naturally"; in other instances, public policies supported it.

To promote this process, this Commission endorses the following recommendations of the *Report* of the Federal Cultural Policy Review Committee:

33. *The proposed Canadian Heritage Council should promote liaison among various federal departments and agencies involved in heritage, among all levels of government and between government and the private sector . . .*
37. *The government should amend the National Design Council Act of 1960 to designate a Canadian Council for Design and the Applied Arts and fund the Council to a level that will enable it to fulfill its mandate. The Council should report to the Minister of Communications.<sup>16</sup>*

In addition, this Commission recommends particular attention to pages 161–66 of the *Committee Report*.

High-quality products, technologies, plants, homes, cities and locales require the presence of creative artists of all kinds. To increase the long-run supply of artists in all these areas of our national life, as well as their artistic and cultural expression, governments must support the artists and the arts. The long-term return to investment in artists and the arts is real and substantial. In the absence of strong public support of this sector, Canada will not reap these benefits. Governments at all levels should increase their contribution to their respective arts councils.

Business education is also worthy of examination. One analyst has characterized Canadian management as less well educated and less open than that in the United States:

*There have been clear tendencies for managers in the United States to be drawn increasingly from those in the labour force who have had university training, especially those with training related to business, science and law. There is also a clear shift towards younger managers. Some of these tendencies are also appearing in Canada, but the shifts are occurring more slowly and have not gone as far. For example, the proportion of managers in Canada with some university in 1971 was only approaching the levels reached in the United States in the 1940's. To some extent, this reflects the continued smaller proportion . . . taking commerce and business at both the undergraduate and graduate levels. In addition, however, those who move into senior management levels in Canada move into positions of middle and senior management later in their working lives than in the United States. The proportion of the Canadian elite that come from the upper class was even higher in the early 1970's than two decades earlier, and this was more pronounced for younger than older managers. The low proportion of Canadian managers with relevant university training thus reflects company selection and promotion patterns and not just the composition and availability of persons with relevant education and experience.<sup>17</sup>*

Perhaps the wider social and educational background of more recent graduates will enable them to contribute more innovative qualities to Canadian management. However, another study<sup>18</sup> emphasizes the advantages of lengthy internal experience and longevity of tenure. Commissioners believe that public policy should foster the creation of a competitive environment that



encourages experimentation with alternative approaches and efforts to identify and adopt those management practices that are superior.

In its submission to this Commission, the Canadian Federation of Deans of Management and Administrative Studies acknowledged that some observers have criticized business-school curricula for a lack of attention to production management, over-reliance on quantitative techniques, and inadequate emphasis on strategic entrepreneurship. It responded as follows:

*Individual North American business schools vary substantially so [that] such observations might apply to different schools to different degrees and at different times. Some criticism, such as inadequate attention to the concerns of production and the "plant floor", probably applies to most. Better schools of management, as better businesses, have moved and are moving to respond to these concerns as resources permit.*

*Certainly, traditional ideas about "best management practice" are under substantial attack on many fronts. All of what we teach about management, and the pedagogy we use in so doing, requires continuing, critical examination. Nonetheless, it is important to business school curricula and in North American management practice. Inevitably, still further change will be necessary.*

(Canadian Federation of Deans of Management and Administrative Studies, Brief, November 30, 1983, pp. 3-4.)

Whatever the orientation of curricula, severe underfunding of business education has seriously restricted both the numbers who receive a management education and the quality of their training. In a letter to this Commission, W.H. Richardson, President of the Society of Management Accountants of Canada, cited the following indicators:

*In student-teacher ratios, professional ranking, research funding and doctoral programs, business faculties continue to place far behind the general university average.*

*A student/teacher ratio two to three times higher than in other faculties. In accounting programs alone, the 1965/66 ratio was 26:1 and the 1978/79 ratio was 36:1. Overall ratios in 1981 were 13:1 university wide and 30:1 in the business faculties. Given the current pressure on business enrolments, that ratio has probably increased substantially today.*

