Long-Term Economic Prospects for Canada: A Symposium

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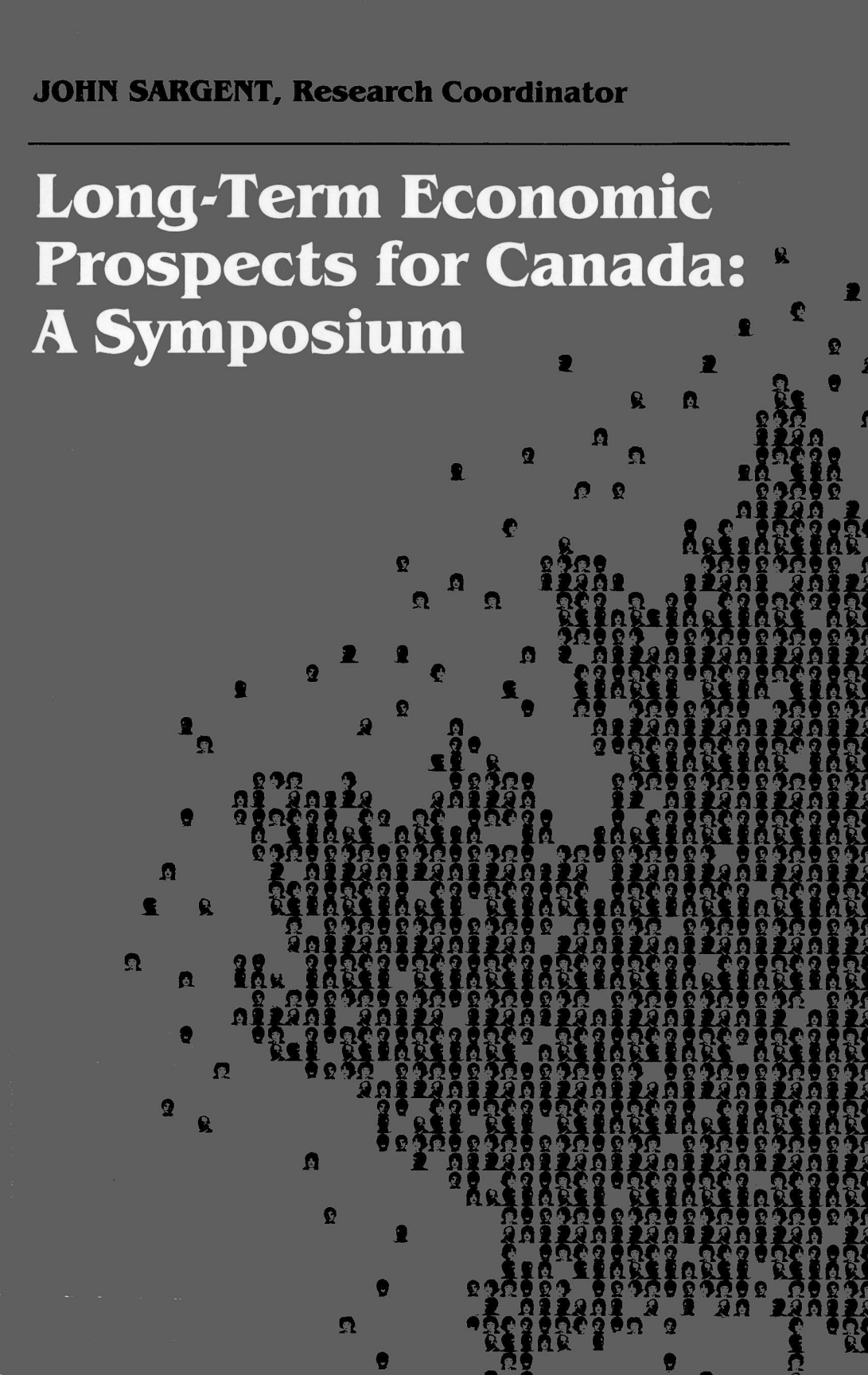
JOHN SARGENT, Research Coordinator

Long-Term Economic Prospects for Canada: A Symposium



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JOHN SARGENT
Research Coordinator

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CONTENTS

FOREWORD

When the members of the Rowell-Sirois Commission began their collective task in 1937, very little was known about the evolution of the Canadian economy. What was known, moreover, had not been extensively analyzed by the slender cadre of social scientists of the day.

When we set out upon our task nearly 50 years later, we enjoyed a substantial advantage over our predecessors; we had a wealth of information. We inherited the work of scholars at universities across Canada and we had the benefit of the work of experts from private research institutes and publicly sponsored organizations such as the Ontario Economic Council and the Economic Council of Canada. Although there were still important gaps, our problem was not a shortage of information; it was to interrelate and integrate — to synthesize — the results of much of the information we already had.

The mandate of this Commission is unusually broad. It encompasses many of the fundamental policy issues expected to confront the people of Canada and their governments for the next several decades. The nature of the mandate also identified, in advance, the subject matter for much of the research and suggested the scope of enquiry and the need for vigorous efforts to interrelate and integrate the research disciplines. The resulting research program, therefore, is particularly noteworthy in three respects: along with original research studies, it includes survey papers which synthesize work already done in specialized fields; it avoids duplication of work which, in the judgment of the Canadian research community, has already been well done; and, considered as a whole, it is the most thorough examination of the Canadian economic, political and legal systems ever undertaken by an independent agency.

The Commission's research program was carried out under the joint

direction of three prominent and highly respected Canadian scholars: Dr. Ivan Bernier (*Law and Constitutional Issues*), Dr. Alan Cairns (*Politics and Institutions of Government*) and Dr. David C. Smith (*Economics*).

Dr. Ivan Bernier is Dean of the Faculty of Law at Laval University. Dr. Alan Cairns is former Head of the Department of Political Science at the University of British Columbia and, prior to joining the Commission, was William Lyon Mackenzie King Visiting Professor of Canadian Studies at Harvard University. Dr. David C. Smith, former Head of the Department of Economics at Queen's University in Kingston, is now Principal of that University. When Dr. Smith assumed his new responsibilities at Queen's in September 1984, he was succeeded by Dr. Kenneth Norrie of the University of Alberta and John Sargent of the federal Department of Finance, who together acted as Co-directors of Research for the concluding phase of the Economics research program.

I am confident that the efforts of the Research Directors, research coordinators and authors whose work appears in this and other volumes, have provided the community of Canadian scholars and policy makers with a series of publications that will continue to be of value for many years to come. And I hope that the value of the research program to Canadian scholarship will be enhanced by the fact that Commission research is being made available to interested readers in both English and French.

I extend my personal thanks, and that of my fellow Commissioners, to the Research Directors and those immediately associated with them in the Commission's research program. I also want to thank the members of the many research advisory groups whose counsel contributed so substantially to this undertaking.

DONALD S. MACDONALD

INTRODUCTION

At its most general level, the Royal Commission's research program has examined how the Canadian political economy can better adapt to change. As a basis of enquiry, this question reflects our belief that the future will always take us partly by surprise. Our political, legal and economic institutions should therefore be flexible enough to accommodate surprises and yet solid enough to ensure that they help us meet our future goals. This theme of an adaptive political economy led us to explore the interdependencies between political, legal and economic systems and drew our research efforts in an interdisciplinary direction.

The sheer magnitude of the research output (more than 280 separate studies in 70+ volumes) as well as its disciplinary and ideological diversity have, however, made complete integration impossible and, we have concluded, undesirable. The research output as a whole brings varying perspectives and methodologies to the study of common problems and we therefore urge readers to look beyond their particular field of interest and to explore topics across disciplines.

The three research areas, — *Law and Constitutional Issues*, under Ivan Bernier; *Politics and Institutions of Government*, under Alan Cairns; and *Economics*, under David C. Smith (co-directed with Kenneth Norrie and John Sargent for the concluding phase of the research program) — were further divided into 19 sections headed by research coordinators.

The area *Law and Constitutional Issues* has been organized into five major sections headed by the research coordinators identified below.

- Law, Society and the Economy — *Ivan Bernier and Andrée Lajoie*
- The International Legal Environment — *John J. Quinn*
- The Canadian Economic Union — *Mark Krasnick*

- Harmonization of Laws in Canada — *Ronald C.C. Cuming*
- Institutional and Constitutional Arrangements — *Clare F. Beckton and A. Wayne MacKay*

Since law in its numerous manifestations is the most fundamental means of implementing state policy, it was necessary to investigate how and when law could be mobilized most effectively to address the problems raised by the Commission's mandate. Adopting a broad perspective, researchers examined Canada's legal system from the standpoint of how law evolves as a result of social, economic and political changes and how, in turn, law brings about changes in our social, economic and political conduct.

Within *Politics and Institutions of Government*, research has been organized into seven major sections.

- Canada and the International Political Economy — *Denis Stairs and Gilbert Winham*
- State and Society in the Modern Era — *Keith Banting*
- Constitutionalism, Citizenship and Society — *Alan Cairns and Cynthia Williams*
- The Politics of Canadian Federalism — *Richard Simeon*
- Representative Institutions — *Peter Aucoin*
- The Politics of Economic Policy — *G. Bruce Doern*
- Industrial Policy — *André Blais*

This area examines a number of developments which have led Canadians to question their ability to govern themselves wisely and effectively. Many of these developments are not unique to Canada and a number of comparative studies canvass and assess how others have coped with similar problems. Within the context of the Canadian heritage of parliamentary government, federalism, a mixed economy, and a bilingual and multicultural society, the research also explores ways of rearranging the relationships of power and influence among institutions to restore and enhance the fundamental democratic principles of representativeness, responsiveness and accountability.

Economics research was organized into seven major sections.

- Macroeconomics — *John Sargent*
- Federalism and the Economic Union — *Kenneth Norrie*
- Industrial Structure — *Donald G. McFetridge*
- International Trade — *John Whalley*
- Income Distribution and Economic Security — *François Vaillancourt*
- Labour Markets and Labour Relations — *Craig Riddell*
- Economic Ideas and Social Issues — *David Laidler*

Economics research examines the allocation of Canada's human and other resources, the ways in which institutions and policies affect this

allocation, and the distribution of the gains from their use. It also considers the nature of economic development, the forces that shape our regional and industrial structure, and our economic interdependence with other countries. The thrust of the research in economics is to increase our comprehension of what determines our economic potential and how instruments of economic policy may move us closer to our future goals.

One section from each of the three research areas — The Canadian Economic Union, The Politics of Canadian Federalism, and Federalism and the Economic Union — have been blended into one unified research effort. Consequently, the volumes on Federalism and the Economic Union as well as the volume on The North are the results of an interdisciplinary research effort.

We owe a special debt to the research coordinators. Not only did they organize, assemble and analyze the many research studies and combine their major findings in overviews, but they also made substantial contributions to the Final Report. We wish to thank them for their performance, often under heavy pressure.

Unfortunately, space does not permit us to thank all members of the Commission staff individually. However, we are particularly grateful to the Chairman, The Hon. Donald S. Macdonald; the Commission's Executive Director, J. Gerald Godsoe; and the Director of Policy, Alan Nymark, all of whom were closely involved with the Research Program and played key roles in the contribution of Research to the Final Report. We wish to express our appreciation to the Commission's Administrative Advisor, Harry Stewart, for his guidance and advice, and to the Director of Publishing, Ed Matheson, who managed the research publication process. A special thanks to Jamie Benidickson, Policy Coordinator and Special Assistant to the Chairman, who played a valuable liaison role between Research and the Chairman and Commissioners. We are also grateful to our office administrator, Donna Stebbing, and to our secretarial staff, Monique Carpentier, Barbara Cowtan, Tina DeLuca, Françoise Guilbault and Marilyn Sheldon.

Finally, a well deserved thank you to our closest assistants: Jacques J.M. Shore, *Law and Constitutional Issues*; Cynthia Williams and her successor Karen Jackson, *Politics and Institutions of Government*; and I. Lilla Connidis, *Economics*. We appreciate not only their individual contribution to each research area, but also their cooperative contribution to the research program and the Commission.

IVAN BERNIER
ALAN CAIRNS
DAVID C. SMITH

PREFACE

The Royal Commission's Macroeconomics Research Studies Program was designed to shed light on the macroeconomic evolution of the Canadian economy over the postwar period and particularly over the last two decades, on current macro policy issues, and on overall prospects for the Canadian economy. The results of the research program provided background for the Commission's Final Report. The individual studies which constituted the research program are contained in volumes 19 to 25 in the Economics Section of the research publication series.

Volume 23 contains the proceedings of a symposium held in January 1984, as part of the Macroeconomics Research Program, and intended to provide general background on longer-term economic prospects for Canada and on the nature and limitations of attempts to project the longer-term economic future. The Commission did not have the resources or time to undertake a major modelling and projection exercise on its own, and in any event a substantial supply of well-developed longer-term projections was available from other sources. The symposium attempted to tap into this supply in a way that would provide useful background for the Final Report. As well, it would offer information for members of the general public interested in an overview of what is available and for students of the subject interested in a reasonably well-documented comparative set of long-term projections prepared in late 1983. The volume contains:

- an introduction comparing the individual macroeconomic projections, with brief comment on the other material presented at the symposium relating to industry sector outlooks and to the nature and limitations of long-term projections.

- presentations of long-term Canadian macroeconomic, sectoral and regional projections by three leading private Canadian forecasting/projection services;
- examinations of the role, record, and limits of long-term projections by Professor Mervin Daub of Queen's University and Dr. Christopher Caton of Data Resources Inc. (U.S.);
- appendices comparing earlier long-term (25 years) projections for the Canadian economy by the 1957 Royal Commission on Canada's Economic Prospects, and medium-term projections published by the Economic Council of Canada over the period from 1964 to 1983, with actual outturns;
- an appendix consisting of an extended set of tables comparing the major exogenous and endogenous variables in the three main macroeconomic projections presented at the symposium, and in a number of medium- and long-term projections prepared by other institutions.

As noted, it is not the purpose of the volume to put forward a single, official Commission view of longer-term economic prospects. But the material should be relevant to those interested in actual prospects and the factors entailed in developing views of prospects, and in the nature and limitations of attempts to project the longer-term economic future.

John Sargent

ACKNOWLEDGMENTS

The Symposium on Long-Term Prospects for the Canadian Economy was held in Ottawa in January 1984.

I am grateful to Dr. David C. Smith, Research Director of the overall Economics Program, for support and advice; to Dr. Brian Scarfe, Professor of Economics at the University of Alberta and member of the Commission Macroeconomics Research Advisory Group, for chairing a session of the program; and to Barbara Cowtan and Douglas Green of the Commission staff and Don Wilson of the Institute for Research on Public Policy for help with program arrangements. Douglas Green took responsibility as well for the considerable task of assembly and checking of the major set of tables presented in Appendix C.

The contributors, largely drawn from private forecasting firms and from government departments concerned with particular industry sectors, responded admirably to the requests made of them to discuss key aspects of the outlook. This they had to do in a limited space, and in a way that would cast light not only on current best views of the area or sector in question but also on the critical issues faced in arriving at such views and, in a number of cases, on the issue of the nature of longer-term projections.

J.S.

Long-Term Prospects for the Canadian Economy: *Overview of the Seminar*

PATRICK GRADY
JOHN SARGENT

Introduction

As part of its effort to gather information on the longer-term trends facing the Canadian economy, the Commission convoked a seminar in Ottawa on January 10, 1984. Three leading private sector forecasting groups, Data Resources Incorporated (DRI), Informetrica Limited (Informetrica), and the Policy and Economic Analysis Program of the Institute for Policy Analysis at the University of Toronto (PEAP), were invited to present their current (end of 1983) views on likely long-term growth paths for the economy. Spokesmen were Tom McCormack (DRI), Mike McCracken (Informetrica), and Peter Dungan (PEAP).

Sectoral specialists were also invited to the conference to comment on the prospects for certain key sectors for which, in the economist's jargon, "exogenous", sector-specific factors play critical roles. They included: Michel Grignon of Quebec Hydro on electricity generation; James Welch of Transport Canada on transportation; Al Chatterjee of Bell Canada on communications; Stewart Borland of the Department of Agriculture on agriculture; John Wansbrough of the Department of Regional Economic Expansion on forestry; Keith Brewer of the Department of Energy, Mines and Resources on mining; and Craig Oliver of the Department of Regional Economic Expansion on manufacturing.

A final session at the conference on the uses and limitations of long-term projections was addressed by Chris Caton of DRI and Mervin Daub of Queen's University.

One might reasonably hope that projections of longer-term trends in the economy would not be subject to rapid obsolescence. However, it is the case that, in the interval of more than two years that has elapsed

between the preparation of these projections and the publication of this volume, all three forecasting groups have revised their projections at least twice; the sector specialists have probably revised their views as well. While it should thus be emphasized that these projections are dated, there are three reasons why the material was still considered of sufficient value to warrant publication.

The first reason is that the analysis of longer-term factors which can be expected to shape overall and sector economic prospects should have some lasting value, even if the numerical magnitudes — especially those for the early years of the projection period — no longer have any claim to represent anyone's current "best guess." Further, the rather informally presented projections will give the reader considerable insight into the way the authors feel about their products. The second reason is that it is hoped that the assembly of these forecasts, together with the extensive comparative tabulation of values of forecast and exogenous variables in Appendix C, will provide a useful source for those interested in the subject of long-term projection. We hope that sufficient detail has been provided to allow the interested student of this subject to analyze the differences among the projections, or to analyze why projections made in late 1983 showed particular patterns. Finally, a major objective of the seminar was to explore the nature of, and — in a rough sense — the accuracy of, long-term projections.

The presentation of the macroeconomic projections of three different forecasting groups provides one indication of the range in views that can arise at a point in time reflecting different models and different exogenous assumptions. As well, Mike McCracken's talk contains interesting summary information on the accuracy of close to twenty years of Informetrica projections. Peter Miles reviews the evolution of the National Energy Board's (NEB) petroleum price, supply and demand projections over a shorter period. Chris Caton reviews the evolution of key aspects of the DRI U.S. macroeconomic forecast. Appendices A and B compare past long- and medium-term projections of the Gordon Commission and the Economic Council of Canada with the now-known outcomes. Next, the juxtaposition of model-based macroeconomic projections containing some sectoral detail, with the qualitative or quantitative views of sectoral specialists, provides a further reading on ranges in views of prospects at the industry level. As already noted, the seminar concluded with a session devoted to a general discussion of the uses and limitations of long-term projections.

Before proceeding to discuss the prospects, as presented in the seminar, it is useful to consider the nature of long-term projections. Experience with long- and medium-term projections prepared by the Gordon Commission, the Economic Council of Canada, and a number of other agencies in more recent years, as well as the experience of other countries, suggests that while carefully prepared projections provide some

basis for identifying likely future trends, such projections should be treated as:

- subject to substantial margins of errors;
- quite possibly overly influenced by the experience of the two or three years immediately preceding preparation;
- not very successful at identifying future breaks in trends; and
- subject to even greater difficulty in projecting conditions for major industrial sectors than for the economy as a whole.

There are noteworthy examples of the failure of projections to anticipate major new developments. Such important demographic shifts as the postwar rise in birth rates and the late 1960s decline both came as surprises. With respect to natural resource supply and demand conditions, neither the dramatic rise in oil prices in 1973, nor the significant decline in real oil prices from 1980–81 peak levels was built into prior short-term forecasts, let alone long-term projections. It was also the common practice in the early 1970s to project the continuation of something like the average productivity growth of the 1950s and 1960s.

All of their failings notwithstanding, long-term projections are still of use. They represent considered and consistent views of future developments by the best experts in the field. As such, they are more likely to be close to the mark than less sophisticated and systematic methods of anticipating future developments. Even though the future is inherently unknowable, it is important to take advantage of the best information available in order to make plans. It was in this spirit that the seminar was convoked.

Macro Projections to 2000: A Summary

The projections presented at the seminar were based, at least in broad terms, on an assumed continuation of existing policies, programs, and private sector behavioural patterns. They also assumed that there will be no major abrupt changes in the external environment facing the Canadian economy.

Average of Long-Term Projections

The average of the three long-term projections prepared for the Commission by DRI, Informetrica, and the Institute for Policy Analysis are presented in Table 1. The growth rate of real Gross National Expenditure (GNE) was projected to slow from about 3.5 percent on average over the mid-1980s to 2.75 percent by the end of the century. This is significantly slower than the growth of 4.25 percent achieved on average over the 1956–81 period.

TABLE 1 Average of Three Long-Term Projections: Main Economic Indicators, 1983–2000 (average annual percent growth)

	1983–87	1988–95	1996–2000
Real GNE	3.4	3.1	2.7
Employment	1.9	1.8	1.3
Unemployment Rate (level)	11.0	9.0	7.4
Consumer Price Index	5.1	4.9	4.8
Productivity	1.6	1.3	1.4

TABLE 2 Sources of Growth of Employment, Average of Three Projections (contribution to average annual growth in percentage points)

	1982–87	1987–95	1995–2000
Population Growth	1.0	0.7	0.5
Increased Participation	0.7	0.8	0.6
Decreased Unemployment	0.2	0.3	0.2
Total Employment Growth	1.9	1.8	1.3

Associated with the slowing in the growth of GNE is a decrease in employment growth. It is projected to decline from 2.8 over the 1966–81 period to 1.9 percent over the mid-1980s and to 1.3 percent by the end of the century, reflecting, most importantly, the slowing in growth of the labour force.

The unemployment rate was expected to decrease only very gradually from current high levels. It was projected to average 11 percent in the mid-1980s, 9 percent in the late 1980s and first half of the 1990s, and 7.4 percent in the last five years of the century.

Inflation was expected to slow only slightly over the rest of the century, remaining in the vicinity of 5 percent. This 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. It represents a continuation of inflation near current rates.

The growth of real GNE can be attributed to productivity and employment. Table 1 shows that productivity was projected to average 1.5 percent or slightly lower for the balance of the century. This means that most of the projected slowdown in real growth was expected to come primarily from a slowing in employment growth, rather than in productivity.

The anticipated sources of the decreased employment growth are shown in Table 2. The most fundamental underlying factor is the decline in population growth from about 1 percent in the mid-1980s to 0.5 percent near the end of the century. There is also expected to be a slight slowing in the increase in the labour force participation rate as female participation rates rise less rapidly. With the unemployment rate currently so

TABLE 3 Comparison of Average of Three Projections for Canada and the United States (average annual percent change)

	1982–87	1987–95	1995–2000
Real GNP			
Canada	3.4	3.1	2.7
United States	3.5	2.6	2.4
Difference	−0.2	0.5	0.3
Consumer price index			
Canada	5.1	4.9	4.8
United States	4.8	5.0	4.7
Difference	0.3	−0.1	0.2

high, employment growth was expected to exceed labour force growth by a small but significant margin for the balance of the century.

Canadian prospects are critically dependent on developments in the United States. This fact is underlined in Table 3. The average projected real growth rate for the Canadian economy of the three forecasting groups is compared in Table 3 with the average real growth for the United States assumed by the same groups. Through the mid-1980s, real growth was expected to be similar in both countries. Into the late 1980s and into the first half of the 1990s, real growth was projected to average 0.5 percent greater in Canada. In the last five years of the century real growth was expected to average only 0.3 percent higher in Canada. Even though real growth was expected to be somewhat higher in Canada, the differential was less than the 1 percent characteristic of the 1956–81 period.

The inflation prospects of the Canadian economy are also closely linked with those in the United States, as indicated by Table 3. Inflation was expected to average about 5 percent in both countries. With a floating Canadian dollar, it is possible in theory for inflation to be much different in Canada than in the United States. However, in the past this has not been the case because Canadian monetary policy has been similar to that in the United States.

The prospects summarized so far have been based on the average of the three projections prepared for the Commission. We now consider the individual long-term projections by the various forecasting groups.

Individual Long-Term Projections: A Comparison

The extent of the difference of views concerning the prospects for real growth is shown in Table 4. This difference is not significant in the early years of the projection period, but it widens as the horizon increases. The range for the mid-1980s is from 3.3 for DRI to 3.4 percent for

TABLE 4 Real GNE (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	3.3	3.3	3.1	2.8
Informetrica	3.4	3.2	2.8	2.8
PEAP	3.4	2.8	2.1	2.2
Average	3.4	3.1	2.7	2.6

a. Last year of DRI projection is 2008.

TABLE 5 U.S. GNP (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	3.7	2.8	2.3	2.3
Informetrica	3.7	2.4	2.6	2.5
PEAP	3.2	2.6	2.2	2.0
Average	3.5	2.6	2.4	2.3

a. Last year of DRI projection is 2008.

TABLE 6 Population (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	1.0	0.7	0.5	0.4
Informetrica	0.9	0.7	0.6	0.6
PEAP	1.0	0.7	0.4	0.3
Average	1.0	0.7	0.5	0.4

a. Last year of DRI projection is 2008.

TABLE 7 Labour Force (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	1.8	1.5	1.0	0.9
Informetrica	1.7	1.3	1.2	1.0
PEAP	1.5	1.6	1.0	0.7
Average	1.7	1.5	1.1	0.9

a. Last year of DRI projection is 2008.

Informetrica and PEAP. From the late 1980s through the first half of the 1990s the range is from 2.8 percent for PEAP to 3.3 percent for DRI, or an average of about 3.1 percent. In the last five years of the century the projections for real growth run from 2.1 percent for PEAP to 3.1 percent for DRI, averaging 2.7 percent. In the part of the first decade of the next century forecast, the projections range from 2.2 percent for PEAP to 2.8 percent for DRI and Informetrica. The close correspondence between the real growth projected in Canada and that assumed for the United States is revealed by a comparison of Tables 4 and 5 giving the real growth rates for Canada and the United States respectively.

There was a much greater degree of consensus about the likely growth of population and labour force than concerning real growth. Tables 6 and 7 show that the range of projections is fairly narrow, especially for population growth. With regard to labour force growth, for the mid-1980s

TABLE 8 Unemployment Rate (average annual in percentage points)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	10.8	8.2	6.7	5.7
Informetrica	11.8	11.3	9.0	6.3
PEAP	10.3	7.4	6.4	6.4
Average	11.0	9.0	7.4	6.1

a. Last year of DRI projection is 2008.

TABLE 9 Employment (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	2.1	1.9	1.2	1.1
Informetrica	1.5	1.6	1.6	1.6
PEAP	2.0	1.9	1.0	0.7
Average	1.9	1.8	1.3	1.1

a. Last year of DRI projection is 2008.

the range is from 1.5 percent for PEAP to 1.8 percent for DRI; for the 1988–95 period, from 1.3 percent for Informetrica to 1.6 percent for PEAP; and for the 1996–2000 period, from 1.0 for PEAP and DRI to 1.2 percent for Informetrica.

Views differed significantly about the likely path of the unemployment rate, as shown in Table 8. For the mid-1980s the low projection for the unemployment rate is PEAP at 10.3 percent, the high is Informetrica at 11.8 percent, and DRI is 10.8 percent. For the late 1980s and the first half of the 1990s the low is PEAP at 7.4 percent, the high is Informetrica at 11.3 percent, and DRI is 8.2 percent. For the last five years of the century the low is PEAP at 6.4 percent, the high is Informetrica at 9.0 percent, and DRI is 6.7 percent or only marginally higher than PEAP.

The three projections for employment are provided in Table 9. For the 1982–87 period, the low projection for employment growth is Informetrica at 1.5 percent, and the high is DRI at 2.1 percent. For the 1988–95 period, the low projection is Informetrica at 1.6 percent. For this period, both DRI and PEAP forecast 1.9 percent. For the 1995–2000 period, the low projection for employment growth is PEAP at 1.0 percent, and the high is Informetrica at 1.6 percent.

There was less agreement among the three forecasting groups about productivity growth than about labour force and employment growth. This stems in part from differences of opinion about the causes of the post-1974 slowdown in productivity and about the extent to which the slowdown can be expected to continue. Table 10 shows that Informetrica expected productivity growth to average almost 2 percent per annum over the mid-1980s, whereas DRI and PEAP projected productivity growth closer to 1.5 percent, with DRI slightly below and PEAP slightly above. For the late 1980s and early 1990s, Informetrica and DRI projected a higher productivity growth than PEAP at just above and just below 1.5

TABLE 10 Productivity (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	1.3	1.4	1.9	1.7
Informetrica	1.9	1.6	1.2	1.2
PEAP	1.6	0.8	1.1	1.4
Average	1.6	1.3	1.4	1.4

a. Last year of DRI projection is 2008.

TABLE 11 Consumer Price Index (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	5.5	6.2	6.2	5.9
Informetrica	4.6	3.7	3.7	4.2
PEAP	5.3	4.9	4.6	4.5
Average	5.1	4.9	4.8	4.9

a. Last year of DRI projection is 2008.

TABLE 12 U.S. Inflation CPI (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	5.1	6.7	6.4	6.0
Informetrica	4.9	4.1	3.4	3.3
PEAP	4.4	4.3	4.2	4.2
Average	4.8	5.0	4.7	4.5

a. Last year of DRI projection is 2008.

percent respectively. For the latter 1990s, DRI forecast a pickup in productivity growth toward 2 percent and Informetrica projected a slowdown to 1.2 percent. For the same period, PEAP expected a moderate increase in productivity growth from below 1 percent to just above.

As can be seen in Table 11, there is a significant range of views concerning the prospects for inflation, although none of the forecasters called for a return to double-digit inflation. Inflation projections for the mid-1980s varied from 4.6 percent for Informetrica on the downside to 5.5 percent for DRI on the upside with PEAP calling for 4.9 percent. For the balance of the 1900s, the three inflation projections range from 3.7 percent for Informetrica to 6.2 percent for DRI. For this period, PEAP projected inflation of 4.3 percent. The extent to which the projections of inflation in Canada are closely tied to the assumptions made about inflation in the United States is evidenced by a comparison of Tables 11 and 12.

The range among the three forecasting groups is remarkably compact 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. This reflects the forecasting groups' judgment about the likely stance of monetary policy in Canada and the United States.

TABLE 13 Consumer Expenditure (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	3.3	3.5	3.3	3.2
Informetrica	3.4	3.2	3.1	3.0
PEAP	3.7	2.7	2.2	2.4
Average	3.5	3.1	2.9	2.9

a. Last year of DRI projection is 2008.

TABLE 14 Government Current Expenditures on Goods and Services (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	2.0	2.8	2.9	2.9
Informetrica	1.7	1.8	1.8	1.7
PEAP	1.1	1.4	1.3	1.1
Average	1.6	2.0	2.0	1.9

a. Last year of DRI projection is 2008.

An important question was raised at the seminar about why inflation should stay up around 5 percent if the unemployment rate is expected to remain above the non-accelerating inflation rate of unemployment (NAIRU). In response, Peter Dungan offered two reasons. The first was that it is necessary to leave some room for price shocks in making projections. The second was that there is a certain residual level of inflation necessary to allow for relative price changes. Arguing against the second point, a participant asked why 4 percent inflation is necessary now, when 2 percent was adequate in the 1960s.

The composition of the growth of aggregate demand projected by the three forecasting groups is similar in many respects. Table 13 shows that consumer expenditures were expected to grow more or less in line with real GNE. Since consumer expenditures account for some two-thirds of GNE, this should not be surprising. However, the extent to which PEAP anticipated weaker growth of consumer expenditures is noteworthy. This relative weakness is also reflected in the Institute's projection for the growth of real GNE. For PEAP even to forecast this relatively weak growth required a substantial projected decline in the savings rate from 10 percent on average over the 1983–87 period to 6.7 percent over the 1996–2000 period. In contrast, DRI expected the savings rate to decrease by only one percentage point over the same period and Informetrica expected the savings rate to remain about the same.

Tables 14 and 15 show that all three forecasting groups expected government spending to grow more slowly than GNE. This reflects an assumed continuation of the existing policies of expenditure restraint pursued by all levels of government.

After a spurt of growth over the 1983–87 period as residential con-

TABLE 15 Government Capital Expenditures (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	2.1	1.7	1.8	1.9
Informetrica	2.5	3.2	2.6	2.4
PEAP	1.1	1.5	1.5	1.3
Average	1.9	2.1	2.0	1.9

a. Last year of DRI projection is 2008.

TABLE 16 Residential Construction (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	6.7	1.5	1.5	1.8
Informetrica	4.5	0.7	0.7	0.4
PEAP	8.5	1.6	0.6	0.4
Average	6.6	1.3	0.9	0.9

a. Last year of DRI projection is 2008.

TABLE 17 Non-Residential Fixed Investment (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	3.0	4.9	3.7	3.5
Informetrica	2.7	4.8	4.0	4.9
PEAP	2.8	6.3	3.2	3.2
Average	2.8	5.3	3.6	3.9

a. Last year of DRI projection is 2008.

struction recovers from the sharp decline experienced during the 1981–82 recession, the pace of residential construction was projected to slow markedly (Table 16). The dampened outlook for expenditures on residential construction stems from the projected persistence of real interest rates and reduced household formation due to demographics.

Non-residential fixed investment was expected by all three forecasting groups to be the strongest category of spending after 1987, growing substantially more rapidly than GNE over the 1988–95 period (Table 17). However, concern was voiced at the seminar by the forecasters that such strength may fail to materialize.

Except for Informetrica, real growth of exports of goods and services as shown in Table 18 was expected to increase strongly over the 1983–87 period. For the 1988–95 and subsequent periods, the divergence among growth rates becomes less. While Informetrica projects roughly constant growth of 2.75 percent per year over the whole period, DRI and PEAP forecast a slowing in export growth. In the case of DRI, this slowing is sufficient to bring its projected growth in line with that of Informetrica by 1996–2000.

TABLE 18 Exports of Goods and Services (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	5.3	3.3	2.6	2.7
Informetrica	2.7	2.8	2.7	2.7
PEAP	4.9	3.8	3.7	3.8
Average	4.3	3.3	3.0	3.1

a. Last year of DRI projection is 2008.

TABLE 19 Imports of Goods and Services (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	7.0	3.8	3.1	3.8
Informetrica	3.6	2.8	3.3	3.8
PEAP	6.5	4.5	3.7	4.0
Average	5.7	3.7	3.4	3.9

a. Last year of DRI projection is 2008.

Imports of goods and services were projected to rise even more rapidly than exports over the 1983–87 period (Table 19). Again, Informetrica's projected growth is the lowest of the three. Import growth was expected to slow in the 1988–95 period, although for DRI and PEAP, import growth is expected to grow more quickly than GNE. Over the entire period, PEAP forecasts the highest rate of import growth. This contrasts with its projection of real GNE growth, which is the lowest of the three.

Long-Term Prospects vis-à-vis Risks

The projections of the three forecasting groups are presented as being indicative of the economy's likely performance in the absence of major unanticipated events or changes in behaviour. However, the three groups were the first to stress that the projections are not representative of the full range of possible outcomes. There are always risks and uncertainties associated with any forecast. In order to take these risks into account, a common practice among forecasters is to prepare, as an integral part of their regular forecasting routine, optimistic and pessimistic scenarios to accompany their best-guess projections. Such alternative scenarios were not considered at the seminar given the limitations on the available time, in order to focus discussion on the most likely long-term prospects. Nevertheless, it is essential to mention a few of the most important risks.

One significant risk relates to the dangers of another run-up in interest rates. This 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 major negative 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 experience of the energy shocks of 1973–74 and 1979–80 should serve to reinforce this point.

There are also domestic risks which must be recognized. While long-term projections tend to be primarily driven by notions of supply, there was some concern voiced among forecasters that demand might not be strong enough to meet supply. A specific worry pertained to whether or not investment spending is likely to be as strong as projected in the light of present and anticipated excess capacity and of the expected financial position of the corporate sector. Another concern was the degree to which consumers would be willing to draw savings to finance spending.

Recent experience notwithstanding, not all of the uncertainties involve unfavourable outcomes. It is not outside the realm of the possible that inflation, rather than levelling out at a 5 percent rate, could continue to slow, leading to a new era of international price stability. Real interest rates could decline worldwide, spurring a global surge in domestic consumer and investment spending and in exports. This would have the felicitous effect of bringing the global economy, including Canada, back much more quickly than expected, to relatively full employment.

Sectoral Prospects

So far the discussion has focussed on the broad outlines of the macroeconomic prospects of the economy. The projections prepared for the Commission also contained industry detail, which is of interest. In addition, sectoral specialists presented their own views on the prospects for agriculture, forestry, metal and non-metal mining, mineral fuels, manufacturing, transportation, communications, and electrical utilities.

This overview does not provide a full discussion of the comprehensive presentations made by the sectoral specialists, but instead is limited to a brief commentary on sectoral prospects as described in the projections of the three forecasting groups and as characterized by those specialists.

Before considering the projections sector by sector, a few general observations may be useful. A common feature of the projections and the sectoral commentaries is the relatively weak growth expected for natural-resource-based production, exports, and relative prices, with the possible, partial exception of energy and agricultural products. The weakness, 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-1973 period; increased dependence on

TABLE 20 Real Domestic Product — Agriculture (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	2.1	1.8	1.7	1.3
Informetrica	2.6	3.5	3.2	3.1
PEAP[b]	1.9	1.6	1.4	1.2
Average	2.2	2.3	2.1	1.9

a. Last year of DRI projection is 2008.
b. Includes fishing, hunting and trapping.

TABLE 21 Real Domestic Product — Forestry (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	8.2	2.6	1.8	2.0
Informetrica	6.3	2.3	2.2	1.9
PEAP	8.0	1.8	1.2	1.1
Average	7.5	2.2	1.7	1.7

a. Last year of DRI projection is 2008.

higher-cost sources of supply in Canada; and increased international competition, particularly from developing countries which may still have the benefit of large, relatively untapped lower-cost sources of supply.

The projections of the three forecasting groups for RDP in agriculture are given in Table 20. Except for the projection of Informetrica which is somewhat higher, the projections are in the 1.5 to 2.5 percent range suggested by Stewart Borland of the Department of Agriculture at the seminar.

According to John Wansbrough, the outlook for the forestry industry for the remaining part of the 1980s and into the 1990s was for real growth of about 2.3 percent per year. This is broadly consistent with the projections of DRI and Informetrica shown in Table 21, but a little stronger than the projection of PEAP.

Keith Brewer's characterization of the prospects for mining was substantially weaker than the projections of the three forecasting groups shown in Table 22. In his view, total mining output would grow by only 2.4 percent on average over the 1984 to 1987 period and by an even lower 1.1 percent over the 1984 to 1995 period. The projections of PEAP are for weaker growth in mining than those of DRI and Informetrica.

While Peter Miles presented no projections for RDP in mineral fuels, he did provide preliminary projections for production of crude petroleum and natural gas and for exports of natural gas. The production of crude oil and natural gas was expected to decline as conventional reserves were exhausted. In contrast, the three forecasting groups all

TABLE 22 Real Domestic Product — Mining (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI				
Metals	4.4	2.5	1.8	1.7
Non-Metals	7.8	2.6	2.0	2.1
Informetrica				
Metals	4.9	1.3	2.2	1.9
Non-Metals	5.9	3.7	2.2	1.7
PEAP	8.0	1.8	1.2	1.1

a. Last year of DRI projection is 2008.

TABLE 23 Real Domestic Product — Mineral Fuels (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	1.1	1.9	1.9	1.7
Informetrica[b]	4.8	4.7	2.7	3.0
PEAP	1.9	1.7	0.8	1.4
Average	2.6	2.8	1.8	2.0

a. Last year of DRI projection is 2008.
b. Includes coal mining.

projected increases in RDP in mineral fuels (Table 23). Miles also projected a sharper rise in natural gas exports than that anticipated by the three forecasting groups, followed by a greater fall-off to lower levels. Of the three groups, DRI expected the largest increase in the medium term and Informetrica in the long term. PEAP expected a much smaller increase.

Concerning the outlook for the average import price of crude oil which is an important determinant of prospects for the price of domestic oil, Miles reported the assumption in the NEB 1983 fall update of a price per barrel in 1982 dollars of $31.5 US in the year 2000. Converting this to current dollars using the average level of the GNE deflator projected by the three forecasting groups yields a price of $78 US. This compares to an import oil price of $67.5 projected by Informetrica and $113.9 US forecast by PEAP for the same year.

Table 24 gives the projections for RDP in manufacturing. For the 1983–88 period, both DRI and Informetrica expected manufacturing output to increase more rapidly than GNE. PEAP expected manufacturing output to grow at about the same rate as GNE over this period. Subsequently, until the end of the century only Informetrica expected relatively strong growth in manufacturing output, which exceeds the

TABLE 24 Real Domestic Product — Manufacturing (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	4.3	2.8	2.4	2.3
Informetrica	4.5	4.0	3.3	3.2
PEAP	3.5	1.8	1.1	1.0
Average	4.1	2.9	2.3	2.2

a. Last year of DRI projection is 2008.

TABLE 25 Real Domestic Product — Transportation and Storage (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	2.4	3.4	3.4	2.9
Informetrica	3.4	3.3	3.2	3.1
PEAP	2.1	2.0	1.3	1.2
Average	2.6	2.9	2.6	2.4

a. Last year of DRI projection is 2008.

TABLE 26 Real Domestic Product — Communication (average annual percent change)

	1983–87	1988–95	1996–2000	2001–05
DRI[a]	5.3	6.0	5.5	4.3
Informetrica	3.8	3.5	3.4	3.4
PEAP	5.7	6.4	5.3	5.2
Average	4.9	5.3	4.7	4.3

a. Last year of DRI projection is 2008.

growth of GNE. DRI projected growth in manufacturing output that was slightly weaker and PEAP forecasts growth that was significantly weaker.

James Welch of Transport Canada characterized the prospects for the transportation sector from 1982–95 as one of moderate growth. This is largely consistent with the projections shown in Table 25.

Al Chatterjee of Bell Canada portrayed the Communications sector as poised for rapid growth in the 6 to 7 percent range for the balance of the century. The three forecasting groups also expected strong growth in the communications sector as evidenced in Table 26. DRI and the Institute for Policy Analysis projected that real growth would average in the 5 to 6 percent range, whereas Informetrica projected more modest growth in the 3.5 to 4 percent range.

The projections for RDP in electrical power and other utilities presented by the three forecasting groups are shown in Table 27. It is notable that Informetrica and PEAP expected RDP in electric power to grow faster than GNE.

TABLE 27 **Real Domestic Product — Electrical Power and Other Utilities (average annual percent change)**

	1983–87	1988–95	1996–2000	2001–05
DRI[a]				
Electrical Power	2.2	2.6	3.1	2.6
Other Utilities	1.8	2.0	1.6	2.1
Informetrica				
Electrical Power	3.5	3.5	3.0	3.0
Other Utilities	5.9	3.7	2.2	1.7
PEAP	4.6	4.1	3.9	3.8

a. Last year of DRI projection is 2008.

The Uses and Limitations of Long-Term Projections

The opening speaker at this session was Chris Caton of DRI, who raised some important questions about the uses and limitations of long-term projections. In the first part of his presentation, he discussed the uses of the long-term projections produced by DRI. He noted the smooth trajectory usually characteristic of long-term projections in comparison to the volatility of actual developments. This he attributed to the assumed absence of shocks. DRI regularly prepares a cyclical projection to satisfy clients' demands for more variability in the forecast. However, the cycles are regarded as suggestive rather than definitive.

The frequency of long-term forecasts was another phenomenon mentioned by Caton. Even though long-term growth trends are presumably stable, monthly updates are customary in order to incorporate the most recent historical data available so that any user can access a completely up-to-date forecast as required. Thus, DRI updates its central trend long-term forecast once a month, produces a full set of trend and cycle scenarios through 1995 only twice a year, and produces a full set of 25-year forecasts twice a year.

Users for DRI long-term forecasts fall into four groups according to Caton. First, clients with very long planning horizons use the 25-year forecast. These are primarily utilities and other energy-related companies. Second, there are the five-year planners who do not require forecasts with a time horizon as long as 25 years. Third, a substantial group of users are DRI in-house users who require macroeconomic assumptions to prepare long-term energy, agricultural, and other sectoral forecasts. Fourth, there are those users interested in the analysis of alternative policies using the DRI model and long-term scenarios. This group is not large because most business clients are not interested in analyzing the impact on the economy of manipulating macroeconomic policy instruments beyond their control.

Turning to limitations of long-term projections, Caton cited four. First, long-term forecasts are always going to be wrong to varying degrees. Users must recognize this and take it into account in their planning. Second, long-term forecasts exhibit a tendency to change even when they have not yet been proven wrong. Caton illustrated this point with the example of how the DRI forecast for the 1983 to 1995 period had evolved over the years. Third, many of the important variables utilized in long-term projections are really assumptions rather than results. Important assumptions include demographic projections and the stance of fiscal and monetary policy. Fourth, macroeconomic projections do not provide answers to the microeconomic questions of most concern to clients. Nobody produces GNP, but car sales or housing starts are very important to those in the industries concerned.

The second speaker at the session on the uses and limitations of long-term projections was Mervin Daub of Queen's University. Daub opened with the observation that the nature of the evidence on the accuracy of long-term macroeconomic forecasts is extremely weak. Given the forecast horizon, the data currently available on realizations is not sufficient for statistical research of the type done by Kenward and Jenkins, and Stokes, on short-term forecasts, but it is slowly building up to that point. In the absence of other empirical evidence, Daub summarized the conclusions of some U.S. studies on long-term projections for population, the economy, energy and technology and of two of his own studies on the accuracy of the ITC investment intentions survey and on short-term forecasts.

Daub concluded with three kinds of comments. First, his reading of the record of long-term projections suggested that:

- the longer the time horizon of the forecast, the less accurate it becomes;
- it is impossible to forecast variability or cycles, but at best only trends;
- no single methodology or source will prove more accurate than any other; and
- certain periods are more difficult to forecast than others, but there is no clear guide to what makes them so.

Second, Daub stressed that assumptions are key. Any given methodology only works out the implications. Daub cited the assumptions for population, fiscal policy, resource prices, the U.S. economy, and the savings rate as critical.

Third, Daub warned the Royal Commission not to regard long-term forecasts as a waste of time just because of their poor record and the criticisms voiced at the seminar. He emphasized that forecasts serve many useful purposes, such as:

- demonstrating that reasonable care has been taken;
- spreading responsibilities for failure;
- helping people to focus on key issues; and
- having sometimes the added benefit of actually reasonably accurately foretelling the future.

SESSION I

Macro Projections to 2000

Chairman:

John Sargent

Participants:

Tom McCormack, Data Resources Incorporated (DRI)
Mike McCracken, Informetrica Limited
Peter Dungan, Policy and Economic Analysis Program (PEAP), Institute for Policy Analysis, University of Toronto

1

Macro Projections to 2000: *Perspective I*

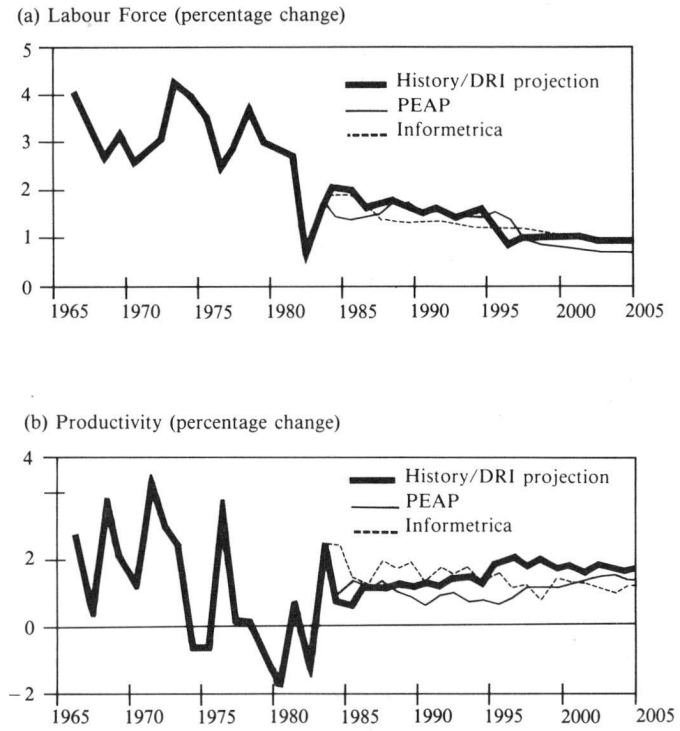
TOM MCCORMACK

Since I have less than 20 minutes to cover the next 22 years, I would like to discuss with you only the key features of the long-term forecast from Data Resources. In order to do that I have prepared some graphics to show you the major elements of the macro economy for the next 22 years, as we see them. I have also taken the liberty of including in these charts the projection data from my two colleagues' presentations so that, for later discussion purposes, we will be able to focus our attention on just where the differences lie in the three forecasts.

Let me begin by saying that we have all started with a set of population projections based on both the Statistics Canada numbers and some work that David Foot at the Institute of Policy Analysis has done. These projections form the basis of our forecast, and they say that the long-term population growth rate will be declining from what has been, most recently, about one and a half percent per year to something under one percent per year by the end of the 22 year forecast horizon. Over that time period, as the entire population ages, the source population — that group 15 years and over from which the labour force is taken — will be growing at a slightly faster rate than the overall population. In addition, the participation rate will be rising slightly over time so that the slow-down in labour force growth will not be as dramatic as it is in the total population.

To put that particular variable in some perspective, the bold line in the top panel (Figure 1-1) shows the annual percentage change in the labour force over the period from about 1966 to 1983. The Data Resources forecast is represented by the bold line that extends into the forecast horizon, as if making the assumption that we are right and the rest are somewhat wrong. The Informetrica forecast is represented by the dot-

FIGURE 1-1 Labour Force and Productivity Change 1965-2005



DRI: Data Resources Incorporated

PEAP: Policy and Economic Analysis Program (Institute for Policy Analysis, University of Toronto)

ted line and the PEAP forecast by the thin line in the top panel, and this will be standard in all other figures.

What we are collectively saying is that the labour force growth rate, which over the last five years has been averaging about two percent growth annually and during the 1960s averaged something like 3 percent per year, will in the immediate five-year period drop below 2 percent, and by the end of the forecast horizon, will actually be rising at an average annual rate of less than 1 percent. This has very serious implications for the overall growth rate of the economy, as it is a key variable in determining what will be happening to total real GNP.

Additional to labour force considerations are those on the productivity side. In our forecast, we are assuming that productivity growth in the near term will have improved, compared with the last five years when there has been no productivity growth in Canada at all. We assume in our

long-term forecast that over the next five years the growth rate will rise to about 1 percent per year, and over subsequent five-year periods it will move from 1 percent to 1.3 and upward toward 2 percent annually. As Figure 1-1 shows, the other forecasters have different views on this particular variable; I will explain below how we at DRI arrived at this particular assumption about future productivity growth.

These two variables themselves, when put together, give a reasonable estimate as to what will happen to overall economic growth as such (Figures 1-2 and 1-3). In our forecast, real GNP is expected to grow at an average annual rate of about 3 percent over the entire forecast horizon. Over the next five-year period we expect a growth rate of 3.6 percent annually, representing, in part, some catch-up from the very severe recession we witnessed in the 1982–83 period. Beyond the next five years, we expect overall growth to drop gradually below the 3 percent annual level. Within this particular set of numbers, I have laid out the key assumptions of the overall macro forecast, but these are not the only elements that go into the long-term forecast. Another key element considered here is the state of the U.S. economy.

Among the other basic assumptions we have made is that monetary and fiscal restraint will be the order of the day. Over the forecast horizon we have concluded that monetary policy will be adapted in such a way as to at least sustain the reduced rate of inflation we are currently witnessing and to see that it does not once again go above rates of 5 to 6 percent annually. In individual years, inflation may exceed or fall below the trend rate, but we expect it to average between 5 and 6 percent. We have also assumed, on the fiscal policy side, that in both nominal and real terms, government spending as a share of GNP will gradually decline. In fact, underlying this assumption is the view that the real program deliverability at the federal and provincial levels will not change over the forecast horizon.

We have neither increased nor taken away from the current level of real programs delivered by the federal and provincial levels of government. This particular assumption implies that, as a share of GNP, both nominal and real government spending will decline over the forecast horizon. While we anticipate only a modest decline, this would be in sharp contrast to trends over the past twenty years which have seen substantial real growth in the number and scope of government programs.

The growth rate that we have projected for the economy as a whole will generate enough jobs to unwind the unemployment rate at a modest pace, so that by the end of 1988 we expect the unemployment rate to be in about the 9 percent range and by 1993 it should drop below 8 percent (Figure 1-4). But the rate of 6 percent is not projected until about the year 2003. This modest unwinding of the unemployment rate is in part responsible for the relative improvement in long-term inflationary prospects,

FIGURE 1-2 Gross National Expenditure ($billions) 1965-2005

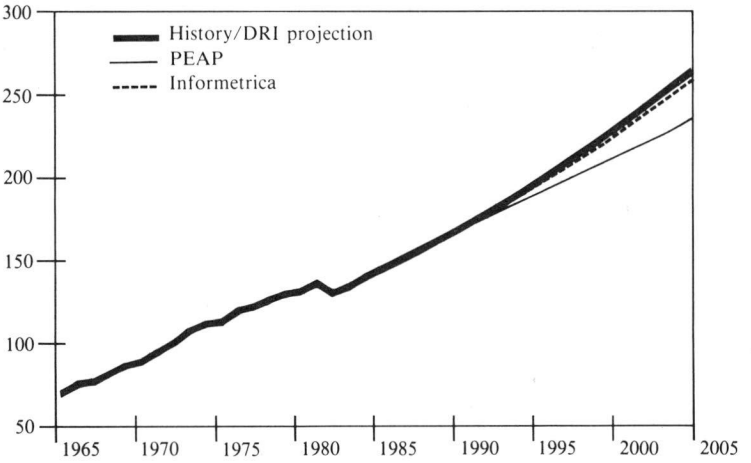


FIGURE 1-3 Real GNP and GNP Implicit Price 1965-2005

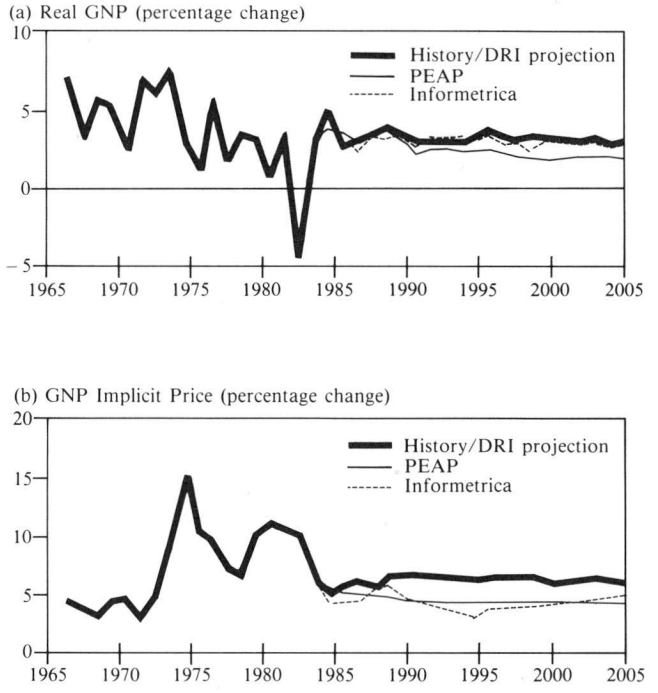
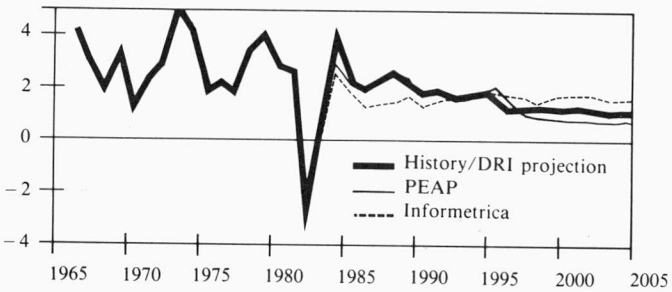
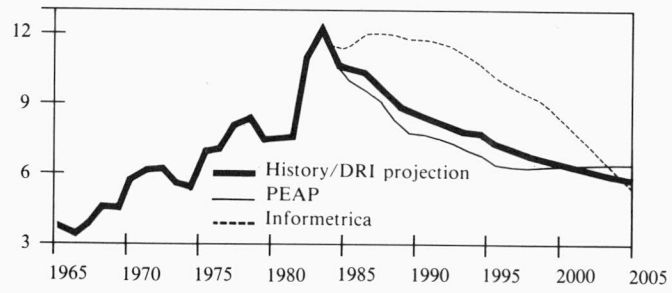


FIGURE 1-4 Total Employment and Unemployment 1965-2005

(a) Total Employment (percentage change)



(b) Unemployment rate (percentage level)

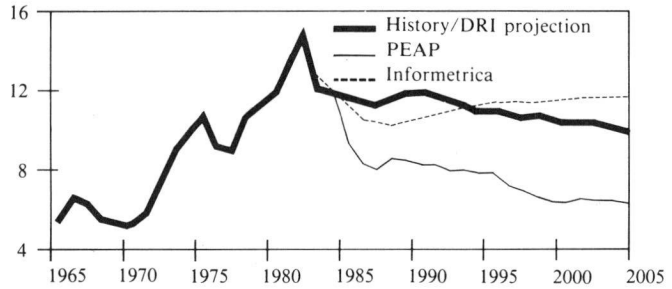


and also has a considerable impact on the degree to which consumer spending grows over the long-term period. As Figure 1-4 shows, the unemployment rate forecasts vary quite widely.

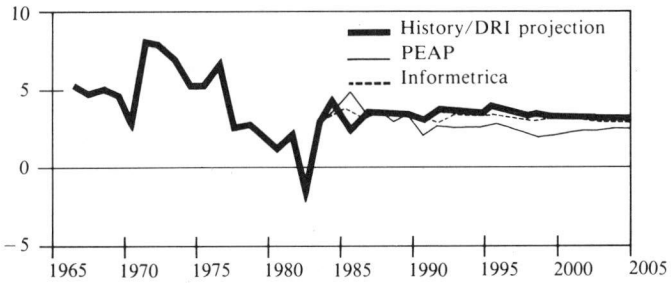
One of the essential features of the assumptions we have made on the fiscal policy side is that, because of fiscal restraint, income is transferred away from the government sector toward the private sector. As our model sorts out that particular income shift, most of the income moves toward the corporate sector; in fact personal income as a share of GNP actually declines slightly over the forecast period. However, as a result of the impact of unwinding inflation and the lowering of the unemployment rate gradually over time, the personal saving rate also drops over the long-term forecast period. The net result is that consumption becomes a major force in sustaining economic growth over the entire forecast horizon (Figure 1-5). That is, in spite of the reduction in personal income as a share of GNP, we have a strong consumer sector because of this important but slow unwinding of the personal savings rate. Figure 1-5 also shows quite dramatic differences in the personal savings rate forecasts among the three forecasters.

FIGURE 1-5 Personal Savings and Real Consumption 1965-2005

(a) Personal Saving Rate (percentage level)



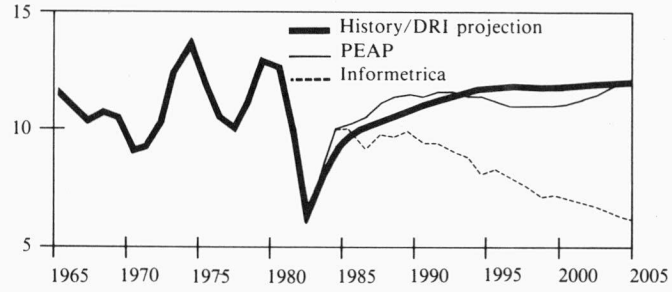
(b) Real Consumption (percentage change)



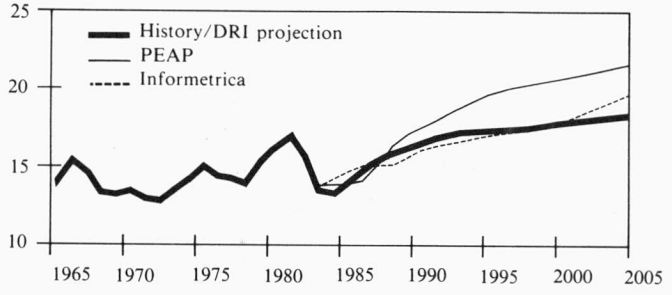
I have already indicated that the income shift is more toward the corporate sector than it is toward any other sector of the economy. The net impact, in our view, is that corporate profits as a share of GNP will rise from a very mediocre 5 to 6 percent in 1982–83 to more normal ranges, and by the years 1990–95, will move back into the 10 percent range (Figure 1-6). Corporate profitability and business investment thus become important forces driving the overall long-term outlook. We find that, in our model, business investment as a share of GNP in real terms, and in nominal terms for that matter, rises fairly significantly above historical levels. It is this increased investment which brings about an improving productivity growth rate over the long-term horizon. This shift in income toward the corporate sector generates a capital stock growth rate that exceeds that of the labour force. Thus there is a deepening of capital in the economy; this is the main reason why the overall rate of growth and productivity improves over our long-term forecast. And with that improvement in productivity growth comes an improvement in workers' real income which, in turn, is a major force underpinning the consumer spending increase over time.

FIGURE 1-6 Corporate Profits and Fixed Capital 1965-2005

(a) Corporate Before-Tax Profits (percentage of GNP)



(b) Real Business Gross Fixed Capital (percentage of Real GNP)

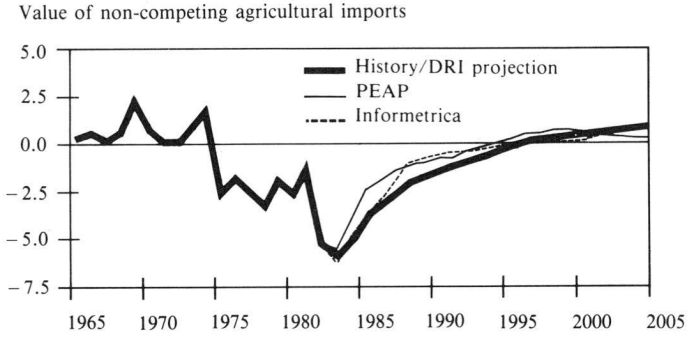


It is interesting that all three forecasts view the government deficit as a share of GNP, measured on a consolidated government basis, as improving dramatically over the long-term horizon although it is clearly a very slow process (Figure 1-7). It took about ten years, from 1974 to 1983, to change the government balance from a small surplus on a consolidated basis to a deficit equalling about 6 percent of GNP. In fact, in all three forecasts, it takes from seven to ten years to restore that particular balance.

We at DRI are the least optimistic about governments' being able to redress the deficit question; in our view the provincial governments will come into a surplus position in the early 1990s but the federal government will remain in a deficit position beyond the year 2000. The similarities among the forecasts may be of more interest than the differences at this point.

Looking at the economy from the point of view of our international trade, one of the results that is generated by our model relates to the terms of trade, where DRI expects improvement at an average annual rate of about 0.9 percent between now and the year 2008 (Figure 1-8).

FIGURE 1-7 Government Surplus/Deficit as Percentage of GNP 1965-2005



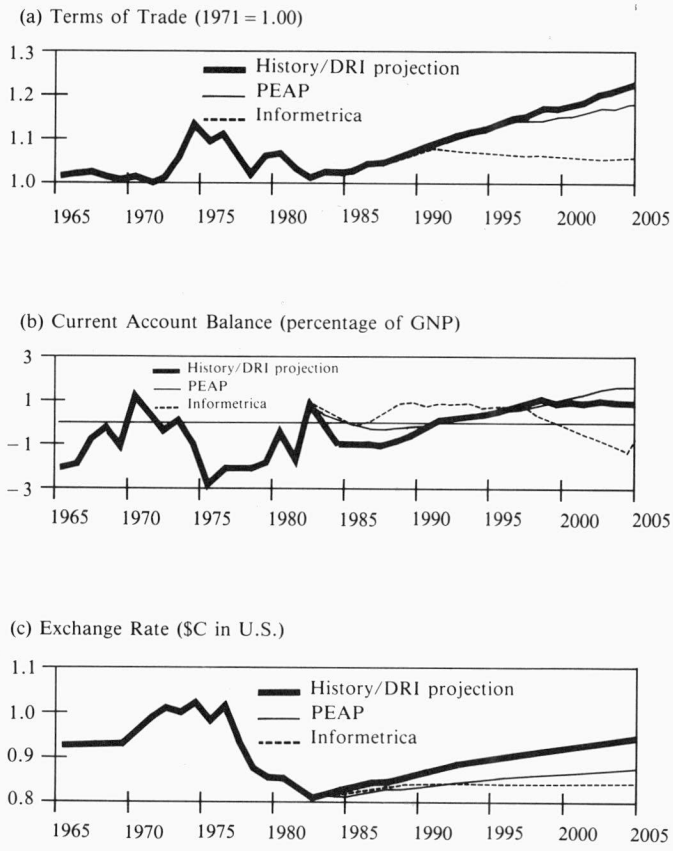
This improvement is the net result of the kinds of oil and other resource price assumptions that have gone into the U.S. forecast and our own. Of course, the net result, from Canada's viewpoint, is very beneficial in terms of generating a current account balance that reaches a surplus position by about the year 1993 and remains in that position as a share of GNP throughout the remainder of the forecast horizon. The other forecasters also see the terms of trade improving, but not quite as dramatically as does Data Resources. This is an area we can explore later on.

The current account balance, then, from the Data Resources viewpoint, will be in a surplus position by the 1990s. The exchange rate is projected as appreciating from a current level of about 80 cents to about 95 cents by the end of the forecast horizon. That is a rate of less than a half cent per year. This particular improvement in the exchange rate helps to shift some of the income away from the personal sector to the corporate sector as one would expect, and is also a major source of the improved inflationary prospects for the Canadian economy.

To summarize our overall position then, Data Resources forecasters could rate as the most optimistic, although within a very very small margin. (Again I would make the point that the similarities among the three forecasters are probably more remarkable than the differences.)We expect that the real growth rate for the economy will be about 3 percent per year as does Informetrica, and the Institute for Policy Analysis sees it more in the 2 ½ percent range per year between now and the year 2005. However, one of the key differences with the latter forecast is that its trade side was based on a much more pessimistic U.S. outlook.

I have covered a great deal of information here in very short order, but that is inevitable when discussing a very complex subject in such a short time period. To sum up, the key features of our forecast are that we see fiscal restraint shifting income away from the government sector toward

FIGURE 1-8 Trade Figures 1965-2005



the corporate sector; this in turn helps to generate a rapid, or accelerating, growth rate of the capital stock in Canada which then improves the growth rate of productivity over the longer term and brings about renewed real income growth for Canadians. Our forecast depends very fundamentally on this relative restraint on the monetary and fiscal policies side, though we have built other long-term forecasts which do not incorporate such assumptions. For example we have built a forecast based on a less optimistic view of the U.S. economy and the assumption that we do not shift income away from the government sector toward the private sector; this results in a lower growth rate and a higher rate of inflation. We have also built a more optimistic forecast in which the amount of restraint at government levels is even greater and in which the economic environment internationally is better. That generates a higher real growth rate and a lower rate of inflation.

In conclusion, let me say that the picture for the next twenty years

may be somewhat cloudy, but there is a reasonable band within which at least the three forecasters represented here foresee real GNP and income shares evolving. I think it is within that framework that we should be addressing most of our remarks.

Note

This paper was presented at the Symposium "Long-Term Economic Prospects for Canada," organized by the Macroeconomic Research Section of the Royal Commission on the Economic Union and Development Prospects for Canada, Ottawa, January 10, 1984. The views expressed are those of the author.

2

Macro Projections to 2000: *Perspective II*

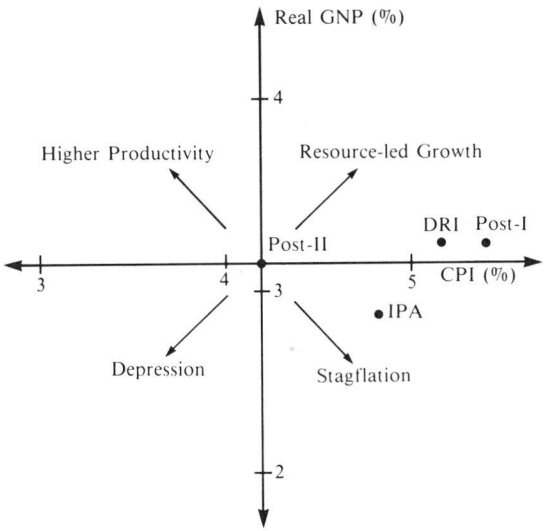
MIKE MCCRACKEN

I could just stop now and say you saw all our numbers, but that would not be a service. We have no right and wrong lines on our charts, but we do have a scenario that we will try to explore with you.

The first chart (Figure 2-1) is a simple way of comparing the various forecasts. The vertical axis is the average real GNP growth over the period 1984 to 2000, and the horizontal axis is the rate of inflation. The reference forecast that you have is at the intersection; approximately 3.2 percent real growth and 4.3 percent on the inflation front. You can see the point that Tom made: that our real growth forecast is very similar to DRI's, with the Institute of Policy Analysis somewhat less optimistic. The inflation forecast is the major area of difference. One of the changes that we have made as a result of a number of assumption changes is to move from inflation in excess of 5 percent on average over the next 20 to 25 years to averaging slightly above 4 percent. The quadrant arrows indicate the kinds of scenarios characterized by those quadrants: higher productivity would likely mean more output and lower inflation; resource-led growth, if in response to higher resource prices, is likely to produce more inflation with real growth. The view of higher inflation and low growth has become known as stagflation, or among some of us as "dough pression," and the far left quadrant is a so-called depression scenario of a collapse in prices or slow inflation and slow real growth.

The second point I would like to make is that forecasts change over time. Figure 2-2(a) is a tabulation of forecasts since 1974 of real GNP in 1985. That is, we are looking at the same point over the entire period. Between 1974 and the present forecast, we have made 20 reference forecasts projecting beyond 1985, but this was a year common to all of them, and the message to take away from this is not only that things

FIGURE 2-1 Scenarios 1984-2000



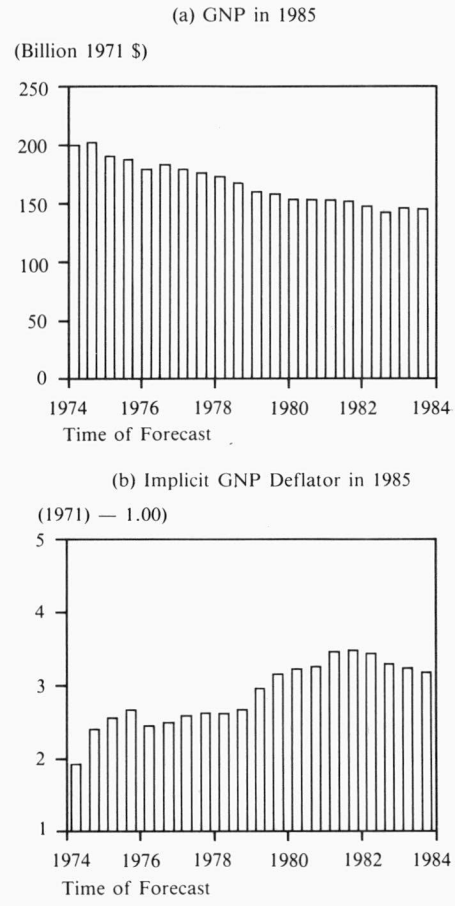
Notes:

- Long-term macroeconomic forecasting is the creation of consistent scenarios for the course of the economy based on explicit assumptions about international developments, economic policy, behaviour, demographics, etc.
- At any point in time there are a number of possible paths. The choice of scenarios will depend on the application; the outcome depends on the policy choices and events in the future.
- Two key dimensions — real growth and inflation — are depicted in Figure 2-1 for several different economic forecasts for the period 1985–2000. The arrows indicate the kinds of scenarios likely to be associated with each quadrant.

change but that there has been a marking down of the real output level in 1985 that we forecast. We do still have a year, so it may be that we were right in 1974 for all the wrong reasons. But this marking down is due primarily to OPEC shocks that occurred in 1974–75 and subsequently in 1979–80, and to the abandonment of full employment targets by government. When we started making forecasts, we believed that governments would be trying to bring the economy back to full employment. So when projecting ten years ahead, a useful place to anchor performance was full employment. However, it has certainly become clear both in statements and in performance in the latter half of the 1970s that full employment is no longer an objective of the government.

Figure 2-2(b) shows the forecasts of inflation which have been marked up. This is the level of the index for the GNP deflator in 1985. Again, note the particularly sharp mark-ups after the first OPEC shock and subsequently in the 1979–80 period. One of the interesting things in the last

FIGURE 2-2 Forecasts of Gross National Product in 1985



Notes:

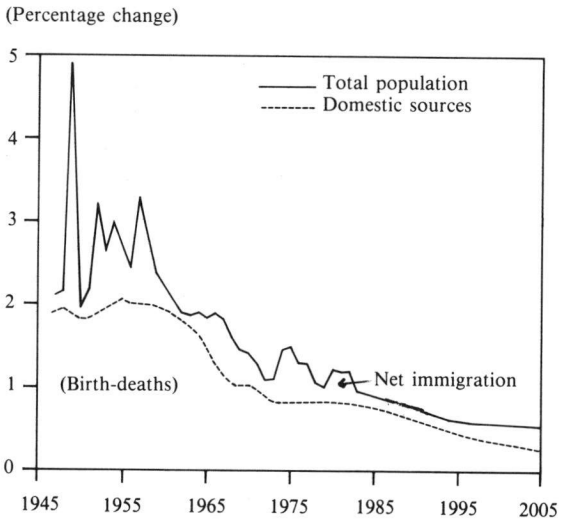
- Over time, forecasts will change as a result of: continual updating and revisions to the statistical base; new policies; changes in the external environment; changes in behaviour of various sectors of the economy; and announcement of major new investments (or cancellations).

- Figures (a) and (b) show the level of real GNP and the GNP deflator in 1985 as forecast twice a year since 1974. The net effect of changes over the past ten years has been to lower the predicted level of GNP and to raise the level of the implicit deflator.

two years is that the level of that price index has been moderating somewhat.

I would like to go into a little more depth on some of the demographic characteristics that Tom went over (Figure 2-3). This is another way of looking at the slowdown in population growth. The two sources for our population growth are our so-called domestic forces, births minus

FIGURE 2-3 Growth of Population, Domestic and External Sources 1945-2005



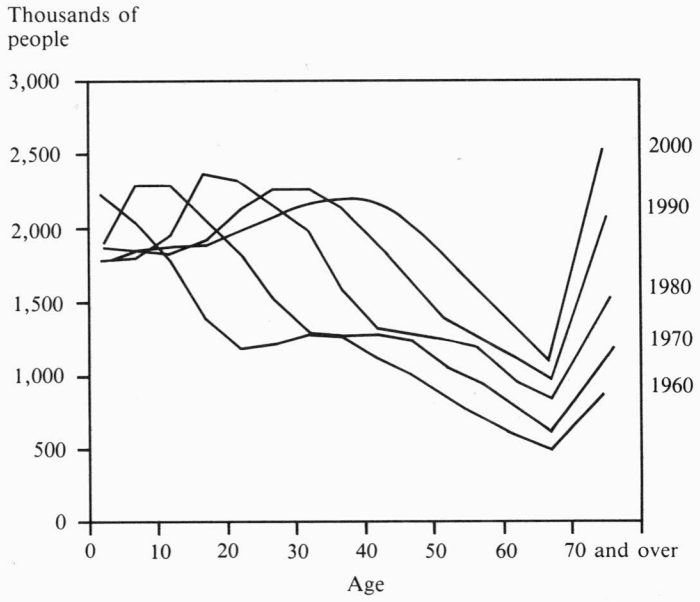
Note:
Population growth will be slower — less than 1 percent per year — as a result of both slower domestic growth (births less deaths) and reduced net immigration relative to historical periods.

deaths, which is the area under the broken line. The area between the lines is growth due to net immigration; historically, that is where most of our volatility has come from. That real spike in 1949 also includes the immigration of Newfoundland into Canada.

Another factor to keep in mind is the changing age structure in the Canadian economy (Figure 2-4). We are going from an average age of about 33, currently, to over 37 by 2005. Of course this aging pattern began in the early 1960s. You can see the so-called baby boom starting out in 1960 and moving through the system. Some of us use the analogy of a snake swallowing something — presumably a baby — that slowly moves through its system. The other characteristic to note is that last age group, all those 70 and above, and the group right before it, which is 65 to 69. In each case, there is a growing number of people in that particular category.

Another way of summarizing the age distribution or other characteristics of the population is with dependency ratios (Figure 2-5). The popular ones we will examine include: the ratio of youth, that is the population 0–19 over the population 20–64. It is the solid line and it is declining. That again is just another way of saying, from the early peak in 1959–60, that we have a smaller proportion of people in that age group

FIGURE 2–4 Age Distribution 1960–2000 (Five-Year Age Group)



Notes:

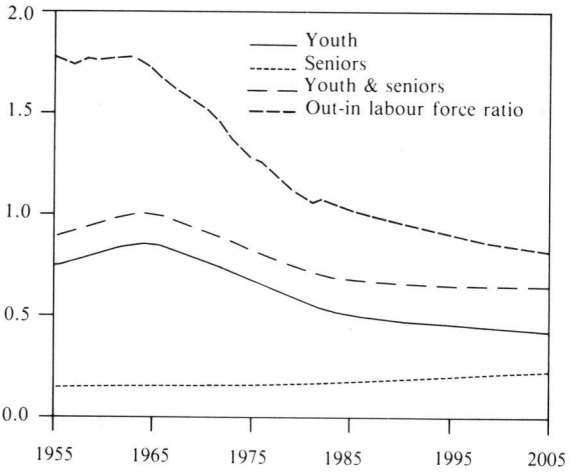
	1951	1960	1970	1980	1990	2000	2005
• Average age	29.8	29.0	29.9	32.3	34.4	36.4	37.3

• Figure 2–4 shows the number of people in each five-year age category for the decades starting in 1960. The baby boom of 1950s can be seen as the "middle-age bulge" of the year 2000.

relative to the so-called prime age or working age group. The bottom line on the chart shows a similar ratio for those over 65; it is going up, but slowly. Many people talk about the greying of Canada as if it were an imminent event: I would suggest to you that it is a rather modest occurrence and one that will not influence our economy in a major way until such time as the baby boomers, that middle-age bulge in 2000, enter the older group in the 2015–2020 period.

The combination of those two ratios is the dependency ratio most commonly used, although there is no clear standard definition. I prefer the top line on the chart, which is basically the ratio of those not in the labour force to those who are in the labour force. In a sense, it shows how many people are being supported by those who are either working or seeking work. An interesting characteristic is the degree to which this ratio has dropped over the 1960–80 period, and continues to drop all the way out to 2005. That is because of rising participation rates along with the middle-age bulge of the population, flat or declining youth population, and only a slowly rising aged. One implication is that there are more

FIGURE 2-5 Dependency Ratios 1955-2005



Notes:

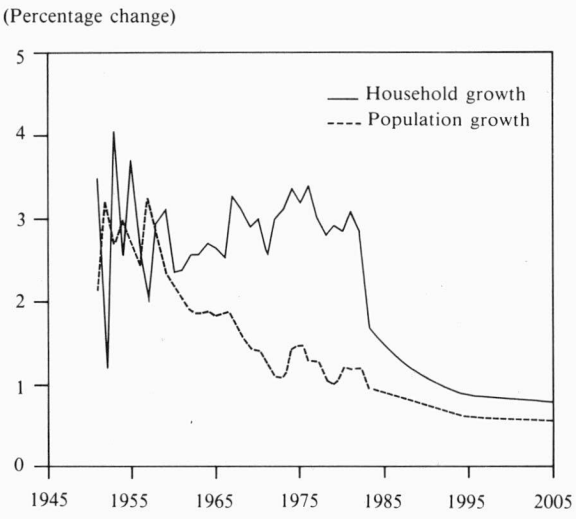
- Figure 2-5 illustrates four dependency ratios:
  youth: population aged 0–19 divided by population aged 20–64;
  seniors: population aged 65 and over relative to the same base;
  the combined ratio of youth plus seniors; and population less labour force relative to the labour force.
- The rising senior dependency ratio and declining youth ratio result in little change in the combined ratio.
- The continuous decline in the out-of-labour force to labour force ratio reflects the combined effects of changes in the age structure and rising participation rates. The implication is that the number of earners grows more rapidly than the dependants.
- The term *dependency* should be used with caution. An increasing number of retirees will be beneficiaries of pensions, RRSPs, and accumulated savings.

contributors to social programs than beneficiaries — at least over this period. We think this is also an important factor to keep in mind when we will address the savings rate in Canada.

Population in terms of individuals is just one of many so-called populations that we must consider; another one is households (Figure 2-6). One characteristic of household growth since about 1963–64 is that it has exceeded population growth by quite a substantial amount. This does slow down over the upcoming period, but less so than population. The households determine many of the consumer categories and housing-related expenditures.

Figure 2-7 decomposes the growth in labour force. Source population is slowing down. The area between the lines is the growth in the labour force due to participation rate changes. Participation rates will continue to contribute positively to labour force growth, although at a somewhat slower pace than recently. The volatility of participation rates is a main

FIGURE 2-6 Household and Population Growth 1945-2005



Notes:

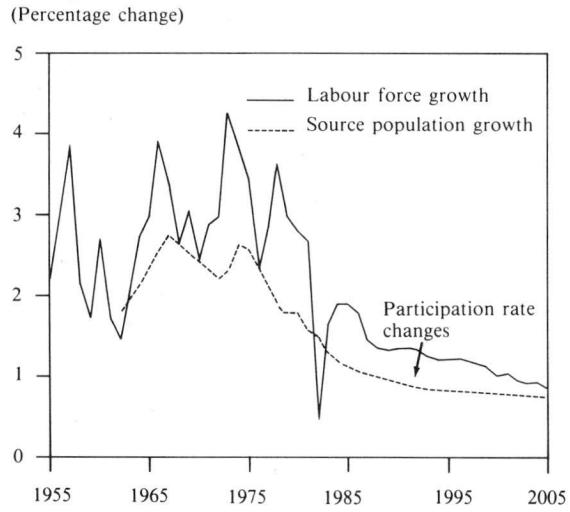
- Since 1960, household growth has exceeded population growth, and it will continue to do so through 2005. But reduced net immigration and the passing of the baby-boom generation through the ages of peak family formation will lead to slower growth of households in the next two decades.
- This implies a slower growth in the housing stock, fewer housing starts, and less rapid growth for housing-related expenditures by consumers and governments.
- More vigorous economic growth could lead to more rapid non-family household formation through "un-bundling" and, hence, more rapid household growth.

cause of volatility in labour force growth. The year 1982 was remarkable in that it was one of the few times in the postwar period that participation rates absolutely dropped, contributing to the unemployment rate rising less than it might otherwise have done.

Detailed age/sex participation rates are shown in Figure 2-8. These graphs make two particularly important points. One is that female participation rates in all age/sex categories are tending to converge on the male participation rates over this period. That is, the youth categories, 15 to 19, 20 to 24, and so-called prime age, 25 to 54, all show convergence. (The male prime age rate which had been stable around 95 percent has weakened slightly over the last few years.)

The second is that in the senior groups, there is some diminution in the 55 to 64 male participation rate with earlier retirement. Female rates are rising, partly as a reflection of the fact that many have now (when younger) been in the labour force at a higher rate than was previously the

FIGURE 2–7 Labour Force Growth 1955–2005



Notes:
Participation rates (the fraction of an age/sex group that is in the labour force) together with the source population determine the size and composition of the labour force.

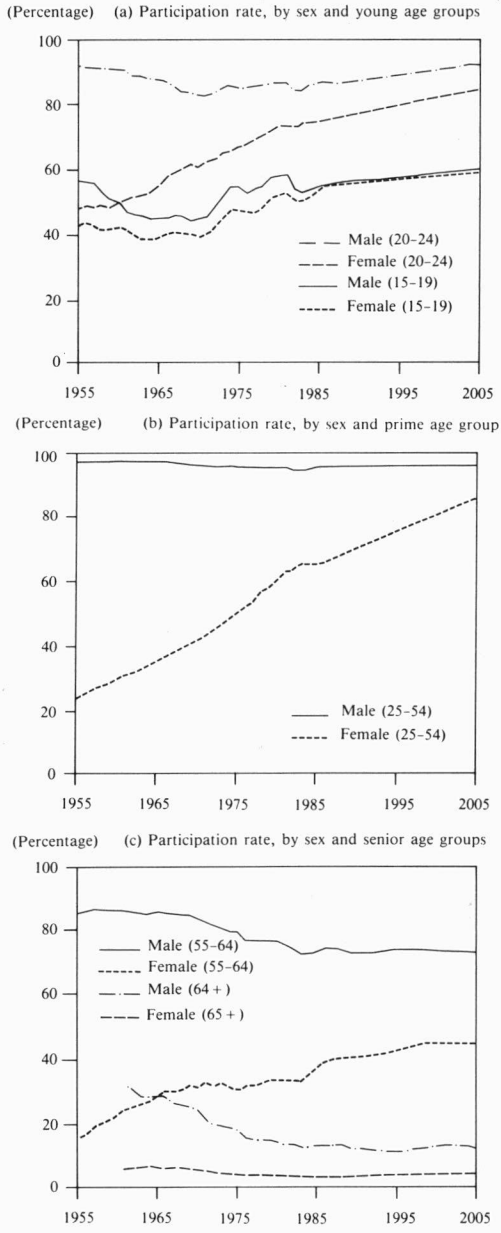
Changes in participation rates provide most of the volatility in labour force growth, with increases occurring in periods of improving economic conditions and slower growth or absolute declines in periods of recession. Figure 2–7 decomposes the growth in the labour force into that attributable to source population growth and participation rate changes.

case. The 65 and over group is tending to slow down in the case of males and is virtually flat in the case of females 65 and over.

As for real GNP growth (Figure 2-9), you saw the contrast of views earlier. The only point I would stress and ask you to remember is that the degree of volatility likely in the future is not what you see in our lines there. It is much more likely to resemble the historical record. The problem is that we do not know the timing or the direction of that volatility. So, when looking at long-term forecasts in general, keep in mind that they show mean paths or ones with substantially less variance, unless they have been created with volatility specifically introduced.

The unemployment rate and its determinants are shown in Figure 2-10. We find it somewhat slow to go down, which is a result of our labour force growth effectively matching employment growth in the next few years, and then employment growth only slightly exceeding it in the period from about 1989 on. Again the unemployment rate can be thought of as the difference between two very large numbers: minor changes in labour force growth or minor changes in employment growth can give the kind of movements shown in some of the other charts.

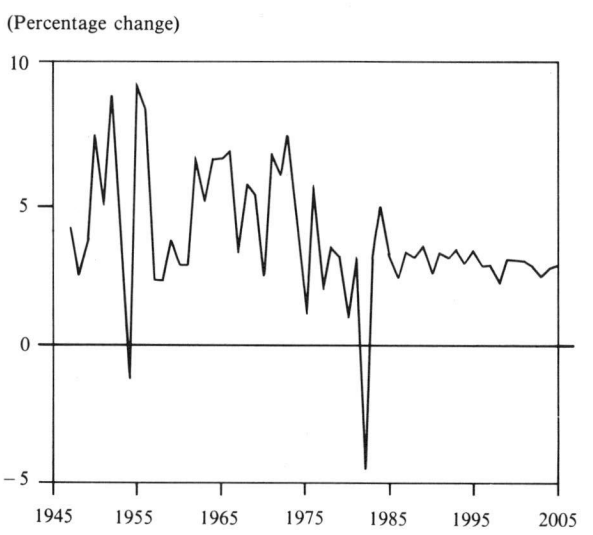
FIGURE 2–8 Participation Rates by Sex and Age 1955–2005



Notes:

- The participation rates of women are lower than those of men in each age category, but the trend toward convergence continues in the next two decades.
- Increases in the participation rate of women (25–54) remain particularly strong, although growing somewhat less rapidly than in the 1970s.

FIGURE 2-9 Real GNP Growth Rate 1945-2005



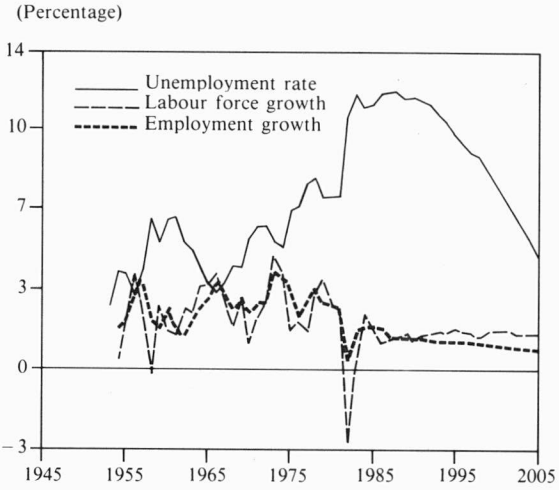
Notes:

- Forecasts of economic growth generally show less variance than the historical track. There will be shocks, but their timing, direction, and amplitude are unknown. In some applications (e.g., capacity planning) it may be desirable to generate forecasts with similar variance to historical experience.
- Real economic growth averages about 3 percent over the remainder of the century, a pace insufficient to use resources fully until the end of the period.
- This growth path is one of many possible scenarios; growth could be much more rapid or less so.

Productivity growth is an area where, as Tom pointed out, our forecasts differ (Figure 2-11). We tend to be somewhat more robust on productivity growth in the next 5 to 10 years and perhaps slightly less so in the long run, but on average we would be higher, particularly, than the Institute for Policy Analysis, and slightly higher than DRI. These become matters of opinion to some degree, although we are expecting some cyclical rebound in 1983–84 as the result of a recovery from Canada's worst postwar recession. Whether our levels or even higher ones will be attained, only time will tell.

Andrew Sharpe of the Department of Finance has done some very interesting work that I would like to recommend to all of you, in which he explores the relationship between productivity growth and economic growth and puts forward the interesting thesis, with which we concur, that in more rapid growth environments one might expect productivity growth to be higher. If that is the case, then it would behoove those

FIGURE 2-10 Unemployment Rate and Changes in Labour Force and Employment 1945-2005



Notes:

- The unemployment rate will decline if employment growth exceeds labour force growth. But in the rest of this decade, employment growth is not sufficient to offset the labour force growth. The unemployment rate stays above 10 percent. Only in the late 1990s with slower labour force growth, does the unemployment rate decline significantly.

- Employment does increase from 10.6 million in 1983 to 11.9 million in 1990, 14 million in 2000 and 15.1 million in 2005.

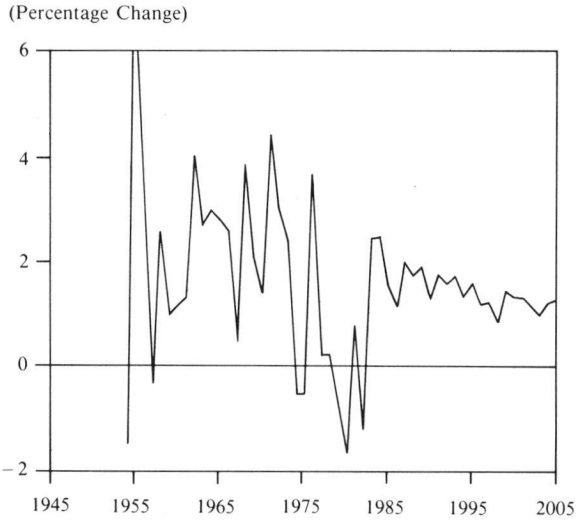
- The unemployment rate is determined by the difference in two large numbers (labour force and employment); minor changes in the growth rates of either labour force or employment can produce a quite different path for the unemployment rate.

people in government who are concerned with productivity growth to spend their dollars on enhancing real economic growth overall.

One welfare measure or broad measure of performance in the economy is real disposable income per capita (Figure 2-12). The main point here is that personal disposable income and real GNP are very similar measures. The growth average is about 2.3 percent per year, which is slightly higher than productivity growth; this is made possible by the fact that the labour force is growing more rapidly than the population and that there are still some net transfers to the personal sector.

I would next like to explore briefly the shares of Gross National Income (Figure 2-13). This is the conventional approach, but I would simply point out on this chart that unincorporated income was squeezed hard in the 1945–80 period, but does not continue being squeezed to quite the same degree. We remain at a point where we may yet lose a few

FIGURE 2-11 Productivity Growth 1955-2005



Notes:

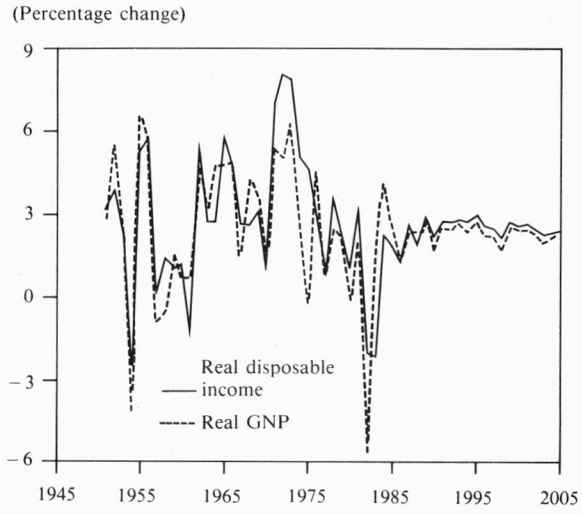
- Growth in productivity (real GNP per person employed) averages 1.4 percent over the period to 2000, with a faster pace in the 1980s reflecting some cyclical recovery from the 1978-82 period.
- Productivity is not exogenous; its growth will reflect the mix of activity, the level of new investment, the pace of overall economic growth, and the characteristics of the economy (e.g., regulatory, education, management skills).
- There are wide variations in forecasts of productivity growth. But a slower pace may not lead to higher employment growth; rather it can result in less economic growth and even weaker employment growth!

more people from agriculture, but not many, and there are other components of unincorporated income which tend to hang in there, like the imputed rent on owner-occupied dwellings. So it is that we do not see the same degree of squeeze that has occurred historically.

The other notable area is interest income of persons. Although this line item is not shown in the accounts separately, if you take out the government investment income component you can look at it. This tends to rise, consistent with our high savings and high real interest rates. And that is one of the factors putting the squeeze on the corporate income sector.

I have done some rearranging of the data on income shares (Figure 2-14). Though we are still talking here about national income, I have made it net national income at market prices. The previous graph showed gross national income. We are ignoring capital consumption

FIGURE 2-12 Real Disposable Income and Real GNP per Capita 1945-2005



Notes:

- Real disposable income per capita increases at an average rate of 2.3 percent per year over the period 1983–2000, making a total increase of about 48 percent. This improvement reflects productivity increases, employment growth exceeding population growth, and the net effect of sectoral redistribution.

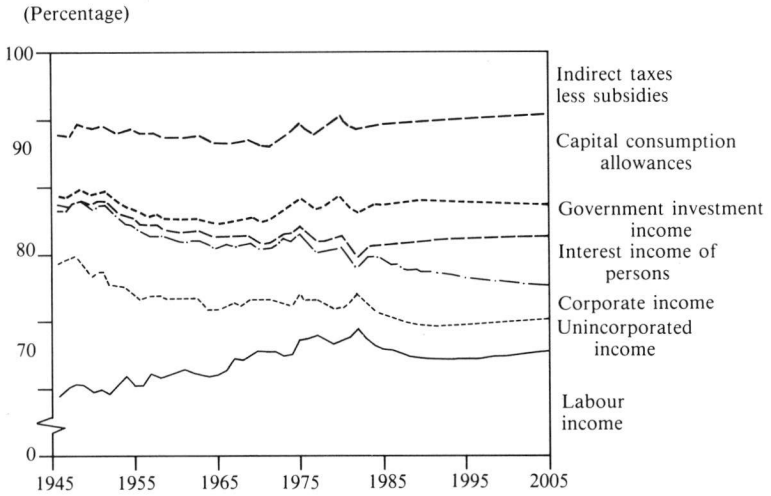
- A broader measure — real GNP per capita — increases at about the same pace.

allowances for the moment, and including indirect taxes less subsidies as so-called earned income of the government sector. The personal sector includes unincorporated business income, wages and other income accruing to that sector, putting this on the same basis that the national accounts use, for example, for the concept of personal disposable income.

Similarly, the corporate and government enterprise sector, which is used throughout the accounts, has been rearranged here to be the earned income of that sector. Government, finally, is the balance including government investment income. The main points here are that, before tax and before transfers, there is some improvement in the share of persons and of the unincorporated sector, and some squeezing of both the corporate and government enterprises and of the government share of so-called earned income.

In looking at this after tax and transfers (Figure 2-15), or at least after all the taxes and transfers that are taken out or put in to arrive at personal disposable income, and taking the other sectors to that same level, we find that the personal and unincorporated enterprise sector share is

FIGURE 2-13 Shares of Gross National Income 1945-2005



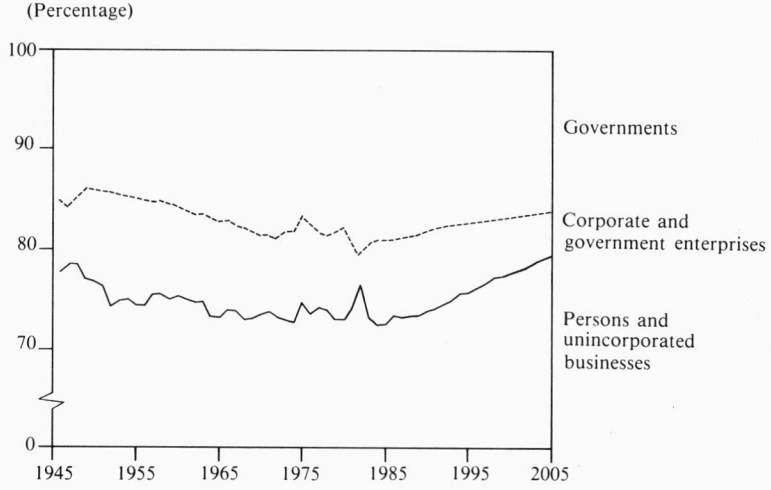
Notes:

- The share of labour income averages about 55 percent of gross national income over the period 1982-2000.
- The share of corporate income (corporate profits less dividends to non-residents plus inventory valuation adjustment) declines slightly after 1985.
- The share of interest income of persons increases throughout the period, reflecting high real interest rates and the high personal savings rate.
- Government investment income, including oil and gas royalties, maintains its share.

actually declining slightly from its recent peaks. The corporate sector squeeze is even more evident and the government sector share is widening. However, we should not feel too sorry for corporations because this does not include capital consumption allowances which are, as most people know, the major component in their total cash flow.

Looking at the ratio of the two, i.e., earned to disposable, we see a tendency for the corporate sector to show a wide discrepancy between those two measures (Figure 2-16). Again ignoring capital consumption allowances, in 1982 it was to a point where the disposable income was negative and dropped off the bottom of the chart. The personal sector is running roughly around one, which does not mean that substantial income redistribution is not taking place; however, it might well be thought of as taking place within the personal sector as opposed to between the personal and the corporate and government sectors; i.e., direct taxes collected by governments out of earned income roughly

FIGURE 2-14 Earned Shares of Net National Income at Market Prices 1945-2005



Notes:

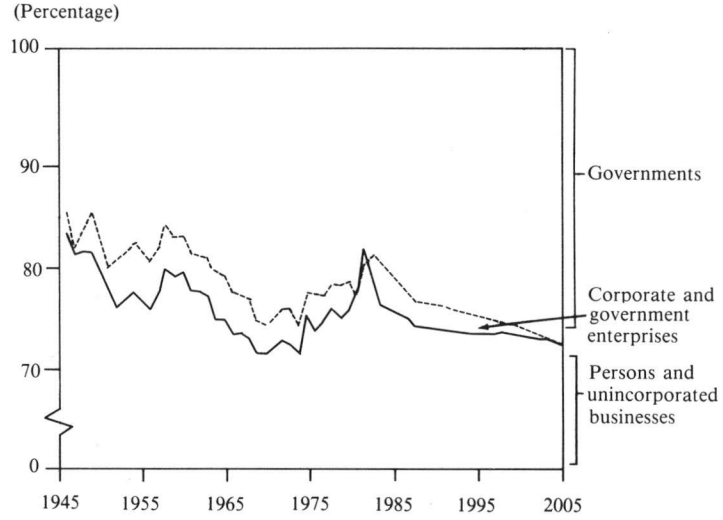
- The national income components have been regrouped into three categories: persons and unincorporated businesses, corporate and government enterprises, and governments. Capital consumption allowances are not included (hence, net), and indirect taxes less subsidies are part of the earned income of governments (hence market prices, instead of factor cost).
- Over the period to 2005, there is a rising share of earned income for the personal sector, declining shares for government and the corporate sector.
- The term *earned income* denotes the positions before taxes and before transfers are made.

balanced the transfers that are being made to the personal sector. Using this same concept, the disposable income of government is the top line. The rising share expected in the next 20 years is the amount left over for current expenditures on goods and services, investment, and any improvement in the surplus or the cumulated deficit.