*The highest ratio of part-time to full-time faculty, almost 1:1 today. 1981 business school enrolments accounted for about 12% of the total university enrolments, but with less than 5% of full-time faculty. This disproportionate use of part-time faculty suggests that the business student is receiving his/her education from less qualified people than the norm.*

*Even with 12% of university enrolment, it is estimated that business faculties receive only about 3%-4% of the operating budget of the university system, though this is an average that would fluctuate considerably between schools . . .*

*The Canadian Federation of Deans of Management and Administrative Studies reports that these kind[s] of problems are not restricted to the accounting streams of business faculties.*

*The unfortunate fact is that many qualified students are not getting the opportunity they deserve to enter business schools, and those that do are receiving a less than adequate education.*

*Essential research into such areas as measurement of value, productivity, information management, and the not-for-profit sector is not being done. Even if it were, qualified instructors are not available to teach the new techniques and skills arising out of the research.*

*I believe that we are past the crisis point in developing tomorrow's accountants and managers. For our own economic survival, we must begin now to put matters right.*

(Society of Management Accountants of Canada, Brief, November 16, 1983, pp. 2, 4.)

This Commission is of the opinion that Canada must find additional resources for business education. These resources should come from business, from within the university system, and from government.

The international comparison mentioned earlier of Canadian corporate management and its performance leaves no room for complacency; on the contrary, it should be a matter of considerable concern. While government can help to improve the quality of Canadian management—by providing support for business schools, and guidance and training for those involved in smaller enterprises—business must tackle most of the problem itself. It may be, as some have suggested, that the rather unsatisfactory ranking of Canadian management is a result of the sheltered environment in which large segments of the economy have operated in the past. In the far more competitive environment into which we are moving, whether we like it or not, improved management may become essential to the competitiveness of our industries.

## **Entrepreneurship**

As Commissioners emphasized earlier, and as a number of individuals and groups recognized in their submissions, entrepreneurship is a critical element of national economic growth and development. It is difficult to measure the contribution of entrepreneurship to our economic well-being, in contrast to the other elements that contribute to this process, such as human and physical capital and technological advances.

It is sometimes difficult to distinguish between the entrepreneurial and the management functions. A study undertaken for this Commission defined entrepreneurship as part of the process of that innovation:

*Entrepreneurship involves the perception of an opportunity to innovate, and the creativity entailed in responding to that opportunity. Some individuals, understanding the potential to alter previous production methods, may implement new techniques or organizational arrangements based upon that understanding, while others may confront the same situation but not share the same insight or creativity. Second, entrepreneurship entails decisions based upon an analysis of uncertainty and risk. An error may occur; an attempt to innovate may fail; there is no guarantee that a new production method will succeed . . . The desire to acquire profit forms a powerful incentive to innovate.<sup>19</sup>*

Another study undertaken for this Commission maintains that entrepreneurship is central to economic progress. This survey describes an entrepreneur as

an "individual who bets on a new idea and implements it."<sup>20</sup> It concludes that an entrepreneur initiates activities that involve considerable uncertainty, and that could have a profound effect on social relationships by upsetting the existing order and eroding the wealth and privilege of certain groups. In that sense, entrepreneurship is part of the process of "creative destruction".

There are various views on the circumstances that promote or inhibit entrepreneurship. One view is that entrepreneurship may emerge as a consequence of a perception by individuals, firms or nations that they have fallen behind. Another view emphasizes immigration, particularly by minority groups, as a contributing factor:

*Immigration entails self-selection in that immigrants generally are aggressive and optimistic risk-takers. Furthermore, they may find that avenues to success in their new country are blocked: they are not part of the established culture and their professional qualifications may not be honoured. Their only available route for advancement may be to go into business. Exposure to different production methods in their homeland may spur certain immigrants to take risks and pursue an entrepreneurial career.<sup>21</sup>*

Another view emphasizes a fluid social and political structure and an appropriate reward structure as essential if individuals are to accept the risks of initiating new activity.