Figure 2-17 shows the personal savings rate. Let me just raise with you something we should discuss later. We believe the savings rate will stay high, the Institute thinks it will drop, DRI thinks it will be a little higher in the short run, and a little lower in the long run. Basically we sense and feel from some work that we have done at Informetrica that a substantial amount of the savings is what we call institutionalized savings in the form of RRSPs, pension plans, and such.

Figure 2-18 shows the sectoral gross savings rates as percentages of GNP. The personal sector is the solid line and it is running at about 9 percent, keeping in mind that the base is larger with GNP and the

FIGURE 2-15 Disposable Shares of Net National Income at Market Prices 1945-2005



Notes:

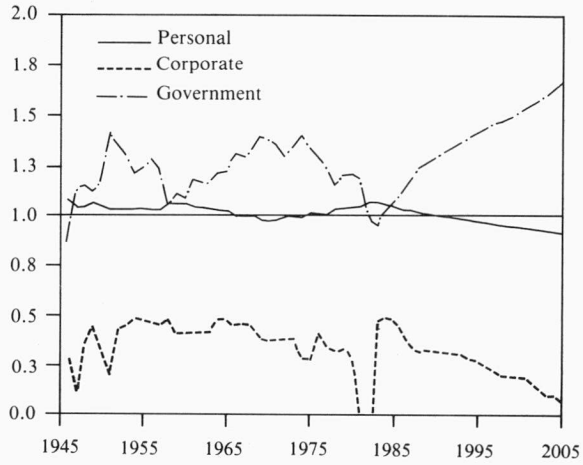
- The same categories are shown after taxes and transfers, with declining shares for the personal sector, a squeeze of the corporate sector, and a rising share for the disposable income of governments.
- The personal sector corresponds exactly to personal disposable income in the National Accounts, and the other two sectors are at the same point of reallocation. (Consumer interest is still part of the personal sector and not yet "transferred" to the corporate sector.)
- The net disposable income of the corporate sector was negative in 1982. Capital consumption allowances are not included in these net measures.

numerator is only slightly higher with capital consumption allowances plus the adjustment on grain transactions. The government savings rate was positive in the 1960–70 period. As many people noted, it became negative in the last year or two, and we expect that it will be positive in the period from 1990–2005. Then finally, the non-resident sector — which many people are wringing their hands about — is a relatively small part of the total savings rate running as high as 3 percent in some years (i.e., current account deficit).

In the forecast period we show it slightly negative (i.e., current account surplus) in part of the period, ending up with a slight positive savings rate at the end. The sum of all those savings rates rises over the period from roughly 19 percent up to about 26 percent, and of course that is the same thing as the investment to GNP ratio.

One transformation that we make is to subtract from each sector's

FIGURE 2-16 Ratio of Net Disposable Income to Net Earned Income 1945-2005



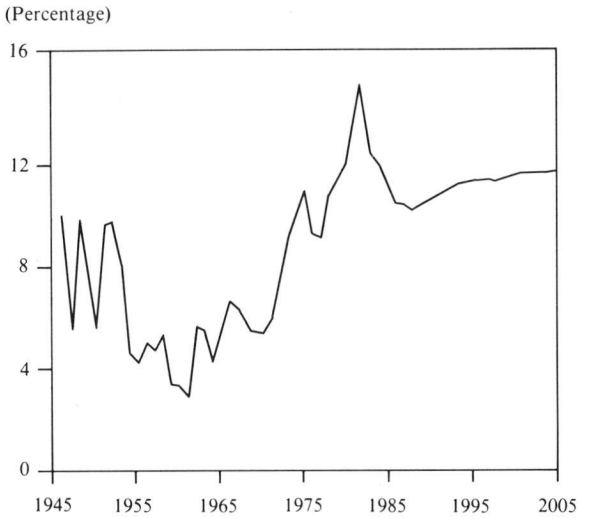
Notes:

- The ratio of net disposable income to net earned income for each sector combines the information in the two previous figures.
- These ratios are sensitive to the manner in which governments raise revenue. Increased reliance on indirect taxes or reduced subsidies would lower the ratio for government and raise the ratios of the other sectors.
- The close proximity of the personal-sector ratio to 1.0 suggests that the bulk of direct taxes paid by the sector are reallocated to the sector through transfers.
- A more detailed examination of net or gross disposable income by sector may provide some additional insights into the behaviour of each group.

gross savings the investments that sector makes, whether it be personal investment, involving housing or agriculture, corporate investment, or government investment (Figure 2-19). This leaves the net requirements of — or sources of funds from — each sector. Again, a feature of the forecast period is the personal sector as a substantial source of funds — the percentage of total savings accruing that require some kind of inter-sectoral financial intermediation. The government sector is currently in a deficit position, but the deficit becomes smaller over time. And then the corporate sector is in deficit. In fact, it is in deficit every year with the exception of two in the postwar period, to an extent that is generally greater than the government deficit, although I never have heard the term "the corporate deficit" and the problems associated with that. We can perhaps talk about that later as well.

As for inflation (Figure 2-20), our forecast is running a little bit higher

FIGURE 2-17 Personal Savings Rate 1945–2005



Notes:

- The ratio of net personal savings to personal disposable income (the personal savings rate) is an important analytical ratio.
- The savings rate remains above 10 percent to 2005, averaging 11.3 percent over the period 1982–2000.
- This forecast reflects the continuation of substantial institutionalized savings in the form of private pensions, RRSPs, and RHOSPs, the income of which is part of the personal sector.
- Substantial declines in the personal savings rate are not likely to occur until 2020, when retirement income paid out dominates the earnings and contributions to these various savings plans.

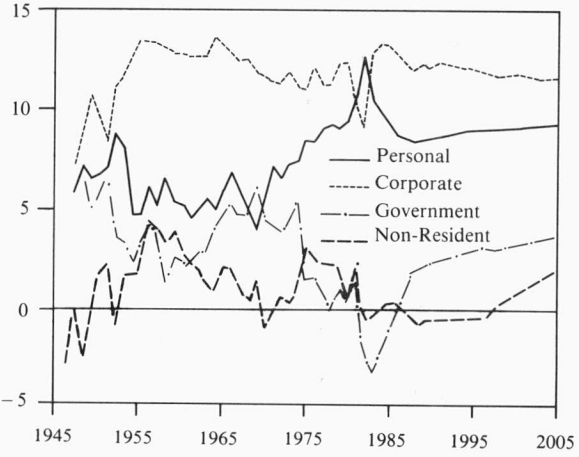
than 4 percent over the period 1984 to 2005, with the GNE deflator in the same ballpark. This reflects lower OPEC inflation and that long period of slack shown in the economy in the 1980s and early 1990s.

The contributions of labour, capital and indirect taxes to inflation are shown in Figure 2-21. The main point here is that unit labour costs are a dominant factor in inflation, but not the only factor; in some periods, indirect taxes per unit of output can contribute to inflation, as can a widening of the total unit capital costs per unit of output.

The growth in productivity, wages, and labour costs, are shown in Figure 2-22. Unit labour costs growth is simply the difference between the wage rate and productivity. Wage rates running close to 6 percent over the period, coupled with a productivity increase of about 1.4 percent, account for the increase in unit labour costs of about 4.5 percent.

FIGURE 2-18 Sectoral Savings Rates 1945-2005

(Percentage of GNP
in Current Dollars)



Notes:

- Gross savings (net savings plus capital consumption allowances) for each sector relative to nominal GNP define a sectoral savings rate. The non-resident sector is introduced at this point.

- In the forecast period, the coporate-sector savings rate is the highest: 12 to 13 percent; the personal sector is about 9 percent; the government sector varies from dissaving to a savings rate of about 3 percent by 2000; and the non-resident sector is the smallest component, ± 1 percent of GNP.

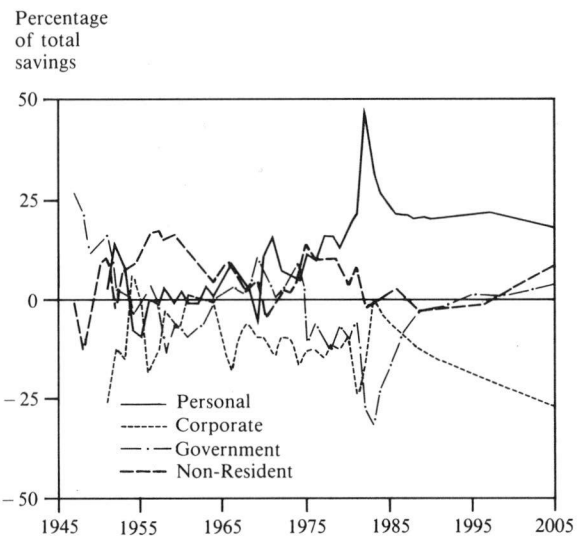
- The sum of these savings rates is the national savings ratio and the investment/GNP ratio for the economy. This ratio in the forecast period is:

1982	1987	1995	2000	2005
19.05	21.59	23.61	24.70	26.68

Interest rates also concern us (Figure 2-23). The dotted line at the top is the long-term bond yield; the dashed line below is a calculation of a so-called real rate. Though no one can tell me what the real rate is, in this particular case we used a four-year average of inflation as a proxy for so-called expected inflation, suggesting that, "yes, rates are high now, but if you believe that proxy, they get higher." This is implied by the nominal rates staying up in the 11 to 12 percent range, with inflation pursuing a course of around 4 percent. A comparable index for short-term paper, using the current year-over-year rate of change in inflation, is also shown.

The terms of trade are shown in Figure 2-24, the exchange rate in Figure 2-25. In the interest of time, we shall not discuss them here.

FIGURE 2-19 Sectoral Balances 1945-2005 (Savings Less Investment)



Notes:

- The sectoral balance is defined as the sector savings less the sector investment. If it is positive, that sector is a source of financing for other sectors; if it is negative, that sector requires funds from other sectors.
- In the forecast period the growing requirements for funds by the corporate sector are met by decreasing requirements by government, the personal-sector balances, and by non-residents in the last five years.
- The negative government-sector balance is also known as THE DEFICIT. It is noteworthy that the corporate-sector balance is usually negative as well.
- The implication of these sectoral balances is the continuing need for financial intermediation between the sectors, to a degree substantially greater than previous experience.

The industrial detail, in terms of growth of sectoral GDP in constant dollars in different periods, is shown in Table 2-1. The only point I would stress now is that metal mining is relatively weak over the entire period. Durable manufacturing, dominated particularly by the transportation equipment sector, is the most rapidly growing industrial group. The five "detailed industries" with the most rapid growth in the period 1980 to 2000 are: auto parts and accessories; hotels, restaurants and taverns; railroad rolling stock; coal mining, and services incidental to mining which include contract exploration and drilling. The losers: non-profit organizations; private household services; education; provincial government administration; metal mining — iron metal mining — other. I list six because some think the first item is just an artifact that I put there

TABLE 2-1 Growth of Gross Domestic Product in Constant Dollars (average annual rates of growth)

	1982–87	1987–95	1995–2000	2000–2005
Agriculture	2.6	3.5	3.2	3.1
Forestry	6.3 H	2.3	2.2	1.9
Fishing et al.	3.4	3.7	3.7	3.2
Metal mining	4.9	1.3 L	1.1 L	0.8 L
Mineral fuels	4.8	4.7	2.7	3.0
Non-metal mining	5.9	3.7	2.2	1.7
Manufacturing	4.5	4.1	3.3	3.2
Durables	4.8	4.9 H	3.7 H	3.8 H
Non-durables	4.2	3.2	2.9	2.5
Construction	2.5	3.8	2.9	3.3
Transportation	3.4	3.3	3.2	3.1
Communications	3.8	3.5	3.4	3.4
Electric power	3.5	3.5	3.1	3.0
Other utilities	2.6	2.5	1.9	1.9
Trade	3.8	3.4	3.1	3.2
Finance, insurance and real estate	2.2	2.0	1.8	1.8
Services	2.2	2.5	2.4	2.3
Public administration	1.9 L	1.6	1.7	1.7
Total	3.2	3.1	2.8	2.8

Notes: The pattern of gross national expenditure determines the distribution of output by industry. The forecasting framework, however, does not capture new products and services. Thus there may be new industries appearing in the industrial structure perhaps at the expense of existing ones.

The pattern of output growth reflects the increased share of investment over the next two decades, with durable manufacturing particularly strong. The pervasive weakness of metal mining is quite sensitive to the assumptions about international prices for metals increasing quite slowly.

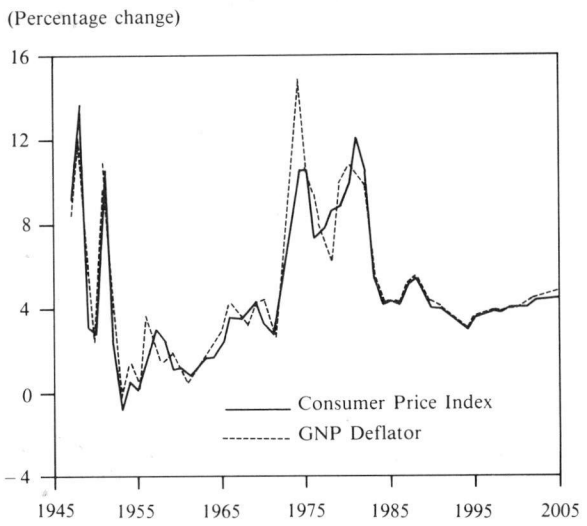
Employment growth is not strong, except in some of the services sectors: finance; education; health; business services; public administration. One implication is a continuing growth in the share of employment in these sectors, from 42 percent in 1981 to 47.9 percent in 2000 and 48.9 percent in 2005.

H = high. L = low.

as the slowest growing sector in the next 20 years because the Conference Board is a non-profit organization. (It's not really that . . . it's not even clear where they are in the accounts.)

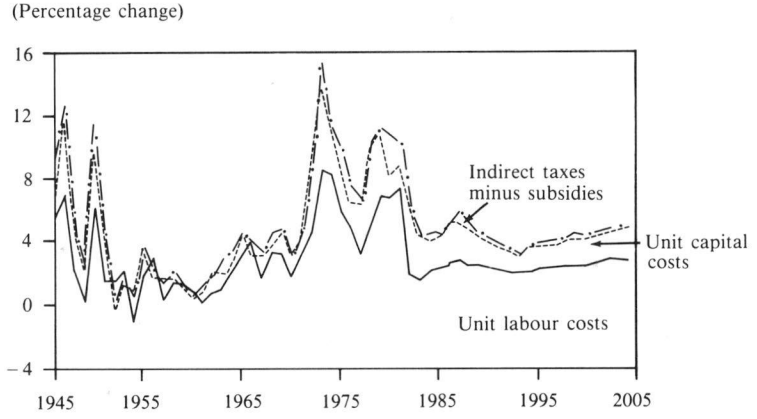
I refer now to the provincial data (Figures 2-26 to 2-31). Over the 1980–90 period (Figure 2-26), the barred lines at the bottom represent real growth in the ten provinces, the line across being the national average. The above average areas of real growth 1980–90 would be P.E.I., Nova Scotia, Ontario and Manitoba. The top line is GDP in current dollars, and you will note that the provinces with energy revenue either coming or promised are the areas which tend to have the most rapid GDP growth in current dollars. Similarly in the 1990 to 2005 period,

FIGURE 2-20 Consumer Price Index and GNP Deflator 1945-2005



Notes:
Inflation in this forecast averages about 4.3 percent per year over the period 1982-2000 for the CPI and slightly higher for the GNE deflator (4.6 percent). This is substantially lower than previous forecasts (and other forecasters), reflecting the long period of slack in labour markets, higher productivity, and the absence of external price shocks (e.g., stable OPEC prices) or major devaluations.

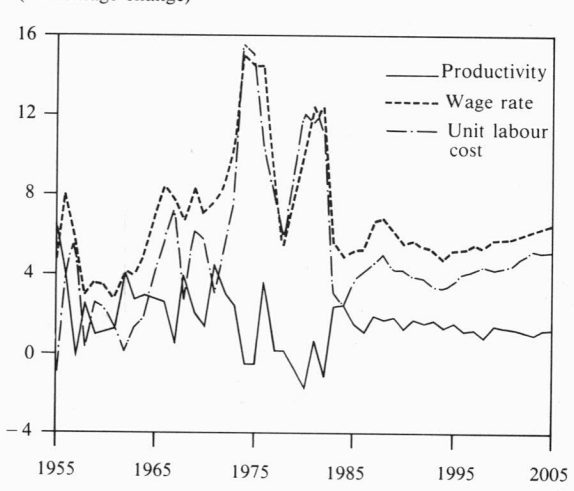
FIGURE 2-21 Labour and Capital Contributions to Growth in the GNP Deflator 1945-2005



Notes:
- The contributions of changes in the GNP deflator are defined as the increases in unit labour costs, until capital costs, and unit net indirect taxes, weighted by their respective shares of GNP in the previous year.

- Unit labour costs have the dominant role; but in some periods unit capital costs and indirect taxes can contribute a disproportionate share to inflation.

FIGURE 2-22 Changes in Productivity, Wages, and Unit Labour Costs 1955–2005



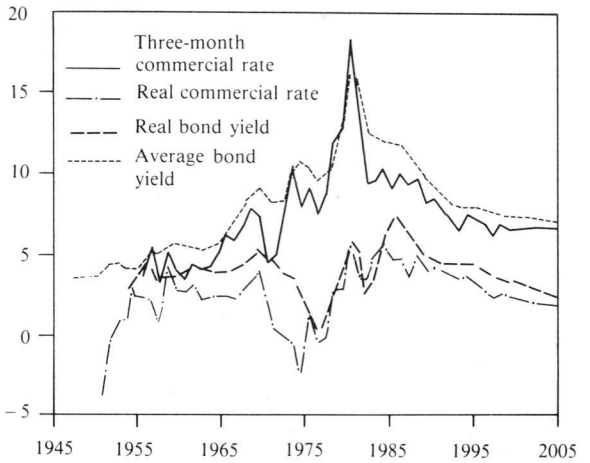
Notes:

- The change in unit labour costs is the change in the aggregate wage rate less the increase in productivity.
- The average wage rate increases, of 5.9 percent per year, over the period 1982–2000, coupled with productivity increases of 1.4 percent per year, result in an increase of 4.5 percent per year in unit labour costs.
- The historical experience would suggest greater volatility in wages, productivity, and, hence, unit labour costs.

Hibernia makes a substantial impact on GDP in current dollars and also in real growth in Newfoundland. Ontario and Alberta have some growth. Again in the 1990–2005 period there is not too much difference among provinces, mainly because there is not much tuning of the assumptions.

I am going to break off here and would just mention that there are some charts in this last group on household income, the main point being that they show the tendency for convergence in some cases but not all. Unemployment rates by region show a tendency again for tracking with the national and some tendency toward convergence going overall (Figures 2-27 to 2-29).

FIGURE 2-23 Interest Rates, Nominal and Real 1945–2005

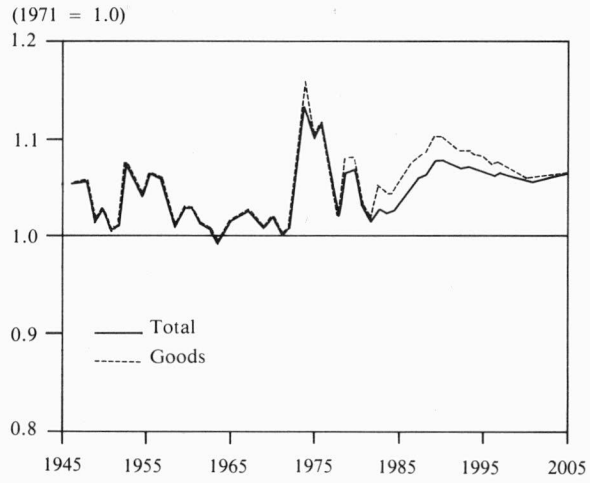


Notes:

- Another important set of prices in the economy is interest rates. The nominal interest rates have been adjusted for inflation by subtracting the annual change in the CPI from the short-term interest rate and the average rate of inflation over the past four years from the long-term industrial bond rate. (There is no standard adjustment for real rate calculations, since the concept requires the subtraction of expected inflation.)

- Nominal interest rates are expected to continue to decline, but slowly. This results in high real rates by historical standards throughout the 1980s.

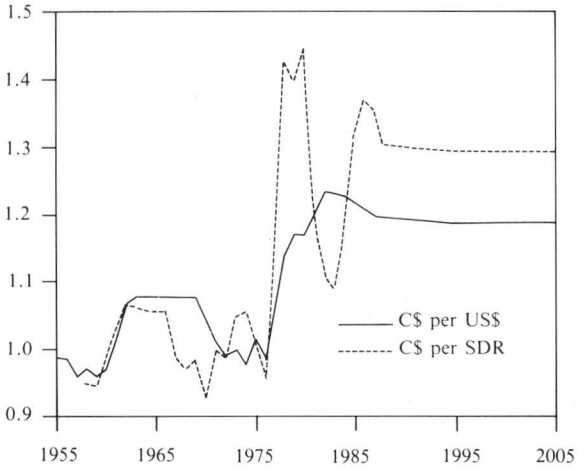
FIGURE 2-24 Terms of Trade 1945-2005



Notes:

- The terms of trade (export prices/import prices) rise until 1990 and then gradually decline over the remainder of the forecast period.
- Much of the improvement in the 1980s can be attributed to increases in export volumes of natural gas and coal.
- The terms of trade for manufactured goods are stable.

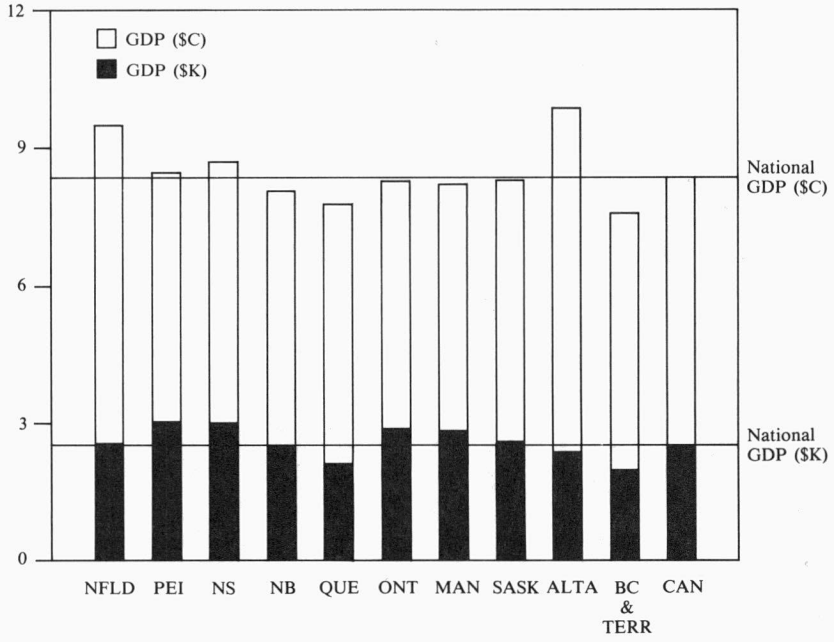
FIGURE 2-25 Canadian Exchange Rates with the U.S. and OECD Countries 1955-2005



Notes:

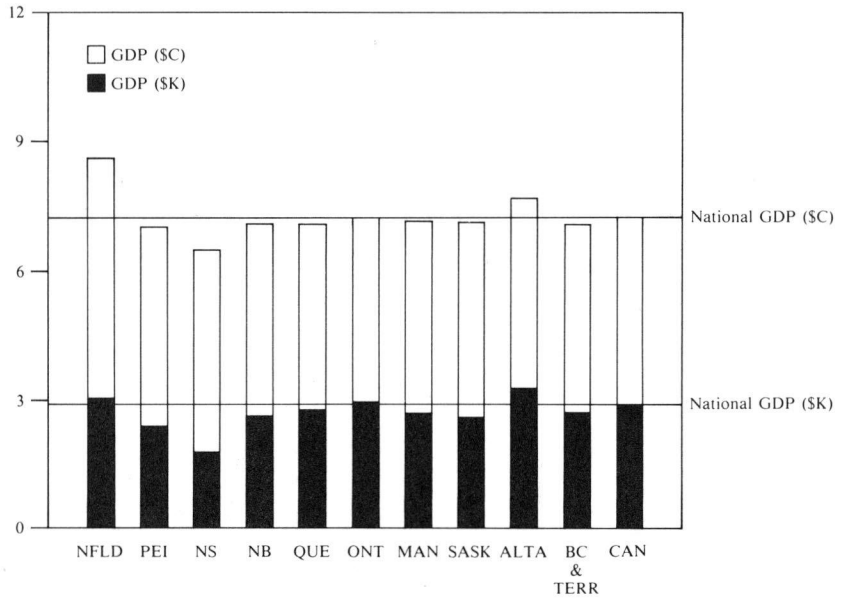
- The Canadian dollar is expected to appreciate slightly with respect to the U.S. dollar in the next five years and then stabilize.
- The Canadian dollar depreciates with respect to other OECD currencies, although not to the degree that it has appreciated to the 1980-83 period.
- Such exchange-rate movements are likely to be dominated by developments in the U.S. economy and financial markets.

FIGURE 2–26 Provincial Forecast Service Post II-83 Reference Forecast Average Annual Rates of Growth 1980–90



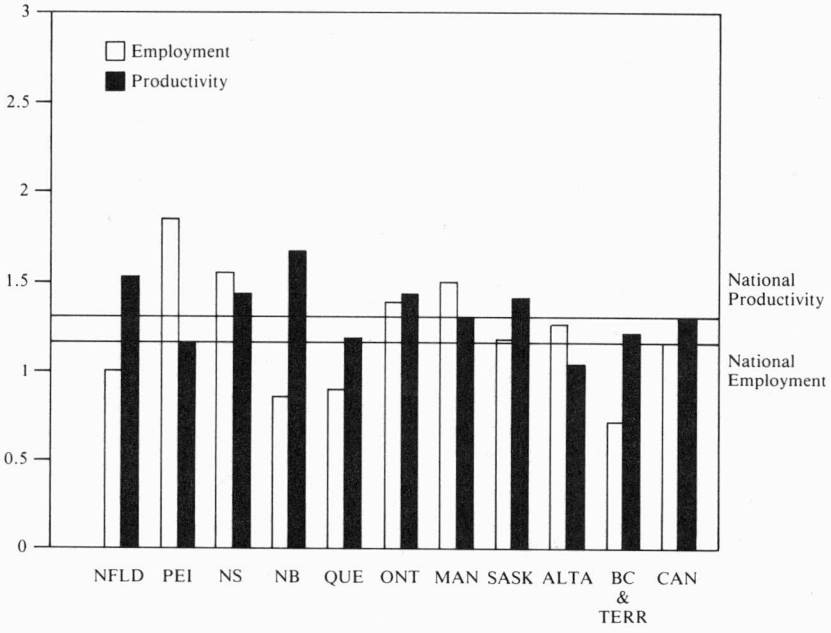
Note:
In the 1980s above-average nominal growth is evident in Newfoundland, Alberta, and Nova Scotia, reflecting energy-related investment. Quebec and British Columbia and Territories are the slowest-growing provinces/regions in the decade.

FIGURE 2-27 Provincial Forecast Service Post II-83 Reference Forecast Average Annual Rates of Growth 1990-2005



Notes:
Growth is more balanced in the 1990s, with Newfoundland and Alberta particularly strong in real and current dollar measures. (The high growth rate of GDP in current dollars in Newfoundland is due to the production of oil from Hibernia.)

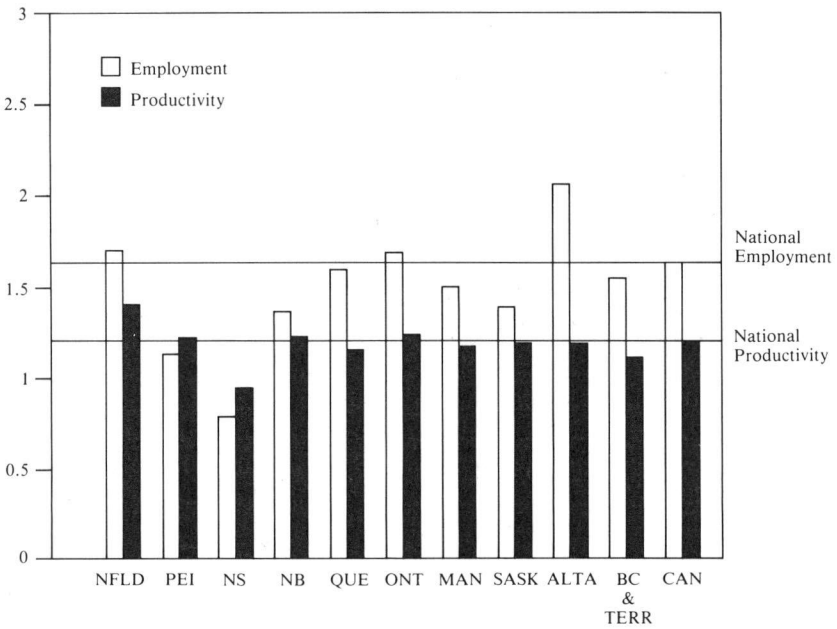
FIGURE 2-28 Provincial Forecast Service Post II-83 Reference Forecast Average Annual Rates of Growth 1980-90



Notes:
Employment growth generally reflects the pattern of output growth, expected in the 1990s.

In the 1980s, overall productivity growth exceeds overall growth in employment, a phenomenon which is particularly strong in New Brunswick, Newfoundland, and British Columbia and the Territories. Conversely, Prince Edward Island, Alberta, Manitoba, and Nova Scotia experience employment growth in excess of productivity gains over this period.

FIGURE 2-29 Provincial Forecast Service Post II-83 Reference Forecast Average Annual Rates of Growth 1990-2005



Note:

Over the period 1990-2005, however, national productivity grows less rapidly than national employment. This difference between employment and productivity growth is particularly evident in Alberta, Ontario, Quebec, Manitoba, B.C. and the Territories, and Newfoundland. In contrast to their performance over the 1980s, P.E.I. and Nova Scotia experience productivity growth in excess of employment growth, although both are below national average growth rates.

FIGURE 2-30 Provincial Forecast Service Post II-83 Reference Forecast Unemployment Rates, Provinces and Canada 1980-2005

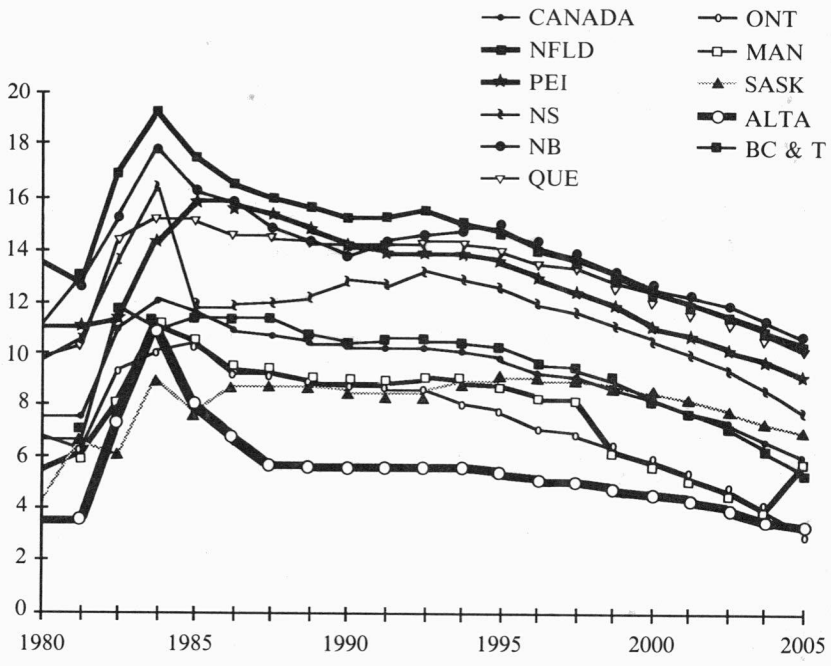
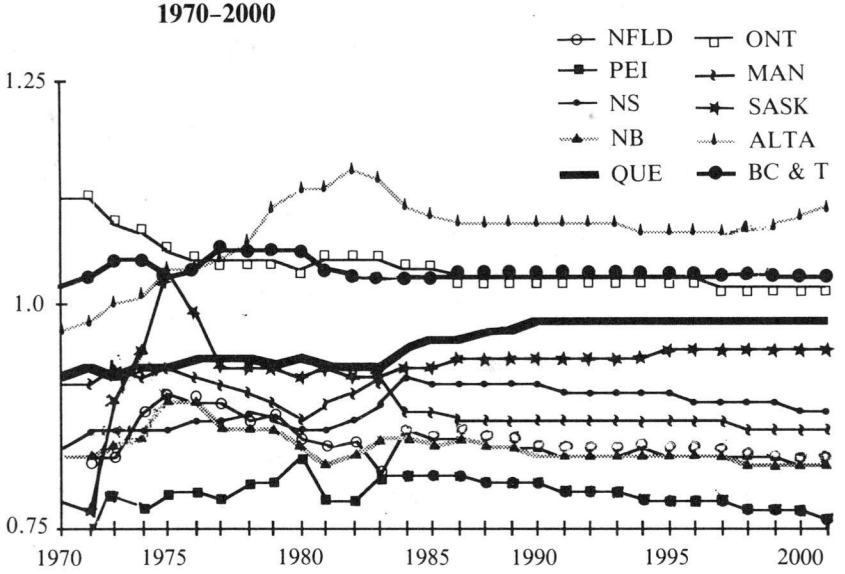


FIGURE 2-31 Provincial Forecast Service Post II-83 Reference Forecast Household Income Relative to the National Average 1970-2000



Notes:

- The ratio of provincial income per household for each province relative to the same national measure indicates that Alberta, Ontario, and British Columbia remain above average. Saskatchewan also edges above the national average after 1990, whereas the Atlantic provinces drift to slightly lower values.

- Minor adjustments to household growth or other allocations of output growth could alter these patterns.

Note

This paper was presented at the Symposium "Long-Term Economic Prospects for Canada," organized by the Macroeconomic Research Section of the Royal Commission on the Economic Union and Development Prospects for Canada, Ottawa, January 10, 1984. The views expressed are those of the author.

3

Macro Projections to 2000: *Perspective III*

PETER DUNGAN

As we are running a little late, I will be commenting on a few points only, and this talk is likely to be somewhat sketchy as a result. Let me begin with the question of assumptions. The most critical for us, outside population, are those that relate to the United States. Data Resources Incorporated makes available to us their long-run U.S. simulations to use as our own U.S. assumptions. Since we know that in the long run it is very difficult for the Canadian scenario to diverge a lot from that of the U.S., if we had used the same U.S. inputs as DRI we were likely to obtain some of the same answers. We wanted to take a different approach, with the blessing of the Commission here, because of the interest in showing different paths in the future. As a result, a number of wild cards are thrown into our projection as interesting alternatives that I think worth discussing.

To take a different approach to the United States, we took the basic U.S. projection and made some hand adjustments to it. Consequently, we arrived at our numbers. The main difference we made vis-à-vis DRI's U.S. projection was to lower the rate of inflation in the longer run, the assumption being that the gap — the potential gap in a sense — would still be there and would be exerting downward pressure on inflation; we lowered the rate of growth as well. In other words, it is stagflationary, though not drastically so. Its premise is that inflation is going to be more of a problem, with the policy mix in the United States producing lower growth and lower inflation which in turn passes through into Canada.

When we go into the longer period, 1995 to 2000 and beyond, we have also lowered the rate of U.S. growth relative to DRI's assumption. As I say, I am not using our model to do this; we merely thought it would be useful here to take an alternative path and see what would happen.

TABLE 3-1 U.S.–Canada Differences

	1982–87	1987–95	1995–2000	2000–2005/8
Real Growth				
PEAP				
Canada	3.4	2.8	2.1	2.2
United States	3.2	2.6	2.2	2.0
Difference	+0.2	+0.2	−0.1	+0.2
DRI				
Canada	3.3	3.3	3.1	2.8
United States	3.7	2.8	2.3	2.3
Difference	−0.4	+0.5	+0.8	+0.5
Informetrica				
Canada	3.4	3.2	2.8	2.8
United States	3.7	2.4	2.6	2.5
Difference	−0.3	+0.8	+0.2	+0.3
Inflation				
PEAP				
Canada	5.4	4.5	4.5	4.5
United States	4.5	4.1	4.0	4.0
Difference	+0.9	+0.4	+0.5	+0.5
DRI				
Canada	5.9	6.4	6.2	6.2
United States	5.3	6.2	5.9	5.5
Difference	+0.6	+0.2	+0.3	+0.7
Informetrica				
Canada	4.9	4.2	4.1	4.7
United States	5.1	4.5	3.6	3.5
Difference	−0.2	−0.3	+0.5	+1.2

Sources: Appendix Tables C-1, C-6, C-28 and C-37.

What I have done here is to take in the difference between Canadian and U.S. growth, the difference between Canadian and U.S. inflation, the GNE deflator, for each of the three different projections (Table 3-1). You can see that there is a fair amount of difference here though it seldom gets beyond one percentage point. Because our economy is so very much tied to the United States, once the U.S. assumptions for the long run have been chosen, much of the job of forecasting the Canadian scenario has been done.

Just to point to a few things here, our own projection has a very small differential between Canadian and U.S. growth. In fact Canada historically has run a higher growth rate than the United States, except in the last few years, basically the 1973–82 period. Before that we were able to do considerably better because our potential growth was higher. I believe

TABLE 3-2 Real Growth

	1982–87	1987–95	1995–2000	2000–2005/8
PEAP	3.4	2.8	2.1	2.2
DRI	3.3	3.3	3.1	2.8
Informetrica	3.4	3.2	2.8	2.8

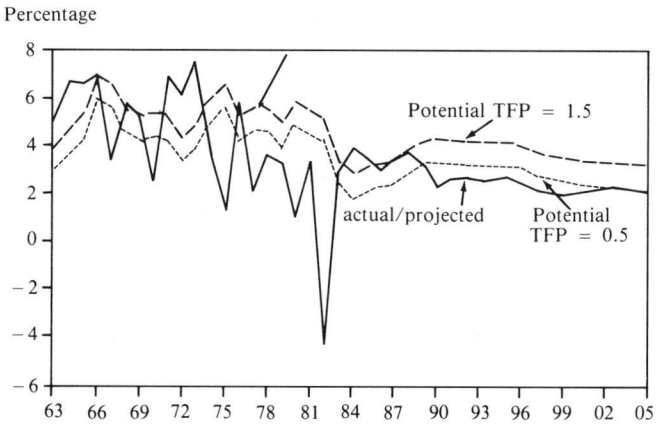
this is still the case with us and I want to talk about that. For the other two services, DRI and Informetrica, you will note larger differentials, especially for the former. DRI is saying that we can do considerably better than the U.S. over a long period of time. When it comes to inflation, our own feeling is that the differential — Canada has also traditionally run higher inflation rates than the United States — can be maintained within about one-half of a percentage point, but we are going to be higher. It is just the way we do business here: the strength of our labour management bargaining; the higher degree of public sector services and so on, that are not open to the market. All these kinds of reasons are going to lead us to have a somewhat higher inflation rate than the United States. I think the other services basically agree with this view, although Informetrica is saying we can do considerably better on inflation for a fairly long period of time in the near term.

Regarding assumptions, the basic point I want to make is that we are trying to take a different approach from the U.S. side, but we should worry when our Canadian predictions diverge too much from those for the United States. What is fundamentally changed vis-à-vis the past behaviour that allows us to run lower or higher growth than the United States, or lower inflation or higher inflation?

On the subject of real growth, Table 3–2 shows that our projection is a bit of an outlier compared to the other two. On five-year averages, however, we are all remarkably close when it comes to the 1983–87 period. Of course Tom Maxwell is the outlier here, the one who believes we have trouble in that period. [Conference Board forecast. Not shown in Table 3–2 but included in detailed comparison tables, Appendix C of this volume.] When it comes to later growth we distinctly fall away from the path followed by the other two services. Again I am not sure I believe it, but we did want to generate a somewhat more pessimistic scenario here to give us something to talk about — some band width to work on. (DRI are quite used to developing band widths of their own, but our projection in a sense gives a smorgasbord of different possibilities to consider.)

Why do we have this lower growth rate? This question can be approached from two sides: the demand side and the supply side. In our model, I should point out that although we can tell something of what is happening to potential GNP in the background, we do not let it feed through in the current model structure so as to run the projection. The

FIGURE 3-1 Alternative Potential Growth Rates (Cobb-Douglas Weights) 1963–2005



Notes:

- Using standard Cobb-Douglas weights of 65 percent for labour and 35 percent for capital (with TFP then added on) yields the two estimates of potential growth shown above, along with actual/projected real growth.

- From 1983 through the late 1980s, real growth is above potential, closing (partly) the gap opened in the late 1970s and early 1980s. Thereafter, growth is weak relative to our potential measure. This reflects, in our projection:

  — chronic demand deficiency (partly due to high government saving and too-weak investment);
  — a margin of slack on the full-employment unemployment rate;
  — a margin left also for less-productive capital in the future; and
  — a bias toward a lower TFP contribution until the cause of its decline in the 1970s is better understood.

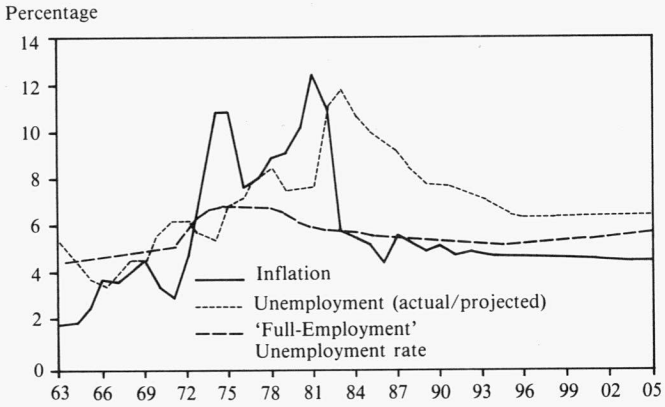
- TFP: Total Factor Productivity.

projection is to some extent still being run from the demand side, but we keep our eyes on the potential.

Let me address the supply side first, using Figure 3-1. Here we have generated a band for potential depending upon what we assume for total factor productivity growth, which is the real wild card when it comes to potential. This is the source of extra growth, the unexplained growth. We think that in the 1960s and early 1970s it might have been as high as 1.5 or perhaps even higher, but probably it was no higher than .5 recently. Since we do not know what it will do in future, I have presented a band of possibilities, and you will note that for a long period our projection is below that potential band. In fact if we compare DRI's and our estimates of potential, we are quite close.

Now examine the full employment-unemployment rate (Figure 3-2). We have a feeling that although the full employment-unemployment rate

FIGURE 3-2 Inflation (CPI), Unemployment, and Full-Employment Rates 1963–2005



Notes:

- The 'full-employment' unemployment rate presented is based on work by Dungan and Wilson for the ECC. Demographics (a younger labour force and more female participation) and UIC easing explain the upward movement of the rate in the early 1970s. A tightening of UIC and reduction of the share of younger workers explain the downward movement after the late 1970s. The rise in the rate after the mid-1990s is meant to reflect problems of adjusting to a larger share of older workers in the labour force, but the projection is suggestive only.

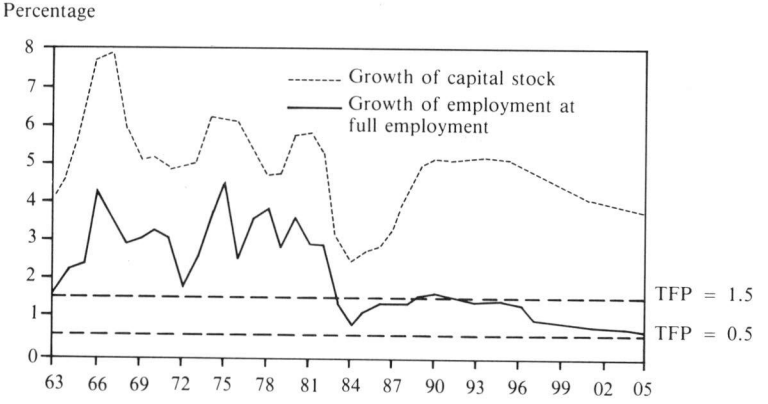
- The gap between projected and full employment is never closed; this is the result of a chronic demand deficiency in our scenario (which is on the pessimistic side), with allowance also for structural problems that might push up the full-employment rate by 1 or 2 percent.

- The continual employment gap should not admit of an acceleration of inflation unless it comes from an outside shock. Indeed, basic theory of the dynamic Phillips curve suggests that inflation ought to continue to fall for a period after the mid 1980s. Our assumption is that there is an irreducible inflation floor at 3–4 percent required to permit basic relative price changes.

will probably drop for a little while longer, possibly even through 1990–95, nevertheless there is a probability that the full employment-unemployment rate thereafter might turn up again. After all it is largely demographics that are moving it around. The economy had a bulge in the full employment-unemployment rate in the 1970s because it had to deal with the baby boomers as young workers. What will happen when they become older workers? It may mean an up bulge in the full employment-unemployment rate again (we've put in just a very, very approximate one, a very gentle one here) once they leave the amorphous middle, middle-age group — and that only begins to occur here.

Again we have a difference with our potential view vis-à-vis the other services: we think that there are several reasons why this potential estimate could be optimistic, and these are again things on which it is difficult to put a number but which we should keep in mind. First of all,

FIGURE 3-3 Components of Potential Growth (Unweighted) 1963-2005



Notes:

- The three sources of potential growth are:
  - — growth in employment at full employment;
  - — growth in capital stock; and
  - — growth in total factor productivity (TFP).

- Slow growth in the labour-force source population, and a later rise in the full-employment unemployment rate, make the labour contribution small relative to past growth.

- Growth in the capital stock returns to levels a bit below those of the 1960s and 1970s. The effect of the capital growth shown here on potential growth might have to be reduced for two reasons:
  - — rates of depreciation may accelerate (and may already have done so) under the impact of high energy prices and technological change; and
  - — some major energy-extraction capital projects might contribute much less to potential in the future than in the past.

- Total factor productivity is the 'wild card' in the calculation. A rate of 1.5 percent seems reasonable (even low) for growth in the 1960s and early 1970s. A rate of 0.5 percent is the maximum reasonable for the later 1970s and early 1980s. Will TFP recover to rates closer to 1.5 percent?

this full employment-unemployment rate that is shown here might be too low. We may be in for more structural unemployment in the later 1980s and 1990s out to 2005 than is implicit in our full employment-unemployment rate. I don't believe the full employment-unemployment rate today is 10 or 12 as some people say, and in the longer run it may be closer to about 6 with 7 or so the target for later on. It is a grey area, one we still know little about.

The main component, if you look at the sources of potential growth (Figure 3-3), is the growth of capital. That is what will keep our potential up because the growth of employment at full employment is dropping away. Total factor productivity we do not know, so capital is the key thing. Will capital be as efficient in the future as it has been in the past?

TABLE 3-3 Government Current Expenditures as Percent of GNP

	1982–87	1987–95	1995–2000	2000–2005/8
PEAP	20.5	18.4	17.3	16.5
DRI	21.1	19.9	19.2	19.0
Informetrica	20.7	19.9	20.2	20.6

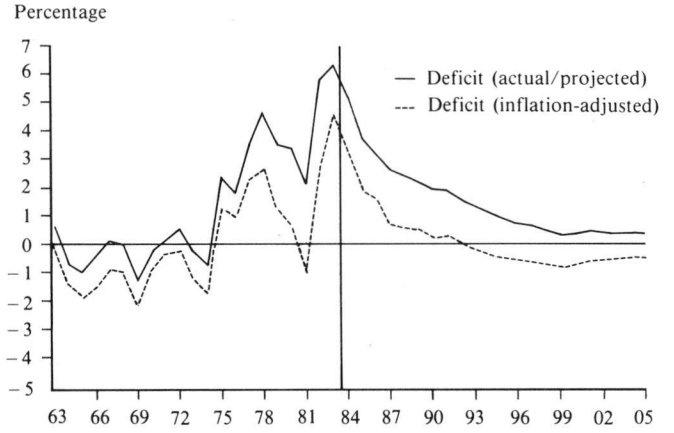
Will it contribute as much to potential? Is the depreciation rate higher than it used to be? Is capital becoming more obsolete more quickly? These are very important questions. If we sink billions and billions of dollars of capital into Hibernia or into a new Alsands project, can we expect the same rate of return, the same potential that we would have if we'd sunk those same billions of dollars twenty years ago into drilling conventional oil wells? I would think not. And so again, although I cannot give you numbers, our feeling is that this potential measure might if anything be too high. If we lowered it about a half percentage point, and if we lowered the band, then the growth rate obtained might not be an unreasonable one. And so one of the reasons why our growth is lower is that, while this is the conventional measure of potential, we have some doubts about whether it is the true measure of potential which will obtain.

The second factor is that when I worked with the Focus model in the medium- and long-term projection period, it was continually trying to tell me that it does not have enough demand to meet potential. I have to kick demand up to get it there. You remember that after the Second World War there was a fear that we would fall back into a 1930s-type situation of chronic insufficient demand. As it turned out, there were numerous things that moved the economy nicely: housing; pent-up demand; technical change that had not been exploited; new investment opportunities; growth of the third world. Our model is signalling to us the possibility that we might be in line for a period of nagging, though not serious, deficiency of demand starting in the mid-1980s and continuing.

One major difference between ours and the other projections is that we are more severe on government expenditure constraints, and so consequently you can see, as a percent of GNP, our government current expenditures are not going to serve (Table 3–3). On government capital expenditure, we think there will be some boost in order to rebuild capital stock: bridges, buildings, rail stock and so on. But in terms of current expenditure, our share drops much more than is the case with the other two. Government, in other words, is not contributing; indeed, it is going quite the other way.

This puts most of the burden on real investment, non-residential investment, and you may remember from one of Tom McCormack's slides that we are the highest of the three scenarios in terms of that proportion of GNP. This is not because we are so rebust on investment;

FIGURE 3-4 Federal Deficit (Unadjusted and Inflation-Adjusted) as Percentage of GNP 1963-2005



Notes:

- Once inflation distortion is taken into account, the federal government is also seen to enter a surplus position by the early 1990s. (Inflation adjustment for other levels of government would show them still more in surplus).

- The degree of federal inflation-adjusted surplus is no greater than in the 'boom' years of the 1960s and early 1970s. However, in that period the United States was also in surplus, and real interest rates were correspondingly slightly lower. In the projection period, the danger exists that U.S. fiscal policy may be much looser than Canada's, and its monetary policy (which also becomes ours, barring heroic efforts against it) correspondingly tighter. We could thus inherit the impact of U.S. (relatively) tight money and Canadian tight fiscal policy, and thus a chronic drag on demand. This effect is present to a small degree in this projection and could be worse. Could Canadian monetary policy be unplugged from U.S. policy in this situation?

rather it is because we are lower on other things, so that investment effectively takes up the slack.

Let me show you one other graph. This is the inflation-adjusted government deficit (Figure 3-4), which switched into a surplus position starting even in the early 1990s on the federal side. If we had inflation adjusted numbers for the provinces, they would switch even earlier. It is not clear that they are not already there. Consequently the fiscal sector is exerting a drag on the system. You may say that is not necessarily a bad thing. Harry Johnson pointed out in the early 1960s that we might want to shoot for a policy mix in which we had tight fiscal polilcy and loose money, to make sure the surplus got translated into capital formation on the private side. And probably during the 1960s, when in fact the inflation adjusted deficit was also in surplus, that is what was happening in Canada and the United States. We are looking at a situation where our monetary policy is virtually tied to that of the United States, yet we are

attempting to run our fiscal policy much more strictly than they do. The net result, I think, could conceivably be a situation of insufficient demand which nags us through the next decade or more.

Note

This paper was presented at the Symposium "Long-Term Economic Prospects for Canada," organized by the Macroeconomic Research Section of the Royal Commission on the Economic Union and Development Prospects for Canada, Ottawa, January 10, 1984. The views expressed are those of the author.

SESSION II

Sectoral Views of the Longer Term: Energy, Transportation, Communications

Chairman:

Brian Scarfe

Participants:

Peter Miles, National Energy Board
James Welch, Transport Canada
Al Chatterjee, Bell Canada
Michel Grignon, Quebec Hydro

4

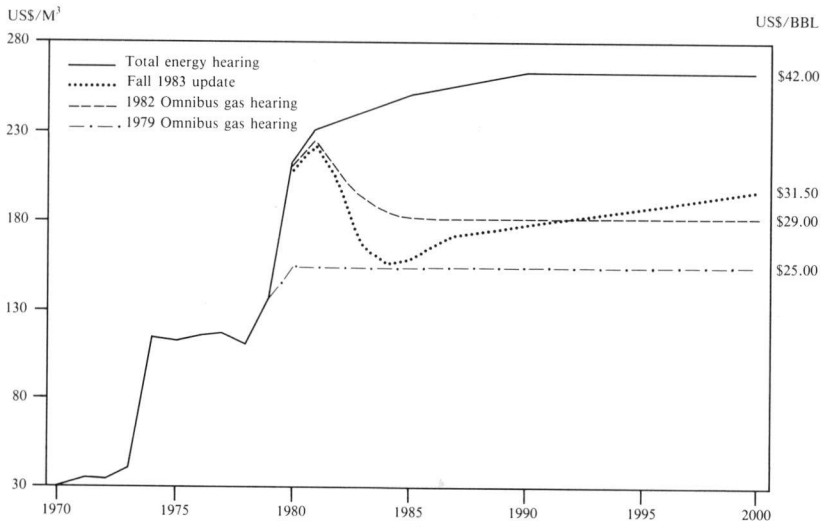
Sectoral Views of the Longer Term: *Energy*

PETER MILES

I would like to spend a few minutes talking about some issues in the energy field. I want to focus on the supply and demand for hydrocarbons, oil and gas, and discuss some of the major issues in the context of estimates of demand and supply for oil and gas, both those which we made internally at the NEB and those made by others. I want to emphasize that what I call NEB staff estimates are of a preliminary nature. We are in the process of conducting an update of the biannual NEB energy supply/demand outlook in consultation with the energy industry, provincial governments and electric utilities, and we are expecting draft submissions from many institutions over the next month or so. We will be revising our views and writing a report, and hope to release something in early summer.

I want to focus on issues because one's estimates of all of these things are influenced by conditions and expectations prevailing at the time they are made. It is increasingly recognized that single projections of economic activity are not wise over a horizon of 20 odd-years. Mike McCracken put up his quadrants, and DRI a number of scenarios, and Peter Dungan talked about the range of possibilities for potential growth. I think this is the only way to examine the longer-run outlook; there is too much uncertainty with the factors that underlie the projections — the value of critical exogenous variables and the domestic and international policy environment — to do otherwise. Moreover, with a 20-year horizon, the relationships among variables are bound to change. I have always been a little bit unnerved by 25-year projections which rely, to a considerable extent, on models that have been estimated on the basis of what has been going on over the *past* 20 or 25 years. I will illustrate this point in some of my comments.

FIGURE 4-1 Comparison of NEB Projections of Average Price of Imported Oil 1970-2000



Note : FOB in 1982 US$/M³

In discussing energy it may be salutary, at the beginning, to examine one or two charts which illustrate where we have been in terms of some of the exogenous variables. Figure 4-1 shows the projections of world oil prices which the National Energy Board has used in its various analyses of energy developments over the past three or four years. You can see that in the 1979 gas export hearing we assumed a very flat price in 1982 dollars of about 25 dollars a barrel in 2000. Then after the 1979 Iranian revolution, we jump all the way up to an assumed price of 42 dollars a barrel in (again in 1982 dollars) 2000, and now in our latest projection we are using a price which is not too far from where we were in 1979. These are enormous differences in energy prices and it is not surprising that they have had powerful effects on projections not only in the energy area but also on the economy generally.

Figures 4-2 and 4-3 will introduce a little modesty to the whole exercise. When there are substantial changes in policies and in key exogenous variables such as world oil prices, it is not surprising that forecasts relating to supply and demand for energy change substantially as a result. The two panels of Figure 4-2 show the different forecasts of crude oil supply and demand to 1990 made by the National Energy Board at various times over the past 10 years. The most recent projection in terms of crude oil supply is the starred line. Figure 4-3 shows the same forecast comparison for natural gas.

The interesting thing about Figure 4-2 is the marked stability in pro-

FIGURE 4–2 Supply and Requirements for Crude Oil and Equivalent: Comparison of Historical NEB Forecasts 1980–90

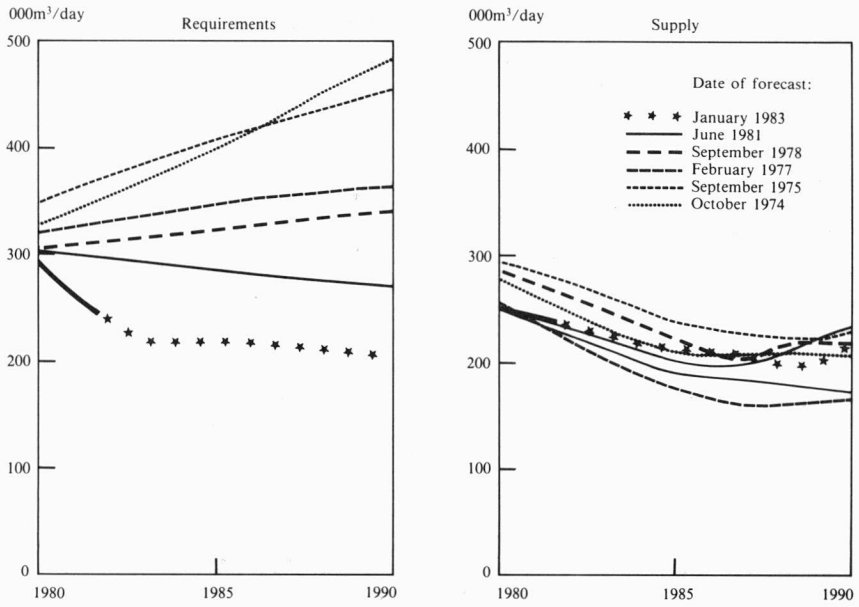
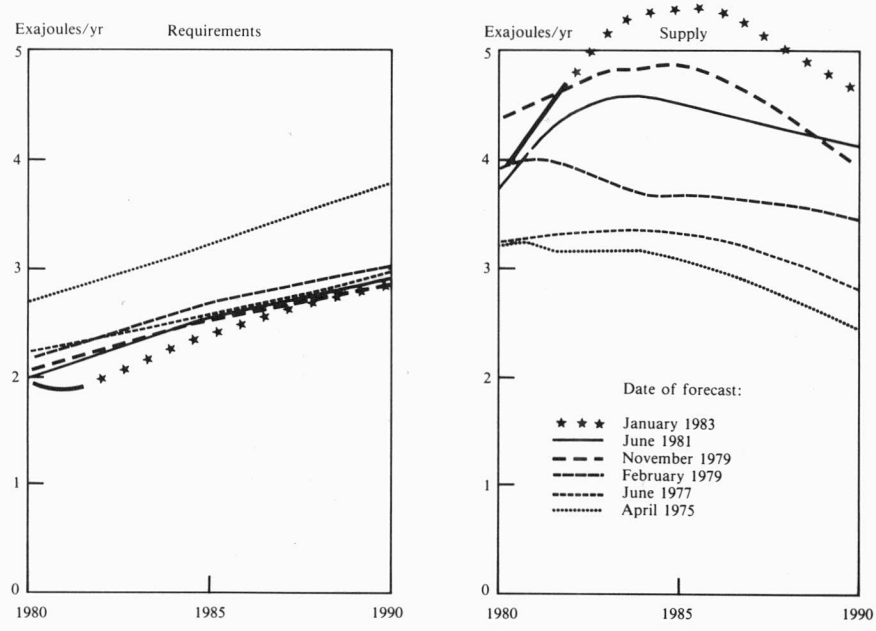


FIGURE 4–3 Supply and Requirements for Natural Gas: Comparison of Historical NEB Forecasts 1980-90



jected crude oil productive capacity; this is conventional oil production capacity, and these projections do not include estimates of future frontier or incremental synthetic production. The stability in the projections occurs because there have not been any big surprises in conventional oil. There have been no big new finds in the West, and as a consequence there has been little variability in the forecast. On the demand side, however, there is enormous variability.

We have been revising our projections down fairly continuously for the last 10 years. This is explained by a number of factors:

- the substantial increases in Canadian energy prices;
- the scaling down of projection GNP growth that Mike McCracken alluded to; and
- the expansion of the government programs designed to reduce oil consumption by conservation and by substituting other fuels for petroleum products.

Thus, we have a lot of variability in the demand forecast, but relative stability in the supply forecast.

Exactly the opposite has occurred in projections of natural gas. There has been a lot of variability on the supply side, with estimates of supply being increased over time. Natural gas prices have increased substantially over the past decade and there has been a lot of new gas found in Alberta. On the demand side there have been many changes but, with the exception of the 1975 projection, the NEB projections have shown rather remarkable stability.

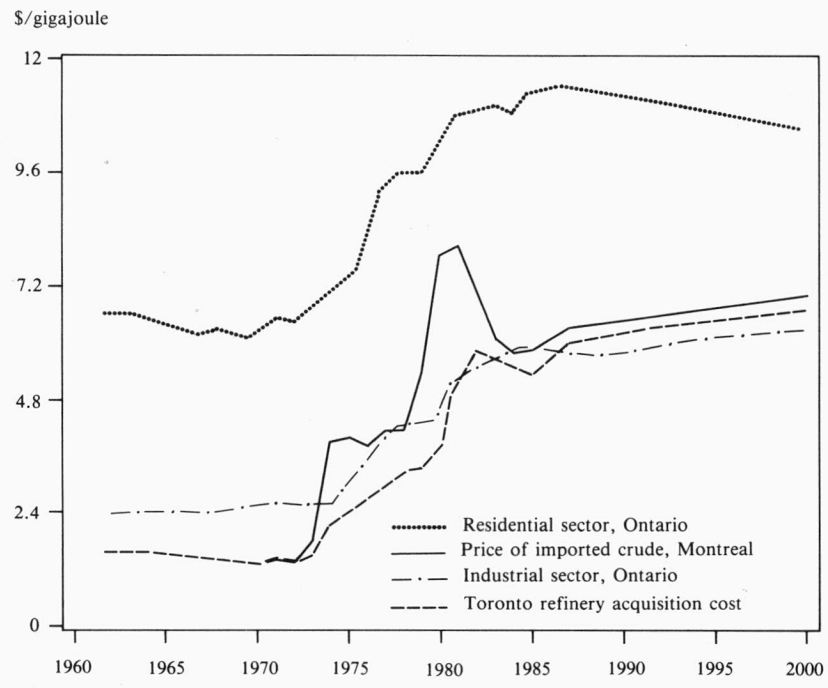
Off-oil programs are inducing people to switch to gas, and so, government policies have been offsetting the impact of big price increases and a scaling down of estimates of GNP growth.

The main points I want to draw from this are:

- if conditions are changing rapidly, then forecasts are going to change rapidly;
- if one is looking at the long term, one should pay a lot of attention to trying to assess what the structural factors are and how they may be expected to change over the projection horizon; and
- it is perilous indeed to use single point estimates in assessing the long-term outlook.

Let me run briefly over the different estimates of some of the factors involved in the demand and supply for oil and gas as we see them. Figure 4-4 shows the past and projected future relationship between Canada and world oil prices, as well as weighted average residential and industrial prices. The weighted averages of residential and industrial prices are based on prices and fuel weights that are in our preliminary projection to the year 2000. In the residential price, by the way, we have assumed some efficiency improvements in household furnaces, and that

FIGURE 4-4 Energy Prices 1960–2000 (1982 Dollars)



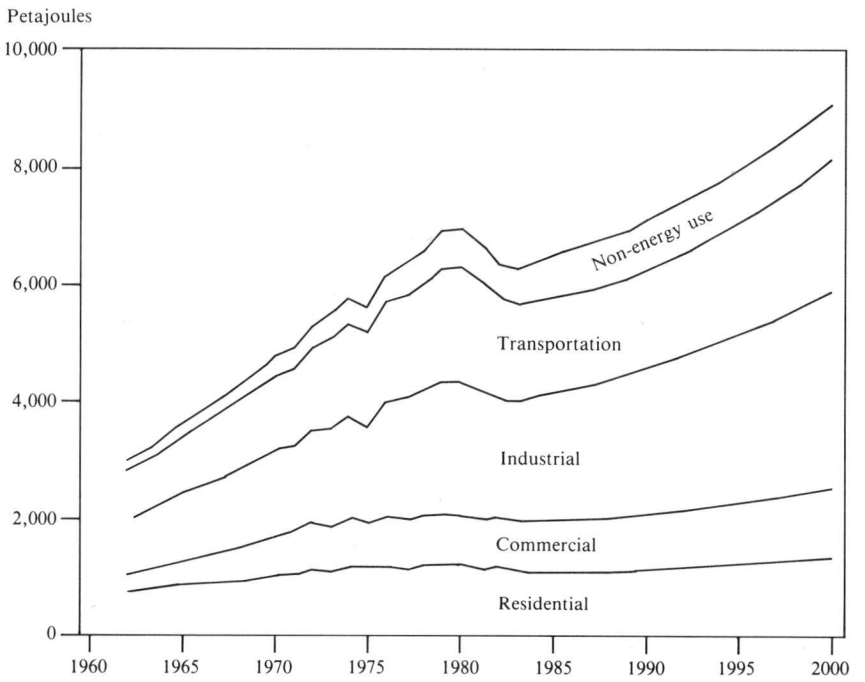
accounts for the slight decline in real terms through the late 1980s and 1990s.

We next consider demand for oil and gas. One has to start with a projection of total secondary energy demand and, of course, none of the macro projections that we are looking at today contain, so far as I can determine, a fully articulated total energy projection. It is difficult to assess their projections of oil and gas demand because we do not know what assumptions are being used for total secondary energy. So let me just show you what we are currently projecting at the Board (Figure 4-5).

It is evident that there has been a rather dramatic fall-off in energy use in this country over the past three or four years, following a sustained period of rapid growth up to the mid-1970s. We have a rate of growth in total secondary energy demand in the Canadian economy of about 1 percent a year in the period to 1987; the macro projection which drives this is, incidentally, similar to those of Informetrica and DRI discussed earlier.

The world oil price projection used is in the same ballpark as those that most other forecasters are using, and we made basically the same assumptions about the domestic policy regime (i.e., that the present regime would continue). So, fairly slow energy demand growth through

FIGURE 4-5 Secondary Energy Demand — Canada 1960-2000



the mid-1980s results from moderate growth in economic activity and a continued significant response to the energy price increases which have already occurred.

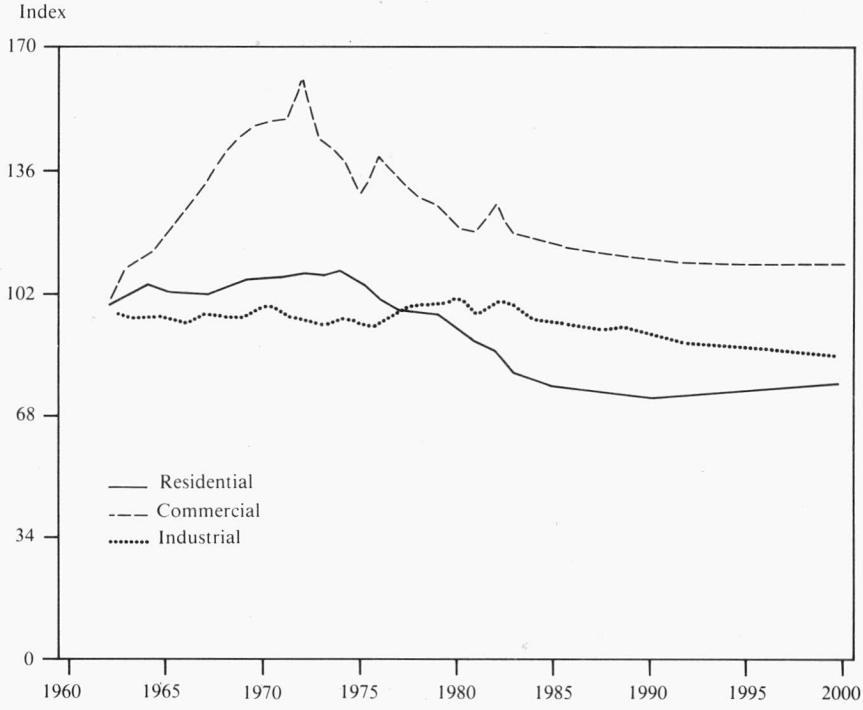
The 1990s look almost like a 1960s "business as usual" scenario; I will illustrate that in a few minutes' time by discussing the transportation sector.

Basically this results from the fact that we assume in the 1990s an economy operating at close to capacity and growing at approximately the potential rate of growth; the unemployment rate is down to something approaching its "full employment" level and energy prices are rising only gradually. This results in a resumption of spending patterns similar to those that have occurred in the past because our models are based on historical relationships. I think a lot of us have not taken a hard enough look at some of the longer-run structural changes that might be emerging and their consequences for the energy sector.

Figure 4-6 shows what has happened to the intensity of energy use in three key sectors. It shows the energy used per dollar of real output in the services producing part of the economy, energy used per household and energy used per dollar of real output in the goods-producing economy.

There has been a substantial decline in energy use per unit of output in the commercial sector since the 1973 oil price increase, following an

FIGURE 4-6 Energy Intensity by Sector 1960–2000

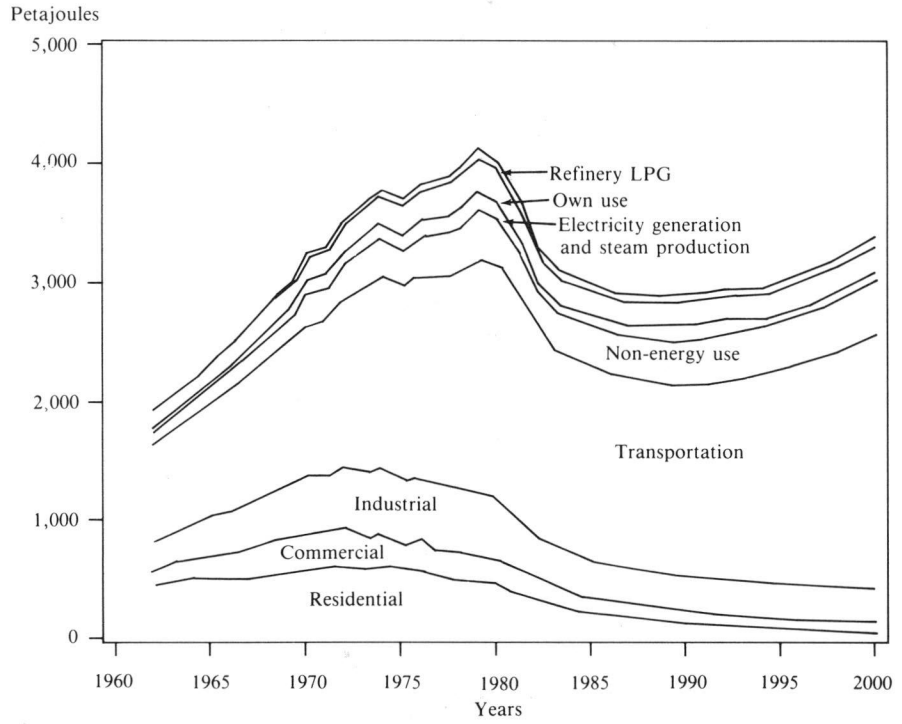


enormous increase in the 1960s. The increase in commercial sector intensity in the 1960s reflects the enormous expansion in office buildings and para-public institutions as well as the proliferation of energy-using equipment such as air-conditioning which occurred in that period. In the household sector, energy price increases have resulted in many kinds of conservation stemming, for example, from retrofitting, lowering thermostats, and better insulation standards in new buildings.

Energy intensity in the industrial sector has been virtually constant, but the experience is so diverse that it is difficult to interpret the aggregate measure. For example, the intensity of energy use in mining has been increasing very rapidly, the flip side of the coin of declining productivity in the mining industry. On the other hand, if one looks at the pulp and paper industry, there have been a lot of changes, greatly increased use of waste wood and pulping liquor for example. Indeed, if we had taken *fossil fuel* use per dollar of output instead of plotting total energy use, we would probably see some decline in industrial energy intensity because pulp and paper accounts for about one-third of all industrial use of energy.

In the projection period, we are showing significant declines in energy intensity in all three of the sectors portrayed, basically as a continuing

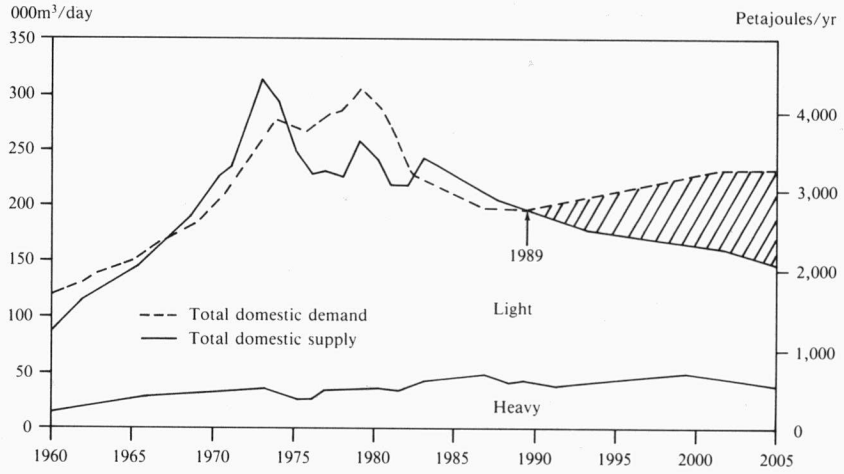
FIGURE 4-7 Total Oil Demand — Canada 1960-2000



response to the price increases which have already occurred. In fact, a number of analysts of Canadian energy demand argue that we have only begun to see the impact of high energy prices on energy demand in industry. The capital stock is slow to turn over and investment in the industrial world has recently been weak. As investment spending grows in the future, industry will be putting in place machinery and equipment which is much more energy efficient than the present stock of capital.

Almost all of the energy used in the transportation sector is, of course, oil-based. Indeed, transportation demand is increasingly the key component in demand for oil in the industrialized countries. There was substantial growth in demand for oil products pre-1973, followed by a substantial decline since 1978. We project demand for petroleum products to decline further through the mid-1980s but to climb significantly thereafter (Figure 4-7). This results from the assumption that there will be a continuing further decline in oil use in residential, commercial and industrial sectors but that, as you can see, is not the largest component of petroleum product demand. The big story has to do with transportation. In a nutshell, we are currently projecting a considerable improvement in the efficiency of the automobile stock as the car fleet is

FIGURE 4-8 Production History and Forecast Productive Capacity for Heavy Crude and Total Crude Oil and Equivalent 1960-2005

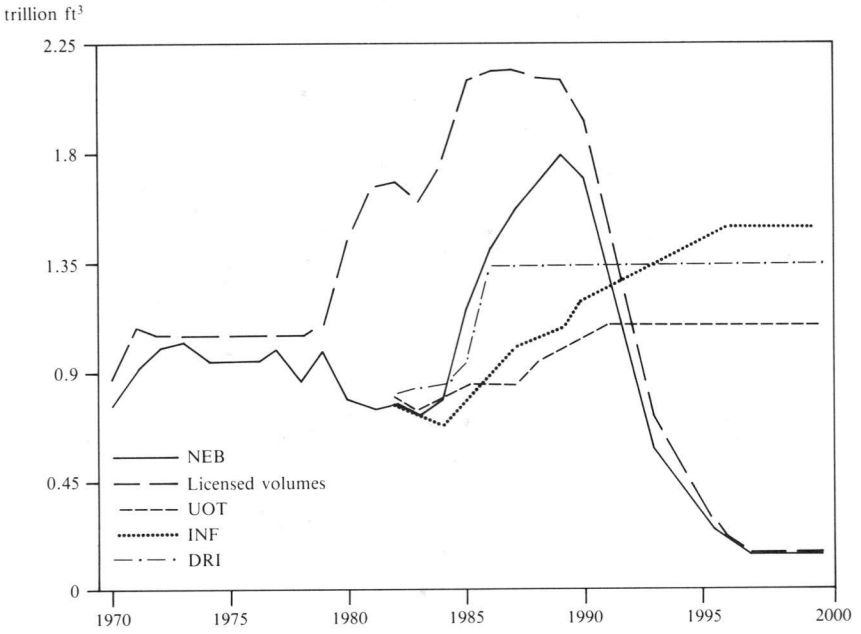


increasingly comprised of smaller vehicles and as EPA-mandated efficiency improvements occur between now and 1985. We have assumed some further efficiency improvements later in the 1980s — of the order of two percent per year. Also built into our current projection is an assumption of more efficient fuel use in the truck stock so that in the medium term, total demand continues to go down. It rebounds rather substantially in the 1990s because we are assuming the same kinds of relationships as prevailed in the past between income and employment on the one hand and car sales on the other.

Figure 4-8 shows the projected relationship between demand and supply for oil. This is projected demand and supply for total crude oil in Canada. The dotted line here is the oil demand line that I have just been talking about. The supply line shows our preliminary estimates of producibility from conventional oil sources including existing synthetic productive capacity. The implication is that we will have a little excess supply over the next three or four years, but a crossover point in the late 1980s after which substantial excess demand for oil is projected to be met either from imports, more synthetic oil plants, frontier production, or some combination of those. Another possibility, of course, is substantial conservation and reduced use of oil — a downward shift in demand.

Everyone who prepares these kinds of projections augments conventional production by assuming some combination of increased synthetic and frontier production, yet I have seen very little analysis supporting such combinations. The report recently published by the Alberta Energy Conservation Board projects a large increase in synthetic pro-

FIGURE 4-9 Natural Gas Exports — Canada 1970-2000

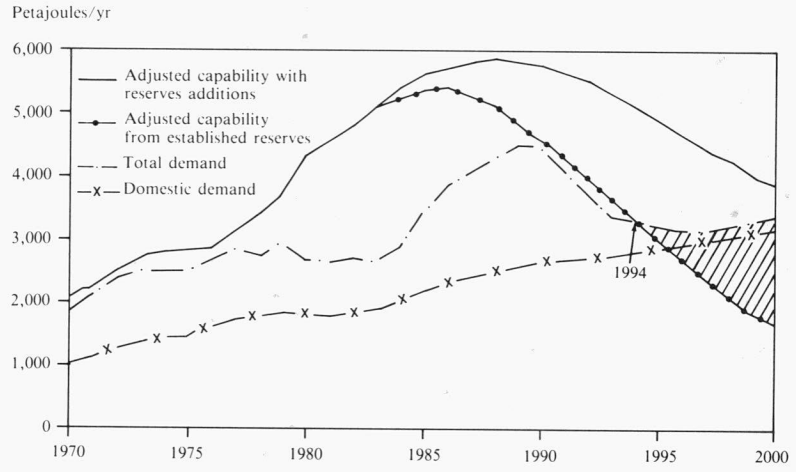


duction. Others project a relatively large amount of frontier production. The point is that there is a wide range of opinion as to the source and amount of future non-conventional oil production, and I think we need more analysis of the economics of the oil sands plants and of the prospective cost of frontier oil. I look forward to seeing the results of the work that the Economic Council has underway on the oil sands and frontier prospects. We at the NEB will also be examining these issues as part of our Supply/Demand Outlook update to which I referred earlier.

Let me say a few words on the question of natural gas supply and demand. On the demand side, as you know, at least 50 percent of the story is what one thinks is going to happen to exports which have recently declined rather dramatically. With respect to domestic demand for natural gas, it is growing at a rate of about 4 percent per year. One's view on gas demand depends to a very large extent on how one assesses the outcome of the battle for shares between gas and electricity in Quebec, B.C. and Ontario.

With respect to exports (Figure 4-9), we tend to be on the optimistic side, though there is enormous uncertainty about the future of gas price regulation in the United States, the consequent development of U.S. prices, and the Canadian export price strategy. Our optimism reflects the assumption that there will be a reasonably strong pickup in U.S. gas as

FIGURE 4-10 Natural Gas Supply/Demand Balance 1970-2000



the recovery proceeds. It also reflects the assumption that the U.S. deliverability bubble will disappear fairly rapidly over the next three or four years. Drilling has been down recently and implicit in our projection is the view that there will not be the kinds of reserve additions witnessed in the United States in recent years. Gas exports gradually thus build to about 85 percent of authorized licences by the late 1980s.

Adding projected domestic and export demand together and comparing the total with the estimated deliverability from existing established reserves (Figure 4-10), one arrives at a crossover point right in the mid-1990s, which is about the point in time where the current authorized export volumes become very small. If one assumes, however, that there will be a reasonable amount of exploration in western Canada, and that finding rates will follow the trend of recent years (there has been a gradual but substantial decline in finding rates over time), then one can foresee the possibility of a significant increase in reserves and a future capacity to produce gas substantially greater than production from existing established reserves. Should that be the case, then we would have a substantial excess supply of natural gas well into the early years of the 21st century.

Note

This paper was presented at the Symposium "Long-Term Economic Prospects for Canada," organized by the Macroeconomic Research Section of the Royal Commission on the Economic Union and Development Prospects for Canada, Ottawa, January 10, 1984. The views expressed are those of the author; they do not represent an official position of the National Energy Board. In particular, the energy demand projections represent a preliminary staff view which is under revision as at the time of the preceding presentation.

5

Trends and Forecasts for the Transportation Sector

JAMES WELCH

Introduction

Transportation is a derived demand, dependent on the level of economic activityin Canada and its trading partners. We are now in a period of low growth and economic uncertainty following a period of stability and high growth during the 1960s and early 1970s. First perceived as a cyclical downturn, many of the social and economic changes of the last few years have become entrenched in the economy. In transportation, these structural changes may have a lasting influence on the production and consumption of transportation services.

The aim of this paper is to trace the performance of the transportation sector over the last 20 years, to show the factors that have helped build the system we have today, to highlight those factors that have already started to shape the transportation system of tomorrow, and to forecast transport activity to 1995.

The first section describes the period from 1962 to 1973 and stresses the factors that influenced the supply and demand for transportation services. Many of the elements that contributed to strong performance in this period weakened in the period from 1974 to 1982, and some of this weakness may become permanent; this is discussed in the second section. The last section looks at future growth in transportation to 1995.

The Years 1962–73: Growth and Stability

From 1962 to 1973, Real Domestic Product (RDP) in transportation grew at an annual rate of about 7 percent. This exceeded the growth of 6 percent in overall economic activity. Transportation's share of the econ-

omy rose from 5.7 percent to 6.4 percent over the period. Strong economic growth and investment in new technology and infrastructure explain much of the expansion in transportation. Some of the specifics are examined below.

Productivity in transportation over the period increased largely because of investment in labour-saving equipment, improved infrastructure and low energy prices. Dieselization and improvements to rolling stock in the late 1950s and early 1960s made it possible for the railways to meet growth in demand with a smaller work force. In air transport, increased productivity was the result of conversion to jet aircraft and additions and improvements to air's infrastructure. The price of energy, a major factor in airline costs, was low and decreased in real terms. Motor and water transportation services also benefited from cheap fuel and major investment in infrastructure, such as the Trans-Canada Highway and the St. Lawrence Seaway. Increased mechanization in freight handling and containerization also helped increase productivity. Employment growth, particularly in water transport, was reduced. At the same time, the 1967 *National Transportation Act* encouraged increased competition, so that productivity gains were passed on to the user. Lower prices generated increased demand. From 1962 to 1972, transportation prices increased at less than one percent a year, while overall prices increased by almost 4 percent.

Over the period, while world trade increased about 6 percent a year, Canada's foreign trade grew almost 10 percent annually. Our share of world trade thus rose from 5 percent in the early 1960s to about 6 percent in the early 1970s. All major components of import and export trade showed sizable increases. The proportion of end (or high value) products in total trade increased from 28 percent in 1961 to 52 percent in 1973, thus decreasing the sensitivity of total trade to transport prices. Larger import-export volumes, an increased share of world markets and more high value goods exports bolstered transportation demand. Even in terms of tonnage, rail and marine freight traffic increased substantially, at more than 5 percent annually.

Rapid increases in passenger transportation demand also occurred, as population increased 1.6 percent annually on average and real personal disposable income per capita, 4.5 percent. The passenger modes, however, grew at different rates over the period. Following the introduction of promotional fares in 1962 and 1963, rail passenger usage recovered somewhat from its postwar decline. After 1967, the number of passenger-kilometres by rail declined steadily again, hitting a low in 1973. Automobile travel, meanwhile, increased rapidly in response to inexpensive gasoline and an extensive highway system. While the Canadian population rose 21 percent from 1961 to 1973, the number of vehicle registrations went up by 84 percent in the same period.

Air travel also became increasingly popular. Passenger growth by air

averaged 13 percent per annum over the period 1962–73, more than twice the rate of growth in GNP. Finally, although intercity bus, with its lower fares and more frequent service, captured some of the rail mode's market share, ridership on this mode slowly declined in the face of automobile and air competition.

Thus, from the early 1960s to the early 1970s, the passenger transportation sector operated in a most favourable institutional and economic climate, resulting in strong growth. Price increases were below those of the economy in general.

The Years 1974 to 1982: Emerging New Trends

In contrast to the stability and growth of much of the postwar period, the last eight years have seen major socio-economic changes. The most important were:

- economic slowdown and persistence of high unemployment and inflation;
- emergence of the newly industrialized countries and some redistribution of economic power within the OECD area from the United States to Japan and Western Europe;
- oil price shocks of 1973 and 1979; and
- new social values and aspirations.

Normally, market forces should have quickly "cleared" these changes. However, this has not happened. The presumption is that these changes called for adjustments that our economic structure had difficulty accommodating. Particularly difficult for transport was the very real increase in energy costs over the period.

Taken together, these changes imposed a squeeze on the transportation sector, affecting both demand and supply, and resulting in a major reduction in its growth. Factors which had driven transportation's growth in the 1960s and early 1970s were now responsible for its poor performance.

From a 7 percent annual increase from 1962 to 1973, transportation RDP fell to 3 percent annual growth in the period 1974 to 1982 (Table 5-1). The overall performance of transportation was affected by lowered productivity, less effective investment and higher energy prices. Productivity growth was higher than in the rest of the economy, but was only one-third of the 1962 to 1973 level, declining from 4.9 to 1.7 percent annually (Table 5-2).

Transportation investment in the period from 1974 to 1982 was marginally higher than in the previous period, growing at 4.1 percent annually compared to 3.7 percent. Most labour-saving investment was made during the 1960s, while investment in the 1970s was dominated by

TABLE 5-1 Real Domestic Product Total and Transportation (average annual rates of growth)

	1944–61	1962–73	1974–82
Total	3.0	5.9	3.0
Transportation	2.5	6.9	3.0

Sources: Transport Canada; Statistics Canada.

TABLE 5-2 Aggregate Productivity[a] Growth (in percent)

	1962–73	1974–80
Air	7.0	6.4
Rail	6.7	2.3
Urban	−2.7	−2.5
Water	18.4	3.9
Motor and Pipeline	1.3	−1.6
Total transport	4.9	1.7
Total economy	2.8	0.2

Sources: Transport Canada; Statistics Canada; Informetrica Limited.
a. Real Domestic Product divided by total employment.

TABLE 5-3 Fuel Costs as Percentage of Operating Costs by Mode (1973–81)

Mode	1973	1976	1979	1981
Air	12.0	19.3	20.9	23.2[a]
Intercity bus	N/A	7.4	7.3	N/A
Rail	4.1	6.2	7.6	10.8
For-hire trucking	N/A	9.1	9.5	N/A
Marine	N/A	9.2	11.4	14.2
Urban transit	N/A	5.3	5.2	N/A

Sources: Statistics Canada; Transport Canada.
a. 1980.

TABLE 5-4 Transportation and Total Output Prices (average annual percentage change)

	1962–73	1974–82
Transportation services	0.9	9.9
Total economy	3.8	10.2

repair and conversion expenditures to increase the life and energy efficiency of existing capital equipment.

From 1973 to 1981, fuel costs rose substantially, becoming a major factor in the operating costs of air, rail and marine (Table 5-3). This contributed to a tenfold increase in transport prices between 1962 and 1982 (Table 5-4) during which period the rate of inflation tripled.

TABLE 5-5 Exports and Imports of Goods and Services (average annual rates of growth in constant dollars)

	1962–73	1974–82
Exports	8.9	2.5
Imports	8.4	2.0

Sources: Statistics Canada; Transport Canada.

Before the energy crisis, transport had operated with a technological structure based on cheap energy. The increase in energy prices in the 1970s called for different technology. The adjustment was difficult because transportation is capital intensive and the introduction of new technology is time-consuming and costly. Furthermore, this investment was now required in a period of slow growth, high interest rates and low profits. Thus, lower scrappage and insufficient investment tended to be transportation's response to higher energy prices.

While a poor economy depressed freight transportation activity, the shift to services from goods production accentuated transport's difficulties. Goods production, which requires transport, has dropped from 38 percent of the economy in the 1960s to 32 percent in 1982. Also, from 1974 to 1982, the annual growth in exports fell from 8.9 to 2.5 percent and growth in imports from 8.4 to 2.0 percent (Table 5-5). The proportion of end-products to total goods traded increased but at a lower pace, rising from 52 to 56 percent. Coal, potash, sulphur, chemicals and fertilizers from Western Canada emerged as major export products. Freight traffic from Western Canada and to Pacific Rim countries increased in importance as a result. Rail and marine traffic peaked in 1979 and 1980. Since then, they have declined by 17 and 14 percent respectively. Thus, overall growth from 1973 to 1982 was low, 0.2 percent annually.

In spite of the economic slowdown, which slowed the rate of increase of real personal disposable income per capita to 2.3 percent annually, while that of population fell to 1.2 percent, passenger traffic by air thrived in the 1970s. With the introduction of higher capacity aircraft, operating costs decreased on a seat-kilometre basis, permitting lower air fares. In the period 1973–78, for example, the top 25 airports in Canada reported 5 percent more flight departures and 17 percent more deplaning passengers. This market had stabilized, however, by 1980, and it is estimated that in the three years between 1980 and 1983, traffic fell 20 percent.

After the decline in rail use from 1967 to 1973 (following a brief recovery from a protracted postwar decline), rail passenger traffic stabilized at around 3 billion revenue passenger-kilometres a year. Then, following the creation of VIA Rail in 1977, a 60 percent increase in patronage was generated by 1980.

During the 1970s, use of intercity bus services held steady, at about

TABLE 5-6 Major Macroeconomic Assumptions (average annual percentage growth)

	1982–95
United States real GNP	3.1
EEC industrial production index	3.0
Japan industrial production index	5.4
Persian Gulf price of oil ($US)	4.0
GNE	3.2
Consumer expenditures	3.1
Total government expenditures	2.0
Business investment	5.0
Exports of goods and services	3.8
Imports of goods and services	4.8
Employment	1.5
Productivity	1.5

35 million fare passengers per year. While the bus industry also benefited from an expanded and improved road network, private automobile usage grew relatively more quickly and the bus share of intercity travel declined.

Growth in automobile use persisted after 1974, in part because the cost of gasoline in Canada was kept down by the Canadian government. Rural and intercity auto passenger transportation was estimated at about 145 billion passenger-kilometres a year. Annual increases of 3.5 percent experienced between 1974 and 1978 thus represented the addition of about 5 billion passenger-kilometres a year.

To summarize, then, energy shocks, high inflation and slow growth in demand had a heavy impact on the transportation sector, in the way the service is both produced and consumed. The former situation of continued high productivity, low inflation, strong demand for raw materials and the economic domination of a few industrialized countries has faded in the last ten years.

Future Transportation Trends and Forecasts to 1995

The following freight and passenger forecasts were derived from a macroeconomic scenario developed some months ago using the Informetrica model. Expected growth rates of selected variables are included in Table 5-6.

Freight Trends and Forecasts

Canada's trade with foreign countries derives and dominates rail and marine freight, and this influence is likely to increase over the medium term. The effect of the 1982 recession was compounded by emerging

TABLE 5-7 **Forecasts of Freight Traffic by Region, Average Annual Growth Rates for 1981–95 Loadings and Unloadings (in percent)**

	Rail		Marine		Truck	
	Lds.	Unlds.	Lds.	Unlds.	Lds.	Unlds.
Atlantic	2.0	3.8	3.7	−0.7	3.5	3.4
Quebec	2.5	1.2	1.1	1.5	2.2	1.7
Ontario	0.9	1.4	1.2	−1.1	2.1	2.0
Prairies	2.9	2.3	—[a]	—[a]	3.2	3.3
B.C.	5.1	5.1	4.1	3.1	2.8	3.0
Canada	2.7	2.7	2.7	1.0	2.5	2.5

a. Levels are insignificant.

structural changes in world demand for Canadian resources. While GNP dropped 4.4 percent in 1982, rail and marine shipments fell by 14 and 11 percent respectively. Long-term prospects for freight traffic have worsened in view of the current outlook for soft prices and poor growth. Particularly affected is traffic for coal, potash, iron ore, non-ferrous metals and forest products.

Some growth in freight movements is still anticipated, especially to 1990 (Table 5-7). Rail and marine traffic will grow by 125 million tonnes from the 1981 levels. In the first half of the 1990s, growth will slow down and traffic by the two modes could gain another 80 million tonnes. In particular, traffic from Western Canada should rise by 4.4 percent annually to 1995, compared to 1.5 percent for the rest of the country. These forecasts presume a moderately sustained world recovery and Canada's maintaining its competitive position as a raw material supplier. As a further note, these forecasts were produced in early 1983, and there is some evidence that the anticipated recovery in demand for resources may be even weaker than that which is implied in these forecasts. Structural changes in resource demand may have a more lasting effect than was initially believed.

In a scenario of weak demand for resources, maintaining Canada's competitive position on world markets will be a challenge for Canadian producers. Transport costs represent a significant proportion of raw material prices, and the establishment of freight rate structures will be affected by users' increasing inability to pay, because of weak prices, and carriers' needs for funds for investment financing. This is particularly true in rail where the planned upgrading and expansion of the freight system could take place on a lower traffic base than expected. If commercial viability in rail transportation is to be maintained, resulting higher transportation costs will strain our competitive position on world markets.

Canada has relied almost exclusively on foreign-owned marine ship-

ping since the 1950s. This market is changing with the growth of cargo reservation schemes and bilateral cargo sharing agreements. There is also pressure to phase out flags of convenience, and multilateral negotiations are proceeding that could cartelize both the general and bulk cargo markets. In the medium term, Canada may also be faced with a less hospitable international shipping situation.

Another factor affecting freight transportation is reduced regulation in U.S. transportation, which has resulted in increased price competition and rates that are generally lower than those in Canada. Further deterioration in relative U.S./Canadian rail rates will affect the demand for Canadian rail services. Canadian shippers, especially those competing in U.S. markets (e.g. forest products), will increasingly move their freight to U.S. railways at the earliest connection. For example, B.C. lumber going to the United States can be transferred to U.S. railroads at the border instead of being routed across Canada. Canadian shippers who are not able to do this will face higher transport costs than their U.S. competitors and could see their competitive position eroded. Shippers using overland transport to ports, in competition with U.S. producers on overseas markets, could also see their competitive position eroded, with overland transport becoming relatively more expensive in Canada. There is also some potential for domestic freight to be routed through the United States.

Since the late 1970s there has been a stability in modal shares for domestic freight. Trends toward higher-valued goods manufacturing and tighter inventory control may stimulate trucking and air cargo activity. Container or piggyback traffic may also increase as a percentage of freight traffic.

Passenger Trends and Forecasts

High average fares, resulting from significantly higher fuel prices, combined with economic recession, affected the demand for passenger travel in 1982. All modes were affected, but particularly the air mode with a traffic decline of around 12 percent. This weak air travel market continued into 1983, with an estimated decline in the first eight months of about 15 percent. Some pickup was observed around mid-year, however, so that the total expected decline for the year is about 10 percent. Continued recovery is anticipated in 1984 and 1985.

Population, income and cost will continue to be key factors influencing the demand for travel. Growth in real personal disposable income per capita is expected to average 1.8 percent to 1995; population, 0.8 percent. Both of these are considerably below what was experienced in the past. There are, however, a number of other factors which may affect the rate of growth and level of demand in the future. In the short term, for example, release of pent-up demand for durable goods, consumers'

drive to reduce long-term debt and the popularity of expensive home entertainment and computer equipment, have perhaps reduced the portion of discretionary income allocated to travel.

Strict control of business travel by more cost-conscious companies and governments may have a lasting impact on air travel, while teleconferencing is already affecting business travel. Another important influence on the demand for Canadian air passenger services is U.S. deregulation in the transport sector, the impact of which may become more evident. Since deregulation, air rates have dropped substantially, often to levels lower than those offered by Canadian carriers. Many Canadians have access to American airports, and low American rates also encourage the choice of U.S. destinations by Canadian (and American) tourists.

Much of our air infrastructure in Canada is owned, operated and maintained by the government. Over the past decade, the air system has been expanded in response to demand, but limited expenditures have been allocated to the replacement of deteriorating infrastructure. In a context of government restraint, funds allocated to the renewal of air infrastructure could fall short of future requirements. Because of poor rates of return, high cost of capital and limited cash flows, the introduction of more efficient equipment has already been delayed in the air industry. This could continue, and adversely affect future productivity in the sector.

Automobiles, although more expensive to purchase, will be far more fuel-efficient. Since out-of-pocket costs are the major determining factor in the decision to travel and in modal choice, growth in usage of the automobile is expected to be relatively strong. The bus industry will continue to be affected by the perception that an intercity trip is cheaper by automobile. Further improvement in terminals, however, will likely encourage some travellers to switch to the bus from other modes and will expand the existing market from predominantly lower-income, non-automobile owners.

In the past two years the rate of railway industry inflation as it affects rail passenger operations has decreased substantially to around 5 percent per annum. With continued capital investment by the federal government to offset the capital starvation of the 1960s and 1970s and to modernize operations, it is expected that government subsidization of operating losses over the long term can be significantly reduced and the quality of service coast-to-coast greatly enhanced. The forecasts presented here assume moderate increases in the current network of services.

Average annual growth rates for passenger modes from 1980 to 1995 are presented in Table 5-8. On a national basis, rail and bus are expected to show similar increases while there will be more rapid growth in automobile travel and air trips, the latter of which will soon recover from depressed current levels. In the central corridor (Quebec to Windsor),

TABLE 5-8 **Domestic Passenger Travel Forecasts to 1995 (percentage average annual growth in person-trips)**

	Air	Rail	Bus	Car	Total
Atlantic Region	2.3	1.2	2.6	2.6	2.4
Central Corridor	2.1	1.8	1.1	2.9	2.7
Western Region	3.2	3.2	4.2	4.8	4.2
Canada	2.8	2.0	1.9	3.3	3.1

the bus mode is expected to exhibit relatively slow growth; whereas its growth will exceed that of rail and air in both the western and eastern regions.

Note

This paper was presented at the Symposium "Long-Term Economic Prospects for Canada," organized by the Macroeconomic Research Section of the Royal Commission on the Economic Union and Development Prospects for Canada, Ottawa, January 10, 1984. The views expressed are those of the author.

6

Sectoral Views of the Longer Term: *Communications*

AL CHATTERJEE

I will give you a brief overview of the industry and then I will indicate that the outlook for this industry depends on demographic forces, general economic conditions, and policies.

In terms of our assumptions about the demographic developments or the domestic economy, we took the mainstream view found in most forecasts; we have no separate view of our own.

The industry has two components: the equipment side, and telephone services. Telecommunications as a group represents about 3 percent of the total output in Canada — about the same as in the United States; we are heavier on the equipment side compared with the United States. This sector has tremendous R&D spending; we spend about 23 percent of the national R&D in this activity, mostly on the equipment side. We started some of the technical equipment much earlier than the United States and other countries, and so we have certain advantages over most countries in some equipment. As a result, equipment exports are very large in Canada compared with the United States. Northern Telecom exports about 35 percent of its product, the industry as a whole about 50 percent. The U.S. figure is only 6–7 percent. Also of note is that 60 percent of our exports go to the U.S. market, but we also have a lot of plants in foreign markets.

Now in terms of the other statistics, employment: telephone service and equipment account for a little over 2 percent of national employment. Worth noting is that this sector is characterized by much more than double the national performance of productivity.

This is the history; now let us look at the projection, where we start with the demographic influence. Our demographic analysis is the same as the mainline view, in that we think there will be slower growth in

population. Household formation, which is the key element to our main residence service, is going to slow down from an average of 220,000 households per year to about half of this rate, or about 100,000 new households. Because most households need a telephone, there will be a slowdown in the main station telephone requirements.

However, there is some strength in the household market to be derived from the long-distance market. Long-distance generally grows about 10 to 12 percent in real terms, i.e., in messages. We expect messages to grow about 6 to 8 percent in the future years, on an average basis.