The coming together of like-minded individuals may also facilitate entrepreneurship. Former employees of older firms often form new ones. Relations developed between entrepreneurs and financiers may lead to financing of new ventures. Thus it may not be possible to ensure that each region has its *pro rata* share of entrepreneurial activity.

It also seems evident that government policy can encourage or discourage entrepreneurship. Government adjustment assistance, for example, can reduce political opposition to economic change, thus facilitating entrepreneurship. Government policies may also suppress change, either directly or indirectly, by reducing the rewards of entrepreneurship.

Before considering specific measures that governments might take to foster entrepreneurship, it is necessary to gain a clearer understanding of the concept itself. Many Canadians think of it in the context of smaller businesses, particularly new ventures, initiated by one or a few innovative individuals. But many large corporations exhibit entrepreneurship, and, indeed, in many cases, it has been essential to their continuing success. Such entrepreneurship has usually been the product of a team of professional managers, rather than of a few individuals. We can perhaps most readily recognize this process in the larger Japanese enterprises that operate so successfully on the world stage.

One critic claims that U.S. corporations have not moved far enough in this direction:

*It is becoming clear that America's economic future depends less on lonely geniuses and backyard inventors than on versatile organizations. Our abundance of Nobel laureates attests to American cleverness . . . Our problem is that we are*

*not consolidating this technological leadership into enduring commercial leadership because our industrial organization is not adaptable enough.*<sup>22</sup>

In the view of this critic and of a number of other observers, adjustment to this new competitive environment will require increased worker participation, political institutions that can link social and economic development, assistance in adjustment, and increased education, training and retraining.

While ongoing entrepreneurship by large corporations is important to the continued well-being of our economy, entrepreneurial activity among existing or new small businesses has been commanding widespread attention recently in both the United States and Canada. A disproportionate amount of employment growth appears to be occurring in small businesses. Indeed, in most industries, including manufacturing, small enterprises account for most, if not all, employment growth. This development applies not only to Canada and the United States, but also to Western Europe.

The most recent data for Canada appear in Table 8-11. Small firms provided 17 per cent of jobs in 1978, but accounted for 66 per cent of employment growth in all sectors between 1978 and 1982. They accounted for the bulk of employment growth in every sector except community services and public administration. In all but two manufacturing categories—electrical products, and food and beverages—most employment growth occurred in small enterprises. (Small enterprises are defined as employing fewer than 20 persons, medium enterprises as employing between 20 and 100 persons, and large enterprises, over 100 persons. The change in employment was measured over the period 1978 to 1982, using employer payroll-deduction accounts from the income-tax files.)

Table 8-12 shows U.S. employment growth by size of enterprise and industry for the period 1980–82. The smallest enterprises (those employing fewer than 20 employees) accounted for most employment growth in most sectors. Employment declined fractionally among medium-sized firms and significantly among large enterprises, but increased substantially in small firms.

What are we to make of these developments? One school of thought considers that these results indicate an increase in entrepreneurship in small enterprises, which in turn has come about because more people want to operate, or work for, a small firm. One presentation to this Commission's Symposium on Small Business gave a number of reasons for this preference:

- Many young people do not wish to work in a bureaucracy, either private or public.
- The economic dislocations of the late 1970s and early 1980s made a larger number of skilled persons available to start new businesses.
- Technology has created many new market niches that did not previously exist.
- Higher general levels of education have enabled individuals to acquire entrepreneurial skills at an earlier age.
- Market fragmentation has reduced the benefits of mass marketing and has created openings for specialists.