Then there is a new idea in the household market: the home of the future. We have the technology to supply various information to the household through TV. There are a lot of experiments going on in this area in various countries. In Canada we call it Telidon; it is a system that will allow households to interact with various data banks such as the stockmarket, banking facilities, restaurants or shopping centres. Telidon is still on an experimental basis in Canada.

Similarly the United Kingdom, Germany, the Netherlands, and Hong Kong all have experiments going on for this market because the technology is already there. This one-way system is commonly called teletext, and provides flows of information through the unused portion of a television broadcast channel. Videotext, on the other hand, is a two-way system which allows the household to communicate with all these information sources. Most experts in this industry believe that it will not be readily available in a commercial fashion before the late 1980s or early 1990s, but when it comes on stream we will see an acceleration of growth, especially in the 1990s to the year 2000.

In terms of the domestic economy, again we take the mainstream view that the GNP will be growing at a slower rate than in the 1960s and 1970s; and that is going to affect the growth rate of our business main stations, anticipated to grow at a slower rate than our earlier experience. But we have other information which suggests that we will be doing quite well on the business side. For example, the service sector is expected to grow much faster than other sectors, as we have seen from the Informetrica and other forecasts. What we call telephone intensity — users of telephones — is very large in the service sector compared to other sectors.

Secondly, we will be providing some new services for the office of the future, what we call enhanced services: electronic mailing, electronic fund transfer, teleconferencing, the storing and accessing of data and so forth. The main technical breakthrough is the new generation of PBX systems. It is a digital system and there is not much difference between computer activities and telephone activities in terms of functions. A lot of computer firms make PBXs very similar to what we provide.

Because the digital PBX has a lot more functions than in the past, we believe that demand for this kind of enhanced service will grow much faster than basic telephone services. There are advantages in terms of

increasing productivity, reducing the cost, and doing business in a much more efficient fashion. Office workers spend about 70 to 75 percent of their time communicating: personally, physically, by telephone; communicating in terms of writing letters or memos and drafts and so forth. Now with enhanced services, we can reduce some of these routine communications through this digital system. Under the current system, to complete one call often means making two to three other calls, but with this new system the message can be stored and passed on by the system to the person concerned. With all these things available from this new equipment and technology, we think that the growth is there.

In terms of foreign markets, we must look at both sides: equipment and service. On the equipment side, we are quite strong, as indicated, because of cost and technology compared with other countries. The potential market is really large but the competition is there as well. Japan in particular is trying very hard to compete in the international market for equipment. We have Northern Telecom plants in various countries: for example, we recently established one in the United Kingdom to provide services there; we have a number in the United States, and Northern has received a contract in Japan for about $150 million, which they will be supplying from the U.S. plant. So, even though the foreign market is going to grow fast, some of the demand will be met from our own foreign plants.

To give you some idea of the global market, I have prepared a forecast which shows that the equipment market in constant dollars is going to grow at about an 8 percent annual rate. Some markets will be growing much faster than this global rate, so there is a tremendous scope for Canadian manufacturers to enter this market to supply the increased demand.

In the service sector there are a few important considerations. One is the Canada–overseas call. Basically, Canada–overseas calls have been growing very fast over the last few years because of direct dialing. Messages are growing at a 25 percent annual rate. In the United States it is running at about 15 percent, and their projection is about the same rate, at least up to 1987. We believe the Canada–overseas call will also be growing at about that rate. The growth of international calls also depends on the trends of trade and immigration.

There is another element on the foreign side: consulting services. Again, there are no hard figures, but Bell Canada International is involved with the Saudi contract, with contracts in Europe, and in other countries because of our technological breakthroughs and leadership. Telephone usage is very low in most countries compared with Canada and the United States; there is a stimulus for us to provide consulting services to many of these countries. We believe we have the potential to provide some of the services in some of these countries, especially in the newly industrialized countries, such as Singapore, where there is tre-

TABLE 6-1 Telecommunications Industry, Annual Percent Change

	1970–79	1980	1981	1982	1983–2000[a]
Output (constant $)	6.5	7.3	8.3	0.4	6.0–7.0
Employment	2.5	3.7	4.1	0.6	2.0–3.0
Investment (constant $)	4.5	8.4	3.6	−6.6	6.0–8.0

Source: Statistics Canada.
a. Estimates: Bell Canada.

mendous scope to modernize the telecommunications equipment and network.

In terms of a forecast (Table 6-1), what we have said is that on a total basis, output will be growing at about 6 to 7 percent per year, which is about double the GNP rate. As in the past, we are growing much faster than real GNP. In terms of employment, again the 2 to 3 percent which we quote is consistent with historical experience, but we must be mindful of the fact that the telephone industry will not be increasing employment as much as it did in the past.

In terms of investment, again in real dollars it grows faster than the national average. We see that investment is going to grow about 6 to 8 percent, but there is some downside risk, depending on how policy issues are resolved. If resolved in the way we anticipate, 6 to 8 percent is consistent. Otherwise it will be slower than that.

On the policy issue, the first point is implementation of technology. The digital technology in the transmission system (e.g., fibre optics) or switching system is already known but the question is how fast we can implement those technologies; there are some adjustment costs, and all economic agents have to prepare for this.

The second point is freedom of choice in telecommunications. This is a term we use in the industry; it has two dimensions. One is that the customer should have the right to choose from anyone the basic service which will meet his purpose. On the other hand, all suppliers should face the same rules of the game.

Right now we have many constraints. Most telephone companies have to go through regulators for pricing, and for introducing any new product. This retards the introduction of products, and diminishes flexibility in pricing of some competitive equipment. The industry believes that we need freedom of choice; if regulators give us that kind of freedom, perhaps we will be able to do better than indicated.

The third point is the pricing dilemma in telecommunications. This is an old problem facing the industry, which arises because the pricing is based on value of service rather than the cost situation. Because of this philosophy there is a tremendous imbalance between local pricing and long-distance prices. The local prices are far too low compared to cost. At Bell Canada we have some studies that show it costs about $1.93 to

generate $1 of revenue in the local telephone market. And in the long-distance market it costs about .30 dollars to produce $1 revenue. This type of imbalance and cross-subsidization creates resource allocation problems and efficiency problems.

As you know, in the United States, the old American Telephone & Telegraph Co. (AT&T) was broken up and we have now seven independent local companies. The Wharton School did a study of the net impact, in which they attempt to determine what would be the impact in the macro sense (we do not have any such studies in Canada) if the local prices were gradually increased, and if long-distance providers paid access line charges as per the 1982 Federal Communications Commission (FCC) consent decree. The simulation model indicates GNE is going to increase about $9 billion in real terms annually. By 1988 in the United States about 400,000 new jobs would be created and consumer prices would go down by one percentage point. So there is tremendous net benefit to the economy.

In Canada we do not expect this pricing dilemma to be resolved quickly, but some of the imbalances could be adjusted. For that, you must educate the consumers, Canadian Radio-television and Telecommunications Commission (CRTC), the media and so forth. On the local front we can adjust some imbalances with the LMS (local measured service) system and we believe that, in part, the dilemma could be resolved by jacking up the local rates. A last thing: there is no common philosophy or uniformity in the regulation.

In sum, then, we expect the industry to grow at double the rate of GNP, but growth in employment will be slow compared to the historical experience. There is tremendous scope to sell our products in the international market, and there are some opportunities for consulting services.

Note

This paper was presented at the Symposium "Long-Term Economic Prospects for Canada," organized by the Macroeconomic Research Section of the Royal Commission on the Economic Union and Development Prospects for Canada, Ottawa, January 10, 1984. The views expressed are those of the author.

SESSION III

Sectoral Views of the Longer Term: Agriculture, Forestry, Mining, Manufacturing

Chairman:

John Sargent

Participants:

Stewart Borland, Agriculture Canada
John Wansbrough, Department of Regional Industrial Expansion
Keith Brewer, Energy, Mines and Resources Canada
Craig Oliver, Department of Regional Industrial Expansion

7

Sectoral Views of the Longer Term: *Agriculture*

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Introduction

We would all likely agree that accurate forecasts become even more crucial when decision makers are faced with mounting uncertainty, and that the 1970s and early 1980s have been dominated by such uncertainty. They have been characterized by technological advancements in production, manufacturing and communication networks; rising then falling per capita income and consumption for certain agricultural products; two unprecedented energy shocks; growing government deficits; a huge accumulation of foreign debts; monetary and exchange rate instability; worrisomely high unemployment; and an increasing use of marginal land for food production coupled with several fluctuations in global weather patterns.

Furthermore, there seems to be little doubt that the conditions facing the agricultural industry in the long run will be at least as uncertain as they have been in the 1970s and early 1980s. Factors which in the past have played a relatively minor role in the production of agricultural commodities and the composition of agri-food trade will exert much greater influence on the decision process in the agricultural sector. These include macroeconomic policies such as money supply and foreign exchange controls, floating exchange rates, the domestic and trade policies of other countries and geopolitical considerations. Canadian agriculture will have to cope with an increasingly complex and integrated trade setting.

The primary objective of this paper is to present medium-term and longer-term forecasts for a number of key variables in the agri-food system. In order to place results in perspective, the paper is organized as

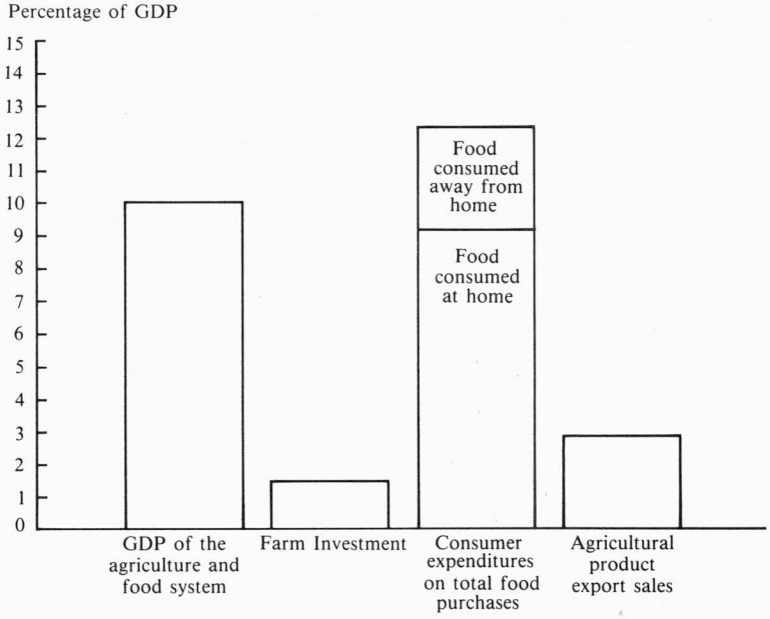
follows: the following section outlines the importance of the agri-food system in the Canadian economy. The next section summarizes the estimated impacts of changes in several major macro variables (such as population, income and exchange rates) on the gross domestic product of agriculture and on certain other key indices of the agri-food system. This section also compares forecasts for these macro variables made by the three firms participating in the seminar and by the Conference Board. The third section reviews the global agriculture situation and outlook as seen by such internationally oriented groups as the Organisation for Economic Co-operation and Development, and the Global 2000 Report to the U.S. President, and the Food and Agriculture Organization of the United Nations. The fourth section presents current long-term commodity forecasts by Agriculture Canada which update those produced when the Department's Agri-food Strategy was written in 1980–81. The fifth section then looks at the vital role which exports will play in the future of Canadian agriculture. The last section contains some concluding observations on policies and priorities aimed at capitalizing on Canadian agriculture's potential for growth.

Agriculture and Food in the Canadian Economy

The agriculture and food system can claim to be the most important sector in the Canadian economy. As the largest goods producing/distribution sector, this system accounts for approximately 10 percent of the Gross Domestic Product (Figure 7-1). In 1981 farm investment alone was $4.7 billion or 1.5 percent of the GDP. Consumers spent $37.8 billion or 12.3 percent of the GDP on total food purchases ($9.5 billion for meals eaten away from home and $28.3 billion for food prepared at home). Agricultural export sales were $8.8 billion or 2.9 percent of the GDP. Without counting those employed in agricultural and food related activities by governments and research and educational organizations, the sector employs approximately 1.4 million people or 13 percent of the total labour force. It includes manufacturers, distributors and sellers of farm input goods and services; producers; hired farm labour; commodity marketing boards; sales agencies; transporters; handlers; storage agents; processors, distributors, wholesalers, and retailers of food; as well as food outlets such as restaurants, hotels and institutions.

The agriculture and food system has a major positive impact on Canada's international balance of payments (Figure 7-2). During the past 10 years, the agricultural trade surplus has increased from $600 million to $4.2 billion, which is an average annual growth rate of 26.4 percent. Processed agricultural product exports increased at an annual average rate of 14.8 percent, while raw agricultural product exports increased at a slightly higher rate of 16.5 percent. These growth rates kept pace with

FIGURE 7-1 Key Indicators of the Agriculture and Food System Expressed as a Percentage of 1981 GDP



increases in Canada's other exports and maintained agriculture's share of total export sales at about 11 percent.

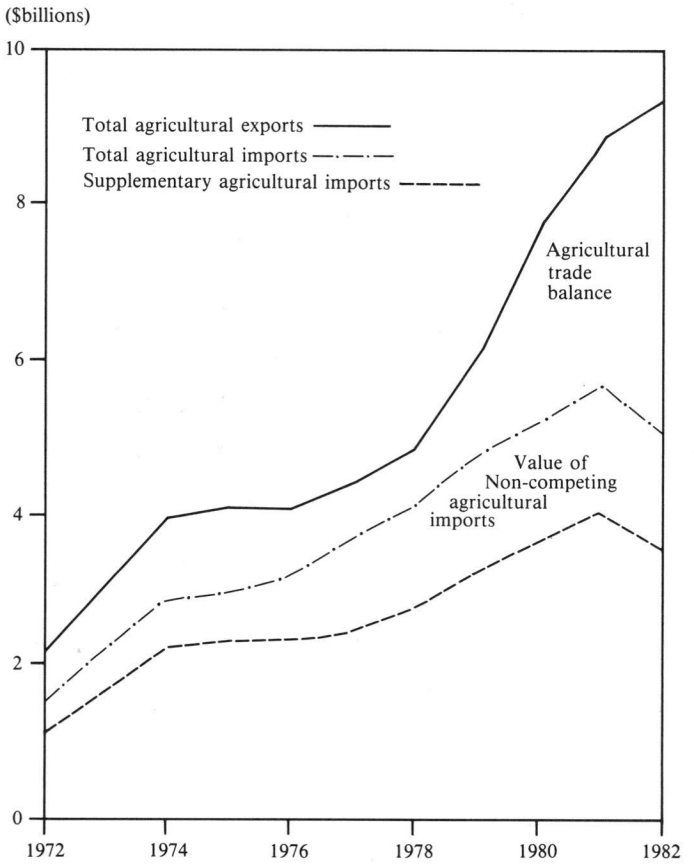
The agricultural trade surplus also benefited from significant success in meeting the demands of the domestic market. While complementary agricultural imports showed an 11.5 percent annual average growth rate, supplementary imports (i.e., those competitive with domestic production) grew at a lower rate of 7.9 percent. The result was that the proportion of agricultural imports to total imports dropped from 8.6 percent to 7.4 percent.

Canadian consumers currently spend only 15.8 percent of their personal disposable income on food. This fraction has continued to drop from a relatively low level of 17.9 percent in 1972 and is still the second lowest among the industrialized nations.

Macroeconomic Factors and their Impact on Agriculture

The macroeconomic climate plays an important role in the agricultural sector, both in determining its well-being and in the formation of long-range directions and goals. It is therefore necessary to evaluate the existing forecasts of key macroeconomic variables and then to consider

FIGURE 7-2 Canada's Agricultural Trade Balance 1972-82



the relationships which link changes in the macroeconomic environment to key variables in the agricultural sector.

The forecasts of average annual growth rate from 1984 to 1988 for population, exchange rates and personal disposable income from the Conference Board (CB), Data Resources Inc. (DRI), University of Toronto Policy Analysis Group (PEAP) and Informetrica are summarized in Table 7-1. Except for income, there is a fair degree of consensus on the growth rate of these variables. The mean average annual growth rate for population is 1 percent with the CB suggesting an average increase of 1.4 percent (350,000 more mouths to feed each year) while Informetrica provides the lowest estimate of .87 percent.

All four forecasts indicate modest strengthening of the Canadian dollar over the next five years. The mean of the estimates is an average appreciation of .64 percent with CB proposing a rate of .88 percent and PEAP at the low end with a value of .41 percent. With the U.S. dollar

TABLE 7-1 Forecast Comparison for Key Canadian Macro Variables (average annual percent change, 1984–88)

	Conference Board of Canada	Data Resources Inc.	PEAP	Informetrica
Population	1.4	1.0	0.93	0.87
Exchange rate ($Cdn/$US)	−0.88	−0.63	−0.41	−0.64
Real disposable income	2.3	3.13	N/A	7.51

TABLE 7-2 Long-Term Multipliers (values are percentage changes)

	Exchange Rate $ Cdn ↑ 5¢	Per Capita Disposable Income 10%	Population 1%
Farm cash receipts	−2.66	These multipliers not relevant in the context of the model structure	
Farm products price index	−1.53		
Real GDP in agriculture	−0.99		
Food CPI	−1.33		
Expenditure on food[a]	0.63	7.84	0.44

a. Constant dollar personal expenditure on food and non-alcoholic beverages and meals outside the home, Canada.

currently priced at about $1.25 Canadian, these estimates imply a price of about $1.20 in 1988.

A wider variation is apparent in the forecasts of personal disposable income. Informetrica suggests a very robust average annual increase of 7.51 percent, while CB and DRI are predicting much lower rates of 2.3 percent and 3.1 percent, respectively. It is worth noting that the mean value of these forecasts, at 4.3 percent, is about the same as was experienced during 1972–76, a period generally regarded as one of relative prosperity in Canada.

One way to assess the importance of macro variable changes on the agri-food system is to estimate sectoral multipliers. When these are derived from a consistent and comprehensive sectoral world, they can represent the long-run effects on the sector due to changes in macro variables, while allowing for resulting adjustments in all other agricultural variables. A set of multipliers from the annual version of Agriculture Canada's Food and Agricultural Regional Model (FARM) are set out in Table 7-2.

Table 7-2 indicates that a 5¢ appreciation of the Canadian dollar would result in a 2.66 percent drop in cash receipts, a 1.53 percent drop in the farm price, a 1.33 percent drop in the price of food, a .99 percent drop in the real gross domestic product (GDP) in agriculture and a .63 percent

increase in personal expenditures on food. The negative response of cash receipts, GDP, farm prices and food prices reflects the dependence of the Canadian agricultural sector on world trade and the dominance of the United States in setting the international prices of the major food commodities. An increase in expenditure on food supports these results, as domestic consumption would increase.

The table also shows the impacts of changes in per capita disposable income and population. A 10 percent change in income would increase expenditures on food by 7.84 percent. An increase of 1 percent in the population would raise food expenditures by about 0.44 percent.

Global Outlook for Agriculture

The Global 2000 Report to the President of the United States reassured us that the world has both the physical and economic means to meet even extreme increases in food demand through the year 2000. However, such a scenario would have to include substantial increases in trade, as the growth in production and consumption would not likely be balanced at the national level. The Global 2000 forecast suggests that food and agricultural trade flows from surplus countries such as Canada to deficit countries would exceed the relatively high levels of 1973–75 by 60 percent by the year 2000. In a similar vein, Chase Econometric's long-term forecast expects that by 1992–93, total world wheat trade will expand by 20 percent and total trade in coarse grains by 48 percent from current levels.

Both the Global 2000 Report and FAO's "Agriculture: Toward 2000" anticipate widely divergent trends in production for the developed countries as compared with the developing nations. FAO estimates that food production in developing nations will rise to a growth rate of 3.7 percent per year over the period from 1980 to 2000 as compared to only 1.3 percent for the developed countries. Similarly, Global 2000 forecasts the growth rate in grain production will increase only slightly, from 1.7 percent in 1985 to 1.8 percent by the year 2000, for industrialized nations. In contrast, it sees the less developed countries attaining a 3 percent rate of production growth by the turn of the century. These increases for the developing countries are expected to stem from a more orderly employment of resources and more extensive land use, whereas production in the developed countries may be constrained by slow growth in effective demand for their exports.

With respect to the composition of this growth, the historical 80 percent share of the total value of crops and livestock attributable to crops is forecast to drop to 77 percent by the year 2000. World livestock production is expected by FAO to increase relatively more rapidly than crops. Between 1980 and 2000, livestock production is forecast to increase at an average annual rate of 4.5 percent as compared to 3.5 percent for crops.

Medium- and Long-Term Outlook for Canadian Agriculture

Agriculture Canada prepares forecasts on several different time horizons as part of its Outlook Program. Short-term forecasts (1–2 years) are published quarterly in the department's Market Commentaries. Medium-term forecasts (5 years) are presented at the Annual Canadian Agricultural Outlook Conference. These forecasts are also used to respond to regular requests from international agencies and other departments of government. Longer-term forecasts are also prepared occasionally for specific purposes. The last major long-term forecast done by Agriculture Canada was published in *Challenge for Growth: An Agri-food Strategy for Canada*. This was prepared in 1980–81 and relied heavily on the long-term forecasts of international food demand developed by the Global 2000 study.

To support these forecasting efforts, Agriculture Canada consults the Conference Board's forecasts of macroeconomic conditions and depends to a large extent on Chase Econometrics and on the Economics Research Service of the USDA for outlook data on U.S. agriculture. Results from our quarterly (450 equation) econometric model (FARM), and our annual (270 equation) econometric model (FARM-A), are major inputs for the Outlook papers prepared by commodity specialists for each of the sub-sectors of Canadian agriculture.

In December 1983, Agriculture Canada presented a medium-term Outlook paper (1984–88) using the Conference Board's October 1983 Medium Term Macroeconomic forecast and Chase Econometrics' November 1983 Medium Term United States Agriculture forecast. This forecast was generated by our annual econometric model and our commodity specialists. To produce a forecast up to the year 2000, we extrapolated from that medium-term forecast. The macroeconomic variables and the U.S. agriculture variables were extended to 2000 using their average annual growth rate over the period 1979 to 1988. For the Canadian agriculture variables, our annual econometric model was run, and departmental commodity specialists were asked to assess the resulting trends. For the long-term forecast, attention was focussed on overall trend rates with less attention paid to commodity cycles.

Medium Term

In the medium term (1984–88), Real Gross Domestic Product for agriculture is expected to grow by about 1.7 percent, while total Real Gross Domestic Product is expected to grow about 2.0 percent a year. The Farm Product Price Index is expected to grow by 4.2 percent a year, the Farm Input Price Index by 4.6 percent. Inflation as measured by growth in Consumer Price Index is expected to be about 5 percent per year. Farm Cash Receipts are expected to grow by about 4.3 percent a year. Employ-

TABLE 7-3 Projected Average Annual Growth Rates

	Medium Term 1984–88		Long Term 1984–2000	
	FARM-A	ECC Goals	FARM-A	Agrifood
Real GDP agriculture	1.7	—	1.5–2.5	2.4–2.6
Farm product price index	4.2	(5.0)[a]	4.0–5.0	5.7–7.0
Farm input price index	4.6	(5.0)[a]	5.2–5.4	5.0
Farm cash receipts	4.3	—	4.3–5.5	—
Employment in agriculture	−1.4	2.0	0.0–1.8	—
Retail food prices	4.4	(5.0)[a]	4.3–6.3	5.0–7.0
Population	1.1	—	1.0	—
Inflation	5.0	5.0	5.8	—

a. ECC goal for overall inflation.

ment within agriculture is expected to fall by about 1.4 percent per year, continuing the trend to larger, more capital intensive enterprises.

The Economic Council in its Annual Review for 1983 set medium-term (3–5 years) targets for growth in real output per employed person of between 1.5 and 2 percent a year. Agriculture will probably meet this goal with an increase in real GDP of 1.7 percent and a decrease in employment of 1.4 percent. The Economic Council also set a target for inflation of 5 percent or less. Retail food prices will likely meet this target, as well. The agriculture sector will almost certainly not meet the Council's medium-term target of 2 percent employment growth, but should move closer to that level in the longer term (see Table 7-3).

Long Term

It is interesting to compare the results of this forecast to the year 2000 with that done in 1980–81 for the Agri-food Strategy. In the latter, the growth in the Real Agriculture Gross Domestic Product for agriculture was expected to be from 2.4 to 2.6 percent per year. After one has taken account of the impacts of the recent global recession, those growth rate estimates have been widened on the down side to produce a range of from 1.5 to 2.5 percent. The Agri-food Strategy foresaw real agriculture product prices rising at between 0.75 percent and 2 percent a year. Now we are looking for real agriculture product prices to remain at about present levels on average over the period to the year 2000, but with a high probability of a modest (1 percent per year) decline.

Farm Cash Receipts are expected to grow between 4.3 and 5.5 percent

per year. Employment in agriculture is expected to be between flat and growing by 1.8 percent a year. The Farm Input Price Index is expected to grow between 5.2 percent to 5.4 percent a year. Acreage planted to the five major western crops is expected to rise by about 1.2 percent a year. This would add about 12 million acres to the current base of 53 million, whereas the Agri-food Strategy called for an increase of 15 to 17 million acres by the year 2000.

Exports of wheat and barley are expected to attain levels of about 30 million tonnes and 11 million tonnes respectively by the year 2000. This compares with record shipments of 21.4 mt of wheat and 5.7 mt of barley in the crop year ending July 31, 1983. At today's prices, this projected increase in exports of wheat and barley alone would result in an increase of approximately 70 percent (about 3.5 percent per year) in the value of agricultural trade.

Beef and pork production are expected to grow annually by between 1.2 to 3.1 percent and 0.6 to 3.0 percent, respectively. Chicken, turkey, egg and dairy production are expected to grow at about the same rate as population.

Importance of Trade to Canadian Agriculture

In 1981, the value of Canada's total agricultural exports amounted to $8.8 billion, which was about 46 percent of the value of gross agriculture output of $19.3 billion (Figure 7-3). In 1982 agricultural exports reached 9.3 billion, and this level is likely to have been exceeded in 1983.

In contrast, the total value of agricultural imports declined from $5.6 billion in 1981 to $5.1 billion in 1982 and continued at about that same pace in 1983. Of this, $1.6 billion were complementary imports and $3.5 billion were supplementary imports. In short, the value of agricultural exports has continued to grow recently while the value of agricultural imports has levelled off. In addition, the value of agricultural exports as a percentage of the value of gross agricultural output has grown over time (Figure 7-4).

Assuming a population increase of around 1 percent and increases in income consistent with the forecasts set out in Table 7-2, consumption of gross agricultural output can be expected to grow at an average annual rate of about 1.5 percent from now to the year 2000.

If the real value of gross output in agriculture is to continue to grow at the 1.7 percent annual rate suggested by our medium-term forecast in Table 7-3, then the value of the agricultural *exports* must rise at the higher rate of 1.9 percent. At that pace, exports would amount to about $27 billion, in 1982 dollars, in the year 2000. If Canadian agriculture is to attain 2.5 percent average annual growth rate envisaged in the Agri-food Strategy paper, then the export component must increase at about 3.5

FIGURE 7-3 Real Growth in Agriculture 1981-2000

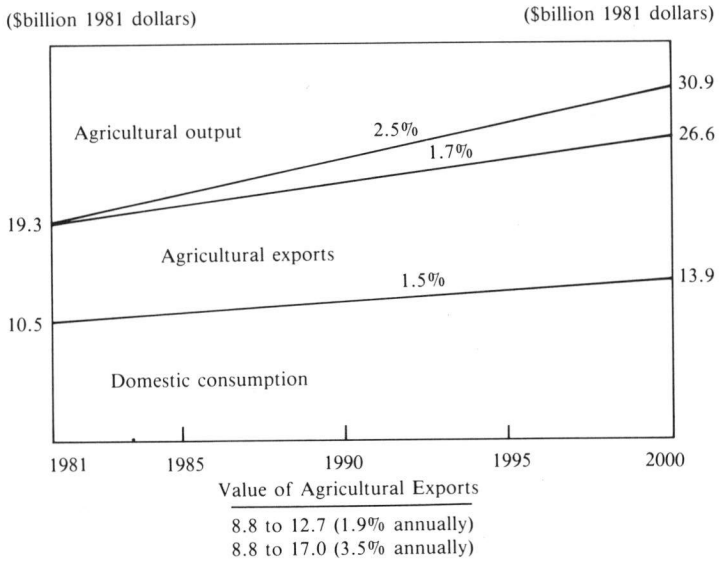


FIGURE 7-4 Agricultural Exports as a Percentage of Output 1973-81

percent. In short, a sustained and rapid expansion of the agri-food sector depends crucially on maintaining and improving Canadian competitiveness in world markets.

Concluding Observations

The domestic market for agricultural products will expand relatively slowly during the period from 1984 to the year 2000. Thus, this paper has demonstrated that in order to ensure an acceptable rate of growth for the agricultural sector, Canada must rapidly expand exports. To do so, it must encourage and support an increased export orientation of its agriculture.

International markets for food and agricultural products are becoming increasingly competitive. The slowdown in economic growth, the balance of payments problems of importers and the expansionistic policies of many exporters have led to more intense competition and to the provision of sizable export subsidies in world markets for numerous food commodities. As well, special types of transactions, such as barter, state-to-state trading, and tied sales, have created new challenges for exporters in their efforts to penetrate and expand foreign markets. Canada's high dependence on centrally planned economies for a very large fraction of its agricultural exports leaves it vulnerable to shifts in the import policies of those countries. This vulnerability creates a high degree of uncertainty about future import levels. As a result, Canada must ensure that it has appropriate policies and agencies to increase its export competitiveness and to move gradually toward a greater diversification of its foreign markets. Improved targeting of export markets and products is required to ensure that market development efforts have a strong payoff.

As Canadian agriculture becomes more highly dependent on international markets, it is increasingly vulnerable to the relatively high level of instability in those markets. This instability results from the fact that trade is the balancing residual between a country's domestic supply and demand, and from internal policies and programs through which most countries, in greater or lesser degree, act to shift the balance of market adjustments from domestic markets into the international marketplace. As a result, Canadian agriculture requires improved stabilization programs to protect against severe short-term market fluctuations. To this end, the government is reviewing the Western Grain Stabilization program and is working with several provinces on proposed programs for red meats which would be voluntary, contributory, and designed to provide support of a "stop-loss" nature in a timely fashion.

Canadian agriculture must have a strong and continuing commitment to research and development. Research continues to be needed to

improve the technology in many of the traditional areas of agriculture so as to maintain the high productivity and commodity quality required to meet international competition. As well, a number of new areas of research offer us an exciting potential. These include biotechnology, genetic manipulation and embryo transplants, to mention a few. A sustained commitment to these new areas of research is required to maintain agriculture's future competitiveness.

Canadian agriculture has some strong comparative advantages in international markets. To exploit these advantages, Canadian agriculture should receive a higher priority in GATT and in the other international fora which evaluate and negotiate trading agreements and performance. Canada has strongly supported a new GATT study on protective measures in the agricultural sector, as well as a related OECD study to examine the impact of domestic and trade policies on agriculture. The results of these studies should provide a better understanding of the extent of trade restraints and their impacts, and thereby assist Canadian trade negotiators in their efforts to improve access to foreign markets.

Because of its comparative advantage, Canadian agriculture would be a net gainer from a general increase in trade liberalization. Not only would agriculture gain improved access to markets but it would also benefit from lower costs for agricultural production inputs. The recent economic slowdown has increased pressures for protectionism. These pressures have manifested themselves in actions which have caused greater concern to agriculture than to most other sectors of the economy.

Canadian agriculture would also benefit from a more rapid development in the agri-food system in the nations of the Third World. Improvements in agriculture are widely recognized as an essential prerequisite to the general economic growth of low income countries. During the subsequent phases of development, rapid increase in population and consumer income have frequently led to an increased import demand for Canadian agricultural products. Countries like Brazil and Mexico are now important importers of Canadian agricultural products. Canada now provides considerable technical and economic planning assistance in the areas of food and agriculture to many developing countries. It is important that these programs continue to contribute to the strengthening of long-term economic ties between Canada and the LDCs.

Appendix

Details of the Medium- and Long-Term Outlook for Canadian Agriculture

Medium Term (1984–88)

Grains and Oilseeds

The reduction in world supplies in 1983 has reversed a three-year decline in coarse grains and oilseeds prices. The recovery in the world economies also should help increase the demand for grain exports. This rise in prices will cause an expansionary pressure on total crop acreage of, on average, about 1.5 percent a year in Western Canada. Within this expanding total acreage, the share of the five major crops mainly responds to relative prices. It is forecast that wheat will average 13.4 million hectares, oats 1.1 million hectares, barley 4.9 million hectares, rapeseed 2.2 million hectares and flaxseed 0.6 million hectares over the period 1984–88. The corresponding production averages for the five-year period are 26 million tonnes for wheat, 2.2 million tonnes for oats, 13 for barley, 2.8 for rapeseed and 0.6 for flaxseed. Exports of wheat and barley are expected to average about 22 million and 6.4 million tonnes respectively, compared to 18.5 and 5.1 for the previous five-year averages. The expected movement of the grain prices is summarized in Table 7-A1. The percent changes use the 1983–84 crop year as the base.

Beef and Pork

During the 1960s livestock prices and feed costs were relatively stable. The 1983 rise in grain prices caused downward pressure on livestock producer profits. Inventories of total beef cattle and of beef cows have been falling for three years and it was expected that the rebuilding phase

TABLE 7-A1 Forecast of Canadian Grain Prices

	1984–88 Average $/tonne	1984–88 Average Annual % Change
Wheat Export price (unit value) (trade of Canada)	248	+3.1
Barley Export price (unit value) (trade of Canada)	157	+1.8
Off Board weighted average prairie farm price	115	+2.3
Soybeans No. 1 Elevator Price, Chatham	312	−1.7
Soymeal, 44% protein, Toronto	312	+0.1
Oats, weighted average prices received by prairie farmers for Non-Board Oats prairie farm price	109	+2.1
Rapeseed, No. 1 Canada, Winnipeg Commodity Exchange in store, Vancouver	334	−2.3
Corn, Chatham elevator	138	−1.4

of the cycle would begin soon. However, with the recent rise in grain prices, the upturn in inventories will be slowed. Hog inventories, on the other hand, were already in a building phase and this cycle may be cut short.

Inventory of beef cattle is expected to grow by an average of 2 percent over the period 1984 to 1988. Inventories of hogs for this period are expected to average at about the 1983 level, below this level in the early part of the period and above it near the end.

Production of beef is expected to average about 2,030 million pounds, while disappearance should average slightly less at 1,945 million. Production of pork is expected to average around 1,895 million pounds and disappearance about 1,562 million, maintaining a large export market.

Given the expectation for the U.S. market, the price of A1/A2 steers at Toronto should average $92/cwt over the 1984–88 period and the price of Index 100 hogs in Ontario is expected to average $82/cwt.

Poultry and Eggs

Production of turkey is expected to average 99.6 million kilos for the 1984–88 period, whereas disappearance is expected to average 101.6

million. The average weighted price of whole consumer weight turkeys is expected to grow by an average of 3 percent per year.

Production and disappearance of eggs are expected to average slightly below their 1983 levels. The price of grade A large eggs is expected to grow by 2.8 percent per year over the 1984–88 period.

The slaughter of broilers, including live imports, is expected to grow by an average of about 1.8 percent a year over the period, whereas disappearance is expected to grow by 1.4 percent a year. This implies a shift toward live imports and a small upward adjustment in stock levels over the five-year period. The average weighted price for broilers is expected to grow by an average of 2.2 percent a year over the period 1984–88.

Dairy

Total milk shipments over the period 1984–88 are expected to average about 74 million hectolitres, about 48 million of that to be industrial milk and 26 million to be fluid milk. Inventory of dairy cows is expected to slow its rate of decline to around 0.7 percent on average. The domestic disappearance of dairy products in butter equivalents is expected to average a little below its 1983 level. The domestic disappearance of dairy products in skim milk powder equivalents is expected to rise by an average 1.1 percent per year. Based on the forecast grain prices and CPI, the Gross Target Return is expected to grow about 4.7 percent per year and the support prices are expected to grow by about 5 percent per year.

Retail Food Prices

The retail price of food is expected to rise at slightly below the rate of CPI for all products, i.e., at about 4.4 percent per year. The individual growth rates are shown in Table 7-A2.

The prices of cattle and hogs are expected to push up the retail price indexes of beef and pork by about 4.7 percent per year. This will stimulate the demand for poultry, increasing the retail price index for chicken by 4.0 percent. Also, the weighted average farm price of turkey is expected to grow by about 3.1 percent a year, resulting in an increase in the retail turkey price of around 3.6 percent.

Dairy support prices are forecast to increase an average of 5.0 percent per year, which leads to an expected growth in retail dairy prices of 5.1 percent. The price of Grade A large eggs is expected to grow by 2.8 percent per year. The retail price of eggs is expected to grow by 2.3 percent on average. Forecast increases in the price of wheat and other inputs is expected to generate an increase in the CPI for bakery and cereal products of around 5 percent. The forecast price of fruits and

TABLE 7-A2 Forecast of Retail Food Prices

	1984–88 Average Annual % Change
Food	4.4
Meat, Poultry and Fish	4.7
Beef	4.9
Pork	4.7
Chicken	4.0
Turkey	3.6
Dairy products	5.1
Eggs	2.3
Cereal and Bakery	5.0
Fruits and Vegetables	3.1
Fats and Oils	4.2
Sugar	7.9
Coffee and Tea	4.2

TABLE 7-A3 Forecast of Farm Cash Receipts

	1984–88 Average Annual % Change
Total	4.3
Total crops	3.0
Wheat	2.5
Feed Grains	4.3
Oilseeds	2.3
Other crops	4.0
Total livestock	5.4
Cattle	6.4
Hogs	6.0
Dairy	4.8
Poultry	3.9
Eggs	2.8
Other livestock	5.5
Other	9.1

vegetables is expected to result in increases in the retail prices of fruits and vegetables of an average 3.3 percent per year. The consumer price indexes for fats and oils, for sugar, and for coffee and tea are expected to increase 4.2 percent, 7.9 percent and 4.2 percent per year on average.

Total Farm Cash Receipts

Total Farm Cash Receipts are expected to grow on average 4.3 percent over the period 1984–88. The breakdown of this by major commodities is shown in Table 7-A3.

Summary

In summary, the Canadian general economic conditions and the U.S. and world agricultural outlooks suggest that product prices for the Canadian agriculture sector are likely to rise somewhat more slowly than the overall rate of inflation. This slower growth in prices, along with some income improvements, will increase domestic disappearance. Increases in production will probably be about equal to increases in disappearance. Large increases in the exports of Canadian agricultural products will not be easy to achieve.

Long Term (1984–2000)

Grains and Oilseeds

Western Canada crop acreage is expected to expand at about 1.2 percent a year, reaching 26.3 million hectares by 2000. Wheat acreage is expected to expand by about 1.0 percent a year reaching 16 million hectares by 2000, barley acreage by 1.5 percent to 6, rapeseed by 2.5 percent to 2.8, flaxseed by 3.5 percent to 0.9. Summer fallow is expected to decline by about 3.5 percent a year. Yields are expected to grow by around 1.0 percent. Production of wheat and barley is expected to grow by about 2.3 percent and 2.5 percent a year, respectively. Exports of wheat and barley are forecast to grow at 5.4 percent to 30 million tonnes in 2000 and 4.4 percent to 11 million tonnes in 2000. Grain prices are in general expected to rise by less than the overall rate of inflation (i.e, at about 3 to 3.7 percent).

Beef and Pork

Federally plus provincially inspected production of beef is forecast to reach 2,683 million pounds whereas disappearance should grow 1.6 percent to reach 2,644 million pounds by 2000. Beef prices are expected to rise about equally to inflation.

Pork production is forecast to reach 2,288 million pounds whereas disappearance should go up by about 1.4 percent to about 1,975 million pounds. Pork prices are expected to rise by a little less than inflation.

Poultry and Eggs

Production of poultry and eggs is forecast to grow at about the same rate as disappearance. The price of turkey is expected to grow by about 5 percent, chicken by about 5.7 percent, eggs by 4.3 percent.

Dairy

Industrial milk shipments and fluid milk shipments are both expected to grow by about 0.9 percent. The inventory of dairy cows is forecast to decline at about 1.0 percent. The target return and support prices are forecast to grow about 7 percent.

Retail Food Prices

The retail price of food is expected to grow by between 4.3 percent and 6.3 percent, with beef, chicken, dairy, fruits and vegetables, fats and oils having the high rates and pork, turkey, eggs, cereal and bakery products, coffee and tea having low rates.

Cash Receipts

The total of farm cash receipts is forecast to grow by between 4.3 and 5.5 percent a year, with cash receipts from crops growing by less than cash receipts from livestock. Cash receipts from cattle, dairy, poultry and eggs should grow more rapidly, with receipts from hogs and crops growing more slowly.

Note

This paper was presented at the Symposium "Long-Term Economic Prospects for Canada," organized by the Macroeconomic Research Section of the Royal Commission on the Economic Union and Development Prospects for Canada, Ottawa, January 10, 1984. The views expressed are those of the authors.

8

Sectoral Views of the Longer Term: *Forest Products*

JOHN WANSBROUGH

Introduction

I intend to outline the dimensions of Canada's forest industry and its industrial and trade structures before proceeding to a discussion of its future prospects. It is my hope that these sectoral perspectives and views will be of assistance to you in developing overall macro projections for the Canadian economy as well as for the Commission's broader assessment of the major challenges and choices facing Canadians.

Industry Significance

The forest industry is the largest and most important industrial sector in Canadian manufacturing. Its contribution to economies in all regions of the country and to the Canadian economy as a whole cannot be ignored. The total value of forest products shipments, excluding logging, amount to about $23 billion annually. The industry accounts for 13 percent of all manufacturing shipments, 10 percent of value added and 20 percent of total new investment in Canadian manufacturing. It directly employs about 300,000 workers, approximately 80 percent in manufacturing and 20 percent in logging operations.

The significant contribution of forest products to Canada's foreign exchange earnings is also well documented. About one-half of total industry shipments are exported, primarily to the United States, Europe and Japan. Net exports of forest products ($12 billion per year) are by far the largest of any resource or manufacturing sector in Canada.

All regions have a significant stake in the industry. For example, over half of British Columbia's industrial production and exports are

accounted for by forest products; in the Atlantic Region, forest products account for about one-third of total manufacturing activity; in Quebec and Ontario, the forest industry is by far the largest manufacturing sector outside the large metropolitan areas, accounting for 15 percent and 7 percent respectively of total manufacturing activity. In the Prairie Provinces, these proportions run from 10 to 15 percent.

Market Orientation

The forest industry represents a diverse range of individual product sectors with different competitive strengths and weaknesses and market opportunities. They run the full range from growth industries to industries requiring adjustment due to declining markets and outdated capital equipment. The one common denominator of these various industries is the forest resource.

While generalizations are difficult, given the diverse nature of the industry, it is important to differentiate between three structurally different groups that have developed over the years. They are:

1. The lumber, pulp and newsprint sectors, which account for about 60 percent of total industry shipments developed in a relatively duty-free environment and which are geared toward export markets. These three products account for about 85 percent of total forest product exports;
2. The sub-sectors such as plywood, waferboard and certain paper grades, which sell in both domestic and export markets;
3. Other product sectors, particularly high value-added products such as millwork, kitchen cabinets and converted paper products, developed mainly to service a protected Canadian market.

World trade in forest products amounts to over $50 billion per year, but for a number of reasons this trade has traditionally been confined to a limited range of products and to adjacent geographic regions. The major trade flows are exports from Canada to the United States, intraregional trade within Europe and the export of logs and other raw materials from the United States, the Soviet Union, and Southern Hemisphere countries to Japan.

Canada accounts for almost one-quarter of total world trade in forest products but, as I noted earlier, the bulk of this trade is with the United States and consists primarily of lumber, pulp and newsprint.

Industry Prospects

The future prospects of the forest industry will depend largely on how we deal with issues related to the forest resource, to changes in the international marketplace and to our ability to supply these markets. Forest products are situated in a relatively mature industry, but there is a

growing realization that the shifts in global production and trade patterns are reaching a turning point which will accelerate the need for industrial restructuring and adjustment in Canada's forest industry.

The days of expansion into underdeveloped timber regions are over. The timber supply constraints emerging across the country are forcing Canadians to pay greater attention to improving and expanding Canada's forest resource base and to deriving maximum volume and value from existing forests.

The slower rates of growth in world demand for forest products anticipated over the coming decade, combined with technological advances in consumption and production and new sources of supply, ensure an increasingly competitive trading environment in the years ahead. At the same time, Canada has allowed much of its existing capital plant and equipment to deteriorate, and significant investments in modernization and industrial renewal are required to continue to compete in foreign markets and, for some products, even in the Canadian market.

World Production and Trade

North America, Europe and Japan account for about three-quarters of world production and trade in forest products and are Canada's principal market areas. Nevertheless, this dominant position is gradually being eroded with faster rates of growth in production and consumption in the developing and newly industrialized countries.

Domestic producers, Scandinavia and the United States represent Canada's major competition in foreign markets. The United States is by far Canada's best customer but is also a formidable competitor in the prime U.S. market and increasingly in offshore markets. The United States is on balance a net importer of forest products at the present time, but this is likely to change in the future, given the strong resource and competitive cost position of the U.S. industry, particularly in the South. Canada is expected to lose market share to new U.S. capacity in its major export items (newsprint, pulp, and possibly lumber). The U.S. government and industry have also taken a new interest in developing markets for U.S. forest products abroad and in limiting log exports.

Western Europe continues to be the largest net importer of forest products in the world and is Canada's second largest customer. Traditionally high-cost producers in Scandinavia have become highly competitive in European markets, with currency devaluations in the order of 30 to 40 percent over the last two years and with the removal of trade restrictions in 1984 as a result of EFTA/EEC trade accords. Scandinavia has been actively pursuing a resource upgrading policy to overcome timber supply constraints through forward integration of pulp production to paper production and by increasing the efficiency of its industrial base. Western European forest product companies are generally smaller

and less efficient compared to Scandinavian and North American companies. Governments in the EEC are under increasing pressure to protect domestic producers from foreign competition and the virtual integration of the large, modern and efficient Scandinavian industry into the EEC spells difficulty for Canada.

Japan is Canada's third largest customer and, together with other countries in Southeast Asia, offers the best export opportunities to Canadian producers over the medium term. Japan, like so many other industrial sectors, is a minor net importer of processed forest products at the present time but must import over one-half of the raw fibre required by its domestic industry. Japan's net import position is expected to increase rapidly over the next decade, however, due to high domestic processing costs and a tightening in world energy and timber supplies. Opportunities will occur but will have to be won against competition from the United States, New Zealand and to a lesser extent, the Southeast Asian countries.

While the major focus of my remarks has been on Canada's principal export markets, developments in other parts of the world cannot be ignored. For example, Latin America has been an important market for Canadian newsprint producers, but Canada's share of these markets has declined in recent years with the rapid growth of indigenous production capacity. Manmade forests and technological advances in the industrial use of hardwoods have resulted in new sources of supply. Several countries in the Southern Hemisphere, such as New Zealand, Chile and Brazil, are not yet major competitors but will become increasingly important suppliers to Europe and Japan during the 1990s, as fast-growing timber plantations mature.

Canada's Competitive Position

Questions of productivity and international competitiveness in Canada's forest industry are receiving increased attention by government, business and labour. The high degree of optimism evident only a few years ago is being replaced by a more realistic appraisal of Canada's competitive position in world markets and prospects for the future.

Much of this change in attitude can be attributed to the severity of the recent recession, but there is also a growing recognition of the difficult market conditions to be faced over the coming decade.

The Canadian industry will always have some natural cost disadvantages stemming from our climate and geography and, therefore, will be under continuing pressure to improve productivity and contain costs in order to compete in foreign markets. Wood, labour, energy and transportation are the principal elements of forest product manufacturing costs.

Wood costs account for the largest share (25 to 50 percent) of manufacturing costs of primary products. Relatively low wood costs have been

one of the major contributing factors to a strong competitive position in Canada over the years and were a principal reason why companies decided to invest in this country in the first place. This wood cost advantage was required to offset higher costs in other areas. Canada now faces real increases in wood costs as the industry uses more distant and marginal stands and as more funds are devoted to intensive forest management. Wood costs in the major competing regions in the U.S. South and Scandinavia are not expected to increase as rapidly as in Canada. Moreover, the comparative advantage derived from the high quality features of our slow-growing softwood species is gradually being eroded because of technological advances in processing and shifts in product mix.

The pulp and paper industry is highly energy intensive but again, Canadian companies have lost their advantage in this area as Canadian energy prices have moved closer to world levels. Moreover, much of the capital equipment was put in place when oil was priced at less than $4 per barrel, making Canadian mills considerably less energy efficient than those in Scandinavia, for example.

Labour costs represent 10 to 30 percent of costs of manufacturing lumber, pulp, newsprint and other primary products but are higher for more labour intensive products such as plywood (30 to 40 percent) and logging (40 to 60 percent). While labour cost increases will likely reflect the improved outlook for general price increases in the medium term, significant opportunities remain for productivity gains associated with plant modernization and other technological improvements. In addition to wage rates, labour costs are also directly related to plant efficiency and productivity which vary significantly between product sectors and between individual mills within a product sector. Job displacement due to modernization and new technology has become a real issue in the forest product sector. It is clear that total employment will decline further if the industry undertakes the necessary investments in industrial renewal.

In the newsprint sector, small scale and pre-1950 paper machines represent a significantly higher proportion of the industry's capacity in Canada as compared to the United States and Scandinavia. These machines are less productive and their products inferior. About 50 percent more man-hours are used per tonne of product in Canada compared with our competitors, and lower product quality creates marketing problems for Canadian companies.

Conversely, in the market pulp sector, the bulk of Canadian capacity has been installed since 1960 and Canadian mills are, by and large, world scale and efficient.

In the lumber sector, a significant proportion of Canada's production also originates from large and efficient mills, although problems of obsolescence are apparent in all regions, and particularly on the B.C.

coast. There are, however, approximately 3,000 small lumber producers inefficient in their use of the resource but often important to the small communities where they are located.

In the domestic oriented product sectors, such as fine papers and packaging papers, few mills were constructed to service export markets, and therefore much of the Canadian industry has problems with scale and lack of product specialization.