**TABLE 8-11 Contribution by Size of Enterprise to Sectoral Employment Change in Canada, 1978-82<sup>a</sup>**

Sector	Small		Medium		Large		All	
	Employment	%	Employment	%	Employment	%	Employment	%
Unclassified	52 840	7.2	674	0.1	2 735	0.4	56 249	7.7
Primary	10 643	1.4	-3 749	-0.5	-1 620	-0.2	5 274	0.7
Mining	12 665	1.7	5 386	0.7	12 621	1.7	30 672	4.2
Manufacturing	52 434	7.1	-23 938	-3.3	-100 609	-13.7	-72 113	-9.8
Construction	439	0.1	-11 418	-1.6	-12 337	-1.7	-23 316	-3.2
Transportation	18 044	2.5	-2 231	-0.3	11 252	1.5	27 065	3.7
Wholesale trade	32 442	4.4	-7 935	-1.1	5 584	0.8	30 091	4.1
Retail trade	87 894	12.0	-7 208	-1.0	71 869	9.8	152 555	20.8
Finance	23 519	3.2	-5 183	-0.7	15 096	2.1	33 432	4.6
Community services	53 581	7.3	18 125	2.5	97 772	13.3	169 478	23.1
Business and personal services	125 031	17.0	13 536	1.8	42 060	5.7	180 627	24.6
Public administration	13 553	1.8	3 816	0.5	127 383	17.3	144 752	19.7
Total	483 085	65.7	-20 125	-2.7	271 806	37.0	734 766	100.0

Source: Stewart Wells, Assistant Chief Statistician, National Accounts and Analytical Services, Statistics Canada. Presentation to Royal Commission, Small Business Seminar, October 15, 1984. Preliminary figures.

a. Includes changes in part-time employment converted to a full-year equivalent.

**TABLE 8-12 U.S. Employment Growth by Major Industry and Enterprise Size Class, 1980–1982**

Industry	Total	(data in thousands) Employment Size of Enterprise		
		1–19	20–99	100 or more
All industries	984	2 650	–2	–1 664
Agriculture, forestry and fishing	49	72	–7	–16
Mining	278	65	28	185
Construction	97	274	–114	–63
Manufacturing	–1 265	274	–55	–1 484
Transportation, communications, and utilities	33	146	4	–117
Wholesale trade	–82	230	–29	–283
Retail trade	152	364	–40	–172
Finance, insurance, and real estate	494	302	34	158
Services	1 228	923	177	128

Source: United States Small Business Administration, *The State of Small Business: A Report to the President* (Washington, D.C.: U.S. Government Printing Office, 1984), p. 26.

- Development of the computer-software industry, which requires brains, but not necessarily large financial resources, to start a business.
- A demand for custom-produced goods induced by higher per capita incomes.
- Deregulation (in the United States) has allowed new business formations in industries into which entry was earlier denied.<sup>23</sup>

According to this view, changes in labour and product markets and in technology are combining to make the smaller enterprise the preferred institutional form for many productive activities. The growth of employment in the small-business sector is more than merely a response to changes in demand, technology and workers' preferences; it is a reflection of the entrepreneurial character of small businesses:

*If small firms are creating jobs, they are doing something that large firms are not on average doing; that is to say, they are finding new markets, both domestically and internationally, they are creating new products, new processes, new forms of business endeavour which are proving themselves to be successful and that is reflecting itself in the formation of more jobs.*

(Patricia Johnston-Lavigne, at Royal Commission, Small Business Seminar, Transcript, October 15, 1984, p. 89.)

While this conclusion is consistent with available facts, Commissioners view it with reservations. The proportion of sales made by small firms has not increased to match employment. Temporary factors prevailing during a turbulent economic period may have produced an upsurge in employment among small firms. U.S. statistics show that over the period 1958–77, the

small-enterprise share of employment and sales declined in most sectors. While recent findings perhaps signify a new trend, only time will tell the whole story.

There are others who believe that fundamental forces are leading to a growth in North American entrepreneurial activity. One economist lists these forces as:

- The rapid evolution of knowledge and technology which is creating new entrepreneurial opportunities.
- Demographic trends that encourage the growth of service industries, where the small business form is most appropriate.
- The development of more adequate venture capital delivery systems.
- An increase in the ability of large corporations to undertake entrepreneurial activities.<sup>24</sup>

We turn now to the central issue: What can we Canadians do to foster entrepreneurship?