Substantial fluctuations in international currency markets have made questions of international competitiveness more uncertain. The magnitude of some of these shifts, such as in Scandinavia, is unprecedented and can change the market situation around virtually overnight. Despite some depreciation of the Canadian dollar against the U.S. dollar since 1977, the U.S. South is still considered to be the lowest cost-producing region in the world for forest products, with the B.C. Interior close behind. The B.C. coast, the U.S. Pacific Northwest and Eastern Canada generally have higher costs within North America in most product sectors.

Role of Government

The forest products industry is considered a priority sector in view of its contribution to regional development and to the Canadian economy as a whole. The federal government has responded to the challenges facing this industry, with both sector-specific initiatives and action of a more broadly based nature. These initiatives can be grouped in three broad areas, namely, strengthening the resource base, encouraging productive investments in forest industry development, and assisting Canadian companies in identifying and capturing export market opportunities.

Resource Policies

There has been considerable discussion in recent years on the capacity of Canadian forests to sustain current harvest levels and to provide for future industrial growth and expansion. The poor quality of existing resource data and the different assumptions used in deriving timber allocation targets across the country compound the confusion in this public debate.

Harvest levels are expected to increase by about 35 percent between 1980 and 1995, an annual growth rate of 2 percent per year, based on the various projections for the individual product sectors outlined later. Given the relatively short time period involved, the timber supplies required for this expansion will have to come from the existing forest.

Woodbridge, Reed and Associates Ltd. (1982), in a study commissioned by the Department of the Environment, have estimated the incremental fibre supply available to support new forest industry capac-

ity at 55 million cubic metres, following a comprehensive timber supply analysis. This increment represents about 35 percent of the current harvest. Almost 60 percent of this increment is hardwood and is fairly evenly distributed across the country. Alberta, Ontario and Quebec account for the bulk of softwood incremental fibre supplies. British Columbia, Saskatchewan and Manitoba also have significant softwood timber reserves available for expansion. The Atlantic Provinces have no incremental softwood timber supplies as a whole, and most of the surplus hardwood reserves consist of undesirable species.

Within these broad provincial groupings, there are certain producing regions already facing timber deficits. The most notable are the B.C. coast, southern parts of Ontario and Quebec, northern New Brunswick, Nova Scotia and Newfoundland. With the exception of Alberta, most of the economically available timber supply has already been allocated to existing producers. The availability of timber to support major new greenfield developments is therefore extremely limited, particularly for new entrants.

A 35 percent increase in the 1979–80 harvest to meet 1995 production levels amounts to 55 million cubic metres, which is virtually the same as the incremental supply estimate developed by Woodbridge, Reed and Associates Ltd. To achieve this balance, however, would require a considerable increase in the use of hardwoods compared to softwoods. This is not immediately feasible with existing plant and market preferences. It also means that there would be no opportunity for industrial expansion beyond 1995.

There is no question that Canada's tightening resource situation can be turned around with a combination of better use of existing resources through improved processing technologies and an upgrading of the product mix to higher value-added products, and through increased investments in forest management. More prompt and effective regeneration of areas denuded from logging and fires would expand the size of the forest base for future generations, but there is a lot of catching up to do from past overharvesting and inadequate forest renewal efforts. Increased protection against fire, insects and disease, stand tending and road access to mature stands will greatly improve the capacity of the existing forests to provide incremental timber supplies.

Federal resources policies reflect the constitutional reality of provincial pre-eminence in resource management matters. Federal financial support is provided for the most part through federal–provincial cost-sharing agreements administered by the Canadian Forestry Service. Most of these agreements expire in 1984, and the Canadian Forestry Service is currently negotiating a new generation of forestry agreements with the provinces which are intended to provide for longer-term resource planning and greater emphasis on forest renewal compared to the previous agreements. Current federal funding amounts to about $80

million a year, but the total amount of federal funds available for resource development in future years has yet to be decided. The recent cutbacks in forest management expenditures in certain provinces, as part of overall government restraint exercises, are particularly disturbing, as it certainly is a step in the wrong direction and may blunt the momentum that has been building in Canada in recent years for more intensive management of our forest resources. With trees taking 60 to 100 years to mature in Canada (much longer in some regions), the long-term nature of forestry investments needed now must be accepted if a diminished industrial base in the years ahead is not to result.

Industrial Development and Renewal

Given the size and export orientation of this industry, government policies that contribute to an investment climate of confidence and stability are critical. As I indicated earlier, substantial investments to upgrade Canada's industrial base to the competitive standards set by the industry in the United States and Scandinavia are urgently required if Canada's forest industry is to continue to survive and contribute at its present level.

The basic dilemma facing most Canadian companies is how to continue to make major investments in modernization projects and new technology at a time of reduced corporate cash flow and heavy debt burdens. Capital expenditures for 1983 were estimated at $1.2 billion. This is about half the annual level of investment in the 1980–82 period and even below the low levels recorded throughout most of the 1970s, after taking inflation into account.

The Pulp and Paper Modernization Program has been the cornerstone of federal direct assistance since 1979 to address long-standing problems of energy conservation, pollution abatement and mill modernization in the pulp and paper industry. This program has had some success in levering industry investment in modernization, but there still remain a significant number of mills with long-term viability problems, despite the offer of government assistance. Moreover, many modernization projects were primarily "patchwork" and did not bring the mills in question up to world standards for the longer term.

The Department of Regional Industrial Expansion (DRIE) is now reviewing the whole question of direct federal financial assistance to the forest industry. While it is still too early to judge the results of this analysis, an important question being addressed by the department relates to the possible impact that government support for new capacity can have on other companies in Canada. This review is examining the full range of industrial activity, including plant establishment and modernization, innovation and export market development. The major objective of this assignment is to provide guidelines for departmental

programming and assistance to the forest industry. One evident thing is that the magnitude of the investment needed to bring the industry up to world standards is large: recent public statements by industry members place it at over $30 billion.

Export Market Development

Trade policy and market development will be of strategic importance, given the difficult international environment that must be faced in the 1980s and the key role that exports must play in the development, rationalization and growth of the forest industry.

It is a fact of life that Canada is the only major world producer of forest products that does not have real and secure access to a large consuming market. Until January 1, 1984, Scandinavia was in a similar position, but now has duty-free access to the large EEC market. Maintaining and improving access for Canadian forest products to foreign markets is therefore an important component in the government's conduct of international trade relations. The U.S. countervail investigation of Canadian lumber last year (1982) and the current potential threat of reductions in Canada's duty-free newsprint quota to the EEC are examples of the kinds of protectionist sentiments that can emerge and, if successful, can have disastrous impacts on the Canadian industry.

The pulp and paper industry is well equipped to meet its own market development requirements. In the wood products sector, the Cooperative Overseas Market Development Program, which is jointly funded by DRIE, the B.C. government and the B.C. industry, has made considerable progress in developing Japanese and European markets for B.C. lumber, plywood and other wood products. Discussions are now taking place with interested provinces and industry trade associations in other parts of the country, with a view to taking a similar approach in these regions.

Industry Outlook to 1995

The forest industry is emerging from the most serious cyclical downturn since the 1930s, but will not reach 1979–80 production and price levels until well into 1984 or later. In the wood products sector, the strong rebound in residential construction activity in North America during the first part of 1983 resulted in significant improvements in lumber prices and industry operating rates which, unfortunately, have not been sustained. Offshore markets continue to be weak, reflecting slower economic recovery in Europe and Japan and unfavourable currency exchange rates. Canadian lumber production will likely be up by 25 percent in 1983 but will still be below the previous 1979 peak. Lumber prices have weakened considerably in recent months, however, due to a

slowdown in demand and reactivation of shutdown capacity in North America and are now only marginally above the cost of production. Cyclical and erratic markets are a continuing characteristic of the industry. The Canadian plywood industry, particularly on the B.C. coast, continues to face serious marketing problems and on a national basis is currently operating at about 75 to 80 percent of capacity.

When final figures are produced, Canadian production of pulp and paper is expected to show an increase of about 1.2 million tonnes or 7 percent in 1983, but this represents a recovery of only half of the decline in the industry since 1980. With the exception of newsprint, operating rates for most grades of pulp and paper are expected to move over the 90 percent level this year, up from the 83 to 87 percent range last year. Newsprint accounts for about 45 percent of the volume of pulp and paper produced in Canada and continues to suffer from world over-capacity and heavy price discounting. Newsprint prices declined in 1982 for the first time since the 1930s. Recent attempts by Canadian producers to restore the $500 per tonne price level in North America are expected to be more successful than previous attempts. Similarly, pulp prices are expected to be in the $550 to $575 a tonne range by the end of 1984, up from the current $450 a tonne, but only about the same level as recorded in the early 1980s. At the same time, costs have continued to increase.

The outlook for the industry for the remainder of the 1980s and into the 1990s is for positive growth in the order of about 2.3 percent per year. I would like to emphasize that this projection is not based on any quantitative work of our own, but represents our best estimate of industry prospects and a review of other published forecasts. It assumes an average annual increase in GNP of 2.6 percent in Canada and 2.4 percent in the U.S. between 1980 and 1995. This seems to be more or less in line with the macroeconomic projections being discussed today and, of course, also assumes some success in addressing the competitive challenges outlined in my previous remarks.

Table 8-1 indicates a breakdown of our projections by major product sector. In summary, only marginal growth is anticipated in the lumber industry, reflecting slow growth in residential construction in the industrialized countries because of adverse demographic trends. This is in sharp contrast to the relatively fast rate of growth of 4 to 5 percent per year of the Canadian industry throughout most of the 1960s and 1970s. Newsprint is also expected to grow relatively slowly over the longer term, reflecting the maturity of the newspaper publishing business in the industrialized countries and loss of some market share in the United States and Europe. The domestic oriented product sectors, with certain exceptions, are expected to grow about in line with the growth in Canadian GNP. The high growth areas include groundwood specialty papers and other printing and writing papers. Competition from electronics is not expected to be a major factor until the mid-1990s. Canadian

TABLE 8-1 The Canadian Forest Products Industry, 1980–95

	Total Shipments		Domestic Shipments		Exports	
	1980	1995	1980	1995	1980	1995
	(billions of 1980 dollars)					
Lumber	4.0	4.9	0.6	0.8	3.4	4.2
Exterior panels	0.6	0.9	0.4	0.6	0.2	0.4
Millwork	1.1	2.3	1.0	1.8	0.1	0.5
Other wood products	2.7	4.0	2.2	3.1	0.5	0.8
Sub-total: Wood industries	8.4	12.1	4.2	6.3	4.2	5.9
AAGR (%)	2.4		2.7		2.2	
Woodpulp	4.1	6.2	0.3	0.5	3.9	5.7
Newsprint	3.7	4.8	0.1	0.3	3.7	4.4
Other paper & paperboard	3.0	3.9	2.2	2.8	0.8	1.1
Converted paper	3.6	5.2	3.4	4.8	0.2	0.4
Sub-total: Paper & allied industries	14.5	20.1	5.9	8.4	8.6	11.3
AAGR (%)	2.2		2.4		2.0	
Total forest products industry	22.9	32.2	10.1	14.7	12.8	17.5
AAGR (%)	2.3		2.6		2.1	
Logging industry	4.6	6.2	4.5	6.1	0.1	0.1
AAGR (%)	2.0		2.0		—	

Note: AAGR denotes average annual growth rates.

production of packaging grades of paper and board is expected to continue to stagnate or decline because of continuing competition from substitute products, particularly plastics, as well as competitive problems with U.S. imports.

Finally, the logging sector as a whole will grow more slowly than the forest products industry, reflecting continuing advances in technology and use of wood.

Conclusions

In conclusion, I would like to make several points.

Markets

Forecasting the future of the industry is made difficult by the unpredictability of international markets on which it is dependent. Protectionist sentiments and possible non-tariff measures are emerging in the United States and Europe. Growth in world demand over the next 30 years will

not be as large or sustained as in the last 30 years. The demand in Asian countries will offer some opportunities if Canada is able to compete in price and quality. There will nevertheless be pressures for raw materials rather than processed wood fibre in these Asian markets.

Facility Improvement and Investment Climate
The need for an investment climate to attract the large amount of capital needed to replace obsolete plant is of primary importance. Capital has gone to the United States, Europe and other countries in preference to Canada, particularly for new plants — even from Canadian companies. Development of a revitalized industry is a priority, and is essential to hold our present level of activity in this industry.

Value Added
Product upgrading, wherever possible, is necessary:

- to utilize the resource as fully as possible; and
- to keep employment levels as high as possible.

Structural changes in the industry will take place as a consequence.

Employment
Employment to produce the same level of output as in 1980–83 is expected to drop by 30 to 40 percent in many parts of the industry over the next five to ten years because of new technology. This is recognized by labour, but the necessary action must yet be taken to facilitate adjustment and to ensure that skills are available as the process of manufacture becomes more complex.

Market Access
Assuming the industry makes the necessary changes in product quality and cost reduction to meet international competition, preserving and enhancing Canadian access to foreign markets will require the coordinated efforts of government and industry.

Forest Resource
Future resource availability puts definite limitations on future growth, and this will become increasingly apparent. The best and most available wood has been harvested over the past century and replacement has been provided for only a fraction of this.

The provision of an adequate resource is a cornerstone to the industrial future of this industry. This will require the efforts of the provinces, the federal government and industry to ensure that the elements of resource, international markets, trade and industrial development all come together in a coordinated fashion.

Note

This paper was presented at the Symposium "Long-Term Economic Prospects for Canada," organized by the Macroeconomic Research Section of the Royal Commission on the Economic Union and Development Prospects for Canada, Ottawa, January 10, 1984. The views expressed are those of the author.

9

Sectoral Views of the Longer Term: *Mining*

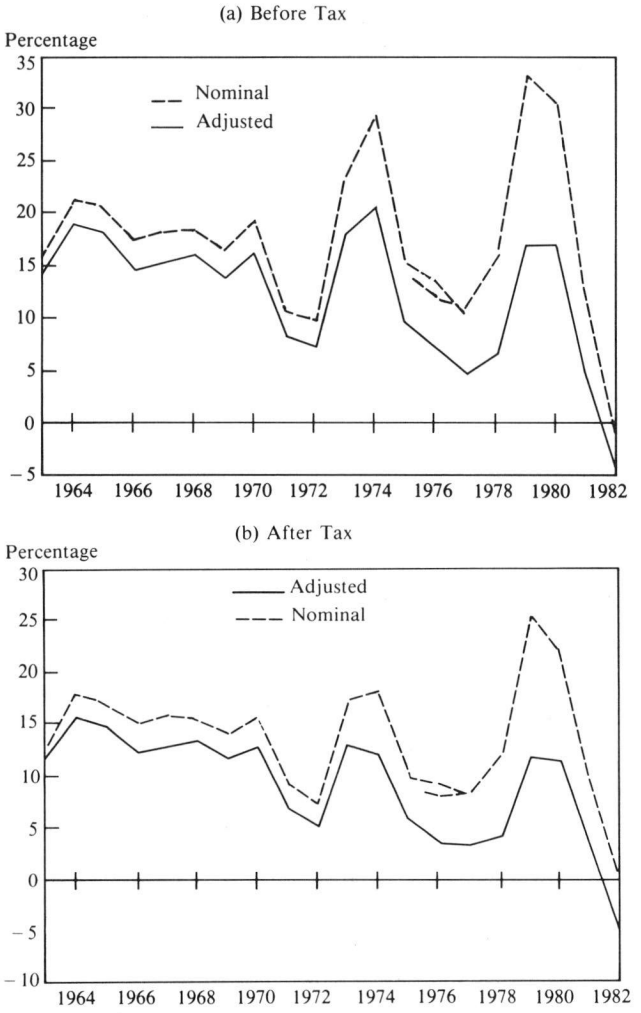
KEITH BREWER

I have structured my comments in response to my reading last week of the three projections we had this morning. I see the task before me as having to provide some refinement or confirmation of the projections for the Canadian mineral industry which are embedded in the forecast of the economy that was provided this morning.

It is very important that we do get a good view of minerals and the other sectors and where we see them going, because of their key role in the total economy. Minerals, for instance, account for 20 percent of merchandise exports, 55 percent of inland freight and 3 to 4 percent of GNP. The danger is that any misconception about the growth potential of this sector could lead to macro policies, perhaps including exchange rate and interest rate policies, which have large unintended and inappropriate effects on viability and growth. Let us start off with my view of the competitive position of the mineral industry and ask what sort of deductions can be made at present and for the future.

Figure 9-1 represents the historical rate of return on equity before and after tax for the Canadian Metal Mining SIC sector. The dotted line is based on conventional accounting and the solid line is "inflation adjusted" to show real rates of return. The extreme cyclicality in the past decade is primarily due to fluctuations in metal prices, which are determined on world markets and largely outside the control of individual Canadian companies. We have some figures now for 1983 — for the first two quarters — and in fact, those negative returns in 1982 have only just gone positive. As you can see from the historical trend here, there is a pessimism in the air about future growth among those of us involved in this sector.

FIGURE 9-1 Metal Mines Return on Equity 1963–82

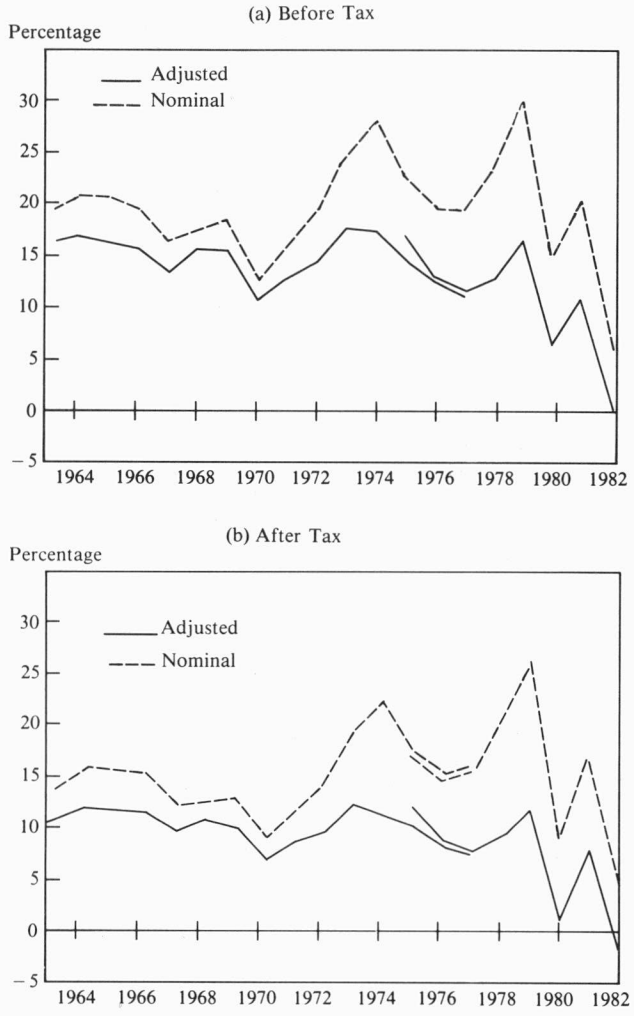


Now for comparison, we show the same rates of return for the total Canadian manufacturing sector (Figure 9-2). We are trying to make some deductions about adequacy of rates of return in the mining sector, as against alternatives; and we take manufacturing as the average alternative.

Mining is not the only sector to have experienced declining returns, and I think it very relevant at least to mention these kinds of numbers and what you might deduce about the incentive to invest in real business activity.

Figure 9-3 represents real domestic product for three sectors: total industrial production, metal mining, and non-metal mining. The extreme

FIGURE 9-2 Total Manufacturing Industries Return on Equity 1963–82



cyclicality in profitability in minerals during the 1970s not unexpectedly led to declining rates of growth. Real domestic product in the Canadian metal mining sector fell over the last decade, in contrast to fairly sustained growth in total industrial production. The pivotal year was 1973, after which the world recession, following the first oil price shock, kept the world's mineral industries in a depressed state. One thing I would stress is that the fairly pessimistic story for Canadian minerals is one which can be told for many of the world's mineral industries in terms of their rates of growth and their rates of profit.

Figure 9-4 shows Canadian production as a percentage of total world

FIGURE 9-3 Real Domestic Product 1967-81

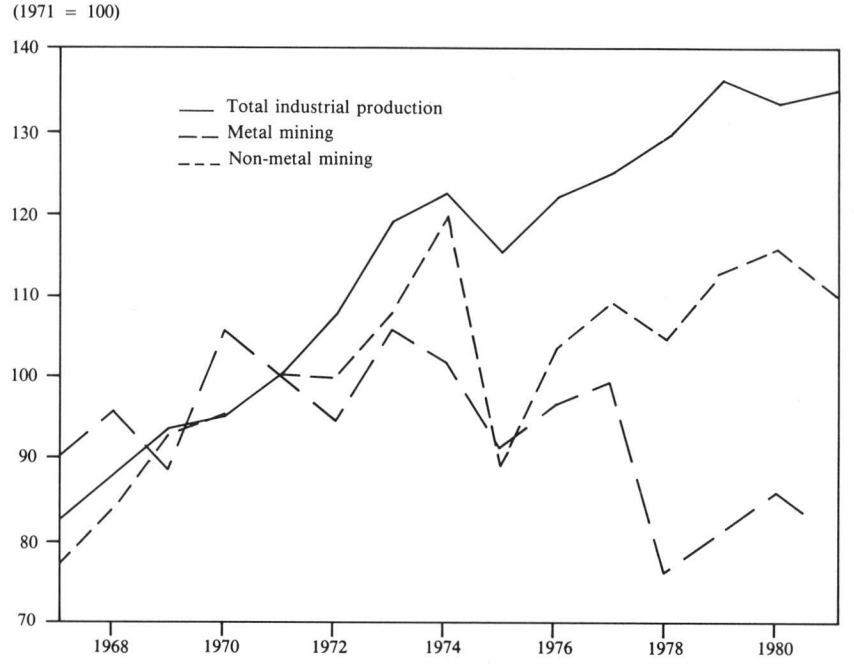


FIGURE 9-4 Canadian Production as a Percentage of Total World Production

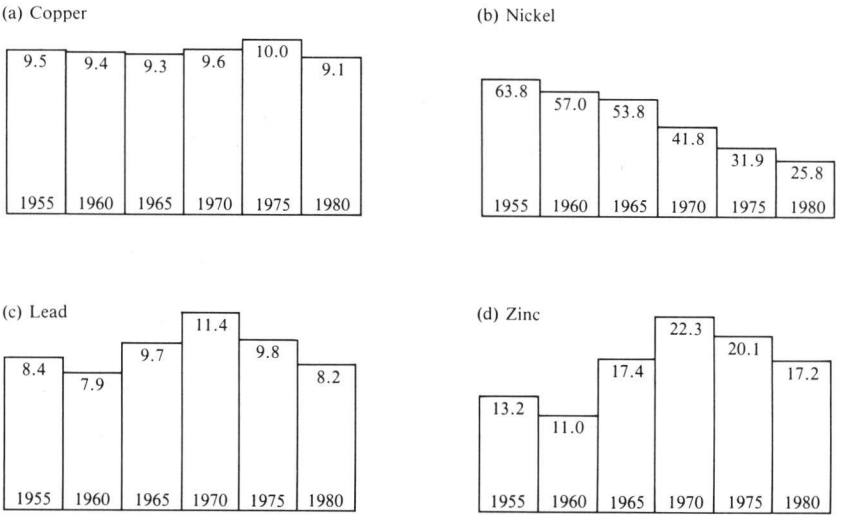
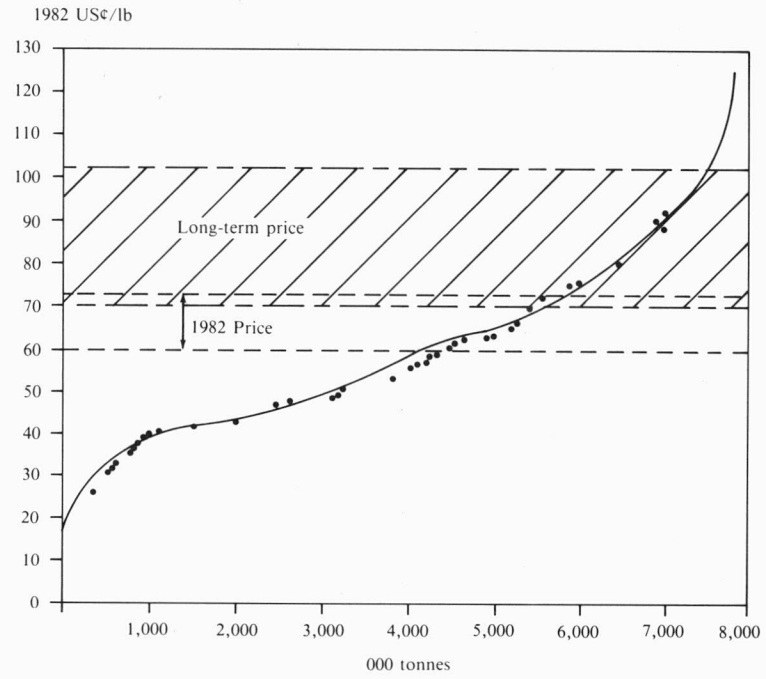


FIGURE 9–5 World Variable Cost League



Note: Plotted points indicate significant Canadian mine producer.

production. Declines in production that took place in Canada in the latter part of the 1970s occurred, in part, with our foreign competitors as well; however, significant new capacity has been developed abroad, relative to Canada, especially in nickel.

One of our basic assumptions now is that Canadian firms are all price takers. INCO, for instance, had 70 percent of world market 20 years ago but is now down to about 22 percent. INCO officials speak in terms of being price takers and being unable to effectively change market price themselves, although any major changes in output on their part would alter total world price.

I want now to address a subject that we call the world variable cost league, by way of introducing a story on how we arrived at the competitive position of Canadian minerals. Until yesterday, in fact, Figure 9-5 represented copper, but those numbers are no longer relevant because of changes in the forecast of price and because of changes in estimates of unit costs. Let us say instead that Figure 9-5 gives an illustrative snapshot of the cost situation of world mines of a particular sector. It shows unit variable cost at full capacity. Each dot here represents a Canadian mine, and all the world's mines lie somewhere along that solid

line. Mines have been ranked by unit variable cost so that, in concept, higher prices would make viable higher rates of world production, which is on the horizontal axis. It is information like this which is used to help project world prices and production. And we are also able to deduce the viability of Canadian mines. Let me now review the likely path of world mineral demand, world supply and world prices.

As economies recover cyclically from the recession, the world demand for minerals will also recover. However, the trend growth in demand will be nowhere near the pre-1973 levels. Precious metals might be an exception, as uncertainty about the future induces speculation. The oil crisis of the 1970s has had a significant impact on world demand through increased conservation. Down-sizing of cars and other products has reduced the demand for many metals. As an example, new thin-wall castings have reduced the demand for zinc.

We make much of the projection of the intensity of use as measured by pounds of metal per dollar of real GNP. This factor declines as industrial countries mature. Technological change has led to substitutions. Copper, for example, has been affected by the replacing of copper wire with optic fibres, and copper tubing has given way to plastic. Ceramics could intrude into markets where steel and aluminum have dominated — car engines for instance. Environmental regulations are expected to adversely affect mineral demand. Laws restricting the use of lead in gasoline and asbestos in construction are examples. Finally, the use of scrap to produce finished metals has increased, and while this does not affect the demand for metal, it does reduce the demand for metal produced by mines.

There are many sophisticated mineral forecasting services around the world which provide forecasts of demand and supply, and of world prices for minerals which are important to the Canadian mineral industry. The most optimistic of these sources generally foresee world demand for nickel increasing at roughly 3 percent per year until the end of the century, with the demand for copper and lead growing at about 2 percent. However, more pessimistic forecasters see demand at about .5 percent or 1 percentage point lower than those numbers I gave you. So, as a rough rule of thumb, the future long-term trend for world mineral demand is seen as around 1½ percent a year, which is less than most estimates for GNP growth. However, world demand growth rates cannot be used as a proxy for Canadian mineral industry growth; world markets are competitive and the growth of Canadian minerals is heavily influenced by prices, relative costs and market access problems.

On the supply side, problems can be summed up in one phrase: "overexpansion of world capacity." Throughout the 1960s and early 1970s, the expectations of rapid economic growth led to plans to rapidly expand productive capacity on a world scale. These plans were usually fulfilled, given a favourable international banking climate and the fact

that governments of industrialized nations fulfilled their perceived aid commitments to LDCs. Most of the added capacity has been placed in the LDCs and represents competition for Canada.

What does all this mean for world price trends? In general, world demand is not meeting expectations and is likely to fall short of potential world supply for the rest of this decade. In a situation like this, many forecasters are calling for world price levels that are heavily determined by competition among producers. The level of variable cost of the marginal producers, such as in Figure 9-5, thus becomes extremely important in trying to predict prices. (And I might add that, while I have a static concept here, we are trying to tell a story over time. This curve moves over time, and quantities which are produced by different producers — represented by the dots on this curve — also change over time.) If this were the copper operating cost curve, production at the low end of the line would be accounted for by two low-cost companies in Chile; their expansion is low cost, and the expansion strategy they follow would be considered "normal," given their low unit costs. In a world of already excess supply and depressed prices, the higher-cost mines at the top end of the line become very vulnerable.

There is a feeling in the mineral industry that a lot of problems are due to foreign subsidized companies producing into already depressed markets. However, there has not been much detailed analysis to check whether or not such production makes sense from a world point of view; that is, whether it is production which is low cost and which should come on anyway. One of the charges which might or might not be true, or might or might not be important, is that state enterprises are in the business of earning foreign exchange and so produce in the market even when they are making losses. The charge sometimes takes the form: "something like 40 percent of world metal X is produced on this 'social' basis. Therefore, the other 60 percent which is produced in the more or less free market atmosphere in which Canadian producers operate, has no chance even though, if you try to rank them, free market producers might appear to be cost competitive." This is an area, however, where a lot more work is needed to sort out the facts from the accusations which may have no basis. It is potentially important though, in price formation, and it has to temper the story I am telling here about the marginal producer being the main determinant of world price level.

With Table 9-1, I want to try and counteract some of the implications that came out of the forecasts this morning. This table shows average annual rates of change in real price for a number of minerals. Up to 1983, the substantial year-to-year changes really do influence the average over five years. I think the lesson is that, abstracting from the instability of the current recession, we are coming up with expectations of long-term real price changes which are actually much less than what we saw earlier in the macro forecasts.

This really is a statement of the best view of what can happen to the real prices in Canadian dollars facing Canadian producers.

Table 9-2 shows the individual price levels on a year-to-year basis. With nickel, for instance, we are saying that about the year 2000, the real price will be $2.90 — but that is really a constant price for much of that forecast period. For a lot of those minerals, the general feeling is that the excess capacity in the world and competition among producers lead to depression in price. We will not find any new investment brought on by higher price rises. New investment will come from countries, perhaps like Chile, which are making a determined effort to blast their way in by way of low-cost production.

Take price expectations as being the determinant of Canadian production and investment — or lack of investment. Table 9-3 shows average annual growth rates of production on a year-to-year basis. The lesson here again is big changes year to year, up and down, in the first two years or so, due to the recession. But as we attain a more stable period, the long term, we are saying that rates of growth of output are going to be a lot less than the 4 or 5 percent real rate we saw in some of those other projections.

Table 9-4 is a summary table of that Canadian mineral forecast. For 1984 to 1995 the forecast is for 1.1 percent real annual rate of change. If we take a shorter period, say 1984 to 1990, it is something like 1.5 percent, and if we take 1984 to 1987, it is roughly 2.5 percent. Anyway, the lesson is for a much lower expectation of growth than had been common in the industry in the 1950s and 1960s.

The main point I would like to make is that the mineral industry is basically a very strong one in terms of its resource base, management, labour force, technology, and so on. But it is suffering from temporarily low product prices as the result of disastrous oversupply. At current prices, very few mines in the world are showing positive returns. A year ago, mineral companies in Canada were talking about how to survive. By and large they did survive, but corporate strategies have changed. They have increased productivity and unit cost has dropped 10 percent or more. We have been talking to people whose job it is to travel the world and talk to producers. And their consensus is that costs have dropped by 10 percentage points. (That in itself is going to influence world prices. The implication is that any producer which does not make the same cost reductions will be in trouble.) These 10 percent cost reductions are being achieved in large part by permanent layoffs.

As profits increase in the recovery from the recession, the proceeds will be first used to pay down debt; mineral investment will be retarded. (This is an issue I would like to see extended to other sectors. It would be worthwhile to examine in detail today's earlier projections, and the underlying assumptions for that very positive and continuing investment.)

TABLE 9-1 Average Annual Rate of Change in Real Price

Year	Nickel	Copper	Lead	Zinc	Iron Ore	Silver	Gold	Sulphur	Asbestos	Potash
1979										
1980	47.5	−1.6	−27.4	−9.7	1.1		121.9	97.1		17.0
1981	4.9	−25.4	−21.9	8.1	−5.5		−17.4	31.3		−1.7
1982	−7.1	−23.1	−36.7	−21.7	−10.3		−9.4	−8.0		−29.0
1983	−15.4	0.0	−5.9	14.0	−10.0		14.1	−22.2	11.0	−21.7
1984	9.1	0.0	5.0	0.0	−5.0	20.0	7.0	11.1	−5.8	20.2
1985	4.2	2.9	5.2	0.0	10.0	8.3	6.5	0.0	0.0	10.6
1986	4.0	2.8	4.2	0.0	10.0	0.0	7.1	0.0	0.0	0.8
1987	7.7	2.7	4.0	0.0	5.0	0.0	−14.3	0.0	0.0	1.6
1988	3.6	5.3	3.8	0.0	0.0	−7.7	−5.6	0.0	0.0	0.8
1989	0.0	6.3	3.7	0.0	0.0	−8.3	11.8	0.0	0.0	0.8
1990	0.0	0.0	3.6	0.0	0.0	0.0	15.8	0.0	0.0	0.8
1991	0.0	0.0	0.6	1.4	0.0	9.1	0.0	5.7	0.0	1.5
1992	0.0	0.0	0.6	1.3	5.0	4.2	0.0	5.4	0.0	0.8
1993	0.0	0.0	0.6	1.6	3.0	0.0	0.0	5.1	0.0	0.7
1994	0.0	0.0	0.6	1.3	3.0	4.0	4.5	4.9	0.0	1.5
1995	0.0	0.0	0.6	1.3	2.0	0.0	0.0	4.6	0.0	0.7
1996	0.0	0.0	0.6	1.3	0.0	3.8	0.0	4.4	0.0	0.7
1997	0.0	0.0	0.6	1.3	0.0	0.0	0.0	4.2	0.0	1.4
1998	0.0	0.0	0.6	1.2	0.0	3.7	0.0	4.1	0.0	0.7
1999	0.0	0.0	0.6	1.2	0.0	0.0	4.3	3.9	0.0	1.4
2000	0.0	0.0	0.6	1.2	0.0	0.0	0.0	3.8	0.0	0.7

TABLE 9-2 Real Price Forecasts 1984–2000

Year	Nickel	Copper	Lead	Zinc	Iron Ore	Silver	Gold	Sulphur	Asbestos	Potash
1979	1.81	1.24	0.71	0.50	41.0		227	34		147
1980	2.67	1.22	0.52	0.46	41.4		504	67		172
1981	2.80	0.91	0.40	0.49	39.2		416	88		169
1982	2.60	0.70	0.26	0.38	35.1		377	81	437	120
1983	2.20	0.70	0.24	0.44	31.6	10.0	430	63	485	94
1984	2.40	0.70	0.25	0.44	30.0	12.0	460	70	457	113
1985	2.50	0.72	0.26	0.44	33.0	13.0	490	70	457	125
1986	2.60	0.74	0.28	0.44	36.3	13.0	525	70	457	126
1987	2.80	0.76	0.29	0.44	38.1	13.0	450	70	457	128
1988	2.90	0.80	0.30	0.44	38.1	12.0	425	70	457	129
1989	2.90	0.85	0.31	0.44	38.1	11.0	475	70	457	130
1990	2.90	0.85	0.32	0.44	38.1	11.0	550	70	457	131
1991	2.90	0.85	0.32	0.44	38.1	12.0	550	74	457	133
1992	2.90	0.85	0.32	0.45	40.0	12.5	550	78	457	134
1993	2.90	0.85	0.33	0.46	41.2	12.5	550	82	457	135
1994	2.90	0.85	0.33	0.46	42.5	13.0	575	86	457	137
1995	2.90	0.85	0.33	0.47	43.3	13.0	575	90	457	138
1996	2.90	0.85	0.33	0.48	43.3	13.5	575	94	457	139
1997	2.90	0.85	0.33	0.48	43.3	13.5	575	98	457	141
1998	2.90	0.85	0.34	0.49	43.3	14.0	575	102	457	142
1999	2.90	0.85	0.34	0.49	43.3	14.0	600	106	457	144
2000	2.90	0.85	0.34	0.50	43.3	14.0	600	110	457	145

TABLE 9-3 Average Annual Growth Rate of Production

Year	Nickel	Copper	Lead	Zinc	Iron Ore	Silver	Gold	Sulphur	Asbestos	Potash
1979										
1980	46.1	12.6	−12.9	−12.0	−14.9	−6.7	−1.0	26.0		8.7
1981	−13.3	−3.5	12.2	3.5	−2.2	12.4	3.7	−0.6		−1.7
1982	−44.9	−11.4	2.7	8.5	−30.4	9.2	23.2	−17.1		−27.3
1983	41.6	2.0	−27.0	−12.2	−2.9	−15.8	9.4	−1.9	−0.6	13.5
1984	33.6	−1.1	20.5	1.5	10.4	1.6	6.0	16.7	8.5	25.8
1985	3.0	0.8	16.7	1.9	8.1	2.0	6.7	0.7	4.4	0.7
1986	3.0	−0.8	0.0	0.0	0.0	0.0	5.0	0.5	0.0	17.2
1987	3.4	0.0	0.0	0.0	−1.3	−0.1	3.6	0.3	−1.1	9.0
1988	3.3	0.5	0.0	0.0	−1.3	0.0	−2.3	0.3	−3.2	6.6
1989	1.6	3.5	0.0	0.0	−1.3	0.0	0.0	0.3	−3.3	3.5
1990	2.1	2.3	2.9	1.9	−1.3	1.3	2.4	0.3	−2.3	4.1
1991	0.5	1.5	0.0	0.0	3.9	0.0	3.4	−5.5	−2.9	6.4
1992	0.0	−1.5	0.0	0.0	3.8	0.4	0.0	−6.8	−3.0	3.8
1993	1.0	1.5	0.0	0.0	2.4	0.0	−5.6	−9.8	−5.0	3.7
1994	0.0	1.6	0.0	0.0	3.6	0.0	0.0	−2.8	−3.9	3.6
1995	0.5	0.1	6.9	8.2	3.4	3.0	0.0	−2.9	−4.1	3.4
1996	1.0	0.7	0.0	0.0	1.1	0.0	−5.9	−3.0		4.0
1997	1.0	1.5	0.0	0.0	1.1	2.1	0.0	−3.9		3.8
1998	1.0	0.0	0.0	0.0	2.2	0.0	−6.2	−4.0		3.7
1999	1.0	−0.4	0.0	0.0	2.1	1.2	0.0	−3.0		3.6
2000	1.0	−0.6	0.0	0.0	1.0	0.0	0.0	−3.1		3.4

TABLE 9-4 Canadian Mineral Production Forecasts (annual rates of change in percent)

	1984–87	1984–90	1984–95
Nickel	3.1	2.7	1.7
Copper	NIL	1.1	1.0
Lead	5.3	3.1	2.3
Zinc	0.6	0.6	1.1
Iron Ore	2.2	0.5	1.8
Silver	0.6	0.5	0.6
Gold	5.1	2.5	1.1
Sulphur	0.5	0.4	−2.4
Asbestos	1.1	−1.0	−2.3
Potash	8.7	6.7	5.6
Total	2.4	1.5	1.1

TABLE 9-5 Canadian and U.S. Inflation Rates

	1981–85	1986–90	1991–95	1996–2005
United States	5.8	4.2	4.1	4.0
Canada	7.5	4.8	4.4	4.5

Source: DRI Canada.

The mineral industry, in the presence of small cash flows and high debt-equity ratios, has become very vulnerable to any future price fluctuations. Having survived with negative interest coverages (the inability to cover their interest payments) in two years has caused them to change their strategies. They are not going to invest; there is no need to invest. We have made some calculations. We looked at the increase in debt-equity ratios between 1979 and 1982, and asked how much cash would have to be generated by the metal-mining sector in order to reduce the currently high level of debt-equity to what it was in 1979. The figures look like three billion dollars, and that takes five years or so to generate. These are the types of subjective things which temper our views about investment, production, and so on. "Fragile" is the word I have to use to describe the immediate future of the mineral industry.

To reiterate, it is critical that we be sure about the foundation for assumptions of a continuing positive Canadian trade balance and an appreciation of the Canadian dollar through this decade. DRI shows the Canadian inflation rate above the U.S. rate, significantly so until 1985 (Table 9-5), yet the Canadian dollar is forecast to increase in value fairly significantly from .82 (1981–85) to .87 over 1996–2005. Now if this scenario is plausible, the point should be made that it would not be of benefit to mineral growth in Canada. In this respect, I am happy about the less bullish exchange rate forecast by Informetrica.

Turning to the PEAP scenario, I noticed a fairly sharp break between the historical forecast period for a number of the key variables: the trade balance again is forecast to stay healthy, positive; private investment as a percentage of GNP is seen to increase significantly. Somewhat surprisingly, the real after-tax rate of return on investment is assumed to reverse the decline of the 1960s and 1970s and to increase until 1995. This brings me back to my opening comments about our need to be sure about the future competitive strength of industry sectors.

Note

This paper was presented at the Symposium "Long-Term Economic Prospects for Canada," organized by the Macroeconomic Research Section of the Royal Commission on the Economic Union and Development Prospects for Canada, Ottawa, January 10, 1984. The views expressed are those of the author.

10

Sectoral Views of the Longer Term: *Manufacturing*

CRAIG OLIVER

I will concentrate on the issues facing the manufacturing sector, providing some comment on the historical framework, on what we think is the likely trend, and on the factors we will be taking into account in looking at the manufacturing sector for the future, with emphasis on some structural issues that are of particular concern to us.

I would like to stress that the manufacturing sector is a very heterogeneous group of economic activities, which makes generalization very difficult. Having made that comment I would just add that the share of manufacturing in the Canadian economy over the last 20 years has been declining as a percentage of economic activity; this seems to be true in a number of industrialized countries, as there is a shift out of manufacturing into the activities typical of the post-industrialized information-based economy. We are making the assumption that that kind of trend will continue in the Canadian environment, which will lead us to give much more emphasis in our thinking to the whole role of the service industry in economic development.

Within the manufacturing sector, over the past 20 years there have been marked differences in performance and in growth rates. The fastest growing share has been in the transportation industry. A large part of that sector is automotive and it may be questioned whether or not that portion will continue to take an increasing share of the annual growth rate in this sector.

Some of the other higher performers have been chemicals, machinery, rubber and plastic, electrical products, textiles and metal fabricating. Marked declines in participation have been noted in printing-publishing, furniture, tobacco, knitting, non-metallic minerals, leather, food and

beverages, clothing (not a surprising list, but it may help to remind people).

All of the sectors I have listed are affected by different kinds of issues, but let me raise three which may have some general applicability: the composition of domestic demand; the international competitiveness of the sectors; and the regulatory and institutional environment in which they operate. I think our analysts were fairly comfortable with assessing the domestic demand. The international competitiveness will be determined to some significant degree by institutional arrangements, and these are much more difficult to predict with any sense of stability.

The three most interesting structural issues from our point of view in terms of influencing the future performance of the manufacturing sector would be: basic technological changes, the changing international environment in which we are operating; and a persistent overcapacity in our current manufacturing base (this was mentioned earlier in some of the other statements).

The technological change issue has had a good deal of attention recently. I categorize it as the micro electronics phenomenon. We are very much concerned that our focus on that be in the user industries, because we are interested in both productivity and competitiveness and feel that user industry adaptation is a major requirement to achieve those objectives. This brings with it the other side of the debate: the problem of employment generation. I think that leads me to the conclusion, which may sound like a cop-out, that one of the basic requirements for development or maintenance of the manufacturing sector would be the strong macro policies which contribute so much to the so-called climate for manufacturing activity. This, in general terms, is the critical determinant of the future of the sector.

We are very much concerned about the changing position of Canadian manufacturing in the international environment. There has already been some discussion about the growth of supply from the LDCs in certain sections of manufacturing, and this will continue to be a very significant part of the international influence: textiles, clothing, and home electronics are the sectors that have been clearly enough identified. Their main feature is that the points of pressure for supply are continually shifting. If you look at the history of our voluntary trade restraints with LDCs over the last 15 years, you can see them moving as the new suppliers develop from, for instance, Japan, Korea, Taiwan, Hong Kong and now Pakistan, Bangladesh and East Africa. We will continue to face those kinds of growing pressures, complicated as Mr. Brewer has said, by some cases in which governments are prepared to put up substantial funds to achieve the objective of establishing their industries in the international market. There is the other dimension, of course, which is perhaps more serious to the manufacturing industry as a whole: the continued competition from the major industrialized countries which, in

our view, will continue to grow. It will probably be encouraged as a matter of national policy, certainly in Japan and Europe.

Finally there is, in certain sectors of the manufacturing industry, a persistent overcapacity: food products; chemicals; petrochemicals; automotive, shipbuilding, and rail equipment. The food industry overcapacity is related largely to demographic trends. Domestic producers of metal and automotive products tend to be marginal producers who have excess capacity except in very high periods of growth. Rail, urban transit and shipbuilding overcapacity is to some extent due to the difficulty suppliers experience in penetrating protected domestic markets of most foreign countries. Any of you who have dealt at all with the shipbuilding industry realize that it is very difficult to operate in the international environment, given the policies of our trading partners. This is probably equally true in rail and urban. The petrochemical overcapacity issue is closely related to the energy question, and there are serious problems as to whether or not the industry as a whole in Canada will have a supply of feedstock that will allow it to develop a more competitive position.

Note

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SESSION IV

Uses and Limitations of Long-Term Projections

Chairman:

John Sargent

Participants:

Chris Caton, Data Resources Incorporated
Mervin Daub, Queen's University

11

Uses and Limitations of Long-Term Projections

CHRIS CATON

I intend to concentrate on the uses and limitations of DRI's long-term projections of the U.S. economy. There will be some generic lessons to be learned, and to the extent that I understand these generic lessons, I will tell you what I think they are. I do not make use of other people's projections because I do not know all of the limitations of their usage. I will focus on what we produce and on the limitations that I see in the use that is made of it, primarily by others.

In the early 1970s, we used to produce a trend outlook, which is what most people talked about this morning, although I found it a little surprising that nobody said, why do we have this smooth trajectory in the future. No one pretends that this is the path the economy will follow; it is rather the mean of all the possible paths which we perceive the economy could follow, once we have worked out the ramifications of the present cyclical experience. In other words, you put a recovery in for a few years and then you say: in the absence of major shocks, what is the mean of all the possible paths the U.S. economy may follow through 1987 and beyond? We put our actual forecast in through to 1987, and thereafter it becomes a mean projection. That has never been enough for all of our clients, and so we also produce a projection which has an explicit cycle in it, and the clear message there is that we do not pretend to foresee the cycles more than two years ahead. So the timing of those cycles in our explicit cyclical projection is clearly suggestive rather than definitive.

That was enough for our clients until about 1978, when I discovered that no matter what you give them, they always want more. Just as the cyclical projection has its genesis in exploration of the cyclical uncertainties that are in the economy, our clients became concerned with

uncertainty about potential growth. There has to be some uncertainty about that exogenous productivity development, which Peter Dungan focussed on this morning.

That was when we began to produce what we call band width forecasts, which attempt to answer the question: what if potential growth is half a percent a year lower or higher? These are not very wide band widths, you understand, and they used to explore only that element of uncertainty, that is: what if we are wrong about potential growth; what are the implications of that for the forecast? They explored only that element originally, but about 1981, I managed to incorporate more, so that the optimistic scenario included not only high growth but also low inflation. Thus the bands we are using now are either optimistic or pessimistic, in the areas of both growth and inflation.

That is by no means the end of the macroeconomic uncertainty out there. Nor is it by any means the end of uncertainty which is relevant for any one user, because a lesson you learn very early on in our business is that no one out there produces gross national product. They all produce cars, or steel, or what-you-will, and they want to know not what is the best and the worst that can happen to GNP but what is the best and the worst that can happen to *them*.

Around 1981, then, I incorporated different inflation rates in the story; at about the same time I began to update the central trend projection every month. The reason for doing that is that any one client who wishes to access a long-term projection at any random point in the year is considered to have the right to use one which is up-to-date with all of the recently published data. The only way you can do that is to update your long-term outlook as often as there are significant changes in data, and that is monthly in the United States. And so every month we update our long-term forecast.

The other projections are produced once a quarter; that seems to be the right frequency. Twice a year they run out 25 years for the more long-term oriented users. Another twice a year we produce a full set of trend and cycle scenarios through 1995 only, and every month I update the central trend scenario.

Four groups of clients use what we produce. Clients who have a very long planning horizon use the 25-year forecast. They are mainly the utilities and other energy-related companies. There is very little government interest, so that was an interesting question asked this afternoon, which presumed the opposite. That might, of course, be true in this country but in the United States, the macroeconomic projections in the long term find much more use in the private sector.

There is a second and bigger set of clients who are five-year planners. A survey result presented at the forecasting conference in Philadelphia last year showed that 60 percent of U.S. corporations regard long-term planning as a five-year proposition. They are quite specific about it. That

is one reason why I made a conceptual error when I limited what I was going to talk about today to the 1995 horizon. Everyone else, this morning at least, went a little longer than that.

Another substantial group of users are the in-house users. DRI discovered at an early stage of its existence that it would have to stop growing if it produced only macro forecasts. Instead, we began to produce detailed energy sector forecasts, detailed agricultural forecasts, international services also; and a lot of these need macroeconomic projections. These are fully integrated with what we produced by our in-house processors. The energy service, for example, uses my outlook for components for industrial production. I use their outlook for what the world price of oil is likely to do, and for other variables.

The last of the four groups are those interested in the analysis of alternative policies. We do provide these projections on line, which means that some people will take our projections, make a few changes, re-solve the model, and then make their own forecast. Of course, we encourage this. But other people will take our projections and ask questions about the impact of alternative policies. I have already mentioned the group of users who look five years out and who run their product line models about five years forward. Just as that group might be surprisingly large, those who take our model and run different policies through it may be surprisingly small. That is because a corporation, unless it has a barrow to push in some particular area, is not really interested in simulated different monetary/fiscal mixes because that area is not in its control. And the government, as I said, seems to have a fairly short planning horizon in the United States.

The sort of questions we have been asked lately include: what are the long-term effects of a tax credit for research and development spending, since that affects potential output; and can you figure out what it does to profits and what it does to receipts? Will such a credit significantly increase growth, will it pay for itself, and if so, when? That kind of use I would typify as using the model primarily as an accounting device; once you specify the elasticity of spending on R&D with respect to the credit, and once you specify the elasticity of potential output with respect to the stock or with respect to R&D, then everything else flows from it. You are using the model as a very sophisticated back-of-the-envelope calculator, which is a function it performs very well.

We have also been doing some work lately which picks from two menus, one that is relatively favourable to the manufacturing sector of the economy and the other that assumes business as usual. The menus differ, for example, with respect to the level of real interest rates, the level of the exchange rate, the cyclical turbulence of the economy, and whether or not one conducts a "rational" trade policy. These menus can be made into model inputs fairly easily and will provide an answer to the question. You can guarantee that.

Those are the kinds of questions we have been asked recently in the area of policy simulation. There is a little more in the paper about usage, but let me turn now to limitations.

The most obvious limitation, and one that is not easy to address, is that long-term projections have one disturbing property: they are usually wrong. If you look at the projections prepared in the past, that is almost universal. If you look at what was done in the early 1970s, everyone assumed that the U.S. economy would settle back to what you might call a "4,4,4" configuration: growth, 4 percent, inflation, 4 percent, and unemployment, 4 percent.

You know, consequently, that our existing projections are also wrong, so that the critical question becomes whether we can tell the direction in which they are wrong. If we can, and if we get a large number of people to agree on this, then there is something wrong. In my view, the ideal projection is one which we know is wrong, and so take that into account, no matter how we use it. If everyone knows it is wrong, but fails to agree on how and why, we may have arrived at a definition of the best possible projection! In any case no one should ever make the assumption — the mistake — of believing that things are going to turn out exactly as we say.

The second limitation, one which I think is potentially even more serious, is that long-term projections have a tendency to change even when they have not yet been proven to be wrong.

I had no idea what Table 11-1 would look like when I developed it to illustrate this point, but thought it would be a useful exercise to go back to the average annual increases we forecast for the period 1982 to 1995. That means to me that you compute the compound growth rate between those two terminal years, meaning that we show the average growth experience for the years 1983 through 1995. For the average level, that becomes a little clearer, and that is why 1983 through 1995 is specified (on the second and third panels) but 1982 through 1995 is specified when we talk about average annual increases.

I decided to go back and look from the first forecast which DRI made through to 1995, and ask: how has the outlook changed, using as the outlook that common portion of all of them, namely the years 1983 through 1995? I was very surprised.

If you look at the top block in Table 11-1, where we show annual average increases, with one exception — the real oil price — the column which most resembles the sixth column is the first column. So, we have gone through a five-year period, and we have in many ways returned to where we started.

Between the two you see that growth rates tended to worsen, inflation tended to get worse and then they came to approach their old levels. The reason for that is evident elsewhere in the table, and illustrates my example that forecasts tend to be revised even when they are not shown

TABLE 11-1 Changes in the Long-Term Outlook, 1978–83

	Average Annual Increases, 1982–95					
Forecast Reported In	**Dec. 1978**	**Dec. 1979**	**Sept. 1980**	**Sept. 1981**	**Dec. 1982**	**Dec. 1983**
Real GNP	3.2	2.8	2.7	2.8	3.0	3.1
Industrial production	4.2	3.6	3.6	3.5	3.9	4.2
Manufacturing employment	0.8	0.4	0.4	0.4	0.8	1.1
Inflation	5.6	7.0	7.4	7.0	6.1	5.6
Real oil price	3.1	2.6	3.7	4.2	2.7	0.6
Output per hour	2.1	2.1	1.6	1.7	1.7	1.9
Potential GNP	2.9	2.6	2.3	2.6	2.5	2.7
	Average Level, 1983–95					
Forecast Reported In	**Dec. 1978**	**Dec. 1979**	**Sept. 1980**	**Sept. 1981**	**Dec. 1982**	**Dec. 1983**
Federal deficit as a share of GNP	−0.1	−0.4	−0.5	−0.9	−2.5	−3.4
Federal expenditures as a share of GNP	20.5	21.0	22.7	20.9	23.4	24.2
Unemployment rate	5.1	6.2	6.3	6.2	7.2	7.6
	Average Level in 1995					
Forecast Reported In	**Dec. 1978**	**Dec. 1979**	**Sept. 1980**	**Sept. 1981**	**Dec. 1982**	**Dec. 1983**
Oil imports as a share of GNP (%)	3.1	3.8	3.3	2.6	3.0	2.7
Price of foreign oil ($ per barrel)	57	130	182	141	104	71
Barrels of oil imported (millions per day)[a]	15.2	9.9	6.1	6.0	7.9	9.4
Total energy usage (quads)	N/A	104.0	93.1	91.2	86.3	84.8

a. Includes natural gas liquids in barrels per day equivalents.

to be wrong, or indeed, that people tend to overreact to short-term events. In the last block, look at the price of foreign oil in dollars per barrel. We have been forecasting it late in each of the last six calendar years — fifty-seven dollars. This is the 1995 price in nominal dollars. It is what we forecast in 1978; it went up to $182 in September 1980, and back to $71 in December 1983. The $182 has come straight from our energy service, so in this case, I must be passing the buck 182 times. . . . In retrospect, we clearly overreacted to what happened in 1979 and 1980. At that time it seemed perfectly sensible — to the extent that I spoke many times over the course of 1980 and 1981 in defence of our oil price forecast being as *low* as you see it here. I mean as low as $182 a barrel in 1995. And invariably these days, I have to defend the fact that it is as high as $71 a barrel. While we must plead guilty to the charge of overreacting to short-run events, everyone else overreacted even more, and there was clearly a tendency to move away from a long-term projection before it was ever proven to be wrong.

There are other interesting stories in the table about the development of the forecast. One of the most interesting, in the middle block, is federal expenditures as a share of GNP, a subject which came up earlier today. It is the size of the federal budget which excludes the states and locals, but includes the redistributive activities, interest payments and so on. It is not just their final purchases. Our projection of this share shows a steady upward trend, interrupted only for a time in 1981 when we, like certain others in the United States, believed campaign promises — a mistake that we will not make again. But that share, as has been observed, will be clearly higher now than it was in 1980.

We might also glean from Table 11-1 that long-term projections do shift over time, but not always as much as some may have thought. While it is likely that there will be further shifts, we cannot predict the direction. Once you can predict the direction, you know you are wrong again.

There is another important class of limitations that I have to plead guilty about: it is not always clear, in long-term projections, where the assumptions end and the results begin. This is because I can say that I make assumptions about energy prices, about demography, about what the monetary authorities are going to do, about governments' fiscal action, and I can outline them to you. But, it is not really clear that these are totally exogenous. The demography assumption I take from the Bureau of Census projections is not an assumption to them; it is their projection. The price of oil I take from our energy service is not an assumption for them; it is their projection. So, the distinction between what is an assumption and what is a result is not clear to me, other than the broad-brush assumptions outlined in our Long-Term Review (and explanatory notes), which basically say: we do not know what the residual in the productivity calculation is; we assume it is this but it could well be higher or lower. That, clearly, is an assumption, but everything

else is a projection, as far as I can tell. They just come from different sources.

I may have a blind spot in this respect, or it may be that most of our clients simply do not want to know what we assumed, only what we said.

I must turn now to a question which has already been asked today by other people: can we better integrate microeconomic and macroeconomic projections? I think those of us who are macroeconomists must be doing it because it is easier than being a microeconomist. But I think we get a little too much flak in this particular debate. It is one aspect of our job to make sure things add up to 100 percent. No one else has necessarily to be concerned about that. We do produce a detailed industrial breakdown of our forecast, and the industry sector experts in DRI do examine it and say whether or not it is reasonable. Have we, for example, used up all the nation's resources in any way by 1995?

As I said, it is our job to make sure the numbers total 100 percent and we may sweep some microeconomic considerations under the rug in making sure that happens. I am not sure what to do about that because I do not know how much I should change my estimate of potential growth if people tell me there are going to be three million robotics in the United States three years from now. I do not have at hand all those microeconomic considerations, and I think that means there may be room for better integration of microeconomics in macroeconomic projections.

There is a further important limitation which may or may not be relevant to the work of this Commission, and that is that you really have not answered all of your clients' questions if you just say, well, inflation is probably going to be 6 percent but it might be 8 or it might be 4. Growth is probably going to be 3 percent, but it might be 2.5 or even 3.5. You have not answered all their questions because any one user will be far more hostage than another to silly little things that can happen: car sales remaining below 8 million in perpetuity; housing starts remaining below 1.5 million in perpetuity; energy prices not growing at all; inflation exceeding 9 percent; zero productivity growth for the next 12 years; the investment share remaining below 10 percent of GNP; imported autos taking 40 percent of the U.S. market; the wholesale replacement of metals by plastics in various uses that we have not even thought of.

I just mentioned eight things. Let us assume there is one chance in ten that any one of those happens. Let us assume for the moment that they are independent. If I produce a macro forecast which incorporates all eight of them, I have just produced one which has one chance in a hundred million of being realized, and so, is not a realistic macro projection. But any one of these events is — or presumably should be — considered by the planners in the particular industries that are most affected by the possibilities. You may have agreed on a macroeconomic projection and a couple of band widths, but you still have not answered all of the questions for all of the planners.

I should mention one final consideration that we have found to be something of a problem. Just as no one produces GNP — only specific commodities — very few people use DRI's long-term outlook as the final product. They have a product line model; they take DRI's long-term outlook and run it through their product line model and deduce the implications for their industry from that. Now, let us suppose a corporate planner does that in year $X-1$, and then comes the following year, year X, and he does it again, only to discover that his product line model is generating significantly different results. He now has a number of possibilities to consider, and what he does next depends on which of the possibilities is correct.

These possibilities include the fact that his model has been re-estimated, or that it has not been and so has become a less close representation of his firm's environment, or that it is overreacting to changes in input from our new projection, or that it is reacting perfectly sensibly. There are four different possibilities for each change in answer. He does not know and it is not trivial to find out which of these is the correct answer. But what he does next depends on which is correct, so here is a further limitation that I see: the fact that long-term projections do tend to get stacked. Having agreed on your macro projection, you then assess what that means to various industries. Every time you do that, you are widening the bands of uncertainty.

Note

This paper was presented at the Symposium "Long-Term Economic Prospects for Canada," organized by the Macroeconomic Research Section of the Royal Commission on the Economic Union and Development Prospects for Canada, Ottawa, January 10, 1984. The views expressed are those of the author.

12

Some Evidence on the Accuracy and Uses of Long-Term Projections

MERVIN DAUB

Introduction

The role of forecasting, while currently under something of a cloud, nonetheless remains indispensable to the policy-making process.[1] This is nowhere more true than in the case of the deliberations of a Royal Commission on the Economic Union and Development Prospects of a country such as Canada.

Because of this it is important to be aware of both the limitations, and the perhaps less-than-obvious uses, of forecasting before either expecting too much or too little of the exercise. In this respect, most would likely suggest that the principal limitation of forecasts, especially long-term ones, is that they are inaccurate. Thus it is important to consider the record of such forecasts first. Following that, attention will be given to the uses of such forecasts.

Methodological Difficulties in Evaluating the Accuracy of Long-Term Projections

In carrying out such a review of the accuracy of long-term projections it is necessary to be quite careful about what is being assumed. Unless expressly noted, it will be assumed that long-term forecasts mean ones with horizons of greater than five years. It will further be assumed that one is principally interested in looking at forecasts of long-term relevance such as those of population, technology, and growth. These may well be "trend-related" forecasts (itself a tricky word but again left untouched here). To the extent that cycles or waves are sometimes introduced, these will also be noted. Further ruled out is any concern

with self-fulfilling or self-defeating adjusted forecasts for several reasons, the principal one being that it is unlikely to be the case that the audience of any given forecast of this type believes it so wholly and unquestioningly as to act on it exclusive of other considerations. Furthermore, it will be assumed that the long-term predictions to be considered are semi-policy neutral (there are, after all, monetary rules and tax assumptions which most such forecasts cannot really avoid but which make the situation unclear), shock-free, explicit-variable (i.e., non-scenario) and economic-based in character.

Further, it is important to point out that the nature of the evidence is extremely weak. Data are seldom precise enough to permit the same kind of analysis as with short-term forecasts. Indeed, they are often vague enough to warrant envy from the Delphic Oracle! As well, data on long-term forecasts have seldom been kept through to realization; they are quickly forgotten. Nothing is so irrelevant as yesterday's headline and a forecast made ten years ago for today.

This is not to say that the profession is unaware of the accuracy of long-term predictions. There is no end to the amount of "anecdotal" reference to the inaccuracy, in the sense of "famous gaffes," of specific long-term predictions. Several in the technological sphere may be cited by way of illustration (from Ayres [1969], chaps. 1 and 2):

> In 1940 a select committee of the National Academy of Sciences predicted that gas turbines would weigh 13 lb/hp [the correct figure was .4 lb/hp for an engine in operation by 1941].
>
> A Canadian astronomer predicted in 1941 that a moon rocket would have to weigh 10^6 tons in order to carry 1 lb. of payload. He was off by six orders of magnitude.
>
> Vannevar Bush testified to the U.S. Senate in 1945 that such a thing as an intercontinental ballistic missile is impossible for many years . . . I think we can leave that out of our thinking. I wish the American public would leave it out of their thinking.

With the exception of what is about to be mentioned, however, no one has undertaken a systematic study of Canadian long-term aggregate economic predictions of the form of Daub (1981) or Kenward and Jenkins (1977) on short-term forecasts. As argued above, it is the data that are at fault. Because the forecasting industry as we know it today really dates from the early 1970s, we have only several long-term projections to consider. It will likely be another five to ten years before it is possible to accept the results as supportable.[2] Unfortunately, one is called now. What evidence *can* be cited?[3]

A Brief Summary of the Accuracy Record of Long-Term Projections

Consider first, population forecasts, one of the key elements in long-term economic forecasting. Ascher (1978) has looked at the accuracy of

the long-term forecasts made by the Census Bureau and other U.S. forecasters since 1891.[4] Using sufficiently solid accuracy evaluation techniques, his findings may be summarized as follows:

- Short-term forecasts are more accurate than long-term ones. In particular, as one closes in on given target data, the accuracy goes up. However, the convergence is neither smooth nor monotonic.
- The best accuracy horizon (out of 5-, 10-, 20-year frames) seems to be at ten years. These ten-year projections showed a strong bias toward underestimation, averaged 4.5 percent of the year to be forecast and demonstrated considerable variability (e.g., the range was +4.3 percent to −11.5 percent).
- No methodology or individual was more accurate than another.
- Population forecasting is much more difficult in certain periods than in others.
- The difficulty of predicting birth control and technology factors offsets increasing data availability and methodology, suggesting that there is no reason to expect different or improved accuracy in the future.

Consider next "economic" forecasts, in particular those of growth in real GNP, again a key variable in the consideration of long-term economic prospects (since it influences, for example, energy use forecasts). Again citing Ascher (1978):[5]

- There is no difference in real GNP level forecast errors by horizon (i.e., from 5-, 10-, and 15-year frames), nor as one closes in on a target date.
- There is no improvement in accuracy with time, i.e., the accuracy of the 1950s is the same as that of the 1970s (in this instance of 5-year forecasts).
- The long-term forecasts were strongly biased toward overestimation, principally because they have often focussed more on forecasting the potential real GNP than the actual.
- There is no evidence that any one methodology is better than any other [e.g., leading indicators, trend extrapolation, econometric model].

Cycles were mentioned at the outset. What little evidence there is indicates that one is no better or worse at spotting turning points in the economy (as measured by real GNP) five, ten, or fifteen years ahead than one is at spotting them a year ahead (at which one is sometimes good, sometimes bad; and where the "one" referred to means by using indicator analysis, expert opinion or any other forecasting methodology).[6] But the data are very thin. This is especially so with respect to the evidence for the long-wave theories of Kondratieff, Schumpeter, Mensch or Marx. Since one has only three or four such long cycles to consider, one cannot statistically support any conclusion.[7]

There are two Canadian economic-based references which are ger-

mane. The first (Daub, 1980) relates to investment. The authors considered the accuracy of the ITC investment intentions survey, which dates from the immediate postwar period and reports a five-year horizon forecast. The other (Daub, 1981) reports on the short-term forecasting accuracy record (over a 20-year period which thus has some distant, if not exactly equivalent, relevance to the longer-run perspective present here).

The investment results suggest that investment forecasts worsen with span. At five years the average error is sizable. They underestimate the actual at the largest span, are invariant by industry or region (i.e., there is no systematic explainable difference in the errors), and do no better than extrapolative methods (at the longer term) but are as good as any other method of forecasting (e.g., econometric models or expert opinions).

The short-run forecasting analyses indicate that short-term (one-year ahead) forecasts underestimate real GNP on average by about 1.1 percent, are not the major source of error in nominal GNP forecasts (price is), are relatively better than extrapolations (but not by much), and are invariant by forecaster and methodology but not by period; i.e., certain years are harder to forecast than others.

Next, consider energy forecasts. Here one can cite Daub and Petersen (1981) on the accuracy of the 1969 NEB forecasts to 1990, as well as some U.S. results. There is at least one contradiction. The U.S. results suggest that the long-term forecasts of total energy *demand* are less accurate than the short-term ones; the Canadian results find no difference. Both agree that long-term electricity demand is more accurately forecast than petroleum demand, that there may be some bias toward underestimation (less in Canada, more in the United States), that variability in demand has been missed completely even if the basic "trend" has been right, and that there does not appear to be any difference due to methodology (especially over spans of greater than five years) or source (at least in the U.S. case). A consideration of the accuracy of forecasts of energy *supply* is too confusing for there to be any extractable conclusions worth citing.

Technology forecasts bear the brunt of much of the anecdotal ridicule over the accuracy of long-term forecasts, principally because they tend to be the most idiosyncratic and ad hoc in nature. Where they are explicitly testable (as they would be, for example, in the case "colour TV telephones will be found in 50 percent of Canadian households by 1990"), the data are exceedingly thin, since there are few independent forecasts of the same phenomenon and/or most predict events still to occur. Two areas where some evidence is available relate to forecasts of nuclear capacity and the speed of computers.[8]

Errors in predicting on-line nuclear power capacity are about the same over all spans down to three years, at which time they improve somewhat; they do not appear to vary systematically by source or method.

Errors in predicting the operating speed of computers increase with span, have been overoptimistic, and differ by way of source experts — being better than non-experts (a consensus of experts being better still). There is little else to go on. One suspects forecasts of engineering innovations would likely be better than those of highly policy-dependent technologies such as medicine (with pure science being perhaps the most difficult); but in the absence of some theory of technological advance, or of sudden event forecasting more generally, there is little chance of testing such a hypothesis, or any other in the area of technological forecasting.

So much for a quick pass at the record. There are enough problems to cause any reasonably detached "scientist" to back off from definitive statements. The situation is even worse than the short-term accuracy evaluation exercise, which has more than enough problems of its own. But reasonable people have asked for some opinions. If the writer were to down his intellectual guard for a moment, he might venture the following comment about the long-term accuracy record. It probably suggests that:

- the further out one goes, the less accurate one becomes;
- one should forget about forecasting variability or cycles — the trend is the best that can be hoped for;
- no single methodology or source will prove more accurate than any other;
- certain periods are more difficult to forecast than others.

Further, assumptions would seem to be the key. Any given methodology works out only the implications. In this regard there are many caveats one can cite (from the behavioural literature on forecasting in particular). One that is often stressed is that in long-term forecasting, it is all too often the case that the solution gets driven by a sense of plausibility which is period-specific and generally conservative.[9] Rather, one should set wide bounds and develop flexible enough institutions to permit quick adaptability to changing circumstances, should the actuals begin to march away from the greatest-probability-of-occurrence path.

Uses of Long-Term Projections

Because of this record, the Commission may be tempted to regard this long-run forecasting exercise as a waste of time. This is more especially the case in a period such as the present where one often hears that economic forecasts in general are no good, are biased to serve special interests, and other similar complaints which indicate a strong skepticism about the role of forecasting in policy making.[10] The writer would submit that such skepticism is misplaced; it is founded on misinformation about the record, confuses the accuracy issue with changes in

demand and supply factors (which changes *are* germane to explaining attitudes toward the value of predictions), and ignores the real contribution that forecasts make to economic activity.

Briefly summarized, the record of the Canadian forecasting industry since the war indicates that it is quite as good as anything achieved elsewhere.[11] Thus the prevailing belief in inaccuracy is ill-founded. It likely serves as a convenient summary measure for a series of other complaints about economics and statistics more generally (e.g., changes in relative prices of forecasting substitutes such as futures markets, increased public availability, theoretical doubts, mismatched models to policy demands and so on are really the factors to blame for this view of traditional forecasting).[12]

Finally, such skepticism ignores the many other purposes to which forecasts are put, besides trying to reveal future truth. For example, they help to demonstrate reasonable care, to spread the responsibility for failure, "to rally the troops," to contribute to consistent thinking, and so on.[13] That they will continue to do so, as well as from time to time to accurately foretell the future, suggests that they will continue to be demanded despite the present temporary dissatisfactions.

Notes

This paper was prepared for the Symposium "Long-Term Economic Prospects for Canada", organized by the Macroeconomics Research Section of the Royal Commission on the Economic Union and Development Prospects for Canada, Ottawa, January 10, 1984.

1. Further aspects of the subject are treated in Daub (1984).
2. Long-term forecasts for 1984, for example, are available from 1974 onwards. Thus it is possible to see how the accuracy of a forecast for 1984 changes as the horizon of the forecast gets closer and closer (i.e., 11, 10 . . . year respectively). This is certainly helpful. But it is as yet statistically difficult to draw any conclusions from, for example, the five or six five-year-ahead forecasts (e.g., of 1979 from 1974, of 1980 from 1975 . . . of 1984 from 1979) or even more restrictedly from the two ten-year forecasts available (i.e., of 1983 from 1974, of 1984 from 1975).
3. In what follows, discussion is restricted to certain variables and sources. No doubt others are available. It is believed that those noted are representative.
4. Ascher (1978, chap. 3).
5. Ibid., chap. 4. In this instance the data sources are much thinner, being available only from the 1950s. His methodology is also weaker and seems biased to demonstrating that the forecasts are of little use.
6. See, for example, Daub and Sankaran (1984).
7. Delbeke (1981).
8. Ascher (1978, chap. 7).
9. See, for example, Clarke (1980, pp. 238–45). This is particularly true with "aggregating-up" forecasting exercises of which "the looking at individual sector prospects and adding up to get the economy" is one particular example.
10. See Daub (1984).
11. See the arguments in Daub (1984).
12. Ibid.
13. Ibid.

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Appendix A

The Gordon Commission Aggregate Projections: A Retrospective Evaluation

DOUGLAS GREEN

As part of its mandate, the Royal Commission on Canada's Economic Prospects (the Gordon Commission, 1955–57) made projections of both a sectoral and aggregate nature. This appendix examines the Commission's aggregate projections and evaluates them in light of what actually transpired. More specifically, we examine its projections of birth rates, mortality rates, net immigration, population, the labour force, productivity changes, potential GNP, the structural unemployment rate, and the changing structure of demand.

Birth Rate

Looking at Table A-1 we see that the Commission projected a moderate decline in the birth rate from 28.2 per thousand of population to between 24.2 and 25.6 over the 25-year period 1955 to 1980. This projection proved to be significantly inaccurate, since by 1980 the birth rate had fallen to 15.4.

Mortality Rate

The Commission projected a slight decline in the mortality rate, most of which it attributed to a falling infant mortality rate. This prediction was quite accurate, as the mortality rate declined from 8.2 per thousand of population in 1955 to 7.1 in 1980.

Net Immigration

Assuming no change in government immigration policy, the Commission forecast that net immigration would vary between 50,000 and 100,000 per

TABLE A-1 The Gordon Commission Projections: An Evaluation

	1955	Gordon Commission Projections for 1980 (or 1955–80 period)	Actual
Birth Rates (per thousand of population)	28.2	Vary between 24.2 and 25.6 over period.	1980: 15.4
Mortality Rates (per thousand of population)	8.2	Forecast moderate decline.	1980: 7.1
Net Immigration	97,000	Assumed 75,000 per year over period (range between 50,000 and 100,000 per year)	Approximately 82,000 per year over 1955–80 period
Population	15,698,000	26,650,000 (assuming net immigration of 75,000 per year)	23,747,300
Labour Force	5,568,000[a]	10,024,000	11,573,000
No. of Hours Work/wk.:			
Business	41.3	34.3	Manufacturing
Agriculture	55.3	43.75	1980: 38.5
Productivity Figures:			
Commercial non-agricultural	1949–55: 2.68	2.5–3.25% per year	2.63% per year
Agricultural	1949–55: 7.54	3.0% per year	4.26% per year
GNE per employed person	—	1.83% per year	1.69% per year[b]

GNP (constant dollars)	Index 1955 = 100	1980: 284 Growth rate: 4.3%	Cyclically-adjusted: 314 Growth rate: 4.7% 1980: Actual: 300 Growth rate: 4.5%
Unemployment rate	3.0%	Full employment level: 3.0% over period	Cyclically-adjusted: 5.6% over period Actual: 5.8% over period

Sources: Canada, Department of Finance, *Economic Review* (April 1984). Canada, Department of Finance, *Economic Review* (April 1976). Royal Commission on the Economic Union and Development Prospects for Canada, *Final Report* (Ottawa: Minister of Supply and Services Canada, 1985). William Hood and Anthony Scott, *Output, Labour and Capital*. Gordon Commission *Final Report*. Statistics Canada, *Historical Labour Force Statistics — Actual Data, Seasoned Factors, Seasonally Adjusted Data*, cat. no. 71-201 (Ottawa: Statistics Canada, 1974). Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985) Table 1.4. Statistics Canada, *System of National Accounts, Aggregate Productivity Measures*, cat. no. 14-201 (Ottawa: Statistics Canada, 1981). Canada, Department of Finance, "Annual National Accounts Historical" (Ottawa: The Department, 1984), computer printout. *Canadian Statistical Review*, July 1983. Bank of Canada, *Statistical Summary*, supplement (Ottawa: The Bank, 1967). Canada, Department of Finance, "Cyclically-Adjusted Budget Balances" (Ottawa: The Department, 1983), Table 1.1.

a. Because the labour force survey underwent a major revision in 1966, it was necessary to adjust the labour force projections presented in the Gordon Commission's *Final Report*. The adjustment factor used was calculated by comparing the labour force figures for the period 1966–1975 under the old and the new survey. From this an average adjustment factor, calculated by dividing the new labour force figure by the old for the common year, was found to be 0.9976.

b. Since the concept of employment has changed since 1955, employment statistics from 1955 were adjusted by calculating the average ratio of old employment statistics to new for the years 1966 and 1967. This ratio was found to be 0.9889.

year and average about 75,000. We see, from Table A-1, that actual net immigration was approximately 82,000 per year on average over the period. This higher net immigration figure can be accounted for by the high immigration rate during the early part of the forecast period.

Population

Using the above projection for the birth rate and the mortality rate and its assumption about the net immigration per year, the Commission arrived at a population figure of approximately 27 million for the year 1980. Owing to its poor projection of future birth rates, however, it overestimated the actual population by about three million.

Labour Force

The Commission's projection for the labour force in 1980 was more than 1.5 million below its actual level in that year. It forecast a labour force of just over 10 million, while the actual number was approximately 11.5 million. As we can see from Table A-2, its projections of the male labour force and participation rate in 1980 were reasonably accurate. The problem lies, however, in its projections of the female labour force and participation rates throughout the entire forecast period. Table A-2 demonstrates how incorrect the Commission projection of these variables was. Although the Commission recognized that the female labour force participation rate would grow (and as a consequence, the female labour force), it did not appreciate the rapidity and extent to which this would occur. As a result, its projections of the female labour force and female participation rates for 1980 were only about one-half the actual levels. It also did not anticipate the growth of part-time employment. These oversights, then, explain the inaccuracy of its total labour force projection for 1980.

Productivity

The Commission thought that it was natural to expect that future rates of productivity growth in both the agricultural and commercial sectors would approximate most closely the experience of the most recent past. (It also tied its assumptions of future productivity gains to this because recent statistics at that time were more reliable.) Employing this assumption it projected, as we can see from Table A-1, an increase in the rate of productivity growth in the commercial non-agricultural sector of 2.5 percent compounded annually and in the agricultural sector a rate of growth of 3.0 percent. Implicitly, productivity expressed in terms of GNE per employed person was projected to grow at a rate of 1.8 percent per year during this period.

TABLE A-2 Labour Force and Participation Rates

Gordon Commission Projections[a]			Actual		
	Labour Force (thousands)	Participation Rate		Labour Force (thousands)	Participation Rate
Males			Males		
1980	7,380	80.2	1980	6,935	78.3
Females			Females		
1960	1,511	25.6			
1965	1,773	26.6	1966	2,346	35.4
1970	2,067	27.5	1970	2,824	38.3
1975	2,371	28.3	1975	3,680	44.4
1980	2,675	28.7	1980	4,638	51.6

Sources: Canada, Royal Commission on Canada's Economic Prospects, *Final Report* (Ottawa: Queen's Printer, 1957). Statistics Canada, *Historical Labour Force Statistics — Actual Data, Seasonal Factors, Seasonally Adjusted Data*, cat. no. 71-201 (Ottawa: Statistics Canada 1974). Canada, Department of Finance, *Economic Review* (April 1976). Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985).

a. As a result of the major labour force revision undertaken in 1976 it was necessary to adjust the Gordon Commission labour force projection figures to make them comparable to the actual current figures. This was done for both male and female labour force projections and a separate adjustment factor was calculated for each. The method used involved finding the average ratio of the revised to the old labour force for the years 1966 to 1975. The adjustment factor for males was found to be 0.9793 and for females 1.0492.

TABLE A-3 Productivity Statistics 1955–80 (actual)

	GNE per Employed Person	Agriculture Output per Person-Hour	Commercial Non-Agriculture Output per Person-Hour
		(percent)	
1955–80	1.7	4.3	2.6
1955–66	2.2	6.8	2.9
1966–73	2.5	2.5	3.8
1973–80	0.0	2.1	1.0

Sources: Canada, Department of Finance, *Economic Review* (April 1984). Canada, Department of Finance, "Annual National Accounts Historical" (Ottawa: The Department, 1984). Statistics Canada, *System of National Accounts, Aggregate Activity Measures*, cat. no. 14-201 (Ottawa: Statistics Canada, 1981).

An examination of productivity statistics in Table A-3 during the forecast period for both sectors reveals that the actual rate of productivity growth in the commercial non-agricultural sector was approximately 2.6 percent, for the agricultural sector 4.3 percent and, in terms of GNE per employed person, 1.7 percent. These statistics are not particularly enlightening in terms of the trend in productivity growth over the 1973–80 period, however. As we can see from Table A-3, the rate of growth has declined quite substantially over this period. Productivity

measured in terms of GNE per employed person and output per man-hours in the commercial non-agricultural sector was substantially lower in this period relative to the 1955–66 and 1966–73 periods; 0.0 and 1.0 respectively compared to 2.2 and 2.5 for GNE per employed person and 2.9 and 3.8 for commercial non-agriculture output per man-hours in these earlier two periods. Agricultural productivity dropped less dramatically but declined nonetheless.

This slowdown in productivity growth has been attributed to many complex and interdependent factors: a modest decline in the growth of the stock of capital relative to labour; large declines in productivity growth in certain sectors of the Canadian economy, e.g., the oil and gas sector; a shift of labour from sectors which exhibit relatively high productivity growth to services where productivity is difficult to measure and is thought to have a lower-than-average rate of growth; the increasing number of women and youths entering the labour force during the 1970s; and the relative change in energy prices resulting from the international supply shocks of the 1970s with its effect on utilized capital stock.

Structural Unemployment

From 1951 to 1955 the average level of unemployment in Canada was approximately 3 percent, and the Commission was confident both that this was the full employment level of unemployment and that it would continue into the future. We have chosen to compare the Department of Finance's cyclically-adjusted unemployment rate with the Commission's projection. Although the Department of Finance's estimate more nearly approximates the average unemployment rate over the period, it will suffice for our purposes. From Table A-4 we see that this unemployment rate averaged above 4.5 percent in the 1950s, 5 percent in the 1960s and moved upward from 6 to over 7 percent in the 1970s. Guindon and Grignon maintain that it rose over this period for the following reasons: the demographic growth of young people and the increase in the participation rate of women; the reform of the unemployment insurance program in 1971; provincial minimum wage policies; wage policy of the public and para-public sector; and the relative price changes of production factors.[1]

Potential GNP

To estimate potential GNP, the Commission used its projections of labour productivity, number of workers and average hours worked per worker in a year. Its results, under the assumption of a 3 percent full employment unemployment rate and net immigration of 75,000 persons per year, are presented in Table A-5 in index form (1955 = 100).

TABLE A-4 Actual and Cyclically-Adjusted Unemployment Rates

	Unemployment Rate	Cyclically-Adjusted Rate	
1955	4.3	4.6	
1956	3.3	4.5	
1957	4.8	4.5	
1958	7.1	4.6	
1959	5.9	4.5	
1960	7.1	4.5	
1961	7.1	4.4	
1962	5.9	4.6	
1963	5.5	4.7	
1964	4.7	4.9	
1965	3.9	4.7	
1966	3.3	4.8	
1967	3.8	4.9	
1968	4.5	5.1	
1969	4.4	5.3	
1970	5.7	5.5	
1971	6.2	5.8	
1972	6.2	6.1	
1973	5.6	6.3	
1974	5.3	7.0	Avg.: 5.6
1975	6.9	7.3	
1976	7.1	7.6	
1977	8.1	7.5	
1978	8.4	7.4	
1979	7.5	7.4	
1980	7.5	7.2	

Sources: Canada, Department of Finance, "Cyclically-Adjusted Budget Balances" (Ottawa: The Department, 1983).

Also contained in this table are the comparable actual index figures and an index derived from the Department of Finance's cyclically-adjusted output estimates. This latter index must serve as a "second-best" proxy for potential output with which to compare the Commission projections for the same reason that the cyclically-adjusted unemployment rate is used above. The methodology used by the Department of Finance is quite simple: an average rate of labour, utilization and trend productivity growth are combined to obtain cyclically-adjusted output.

One can see from Table A-5 that, in all the years surveyed, this index of cyclically-adjusted output is higher than either of the Commission projections and it is also higher than the index of actual output. The former phenomenon may be explained by a number of things: a rate of growth of the labour force unanticipated by the Commission; its incorrect projection of the number of hours worked per week (it projected 34.3 in the business sector while, at least in the manufacturing sector, it was about 38.5 in 1980); unforeseen changes in external demand; and unanticipated technological change.

TABLE A-5 Real GNE

	Index Levels (1955 = 100)			
	Productivity Growth in Business Sector (percent per annum)	Gordon Commission Projections (assuming net immigration of 75,000 per annum)	Cyclically-Adjusted	Actual
1965	2.5	144	162	159
	3.25	153		
1970	2.5	179	210	201
	3.25	195		
1975	2.5	217	265	257
	3.25	245		
1980	2.5	264	314	300
	3.25	306		

Sources: Canada, Royal Commission on Canada's Economic Prospects, *Final Report* (Ottawa: Queen's Printer, 1957). Canada, Department of Finance, "Cyclically-Adjusted Budget Balances" (Ottawa: The Department, 1983). Canada, Department of Finance, *Economic Review* (April 1984). Canada, Department of Finance, "Annual National Accounts Historical" (Ottawa: The Department, 1984), computer printout.

Structural Changes in Demand

Note: Owing to discrepancies between Gordon Commission estimates of the percentage distribution of demand over the 1953–55 period and the official Statistics Canada estimates, both are represented. Thus this narrative will discuss projected and actual changes in the distribution in qualitative terms only.

Personal Expenditure on Consumer Goods and Services

The Commission projected that personal expenditure on consumer goods and services would account for a slightly larger fraction of total national expenditures in 1980 than in 1955. This was based on the belief that there would be less rapid growth in government expenditures in the future. As we shall see, this expectation was borne out.

Government Current Expenditure on Goods and Services

Convinced that the share of the national output devoted to government defence expenditure would decrease, the Commission projected a consequent decline in the percentage share of government current expenditure on goods and services. Table A-6 reveals that this share has declined throughout the forecast period to an even greater degree than the Commission projected.

TABLE A-6 Structure of Demand (as a percentage of GNP)

	Gordon Commission Projections Constant 1955 Dollars			Actual Constant 1971 Dollars		
	Actual 1953–55 (its measurement)	1979–81 (middle)	Increase or Decrease as a % of GNP	Statistics Canada 1953–55 (its measurement)	1979–81 (middle)	Increase or Decrease as a % of GNP
Personal expenditure on consumer goods and services	63.3	64.3	1.0	59.7	61.5	1.8
Government expenditure on current goods and services	13.6	12.8	−0.8	21.0	17.2	−3.8
Gross fixed capital formation:						
Total	23.8	22.4	−1.4	22.0	23.2	1.2
Government	4.3	3.8	−0.5	3.0	2.9	−0.1
Business	14.6	15.2	0.6	13.4	16.0	2.6
Housing	4.9	3.4	−1.5	5.6	4.3	−1.3
Inventories (change)	1.3	1.7	0.4	0.7	0.5	−0.2
Exports of goods and services	21.6	18.5	−3.1	17.3	24.8	7.5
Imports of goods and services	−23.6	−19.8	−3.9	−19.8	−27.5	7.7

Sources: Canada, Royal Commission on Canada's Economic Prospects, *Final Report* (Ottawa: Queen's Printer, 1957). Canada, Department of Finance, *Economic Review* (April 1984). Canada, Department of Finance, "Annual National Accounts Historical" (Ottawa: The Department, 1984).

Gross Fixed Capital Formation

Government

The Commission projected a decline in the share of this type of expenditure compared with GNE. This partly reflects its belief that defence expenditures would decrease and partly its moderate allowances for increased standards of adequacy for social capital. This share rose, however, throughout the 1960s but began to decline after 1970 to a level reasonably consistent with the Commission's projection.

Business

Because it believed that a larger part of investment in the future would consist of machinery and equipment which depreciate more quickly than buildings, for example, the Commission projected an increase in the share of national output devoted to gross investment expenditure by business. We can see from Table A-6 that, by 1980, the increase in this share was substantially larger than they had predicted. This can be explained, in part, by the rise in the world oil price after 1973 and the consequent investment in the energy sector in Canada.

Housing

The Commission projected correctly that in the future Canadians would devote smaller proportions of their growing incomes to providing shelter.

Foreign Trade as a Percentage of GNP

The Commission projected a continuation of the long-run decline in the size of Canada's foreign trade, compared with national output. It attributed this to limited growth in the external demand for the products of Canada's agricultural and secondary manufacturing industries during the forecast period. This prediction proved to be inaccurate, as these statistics demonstrate:

	1953–55 (1971 $)	1979–81
Exports	17.3% of GNP	24.8%
Imports	(19.8%) of GNP	(27.5%)

The Commission understandably could not foresee two occurrences which greatly influenced external demand for Canadian products. First, the U.S.–Canada auto pact signed in 1965 stimulated American demand for Canadian-manufactured motor vehicles and parts. The resultant impact on Canadian exports and on exports as a percentage of GNP can

TABLE A-7 Trade Statistics 1955–80

	Total Merchandise Exports as a % of GNP	Merchandise Exports with Exception of Motor Vehicles and Parts as a % of GNP	Merchandise Exports with Exception of Motor Vehicles and Parts, Crude Petroleum and Natural Gas as a % of GNP
	(current $)		
1955	16.0	16.0	15.8
1956	15.8	15.8	15.5
1957	15.3	15.3	14.9
1958	14.9	14.9	14.6
1959	14.7	14.7	14.4
1960	14.9	14.8	14.5
1961	15.7	15.7	15.2
1962	15.7	15.6	14.9
1963	16.1	16.0	15.3
1964	17.5	17.3	16.6
1965	17.0	16.3	15.6
1966	17.8	16.3	15.6
1967	18.4	15.8	15.0
1968	19.1	15.6	14.8
	(constant 1971 $)		
1968	17.2	13.7	12.9
1969	17.9	13.6	12.7
1970	19.0	15.0	14.0
1971	18.9	14.6	13.5
1972	19.4	14.9	13.6
1973	20.0	15.2	13.8
1974	18.6	14.1	12.9
1975	17.1	12.5	11.6
1976	18.1	12.8	12.1
1977	19.3	13.3	12.8
1978	20.6	14.2	13.8
1979	20.2	15.0	14.5
1980	20.2	15.9	15.6

Sources: Bank of Canada, *Statistical Summary*, supplement (Ottawa: The Bank, 1967). Canada, Department of Finance, *Economic Review* (April 1984). Canada, Department of Finance, *Tabulation of Historical Trade Statistics* (Ottawa: The Department, 1983).

be seen in Table A-7. Second, world oil price increases in 1973 and 1979 generated new demand for Canadian crude petroleum and natural gas. It is also important to note, however, that total merchandise exports less motor vehicles and parts, crude petroleum and natural gas as a percentage of GNP generally exhibited (with the exception of the mid-1970s) an upward trend.

Notes

This appendix was prepared for the Symposium "Long-Term Prospects for the Canadian Economy," organized by the Macroeconomics Research Section of the Royal Commission on the Economic Union and Development Prospects for Canada, Ottawa, January 10, 1984.

1. Denis Guindon and Louis Grignon, "Changes in the Cyclical and Structural Components of Unemployment Rates: Their Implications for the Measurement of the Labour Market." Study prepared for the Department of Finance (Ottawa: The Department, 1981).

Appendix B

Economic Council of Canada Projections: *Comparison with Outturn*

DOUGLAS GREEN

In this appendix, projections made by the ECC in a number of *Annual Reviews* spanning the period from 1963 to 1983 are compared with actual outcomes. Where possible, projections of a "potential performance" nature are also compared with current estimates of corresponding "cyclically-adjusted" series, as the latter are more relevant to the "trend" values which longer-term projections generally attempt to estimate. We look at the potential projections found in the *First*, *Sixth*, *Ninth*, *Twelfth*, and *Seventeenth Annual Reviews*, and at potential and non-potential projections contained in the *Twentieth Annual Review* for a number of the major aggregates.

ECC First Annual Review

Before we begin to evaluate the ECC's projections in this *Annual Review*, it is important to note that they are not forecasts but rather indications of the productive capabilities of the economy under what the ECC regarded as reasonable expectations of performance. Another interpretation is that they represent goals for the economy. The Council's calculation of the potential in various areas leaned heavily on past rates and patterns of performance. This section will examine the Council's projections over the 1963–70 period of net immigration, population, employment potential, productivity potential, potential output, the inflation rate, the unemployment rate and the structure of demand. We highlight the differences and note the similarities between the Council's projections for this period and the actual values.

TABLE B-1 First Annual Review — Projections and Outcomes

	ECC Projections First Annual Review for 1970 or 1963–70 period	Actual 1970 or 1963–70 period
Net immigration (1965–70)	50,000 per yr. between 1963 and 1970	97,000 per yr. over 1963–70 period
Population	22,000,000	21,297,000
Labour force	8,127,000[a] (2.7% per year)	8,374,000[a] (3.1% per year)
Female labour force	2,500,000 (4.2% per year)	2,691,000 (5.3% per year)
Employment	7,883,000[a] (3.1% per year)	7,879,000[a] (3.1% per year)
Total economy		
Output per person employed	2.4%	2.2%
Output per person-hour	3.0%	
Productivity		
Commercial non-agricultural		
Output per person employed	2.8%	2.8%
Output per person-hour	3.3%	3.5%
Agricultural		
Output per person-hour	3.4%	3.8%
Output per person employed	2.9%	3.1%
Output (real GNE)	Index: 1963 = 100 1970 = 145 5.5% per year	Index: 1963 = 100 Actual: 1970 = 144 5.3% per year Cyclically-adjusted = 143 5.3% per year

Inflation rate (CPI)	1.4%		3.4%	
Structural unemployment rate (average annual 1964–70)	3.0%		Cyclically-adjusted: 5.0 Actual: 4.3%	
	Actual 1963	**Projected 1970**	**Actual 1963**	**Actual 1970**
Balance of exports and imports (% of GNP)(constant $)	−1.2	−2.6	−0.8	0.7
Exports		increase	17.3	24.0
Imports		increase	18.1	−23.3

Sources: Economic Council of Canada, *First Annual Review*, "Economic Goals for Canada to 1970" (Ottawa: The Council, 1964). 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. Canada, Department of Finance, *Economic Review* (April 1983). Statistics Canada, *Historical Labour Force Statistics — Actual Data, Seasonal Factors, Seasonally Adjusted Data*, cat. no. 71-201 (Canada: Statistics Canada, 1974). Canada, Department of Finance, "Cyclically-Adjusted Budget Balances" (Ottawa: The Department, 1983), Table 1.1, computer printout. Canada, Department of Finance, *Annual National Accounts Historical* (Ottawa: The Department, 1984), computer printout.

a. Old labour force survey.

Analysis

Upon examining the actual values, one is struck by the remarkable accuracy of the Council's projections for many of the more important variables. The most obvious place to begin is with (real) GNE (or for the ECC, potential GNE). As we can see from Table B-1, the Council's projection for the growth rate of potential GNE over the 1963–70 period proved to be only marginally higher than the growth rate of actual GNE and cyclically-adjusted GNP.

One need not look too far for an explanation. The Council's projections of the three factors they consider to be important in determining potential GNP (the size of the labour force, employment, and productivity) were also surprisingly accurate. Actual labour force growth was slightly higher than its projected value, but this can be explained by the rate of growth of the female component, which was higher than the Council had anticipated. The employment growth projection, on the other hand, was exact. Productivity projections for a number of different measures, as we can see from Table B-1, also proved to be almost identical with the actual values, with the exception of agriculture. For this sector, actual productivity was slightly higher than projected.

However, performance of certain variables (some of major importance and some not) did not match the potential level that the Council had projected. For example, net immigration was almost twice as high as the Council assumed. Population, conversely, was substantially lower than they projected, probably reflecting a lower birth rate than the Council had anticipated. Two noteworthy disparities were those between the actual and projected potential values of unemployment and inflation. The poor performance of unemployment (an actual rate of 4.3 percent vs. projected 3.0 percent) can be explained, arithmetically, by the combination of a higher actual labour force but a similar employment figure. Unfortunately there is no readily available explanation for the failure of inflation to conform with the potential level of which the Council thought the economy was capable. We can only conjecture that the Council was incorrect in assuming that an annual growth rate of inflation of about 1.4 percent was consistent with an annual growth rate of real GNP of 5.5 percent.

A glance at the various components of demand, projected and actual, reveals a third set of disparities. Consumer spending grew at a slightly lower rate than the Council's potential rate, while government expenditure on goods and services grew at a significantly more rapid rate as we can see in Table B-2. All three components of investment demand, on the other hand, grew much more slowly than the Council's potential rate. In addition, they underestimated to a significant extent the potential and actual growth rate of trade.

To understand these differences we must look more closely at the

TABLE B-2 Growth of Real Demand 1963–70

	ECC Projected	Actual
Consumer spending	5.1	4.9
Government expenditure on goods and services	5.0	6.9
Investment	8.9	5.7
Housing	6.3	4.2
Business	10.0	7.0
Government	7.5	3.1
	Goods	**Goods and Services**
Exports	5.4	10.4
Imports	6.4	9.2

Sources: Economic Council of Canada, *First Annual Review*, "Economic Goals for Canada to 1970" (Ottawa: The Council, 1964). Canada, Department of Finance, *Economic Review* (April 1983). Canada, Department of Finance, "Annual National Accounts Historical" (Ottawa: The Department, 1984), computer printout.

model that the ECC employs. It is essentially a supply-side model; an estimate of potential GNE was arrived at by using projections for the labour force, increases in the capital stock and productivity. The main components of potential demand, private consumption, government expenditures, investment, imports and exports, were estimated and then adjusted to make their sum equal to total supply. Since the demand components were estimated separately, a number of different configurations for the demand structure were possible. The one chosen by the ECC in the *First Annual Review* underestimated the contribution of trade to growth in potential GNE. They, of course, could not foresee the signing of the U.S.–Canada Auto Pact and the impact that this subsequently had on trade between the two countries.

ECC Sixth Annual Review

Once again the projections in this *Annual Review* are "neither forecasts of likely or probable future conditions nor quantitative projections based on past performance but instead have been deliberately defined to reflect a challenging set of objectives. . . ."[1] This appendix compares the performance of the Canadian economy with these goals over the 1967–75 period for a number of indicators: the growth of the labour force; real GNP growth; productivity growth; inflation, OECD output growth; employment growth; and growth of demand.

Analysis

In the *Sixth Annual Review* the ECC did not display the prescience that it did in the *First Annual Review*, although the performance of the economy

over the 1967–75 period corresponded reasonably closely with their goals. For instance, GNE and cyclically-adjusted GNE grew at a rate which was only slightly slower than the goal set by the ECC (4.9 percent vs. 5.5 percent), as we can see in Table B-3. The arithmetical explanation for this gap is quite straightforward: although employment growth accorded with their goal, the productivity goal was not reached as its growth, measured in terms of GNE per employed person, was about 1.9 percent compared with an implicit goal of 2.5 percent.

In this Review, as in the *First Annual Review*, the unemployment and inflation goals fared quite poorly relative to the corresponding actual values. The unemployment rate over this period averaged about 5.7 percent compared with the ECC goal of 3 percent, while inflation averaged 6.9 percent compared with the ECC challenge of 2.0 percent. The former discrepancy is accounted for, arithmetically, by a labour force growth which was greater than the ECC thought was possible, while the latter can be explained by a number of unforeseen events such as a series of commodity price shocks in the early 1970s and a realignment of the international monetary system, also in the early 1970s.

An examination of the components of demand reveals that consumer expenditure on goods and services grew at a slightly faster rate than the ECC potential and also increased as a share of GNE quite substantially. On the other hand, government expenditure on goods and services grew at a significantly slower rate than the ECC goal (5.1 actual vs. ECC potential 6.1). Investment, with the exception of housing, increased more slowly than the ECC potential, especially in the public sector (2.4 vs. 7.0). Import growth compared quite favourably with the ECC goal but export growth accorded quite poorly with its corresponding potential (5.4 vs. 7.8). Thus the balance of trade deficit was much larger in absolute terms and as a percentage of GNE than was implicit in the ECC study. This lower export growth can be traced to an output growth among OECD countries, which was below the ECC potential rate. It also aids in the explanation of why output did not grow as quickly as the associated ECC potential growth rate.