## Encouraging Entrepreneurship

### *Venture Capital*

Questions surround the adequacy of the supply of capital available to finance new ventures and expand existing ones, and of measures to increase the supply. During this Commission's hearings, a number of participants emphasized the importance of venture capital and its scarcity in certain industries and lines of endeavour, and at certain stages of development and levels of finance.

One submission, for example, outlined the problems in the software industry:

*Because of the small size and newness of companies in this field, and the lack of understanding of the value of the products, conventional financing methods are almost impossible. Typically, a far higher proportion of personal financial resources must be provided by the entrepreneur than in other industries, and this is a particularly prohibitive handicap to the younger (and often more innovative) people. As a result, many valid projects never reach fruition, or reach the market too late because they were undertaken as a "moonlighting" activity, or are not done well enough to compete, or are never started.*

(Software Industry Development Association, Brief, September 2, 1983, p. 8.)

Another brief underlined the difficulty of obtaining venture capital to develop new inventions:

*[There is] a real problem of [obtaining] start-up money for inventions. The venture capital business does not address that in this country at all. The small business development corporations that Ontario has instituted are a step in the right direction, and certainly that is a help. It still has some constraints which are very limiting. But that whole area of starting up new technologically-based business is one that is very immature in Canada, and needs some support.*

(Frank W. Maine, Transcript, Toronto, December 6, 1983 [vol. 61], p. 12803.)

Yet another submission noted the lack of capital to launch small new enterprises:

*Most of the problems that I see are the little start-ups, the fellows who need \$100,000 to three or \$400,000 to get off the ground and get going, and it is the step before the institutionalized venture capital companies come into play.*

(Calgary Research and Development Authority, Transcript, Calgary, November 7, 1983 [vol. 41], p. 8380.)

Table 8-13 presents evidence on the flow of venture-capital investments by private sector members of the Association of Canadian Venture Capital Companies (ACVCC). The investment flows reported vary significantly over time. While, between 1976 and 1981, venture-capital investment averaged only \$35 million a year, it amounted to more than \$85 million in 1981 and then dropped to \$62 million the following year, reflecting, no doubt, the impact of the recession. In 1983, it rebounded to \$86 million.

A presentation to this Commission's symposium on small business presented further evidence on the stock of venture capital:

*In terms of sources of venture capital funding or financing in Canada, I do not believe that there is a lack of funds. Industry estimates made indicate that there is currently some \$1 to \$1.5 billion Cdn. available for venture capital investments. However, a large portion of these funds is available from public sources (particularly provincial) where there may be fewer incentives to sponsor and direct efforts to the best possible ventures than from private source funding. Additionally, in the U.S. a substantial amount of pension and private funds has been directed towards investments in venture capital. U.S.-based pension funds, both public and private, have had a definite impetus in stimulating new product development and start-up venture capital backed firms through direct investments by such private pension funds as AT&T and IBM. U.S. pension fund venture investment dwarfed the total funds invested in venture capital by all pension funds in Canada. For example AT&T pension funds alone invested much more in venture capital than all the pension funds in Canada combined.*

(Stuart Feiner, Notes prepared for Royal Commission, Small Business Seminar, October 15, 1984, pp. 2-3.)

Another analyst presents a further insight into the stock of venture capital available in Canada:

*Based on information published in the Sources of Funds Index, it is estimated that some \$1.2 billion is now available under the broad definition of venture capital. This compares favorably with the U.S., at least in aggregate, since latest estimates from the U.S. (Venture Capital Journal), sets their total at \$11 billion . . . If we remove . . . direct government-sponsored funds, as opposed to those which are incentive schemes such as SBDC's [Small Business Development Corporations], the figure for Canada is nearer to \$800 million.*

*As an indication of the growth of the industry, the full membership in the Association of Canadian Venture Capital Companies, which started only in 1972, has grown from 14 in 1978 to a current 46 full members and 43 associates. In its peak year (1981) the Association reported \$121 million of investment, which was distributed 30% to start-ups, 30% to development stage*



**TABLE 8-13 Canadian Venture Capital Investments, Domestic and Foreign, 1976–1983**

	1983		1982		1981		Average of 1976–1981	
	Number	\$ Millions	Number	\$ Millions	Number	\$ Millions	Number	\$ Millions
Canada	66	86.3	88	61.7	113	85.5	59	34.7
Foreign countries	42	18.7	35	17.2	65	35.4	18	9.4
Total <sup>a</sup>	108	105.0	123	78.9	180	121.2	177	44.1

*Source:* The Association of Canadian Venture Capital Companies, "Unaudited Information Regarding the Investment Activities of the Association Members", 1983; and Ontario, Ministry of Treasury and Economics, *Economic Transformation: Technological Innovation and Diffusion in Ontario* (Toronto: Queen's Printer, 1984), p. 29.

a. Includes investments with location unspecified.

*companies, 28% to expansion, 4% each in turnarounds and buy-outs – 4% was not identified.*<sup>25</sup>

Overall, the stock of venture capital seems adequate in relation to the practical opportunities presenting themselves, although some consider that government agencies manage too much of the stock. Any problem with venture capital appears to involve communication between investors and entrepreneurs, rather than funding available.

Tax changes could augment the non-government pool of venture capital. Several participants in this Commission's symposium on small business suggested that the federal government should tax capital gains earned by venture capital companies at the capital gains rate. Possible loss of tax-free status inhibits Canadian pension funds from using the most appropriate vehicle for venture capital investment: the limited partnership. One participant in our symposium described the situation as "absolutely ludicrous".

These tax problems have serious consequences:

*Under the current Income Tax Act any investment by a pension fund in a limited partnership is considered to be foreign property regardless of where it makes investments and, is therefore, subject to the 10% limit on foreign investment for the pension funds. Since many of the major pension funds are heavily in the U.S. market, they are already at their 10% limit and, with good reason, are loathe to sell liquid securities in order to participate in non-liquid venture funds. Obviously some modification of this ruling would not be difficult and would certainly help venture capital partnerships raise capital. In the case of North American Ventures Fund II, at least \$15 million was "left on the table" because of this foreign content ruling.*

*Similarly, in the past year, several venture capital companies have been threatened by Revenue Canada with reassessment on some of their earlier capital gains as income . . . The industry has been operating for many years in a state of stability and reasonable expectation of such capital gains treatment. These recent moves by Revenue Canada are having a major disquietening effect, and if they persist, could effectively staunch the flow of capital into the field, as well as increase the already high hurdle rates of return which venture capitalists apply when looking at prospective investments.*<sup>26</sup>

What little is known about government venture capital operations does not induce one to argue for their further expansion. A study of the Canada Development Corporation (CDC), a mixed enterprise in which the federal government has a major stake in the venture-capital operation, concluded:

*The Corporation has not fared very well by being involved with venture capitalists, certainly less well than it would have fared, on average, by randomly investing in nonfinancial equities.*<sup>27</sup>

There is also some indication that the performance of Ontario's venture capital agency, IDEA Corp., has been somewhat disappointing.<sup>28</sup>

One of the foremost problems is the inability of those with promising proposals to convince would-be investors that theirs is a practical and viable

business proposition. Subsidies might better be given to assist in converting ideas into practical business proposals, rather than in supporting the supply of venture capital.

### ***Other Forms of Finance***

The supply conditions of debt and equity capital have received detailed scrutiny recently in a study undertaken for the Economic Council of Canada. The study concluded:

*There is no evidence of important market imperfections in the loan market . . . In fact, this study shows that it is not true that small firms cannot borrow; they have higher debt-to-assets ratios than the larger ones. One may at least question the wisdom of maintaining several lending institutions, at the federal and provincial levels, without any evidence that they are needed.<sup>29</sup>*

In an earlier report, published in 1982, the Council concluded that there was no generalized credit gap in debt markets, and that the pattern and volume of investment would not have been appreciably different in the absence of government lending programs and institutions.<sup>30</sup> Other observers have cited the continuing need for innovative debt financing, particularly given the nature of the security required.

With respect to equity finance, the Economic Council acknowledged that “small businesses in particular, find it difficult to obtain equity finance”.<sup>31</sup> Public policy can amend some of these difficulties. However, the so-called “agency problem” is not so easily remedied. This problem involves the unacceptable way in which an outside equity interest affects the operations of a business.

Difficulties that are potentially amenable to public policy solutions include excessive-issue costs, and “thin” (illiquid) equity markets. The Economic Council suggests that participation in equity markets may be enhanced by changing regulations to encourage increased investments by financial intermediaries in the equities of small and medium-sized firms, and by changing the tax system (that is, the capital-gains tax) to make equity ownership more attractive.<sup>32</sup>

This Commission asked a number of intervenors why the Canadian market for junior equities is so “thin” and what can be done about it. These intervenors answered that the thinness of the market itself discouraged many participants, and that the relatively active U.S. market was, in part, an outgrowth of the long-standing pools of non-government venture capital. In Canada, these pools are of recent origin, and many are government managed. The Economic Council contended that one cause of the equity problem was the tendency of financial underwriters to take an excessive “spread” (that is, the difference between issue price and market price after one month) on junior issues. The Investment Dealers Association provided this Commission with evidence that the spread varies considerably according to economic conditions. We have not been able to determine whether this spread is higher,

on average (over many issues and cyclical experiences), than it should be, compared to that prevailing in other areas.

## Small Business

The participants in this Commission's small-business symposium suggested some changes in public policy that could benefit small business directly, rather than indirectly through financial markets. One participant argued that deemed realization of capital gains on death of the proprietor made the maintenance of family-owned companies difficult and reduced the incentive of entrepreneurs to build them up. In addition, it was suggested that the tax system should be neutral, as it applies to firms of different size. While debate continues as to whether or not the tax system is neutral, Commissioners agree that it should be so. In this connection, it might be worthwhile to study further the continuing use of flow-throughs and refundability of credits that cannot be claimed against taxable income.

Another participant expressed the opinion that neutrality with respect to firm size should also apply to government-subsidy programs, as the costs of meeting program requirements are simply too high for most young businesses. This is another reason for opting in favour of a tax-based incentive system with refundability.

The symposium produced two other significant points. First, small business would benefit from better-prepared and -screened trainees and from measures that would help to maintain continuity of employment for those being trained. Secondly, we were told:

*Governments in the past have used the firm as an instrument for the delivery of social policies without realizing how expensive this is. The overhead costs of actually delivering all the unemployment insurance, payroll taxes and the rest, [are] very high . . . I don't think that policy makers have been sufficiently aware of the costs to the small firm of using the firm as the delivery mechanism for these policies.*

(Caroline Pestieau, at Royal Commission, Small Business Seminar, Transcript, October 15, 1984, pp. 67-68.)

While, as a general principle, Commissioners believe that it is reasonable to expect business to contribute to the operation of social policies, we also think that it would be desirable for government to examine possible steps to reduce the disproportionately heavy burden that appears to be imposed on smaller-business enterprises.

In addition, Commissioners suggest that the government consider reducing the degree of "planning regulation". This type of regulation may cover such fields as entry into a particular industry, the manner in which the operation is conducted, and the prices that may be charged. In the judgement of the U.S. Small Business Administration, the extensive move towards deregulation has created entrepreneurial opportunities for a great many enterprises in such areas as trucking and warehousing, communications and banking, which are reflected in increased business formations in these industries. Commissioners

anticipate that similar opportunities would develop in Canada as a result of reduction in regulatory controls.

## Notes

1. Donald J. Lecraw, "Corporate Operation and Strategy in a Changing World Environment", in *Technological Change in Canadian Industry*, vol. 3 (Toronto: University of Toronto Press, 1985).
2. Robert B. Reich, *The Next American Frontier* (New York: Times Books, a division of Random House, 1983).
3. *Ibid.*, p. 231.
4. *Ibid.*, pp. 140–41.
5. *Ibid.*, p. 141.
6. See, for example, T.J. Courchene, "Towards a Protected Society: The Politicization of Economic Life", *Canadian Journal of Economics* 13 (1980): 556–77; and Mancur Olson, *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities* (New Haven: Yale University Press, 1982).
7. Michael C. Jensen and Richard S. Ruback, "The Market for Corporate Control: The Evidence", *Journal of Financial Economics* 11 (1983), p. 5.
8. Canada, Royal Commission on Corporate Concentration, *Report* (Ottawa: Minister of Supply and Services Canada, 1978), p. 132.
9. Gordon Donaldson and Jay W. Lorch, *Decision Making at the Top: The Shaping of Strategic Direction* (New York: Basic Books, 1983).
10. "Continuity Makes Top Managers", *Financial Post*, June 27, 1981, p. 15. Report prepared by McKinsey & Company in co-operation with the *Financial Post*. Articles appeared June 6, 13, 20 and 27, 1981.
11. McKinsey & Company in co-operation with the *Financial Post*; and Thomas J. Peters and Robert H. Waterman Jr., *In Search of Excellence* (New York: Harper and Row, 1982).
12. Isaiah A. Litvak and Christopher J. Maule, "The Canadian Aluminum and Steel Industries", in *Technological Change in Canadian Industry*, vol. 3 (Toronto: University of Toronto Press, 1985).
13. Conducted by the European Management Forum, an independent, non-profit foundation based in Geneva. See *Report on International Industrial Competitiveness* (Geneva: EMF Foundation, 1984).
14. Jerry Dermer, "Growing Canada's Threshold Technology-Producing Firms", *Business Quarterly* 49 (Spring 1984), p. 41.
15. *Ibid.*, p. 44.
16. Canada, Federal Cultural Policy Review Committee, *Report* (Ottawa: Minister of Supply and Services Canada, 1982), pp. 138, 163.
17. Donald Daly, "Canadian Management: Past Recruitment Practices and Future Needs", background paper prepared for the conference "Management in the 1980s: The Crisis of Management Education and Research", sponsored by the Canadian Federation of Deans of Business and Administrative Studies, Ottawa, March 1980, p. i.
18. McKinsey & Company in co-operation with the *Financial Post*.
19. David Conklin, "Entrepreneurship, Innovation and Economic Change", in *Response to Economic Change*, vol. 27 (Toronto: University of Toronto Press, 1985).

20. Reuven Brenner and Léon Courville, "Industrial Strategy: Inferring What It Really Is", in *Economics of Industrial Policy and Strategy*, vol. 5 (Toronto: University of Toronto Press, 1985).
21. Conklin, "Entrepreneurship, Innovation and Economic Change".
22. Reich, *The Next American Frontier*, p. 279.
23. Patricia Johnston-Lavigueur, at Royal Commission, Small Business Seminar, Transcript, October 15, 1984, pp. 21–24.
24. As discussed by A. Beutel, at Royal Commission, Small Business Seminar, Transcript, October 15, 1984, pp. 104–5.
25. George F. Fells, "Venture Capital in Canada – A Ten-Year Review", *Business Quarterly* 49 (Spring 1984), p. 71.
26. *Ibid.*, pp. 72–73.
27. Abraham Tarasofsky, "The Canada Development Corporation 1973–83", preliminary draft (Ottawa: Economic Council of Canada, 1984), p. 60.
28. Linda McQuaig, "IDEA's Style Brings Disappointment", *Globe and Mail, Report on Business*, November 6, 1984, pp. B1, B19.
29. Jean-Marie Gagnon and Benoît Papillon, *Financial Risk, Rate of Return of Canadian Firms, and Implications for Government Intervention*, study prepared for the Economic Council of Canada (Ottawa: Minister of Supply and Services Canada, 1984), pp. 84–85.
30. Economic Council of Canada, *Intervention and Efficiency: A Study of Government Credit and Credit Guarantees to the Private Sector* (Ottawa: Minister of Supply and Services Canada, 1982), pp. 27–35.
31. *Ibid.*, p. 29.
32. *Ibid.*, p. 35.