ECC Ninth Annual Review

In the *Ninth Annual Review*, the ECC abandoned the supply-side approach and replaced it with a demand-oriented econometric model — CANDIDE. The ECC thought that this new framework provided it with a broader (and thus more realistic) concept of potential. Once again, any projections made in the Review will be compared with actual and (where possible) cyclically-adjusted figures. We will examine the Council's assumptions and projections for the period 1970–80 for the following variables: net immigration; population; external economic conditions;

the growth of real GNP; employment growth; inflation; labour force growth; the unemployment rate; real disposable income per capita; and the growth of demand.

Analysis

In this Review the ECC significantly overestimated the growth in real GNE. As we can see from Table B-4, they forecast a growth rate of 5.6 percent for the 1970–80 period while growth was about 4.1 percent for both actual and cyclically-adjusted output. This is attributable to a number of factors. First, and perhaps foremost, is the fact that their exogenous assumption of an annual 4.5 percent growth rate for U.S. real GNE proved to be much too high. Actual growth was about 3.1 percent. This in turn affected export growth. They forecast an annual growth rate of 5.7 percent compared to an actual rate of 4.4 percent (Table B-5). A second contributing factor was the poor performance of productivity during the decade. Growth in labour productivity advanced at an annual rate of 1.0 percent compared with their projected rate of 2.4 percent.

In addition to exports, other components of demand, in general, also experienced less rapid growth than the ECC anticipated, as we can see from Table B-5. Most notably, growth in government fixed investment was grossly overestimated (8.9 percent as actual 1.0 percent). Consumer expenditure, government expenditure on goods and services, and business investment, with the exception of residential construction, were projected to grow at a rate which proved to be too high.

Despite these differences there were remarkable similarities between actual and projected employment growth and growth in real disposable income per capita. The employment growth performance is significant in that it occurred in an environment of lower real growth than the ECC envisaged. Labour force growth was greater than the ECC anticipated, however, thus resulting in an unemployment rate above the ECC forecast. The Council projected a structural rate averaging 4.6 percent over the decade compared with a cyclically-adjusted rate of 6.9 percent and actual rate of 6.7 percent. In so doing, it did not foresee the extent of certain demographic changes and of modifications to the *Unemployment Insurance Act*. The accuracy of the growth in real disposable income per capita figure can be explained by the ECC's overestimation of population growth over the period. The lower actual growth combined with a slower actual growth of income resulted in this similarity (forecast 4.1 percent compared with actual 4.3 percent). Lower net immigration than forecast in part explains the discrepancy between actual and forecast population growth.

Last and not least in importance is the disparity between the inflation rate forecast by the ECC and the actual rate. For a variety of reasons

TABLE B-3 Sixth Annual Review — Projections and Outcomes

	ECC Projections Sixth Annual Review Perspective 1975 1967–75 Potential	Actual 1967–75
Real output growth among OECD countries	4.5% per year	3.7%
Labour force growth	2.8% per year	3.4%[a]
Employment	2.9% per year	2.9%[a]
Growth of real GNE	Index: 1967 = 100 1957 = 152 5.5% per year	Index: 1967 = 100 Actual: 1975 = 146 4.9% per year Cyclically-adjusted = 147 4.9% per year
Productivity growth (GNE per employed person)	2.5% per year	1.9%[a]
Unemployment rate	3%	Actual: 5.7% Cyclically-adjusted 6.1%
Inflation (GNE implicit price index)	2.0% per year	6.9%

	Growth in Real Demand (1967–75)	
	ECC	Actual
	(average annual percentage increase)	
Consumer expenditure	5.3	5.6
Gov't. expenditure on goods and services	6.1	5.1
Investment	6.1	5.1
Housing	6.1	6.9
Business	5.8	5.3
Government	7.0	2.4
Exports	7.8	5.4
Imports	7.9	7.4

Sources: Economic Council of Canada, *Sixth Annual Review*, "Perspective 1975" (Ottawa: The Council, 1969). Canada, Department of Finance, *Economic Review* (April 1976) and (April 1983). OECD Economic Outlook, *Historical Statistics 1960–81* (Paris: OECD). Canada, Department of Finance, "Cyclically-Adjusted Budget Balances" (Ottawa: The Department, 1983). Canada, Department of Finance, "Annual National Accounts Historical" (Ottawa: The Department, 1984).

a. Old labour force survey.

TABLE B-4 Ninth Annual Review — Projections and Outcomes

	ECC Projections Ninth Annual Review 1970–80	Actual 1970–80
Net immigration	100,000 per year	82,000 per year
Population 1975	23,077,000 25,001,000	22,697,000 24,043,000
U.S. growth rate of GNP	4.5% per year	3.1%
Labour force growth	2.8% per year	3.2%
Employment	3.1% per year	3.0%
Growth of real GNE	5.6% per year	Cyclically-adjusted: 4.1 Actual: 4.1%
Inflation (GNE deflator)	2.7% per year	8.8%
Structural unemployment rate (1971–80)	4.6%	Cyclically-adjusted: 6.9% Actual: 6.7%
Real disposable income per capita	4.1%	4.3%[a]
GNP (current dollars)	1970 = 100 1980 = 226	1970 = 100 1980 = 347
Productivity growth (GNE per employed person)	2.4%	1.0%

Sources: Economic Council of Canada, *Ninth Annual Review*, "The Years to 1980" (Ottawa: The Council, 1972). Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985). United States, U.S. Congress, *Economic Report of the President* (Washington, D.C.: GPO, 1984). Statistics Canada, *Historical Labour Force Statistics — Actual Data, Seasonal Factors, Seasonally Adjusted Data*, cat. no. 71-201 (Ottawa: Statistics Canada, 1974). Canada, Department of Finance, "Annual National Accounts Historical" (Ottawa: The Department, 1983). Canada, Department of Finance, "Cyclically-Adjusted Budget Balances" (Ottawa: The Department, 1983). Canada, Department of Finance, *Economic Review* (April 1984).

a. Disposable income deflated using CPI.

enumerated in the critique of the *Sixth Annual Review*, inflation accelerated during the 1970s. Understandably this escalation was unanticipated by the ECC. It projected an average inflation rate of 2.7 percent over the 1970–80 period while actual inflation averaged about 8.8 percent.

ECC Projections Comparison: 12th Annual Review (1975), 17th Annual Review (1980), 20th Annual Review (1983)

We now turn to more recent *Annual Reviews* in order both to evaluate their projections, where possible, and to obtain some notion of how the

TABLE B-5 Growth of Major Demand Components of Real Gross National Expenditure (average annual percentage increase over 1970–80 period)

	Projected	Actual
Consumer expenditure	5.5	4.7
Gov't. current expenditure on goods & services	4.8	2.6
Government fixed investment	8.9	1.0
Business, fixed investment		
Residential construction	4.0	4.0
Non-residential construction	7.9	5.9
Machinery and equipment	7.7	6.2
Exports of goods and services	5.7	4.4
Imports of goods and services	6.1	5.7

Sources: Economic Council of Canada, *Ninth Annual Review*, "The Years to 1980" (Ottawa: The Council, 1972). Canada, Department of Finance, "Annual National Accounts Historical" (Ottawa: The Department, 1984), computer printout.

projections have been modified over time in response to the deterioration in economic performance in the late 1970s and early 1980s. Our analysis will take the following form. First, we will examine projections of the 1975–80 period in the *12th Annual Review* (1975), in the light of what actually happened during this period, using actual and (where possible) cyclically-adjusted data. Next, data for the 1980–83 period will be used to evaluate, in a preliminary sense, the projections for the 1980–85 period contained in the *12th Annual Review* and the *17th Annual Review* (1980). In addition, we try to get a sense of how projections for the 1980–85 period of the major aggregates have evolved since 1975. In the last section we focus on the post-1982 period projections found in the *17th Annual Review* and the *20th Annual Review* (1983).

12th Annual Review (1975–80)

Because it felt that there was a great deal of uncertainty surrounding the probable development of the economy over the next decade (1975–85), the ECC provided projections for a number of different scenarios. These scenarios differ in their assumptions about the path of energy prices and growth in foreign economies. We have chosen to evaluate what the Review regarded as the most probable scenario — one characterized by a stronger foreign economic performance, with moderate energy prices. This scenario for the 1975–80 period assumed that U.S. real GNP would grow at a rate of 6.0 percent annually (versus the 3.7 percent actually experienced). The Review projected an annual potential growth rate of real GNP in Canada of 5.7 percent compared with an actual rate of growth of 3.1 percent and a cyclically-adjusted rate of 3.5 percent.

Employment growth also was below their forecast; 2.8 percent compared with 3.1 percent.

One factor contributing to this lower growth performance which must be considered, however, is the mysterious decline in productivity growth which began in 1973 and continued throughout the remainder of the decade. Productivity, measured in terms of GNE per employed person, grew at a rate of 0.3 percent annually over the 1975–80 period compared with an ECC forecast of 2.7 percent. These unanticipated factors, and an underestimation of labour force growth (2.5 percent vs. actual 2.9 percent), led to a projected potential unemployment rate which proved to be substantially below the actual (forecast 5.6 vs. actual 7.7) and the cyclically-adjusted rate (7.4 percent).

The second key assumption in the most probable scenario also turned out to be incorrect, and this too contributed to the inaccuracy of the projections associated with this scenario. To recall, in this scenario it was assumed that there would be only moderate increases in the price of energy. As we know, however, the world price of oil approximately doubled in 1979 and was the catalyst behind the ensuing escalation of inflation and unemployment rates. This occurrence, combined with the inability of the government to successfully combat simultaneously unemployment and inflation after 1975, caused inflation to achieve an average rate of growth over the 1975–80 period much above the ECC's predicted level (forecast 6.6 vs. actual 8.7).

A final area of disagreement between forecast and actual concerned population growth. The ECC forecast a growth rate of 1.2 percent per year while population actually grew at a rate of 0.9 percent per year. This can be attributed in part to a lower actual average net immigration level than was forecast.

12th and 17th Annual Reviews (1980–85)

In this section, more attention will be paid to the altered perception of the ECC in 1980 compared with 1975 of how the economy would perform over the 1980–85 period, than to an evaluation of the accuracy of the perceptions in both years. Obviously, the time period studied permits only a preliminary evaluation (using 1980–83 average growth rates) of the projections.

Chastened by the current economic performance, the ECC, in the *17th Annual Review* (1980), revised downward its projections for the 1980–85 period relative to its projections in the *12th Annual Review* (1975). Most notable is a much more modest projection of potential real GNP growth during this period. The earlier Review had forecast growth of 4.1 percent while the later one contained a forecast of 2.7 percent. For the 1980–83 period, actual output growth was much lower at 0.7 percent per year while the cyclically-adjusted rate was 2.4 percent.

Once again a difference in assumptions about real output growth in the

United States provides a partial explanation for this discrepancy. In the earlier Review this aggregate was projected to grow at a rate of 4.0 percent annually, while in the later one this number was 2.4 percent.

Similarly, the forecast performance of productivity was much more optimistic in the earlier Review, although the estimates, expressed in different terms, are not directly comparable. In the *12th Annual Review* the ECC conjectured that the shift of economic activity toward the service sector would lead to lower productivity growth after 1980 (1.8 percent per year over the 1980–85 period). By 1980 the ECC was aware that the virtual cessation of growth in this aggregate was no longer a passing phenomenon but was instead, for the time being, a characteristic not only of the Canadian but of the world economy. Thus they forecast growth in productivity, measured in terms of output per person-hour, of 0.7 percent per year over the period.

A further revision occurred in the projection of the average inflation rate over the 1975–80 period. In the earlier Review it was imagined that inflation would average about 6.9 percent over the period while in the later Review this was revised upward to 9.4 percent.

Finally, although in both reviews an improvement in the unemployment situation over the 1980–85 period relative to the preceding five-year period is projected, there is a substantial difference between their projections. This is because in 1980 the ECC was projecting from a much different environment than in 1975 — one characterized by higher inflation and lower output growth. Thus, in spite of the fact that both projected almost identical labour force and employment growth (approximately 2.0 and 2.2, respectively), there was a difference of nearly 3.5 percentage points between their estimates of the average annual structural unemployment rate over the period (3.7 percent in the earlier Review compared to 7.1 in the later one). For the 1980–83 period, at least, the latter estimate appears more accurate; the Department of Finance estimate of the cyclically-adjusted unemployment rate averages about 7.0 percent over this period.

17th Annual Review (1985–90) and 20th Annual Review (1982–87)

Since the growth rates for the various aggregates are presented annually from 1980 to 1990 in the *17th Annual Review*, we can compute the average annual rates for the period 1982–87 and compare them with those contained in the *20th Annual Review*. (The later Review contains projections of a potential and non-potential nature.) The situation is now reversed with respect to projections from the *17th Annual Review*; they are no longer the most recent projections of the two sets that are compared. Projections from the later Review bear the imprint of the recent 1981–82 recession with its sharp rise in unemployment and sharp fall in inflation.

Upon examining the two sets of projections, one first notices the

TABLE B-6 ECC Projections Comparison, Average Annual Percentage Change

	1975–80		1980–85		1980–83	1982–87			1985–90
	ECC 12th Annual Review (1975)	Actual (A) and/or Cyclically Adjusted (CA)	ECC 12th Annual Review (1975)	ECC 17th Annual Review (1980)	Actual (A) and/or Cyclically Adjusted (CA)	ECC 17th Annual Review (1980)	ECC 20th Annual Review (1983)			ECC 17th Annual Review (1980)
							Potential	Projected Actual	Cyclically Adjusted	
Population	1.2	0.9	1.1	—	1.2	—		—	—	—
Labour force	2.5	3.0	2.0	1.9	1.7	1.7		1.7		1.5
Real GNP	5.7	A: 3.1 CA: 3.5	4.1	2.7	A: 0.7 CA: 2.4	3.0	3.5–5.0	3.1	2.6	2.6
Employment	3.1	2.9	2.2	2.2	0.1	2.0	2.0–3.0	1.7		1.8
Output per employed person	2.7	0.2	1.8	—	0.6	—	1.5–2.0	—		—
Output per person-hr. (Actual: Commercial non-ag.)	—	1.3		0.7		1.2		2.1		1.3
CPI	6.6	8.7	6.9	9.4	9.7	8.6	5.0 or less	5.6		8.1
U.S. real GNP (Average level)	6.0	3.7	4.0	2.4	1.4	2.5		3.5		2.4
Unemployment rate	5.6	A: 7.7 CA: 7.4	3.7	7.1	A: 10.1 CA: 7.0	6.6	6.0–8.0	11.5	6.9	6.0

Current account balance as a % of GNP (current $)	−1.4	−1.9	−2.9	−1.9	−0.5	−2.2	−0.1		−2.3
Net average annual immigration	100	74	100	—	—	—	—	—	—

Sources: Economic Council of Canada, *12th Annual Review*, "Options for Growth" (Ottawa: The Council, 1975). Economic Council of Canada, *17th Annual Review*, "A Climate of Uncertainty" (Ottawa: The Council, 1980). Economic Council of Canada, *20th Annual Review*, "On the Mend" (Ottawa: The Council, 1983). Statistics Canada, *Historical Statistical Compendium*, prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa: Statistics Canada, 1985). Statistics Canada, *Historical Labour Force Statistics — Actual Data, Seasonal Factors, Seasonally Adjusted Data*, cat. no. 71-201 (Ottawa: Statistics Canada, 1974). Canada, Department of Finance, "Annual National Accounts Historical" (Ottawa: The Department, 1984). Canada, Department of Finance, *Economic Review* (April 1984). United States, U.S. Congress, *Economic Report of the President* (Washington, D.C.: GPO, 1984). Canada, Department of Finance, "Cyclically-Adjusted Budget Balances" (Ottawa: The Department, 1983). *Budget of the United States FY/1985*.

somewhat similar real potential output and labour force growth rates for the period. There are, however, different assumptions and projections underlying these similarities. Employment, for instance, was projected to grow at an annual rate of 2.0 percent in the earlier Review compared with an actual rate of 1.7 percent and a potential rate of between 2 and 3 percent in the *20th Annual Review*. Two other differences are those related to productivity growth and growth in U.S. real GNP. First, productivity over the period was projected to grow at a non-potential rate of 2.1 percent (in terms of output per person-hour) annually and at a potential rate of between 1.5 and 2.0 percent (measured in terms of GNE per employed person) in the later Review compared with 1.2 percent in the earlier one. (Part of the difference in projected actual growth, of course, reflects a rebound from the abnormally low levels of productivity experienced during the recent recession.) Second, growth in U.S. real output was substantially higher in the *20th Annual Review* relative to the *17th Annual Review* (3.5 percent compared with 2.5 percent).

Obvious dissimilarities also arise, as we noted above, with respect to the projections of inflation and unemployment. The ECC, in the *17th Annual Review*, did not anticipate the recession of 1981–82 or its consequences. As a direct result of it, the Canadian economy was bequested a legacy of higher unemployment and lower inflation than was thought possible several years earlier. The lower actual and potential inflation and higher actual unemployment projections in the later Review thus reflect this disruptive period in our economic history.

Notes

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1. ECC, *Sixth Annual Review, Perspective 1975*, p. 4.

Appendix C

Detailed Comparison of Projections

Note

The historical figures located at the bottom of each table are included to provide a comparison with the 1981 and 1982 numbers submitted by the different forecasting agencies. Any discrepancies that arise between these historical figures and the agency numbers (and also with respect to differences between the individual agency numbers) can be attributed either to a minor difference in definition or to the use or lack of use of more recent statistics.

TABLE C-1 Variable: U.S. Real GNE

	Average Growth Rate (% per year)						Levels (1972 $ billions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	2.8	3.7	2.8	2.3	2.3	2.6	1,502.6	1,476.0	1,770.2	2,201.7	2,466.3	2,968.6
High Trend	3.2	4.2	3.2				1,502.6	1,476.0	1,815.3	2,332.4		
Low Trend	2.4	2.4	2.6				1,502.6	1,476.0	1,666.7	2,039.2		
Informetrica (Oct. 1983)	2.6	3.5	2.6	2.6		2.6	1,503	1,477	1,753	2,157	2,448	
					2000–2005							
Informetrica (Dec. 1983)	2.8	3.7	2.4	2.6	2.5	2.6	1,503	1,477	1,772	2,143	2,432	2,756
PEAP (Dec. 1983)	2.5	3.2	2.6	2.2	2.0	2.5	1,502.4	1,485.5	1,740.3	2,141.1	2,382.6	2,630.5
Conference Board of Canada (Sept. 1983)	3.4	3.4					1,513.8	1,485.4	1,763.0			
Economic Council of Canada (Oct. 1983)	2.5	3.5					1,513.8	1,476.7	1,753.2			
Department of Finance (Apr. 1983)	2.2	2.3					1,502.6	1,475.5	1,718.8			
	1982–88											
Department of Finance (Feb. 1984)	3.6											
		1956–66	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
For reference: Actual		3.9	3.5	2.3	3.3	−1.9		671.6	984.8	1,254.3	1,513.8	1,485.4

Source: Actual, United States, U.S. Congress, *Economic Report of the President* (Washington, D.C.: GPO, 1984), p. 222.

TABLE C-2 Variable: U.S. Short-Term Interest Rates (90 day commercial paper)

	Average Level (%)						Levels (%)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	9.5	9.0	8.2	7.6	7.2	8.4	15.3	11.9	9.1	7.7	7.6	7.0
High Trend	7.9	7.1	6.1	—	—	—	15.3	11.9	6.5	6.1	—	—
Low Trend	13.1	13.3	12.3	—	—	—	15.3	11.9	13.6	10.8	—	—
												2005
Informetrica (Oct. 1983)	8.9	8.3	6.3	5.6		6.9	14.8	11.9	8.1	6.2	5.4	—
					2000–2005							
Informetrica (Dec. 1983)	9.5	9.1	7.2	5.8	5.7	7.6	14.8	11.9	9.1	6.5	5.7	5.7
PEAP (Dec. 1983)	8.7	8.3	6.1	5.7	5.7	6.6	14.0	10.6	7.1	5.8	5.7	5.7
Conference Board of Canada (Sept. 1983)	9.9	9.5					15.9	12.1	8.7			
Economic Council of Canada (Oct. 1983)[a]	8.9	8.3					14.8	11.9	8.1			
Department of Finance (Apr. 1983)	7.4	6.5					15.3	11.9	5.7			
Department of Finance (Feb. 1984)												
For reference:		**1963–66**	**1966–73**	**1973–81**	**1963–81**	**1981–82**		**1963**	**1966**	**1973**	**1981**	**1982**
Actual		4.4	6.6	9.5	7.4	12.1		3.5	5.6	8.6	15.9	12.1

Source: Actual, CANSIM.

a. 6 month prime commercial paper rate.

TABLE C-3 Variable: U.S. Long-Term Interest Rates (high-grade corporate bonds)

	Average Level (%)						Levels (%)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	11.0	10.4	9.7	9.5	8.9	10.1	14.2	13.8	10.3	9.6	9.3	8.7
High Trend	9.8	8.9	7.2	—	—	—	14.2	13.8	8.0	6.8	—	—
Low Trend	12.8	12.6	13.2	—	—	—	14.2	13.8	13.2	12.3	—	—
					2001–2005							**2005**
Informetrica (Oct. 1983)	11.1	10.3	8.3	7.2		8.9	15.1	14.9	9.9	7.5	7.0	
Informetrica (Dec. 1983)	12.3	11.8	8.8	7.2	6.9	9.5	15.1	14.9	11.4	7.5	7.0	6.7
PEAP (Dec. 1983)	11.3	10.8	8.0	7.5	7.2	8.6	14.2	13.9	9.8	7.7	7.4	7.1
Conference Board of Canada (Sept. 1983)	12.4						15.1	14.9	10.5			
Economic Council of Canada (Oct. 1983)	11.1	10.3					15.1	14.9	9.9			
Department of Finance (Apr. 1983)	8.7	7.7					15.0	13.9	6.4			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		4.3	7.0	9.8	6.8	13.8		3.4	5.1	7.4	14.2	13.8

Source: Actual, United States, U.S. Congress, *Economic Report of the President* (Washington, D.C.: GPO 1984), p. 298.

TABLE C-4 Variable: U.S. Inflation (CPI)

	Average Growth Rate (% per year)						Levels (1967 = 100)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	5.3	5.1	6.7	6.4	6.0	6.1	272.4	289.1	370.9	621.0	845.3	1,345.6
High Trend	4.3	4.0	5.5	—	—	—	272.4	289.1	351.3	538.3	—	—
Low Trend	5.7	5.7	8.8	—	—	—	272.4	289.1	380.8	746.7	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)[a]	5.1	5.0	3.8	3.4		4.1	194.5	206.0	262.5	353.5	416.7	
Informetrica (Dec. 1983)[a]	5.1	4.9	4.1	3.4	3.3	4.2	194.5	206.0	261.5	360.7	425.5	500.0
PEAP (Dec. 1983)	4.7	4.4	4.3	4.2	4.2	4.4	272.0	289.0	358.0	500.0	614.0	754.0
Conference Board of Canada (Sept. 1983)	5.2	5.1					272.3	288.6	370.3			
Economic Council of Canada (Oct. 1983)	5.1	4.9					272.3	288.5	367.3			
Department of Finance (Apr. 1983)	5.2	4.3					272.4	289.1	351.4			
	1982–88											
Department of Finance (Feb. 1984)	4.2											
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		1.8	4.6	9.4	4.9	6.1		81.4	97.2	133.1	272.4	289.1

Source: Actual, United States, U.S. Congress, *Economic Report of the President* (Washington, D.C.: GPO, 1984), p. 279.
a. U.S. Personal Consumption Implicit deflator (1972 = 100).

TABLE C-5 Variable: U.S. Inflation (CPI excluding food and energy)

	Average Growth Rate (% per year)						Levels (1967 = 100)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–( )**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**( )**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)												
Informetrica (Dec. 1983)												
PEAP (Dec. 1983)												
Conference Board of Canada (Sept. 1983)												
Economic Council of Canada (Oct. 1983)												
Department of Finance (Apr. 1983)												
Department of Finance (Feb. 1984)												
For reference:	**1957–66**	**1966–73**	**1973–81**	**1957–81**	**1981–82**		**1957**	**1966**	**1973**	**1981**	**1982**	
Actual	1.5	4.5	8.8	4.6	7.4		83.3	96.6	131.3	257.1	276.1	

Source: Actual, United States, U.S. Congress, *Economic Report of the President* (Washington, D.C.: GPO, 1984), p. 282.

TABLE C-6 Variable: U.S. Inflation (GNE deflator)

	Average Growth Rate (% per year)						Levels (1972 = 100)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	5.4	5.3	6.2	5.9	5.5	5.9	195.5	207.1	268.5	435.9	579.1	886.0
High Trend	4.7	4.4	5.0	—	—	—	195.5	207.1	256.9	380.2		
Low Trend	5.7	5.6	8.5	—	—	—	195.5	207.1	272.5	523.9		
					2000–2005							**2005**
Informetrica (Oct. 1983)	5.3	5.2	4.2	3.6	—	4.4	195.5	207.1	267.1	369.9	441.4	—
Informetrica (Dec. 1983)	5.3	5.1	4.5	3.6	3.5	4.5	195.5	207.2	265.9	377.4	450.3	535.6
PEAP (Dec. 1983)	4.8	4.5	4.1	4.0	4.0	4.3	196.0	207.0	258.0	356.0	433.0	527.0
Conference Board of Canada (Sept. 1983)	5.6	5.5					195.1	206.9	271.5			
Economic Council of Canada (Oct. 1983)	5.4	5.2					195.1	207.1	267.1			
Department of Finance (Apr. 1983)	5.1	4.3					195.5	207.2	252.0			
Department of Finance (Feb. 1984)												
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		2.0	4.7	8.0	4.7	6.0		62.8	76.8	105.8	195.1	206.9

Source: Actual, United States, U.S. Congress, *Economic Report of the President* (Washington, D.C.: GPO, 1984), p. 224.

TABLE C-7 Variable: U.S. Federal Government Deficit — National Accounts Basis — % of GNP

	Average Level (% of GNP)						Levels (% of GNP)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	−5.0	−5.1	−2.0	−0.9	−0.6	−2.0	−2.0	−4.9	−4.0	−1.3	−0.8	0.5
High Trend	−4.8	−4.8	−1.7				−2.0	−4.9	−3.6	−1.1		
Low Trend	−7.1	−7.5	−4.5				−2.0	−4.9	−7.2	−3.3		
Informetrica (Oct. 1983)												
Informetrica (Dec. 1983)												
PEAP (Dec. 1983)												
Conference Board of Canada (Sept. 1983)												
Economic Council of Canada (Oct. 1983)	−4.3	−4.1					−2.1	−4.9	−2.7			
Department of Finance (Apr. 1983)	5.3	5.4					−2.0	−4.9	−4.1			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		−0.3	−0.9	−2.2	−1.1	−4.8		1.4	−0.2	−0.4	−2.1	−4.8

Source: Actual, Robert J. Gordon, *Macroeconomics*, 3d. ed. (Boston: Little Brown, 1982), pp. xiv, xv, xvi, calculated.

TABLE C-8 Variable: U.S. Unemployment Rate

	Average Level (%)						Levels (%)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	8.7	8.5	6.9	6.8	6.9	7.4	7.6	9.7	7.1	6.6	6.9	6.8
High Trend	8.4	8.1	6.9	—	—	—	7.6	9.7	6.8	6.9	—	—
Low Trend	10.0	10.1	7.2	—	—	—	7.6	9.7	8.8	6.5	—	—
Informetrica (Oct. 1983)												
Informetrica (Dec. 1983)												
PEAP (Dec. 1983)												
Conference Board of Canada (Sept. 1983)	8.7	8.2					7.6	9.7	7.4			
Economic Council of Canada (Oct. 1983)	8.8	8.7					7.6	9.7	7.8			
Department of Finance (Apr. 1983)	8.9	8.8					7.6	9.7	7.1			
	1982–88											
Department of Finance (Feb. 1984)	8.5											
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		5.4	4.6	6.9	5.7	9.7		4.1	3.8	4.9	7.6	9.7

Source: Actual, United States, U.S. Congress, *Economic Report of the President* (Washington, D.C.: GPO, 1984), p. 259.

TABLE C-9 Variable: World Oil Price (U.S. average import price of crude oil in $US/bbl.)

	Average Growth Rate (% per year)						Levels ($US/bbl.)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2005**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)[a]	0.8	2.3	5.3	4.9	—	3.8	34.1	31.9	35.8	54.3	68.9	—
Informetrica (Dec. 1983)[a]	0.7	2.4	5.5	4.6	4.5	3.7	33.9	31.3	35.2	53.9	67.5	84.2
PEAP (Dec. 1983)	0.7	1.3	10.5	7.1	7.1	6.4	34.9	34.2	36.5	80.8	113.9	160.7
Conference Board of Canada (Sept. 1983)												
Economic Council of Canada (Oct. 1983)	1.8[b]	4.0					35.1	32.3	39.2			
Department of Finance (Apr. 1983)	0.3	1.7					33.9	31.8	34.6			
Department of Finance (Feb. 1984)												
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		−3.6	10.6	36.5	11.9	3.0		1.9	1.3	2.7	32.5	33.5

Source: Actual, International Monetary Fund, *International Financial Statistics* Yearbook (Washington, D.C.: IMF), 1983, pp. 90 and 91. Saudi light crude.

a. Persian Gulf market price.

b. Fob, Wharlon assumptions for U.S. scenario.

TABLE C-10 Variable: Price of Crude Oil Imports to Canada in $Cdn/bbl.

	Average Growth Rate (% per year)						Levels ($Cdn/bbl.)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	1.5	2.0	9.4	8.0	5.7	6.5	41.04	40.78	44.94	92.32	135.80	211.36
High Trend	−0.3	−0.2	8.1	—	—	—	41.04	40.78	40.38	75.49	—	—
Low Trend	3.3	4.1	12.7	—	—	—	41.04	40.78	49.94	129.48	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)[a]	1.0	1.9	5.4	4.9	—	3.9	42.72	41.38	45.42	69.02	87.85	—
Informetrica (Dec. 1983)[a]	1.0	1.9	5.2	4.6	4.5	3.7[c]	42.72	41.33	45.34	68.22	85.21	106.18
PEAP (Dec. 1983)		0.9	10.0	6.9	6.9			42.19	44.11	94.51	131.63	183.35
Conference Board of Canada (Sept. 1983)		−0.9						42.10	39.80			
Economic Council of Canada (Oct. 1983)[b]	1.5	2.0					42.46	41.99	46.30			
Department of Finance (Apr. 1983)	0.8	1.8					42.99	41.32	45.17			
For reference:		**1961–66**	**1966–73**	**1973–81**	**1961–81**	**1981–82**		**1961**	**1966**	**1973**	**1981**	**1982**
Actual		2.6	7.4	34.8	16.3	−3.8		2.10	2.39	3.95	42.99	41.35

Source: Actual, Canada, Department of Finance, *Economic Review* (1983), p. 173, Imported-CIF, Montreal.

a. Landed price in Montreal ($Cdn/barrel).

b. CIF, CANDIDE assumptions.

c. Dec. RUN RLS for 1981–2000 is 4.6 percent.

TABLE C-11 Variable: "Blended" Oil Price in Canada (domestic refiners' acquisition cost)

	Average Growth Rate (% per year)						Levels ($Cdn/bbl.)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	7.8	5.5	10.0	8.0	5.7	8.8	27.51	33.10	43.21	92.31	135.81	211.48
High Trend	6.0	3.3	8.6	—	—	—	27.51	33.10	39.95	75.48	—	—
Low Trend	9.7	7.6	13.3	—	—	—	27.51	33.10	47.81	129.48	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	8.2	5.8	5.9	5.1	—	6.4	27.67	33.47	44.31	70.18	90.14	
Informetrica (Dec. 1983)	9.1	6.9	5.6	4.5	4.5	6.4	27.66	33.46	46.67	72.30	90.06	111.96
PEAP (Dec. 1983)	7.4	6.0	10.3	6.9	7.0	8.5	27.51	31.65	42.30	92.59	129.23	180.81
Conference Board of Canada (Sept. 1983)[a]	5.5	2.7					27.25	32.82	37.5			
Economic Council of Canada (Oct. 1983)	8.1	5.4					27.43	33.65	43.7			
Department of Finance (Apr. 1983)	7.9	5.4					26.94	32.8	42.59			
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual						32.0					25.55	33.72

Source: Actual, information provided by EMR.
a. Montreal blended price.

TABLE C-12 Variable: "Old Oil" Wellhead Price in Canada

	Average Growth Rate (% per year)						Levels ($Cdn/bbl.)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2005**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)	10.9	7.3	7.1	5.0	—	7.7	18.89	24.63	35.08	60.63	77.31	
Informetrica (Dec. 1983)	13.7	10.6	6.8	4.6	4.5	8.3	18.89	24.63	40.74	68.91	86.30	107.63
RLS (Dec. 1983)	10.7	9.2				6.6						
PEAP (Dec. 1983)		10.1	11.0	6.9	6.9			24.63	39.78	91.44	127.90	178.21
Conference Board of Canada (Sept. 1983)	7.9	3.8					18.87	24.62	29.8			
Economic Council of Canada (Oct. 1983)	10.1	6.5					18.9	24.62	33.70			
Department of Finance (Apr. 1983)	9.6	5.8					18.88	24.63	32.7			
For reference:		**1962–66**	**1966–73**	**1973–81**	**1962–81**	**1981–82**		**1962**	**1966**	**1973**	**1981**	**1982**
Actual		0.4	4.0	23.5	11.0	30.5		2.65	2.65	3.5	18.88	24.63

Source: Actual, Canada, Department of Finance, *Economic Review* (1983), p. 173.

TABLE C-13 Variable: Domestic (Canadian) Demand for Crude Oil

	Average Growth Rate (% per year)						Levels (million bbl./year)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2005**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)	−3.7	−1.5	−0.2	1.5	—	−0.9	635.4	544.9	506.5	498.7	536.7	
Informetrica (Dec. 1983)	−4.5	−2.4	−0.2	1.5	1.000	−1.1[a]	639.2	546.7	484.2	477.3	513.7	539.8
PEAP (Dec. 1983)		0.2	0.0	−0.9	−0.9			595.0	600.0	600.0	575.0	550.0
Conference Board of Canada (Sept. 1983)	−1.6	0.2					692.0	622.0	628.0			
Economic Council of Canada (Oct. 1983)	−3.0	−1.0					621.2	544.4	519.0			
Department of Finance (Apr. 1983)	−1.3	0.5					615.0	553.5	567.9			
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		5.2	5.4	0.2	2.0	−10.2		244.2[b]	403.4	582.1	590.9	530.5

Source: Actual, CANSIM matrix 645, net sales of petroleum products.

a. RLS −0.57.

b. Net sales of petroleum products.

TABLE C-14 Variable: Total Domestic (Canadian) Production of Oil

	Average Growth Rate (% per year)						Levels (millions of bbls./year)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2005**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)	−0.5	−0.3	2.0	1.8	—	1.2	505.5	499.4	491.4	576.2	629.1	
Informetrica (Dec. 1983)	0.2	0.4	2.4	0.6	0.8	1.2[a]	505.6	499.5	510.6	617.9	638.1	664.0
PEAP (Dec. 1983)	−1.1	−1.3	0.3	−0.1	0.4			500.0	468.0	479.0	478.0	488.0
Conference Board of Canada (Sept. 1983)	−0.3	2.2					506.0	443.0	496.0			
Economic Council of Canada (Oct. 1983)	−0.1	0.4					512.0	498.7	508.0			
Department of Finance (Apr. 1983)	−2.2	−2.2					507.0	496.0	444.9			
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		7.3	10.8	−4.3	4.4	−1.3		173.1	349.3	716.1	505.3	499.0

Source: Actual, CANSIM matrix 127, domestic production of crude oil.
a. RLS 1.633.

TABLE C-15 Variable: Canadian Exports of Natural Gas

	Average Growth Rate (% per year)						Levels (billion cu.ft./year)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend[a]	8.7	8.6	9.4	8.0	7.3	8.8	6.9	7.5	11.3	23.3	34.3	60.1
High Trend[a]	10.3	10.5	8.1	—	—	—	6.9	7.5	12.4	23.1	—	—
Low Trend[a]	7.2	6.9	12.7	—	—	—	6.9	7.5	10.5	27.2	—	—
					2000–2005							
Informetrica (Oct. 1983)	4.6	5.0	3.9	0.7	—	3.3	761.89	783.89	1,000.0	1,352.5	1,402.5	
Informetrica (Dec. 1983)	4.6	5.0	3.9	0.7	0.0	3.3	761.9	783.9	1,000.0	1,352.5	1,402.0	1,402.0
RLS	5.0	6.7	4.3	0.5	0.0	3.8						
												2005
PEAP (Dec. 1983)		1.2	3.3	0.0	2.6			800.0	850.0	1,100.00	1,100.00	1,250.0
Conference Board of Canada (Sept. 1983)	−0.7	−1.2					761.0	781.0	729.0			
Economic Council of Canada (Oct. 1983)	12.9	15.2					845.8	860.8	1,749.8			
Department of Finance (Apr. 1983)	9.6	11.0					762.0	783.7	1,320.0			
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		44.6	13.2	−3.7	18.6	2.8		10.8	431.8	1,027.3	761.9	783.6

Source: Actual, Statistics Canada.
a. Petroleum & Natural Gas in $Cdn billions (current).

TABLE C-16 Variable: Canadian Demographics — Total Population

	Average Growth Rate (% per year)						Levels (millions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	1.0	1.0	0.7	0.5	0.4	0.8	24.3	24.6	25.9	27.4	28.1	28.9
High Trend	1.3	1.3	1.2	—	—	—	24.3	24.6	26.2	28.8	—	—
Low Trend	1.0	0.9	0.7	—	—	—	24.3	24.6	25.8	27.2	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	0.9	0.9	0.7	0.5	—	0.7	24.3	24.6	25.7	27.2	28.0	—
Informetrica (Dec. 1983)	1.0	0.9	0.7	0.6	0.6	0.8	24.3	24.6	25.8	27.3	28.1	28.9
PEAP (Dec. 1983)	1.0	1.0	0.7	0.4	0.3	0.7	24.3	24.6	25.9	27.4	28.0	28.4
Conference Board of Canada (Sept. 1983)	1.0	1.0					24.3	24.6	25.8			
Economic Council of Canada (Oct. 1983)	0.8	0.8					24.3	24.6	25.6			
Department of Finance (Apr. 1983)	0.9	0.8					24.3	24.6	25.6			
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		2.2	1.4	1.3	1.7	1.1		16.1	20.0	22.0	24.3	24.6

Source: Actual, Canada, Department of Finance, *Economic Review* (1983), p. 126.

TABLE C-17 Variable: Canadian Demographics — Population 0–14 Years

	Average Growth Rate (% per year)						Levels (millions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2005**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)	0.3	0.3	0.2	−0.3	—	0.1	5.5	5.5	5.6	5.6	5.6	
Informetrica (Dec. 1983)	0.1	0.2	0.1	−0.3	−0.3	0.0	5.5	3.5	5.5	5.6	5.5	5.4
PEAP (Dec. 1983)												
Conference Board of Canada (Sept. 1983)	0.2	0.3					5.5	5.5	5.5			
Economic Council of Canada (Oct. 1983)	−0.4	−0.4					5.5	5.5	5.3			
Department of Finance (Apr. 1983)												
For reference:		**1956–66**	**1966–73**	**1971–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1971**	**1981**	
Actual		2.4	−0.6	−1.5	0.2			5.2	6.6	6.4	5.5	

Source: Actual, Statistics Canada, *Historical Statistics of Canada* (Ottawa: Minister of Supply and Services Canada, annual).

TABLE C-18 Variable: Canadian Demographics — Population 15–64 Years

	Average Growth Rate (% per year)						Levels (millions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	1.0	0.9	0.7	0.8	0.7	0.8	16.1	16.3	17.0	18.0	18.8	19.8
High Trend	1.1	1.0	0.9	—	—	—	16.1	16.3	17.2	18.4	—	—
Low Trend	0.8	0.8	0.4	—	—	—	16.1	16.3	16.9	17.4	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	0.9	0.9	0.7	0.6	—	0.7	16.5	16.7	17.4	18.4	18.9	
Informetrica (Dec. 1983)	0.9	0.8	0.7	0.6	0.5	0.8	16.5	16.7	17.5	18.4	19.0	19.5
PEAP (Dec. 1983) (15–54 years)	0.9	0.9	0.8	0.5	0.3	0.8	14.0	14.1	14.8	15.8	16.2	16.5
Conference Board of Canada (Sept. 1983)	1.2	1.2					18.3	18.6	19.7			
Economic Council of Canada (Oct. 1983)	0.9	1.1					16.5	16.5	17.4			
Department of Finance (Apr. 1983)[a]	1.2	1.1					18.3	18.6	19.6			
For reference:		**1956–66**	**1966–71**	**1971–81**	**1956–81**			**1956**	**1966**	**1971**	**1981**	
Actual		2.2	2.4	2.1	2.2			9.6	11.9	13.4	16.5	

Source: Actual, *Historical Statistics of Canada*, pp. A78–93, see Table C-17.
a. Labour force population 15+.

TABLE C-19 Variable: Canadian Demographics — Population 65+ Years

	Average Growth Rate (% per year)						Levels (millions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2005**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend	2.9	2.8	2.2	1.2	0.8	2.1	2.2	2.3	2.6	3.1	3.3	3.5
High Trend	3.0	2.9	2.5	—	—	—	2.2	2.3	2.6	3.2	—	—
Low Trend	3.0	2.9	2.5	—	—	—	2.2	2.3	2.6	3.2	—	—
Informetrica (Oct. 1983)	2.7	2.6	1.9	1.7	—	2.1	2.4	2.4	2.8	3.2	3.5	—
Informetrica (Dec. 1983)	2.9	2.8	2.0	1.7	1.9	2.2	2.4	2.4	2.8	3.3	3.6	3.9
PEAP (Dec.) (55+)	2.3	2.2	1.2	1.7	1.7	1.7	4.3	4.4	5.0	5.5	5.9	6.5
Conference Board of Canada (Sept. 1983)	2.6	3.1					2.4	2.4	2.8			
Economic Council of Canada (Oct. 1983)	3.0	3.0					2.4	2.4	2.8			
Department of Finance (Apr. 1983)												
For reference:		**1956–66**	**1966–71**	**1971–81**	**1956–81**			**1956**	**1966**	**1971**	**1981**	
Actual		2.2	2.5	3.5	2.8			1.2	1.5	1.7	2.4	

Source: Actual, *Historical Statistics of Canada*, pp. A78–93, see Table C-17.

TABLE C-20 Variable: Canadian Demographics — Net Immigration

	Average Level ('000/year)						Levels ('000/year)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2000–2005**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)	47.0[a]	45.0	45.0	45.0	—	45.6	49.3	57.0	45.0	45.0	45.0	—
Informetrica (Dec. 1983)	49.9	45.0	45.6	65.0	90.0	52.1	86.3	74.6	45.0	50.0	75.0	100.0
PEAP (Dec. 1983)												
Conference Board of Canada (Sept. 1983)		48.00							50.0			
Economic Council of Canada (Oct. 1983)	45.0	42.0					84.9	60.0	40.0			
Department of Finance (Apr. 1983)	50.0								50.0			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		74.1	80.1	95.4	82.6	93.0		71.0	117.0	58.0	98.0	93.0

Source: Actual, Statistics Canada.
a. Mid-year to mid-year.

TABLE C-21 Variable: Canadian Demographics — Fertility Rate

	Average # of Children per Woman over her Lifetime						Levels					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2000–2005**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)[a]	2.0	2.0	1.8	1.7	—	1.9	2.0	2.0	2.0	1.8	1.7	—
Informetrica (Dec. 1983)[a]	2.0	1.9	1.8	1.7	1.7	1.8	2.0	2.0	1.9	1.7	1.7	1.7
PEAP (Dec. 1983)												
Conference Board of Canada (Sept. 1983)	1.7	1.7					1.7	1.7	1.7			
Economic Council of Canada (Oct. 1983)												
Department of Finance (Apr. 1983)												
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		3.6	2.3	2.0	2.7	1.7		3.9	2.8	1.9	1.7	1.7

Source: 1957–1966 Frank T. Denton, Byron Spencer and Christine Feaver, *Future Population and the Labour Force of Canada: Projections to the Year 2051* (Ottawa: Economic Council of Canada, 1980). 1973–1978, David K. Foot, *Canada's Population Outlook* (Toronto: James Lorimer, 1982). 1979–1982 Demographics Division, Statistics Canada.

a. Weighted by age group.

TABLE C-22 Variable: Labour Force Participation Rates in Canada — Males 15–24

	Average Level (%)						Levels (%)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2000–2005**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)	70.92	71.19	72.77	72.84	—	72.20	72.48	69.56	72.20	73.06	72.85	—
Informetrica (Dec. 1983)	70.87	71.14	73.10	74.69	76.14	72.81	72.48	69.53	72.24	73.91	75.24	76.76
PEAP (Dec. 1983)	69.93	69.99	70.08	69.25	69.4	69.7	72.47	69.64	69.95	69.55	69.28	69.53
Conference Board of Canada (Sept. 1983)	71.2	71.5					72.5	69.73	72.1			
Economic Council of Canada (Oct. 1983)[c]	52.8[a] 83.4[b]	53.0[a] 83.1[b]					56.3[a] 86.8[b]	51.9[a] 84.8[b]	53.5[a] 82.1[b]			
Department of Finance (Apr. 1983)	71.5	71.9					72.5	69.7	75.0			
For reference:		**1957–66**	**1967–73**	**1967–81**	**1967–81**	**1982**			**1966**	**1973**	**1981**	**1982**
Actual			63.8	70.0	67.1	69.5			64.1	66.8	72.5	69.5

Source: Actual, Statistics Canada, *Historical Labour Force Statistics*, cat. no. 71-210 (Ottawa: Statistics Canada, 1982), p. 220.
a. 14–19 years.
b. 20–24 years.
c. Old labour force.

TABLE C-23 Variable: Labour Force Participation Rates in Canada — Females 15–24

	Average Level (%)						Levels (%)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2005**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)[a]	64.24	64.65	67.64	69.74	—	67.12	63.24	62.26	66.070	68.78	70.19	
Informetrica (Dec. 1983)[a]	64.28	64.68	67.66	69.82	71.44	67.16	63.24	62.25	66.05	68.86	70.48	72.14
PEAP (Dec. 1983)	63.3	63.5	65.3	66.9	67.5	65.6	63.26	62.4	63.91	66.28	67.30	67.54
Conference Board of Canada (Sept. 1983)	65.48	66.1					63.25	62.3	66.94			
Economic Council of Canada (Oct. 1983)[b,c]	57.9	57.9					59.07	58.2	58.3			
Department of Finance (Apr. 1983)	65.6	66.2					63.3	62.3	70.4			
For reference:			**1967–73**	**1974–81**	**1957–81**	**1982**			**1966**	**1973**	**1981**	**1982**
Actual			50.8	59.1	55.2	62.3			48.4	54.2	63.2	62.3

Source: Actual, Statistics Canada, *Historical Labour Force Statistics*, cat. no. 71-210 (Ottawa: Statistics Canada, 1982), p. 225.

a. 15–19 years plus 20–24 years.

b. 14–24 years.

c. Old labour force.

TABLE C-24 Variable: Labour Force Participation Rates in Canada — Males 25+

	Average Level (%)						Levels (%)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2000–2005**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)	79.98	80.11	79.81	79.18	—	79.70	80.32	79.31	80.47	79.52	78.83	—
Informetrica (Dec. 1983)	79.51	79.55	79.34	78.85	78.14	79.27	80.32	79.32	79.96	79.06	78.63	77.68
PEAP (Dec. 1983)												
25–54	94.42	94.50	95.12	94.97	95.22	94.93	94.90	94.02	94.52	95.11	95.01	95.35
55+	43.5	43.29	44.32	45.51	46.62	44.8	45.4	44.52	43.4	44.98	45.92	47.08
Conference Board of Canada (Sept. 1983)[a]	93.26	93.09					94.92	94.09	92.31			
Economic Council of Canada (Oct. 1983)[b]	95.7	95.9					96.0	95.0	96.3			
Department of Finance (Apr. 1983)	78.5	78.4					80.3	79.5	78.0			
For reference:			**1967–73**	**1974–81**	**1967–81**	**1982**			**1966**	**1973**	**1981**	**1982**
Actual			83.3	81.1	82.1	79.3			84.9	82.3	80.3	79.3

Source: Actual, Statistics Canada, *Historical Labour Force Statistics*, cat. no. 71-210 (Ottawa: Statistics Canada, 1982), p. 222.

a. 25–54 years.

b. Old labour force, 25–54 years.

TABLE C-25 Variable: Labour Force Participation Rates in Canada — Females 25+

	Average Level (%)						Levels (%)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2005**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)	49.96	50.29	55.04	58.35	—	54.30	47.89	48.32	51.94	57.04	59.19	—
Informetrica (Dec. 1983)	49.66	49.93	54.05	57.91	59.92	53.68	47.89	48.32	50.94	56.26	58.84	60.61
PEAP (Dec. 1983)												
25–54	65.44	65.82	71.89	78.47	79.92	73.32	62.69	63.55	67.08	76.18	79.27	80.25
55+	17.93	17.88	18.39	19.01	20.15	18.77	18.21	18.15	17.93	18.72	19.30	20.86
Conference Board of Canada (Sept. 1983)[a]	65.38	65.76					62.69	63.5	66.84			
Economic Council of Canada (Oct. 1983)[b,c]	65.8	66.5					61.4	62.0	69.1			
Department of Finance (Apr. 1983)	50.9	51.5					47.9	48.3	54.3			
For reference:			**1967–73**	**1974–81**	**1967–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual			34.7	43.1	39.2	48.3			31.2	37.6	47.9	48.3

Source: Actual, Statistics Canada, *Historical Labour Force Statistics*, cat. no. 71-210 (Ottawa: Statistics Canada, 1982), p. 227.

a. 25–44 years.

b. Old labour force.

c. 25–54 years.

TABLE C-26 Variable: Labour Force Participation Rates in Canada — Total

	Average Level (%)						Levels (%)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	65.0	65.2	68.1	69.6	70.7	67.5	64.7	64.0	66.1	69.4	69.8	71.3
High Trend	65.4	65.6	68.7	—	—	—	64.7	64.0	66.8	70.1	—	—
Low Trend	64.9	65.1	67.9	—	—	—	64.7	64.0	65.7	70.2	—	—
					2001–2005							**2005**
Informetrica (Oct. 1983)	65.19	65.44	67.62	68.89	—	67.19	64.7	64.0	66.5	68.4	69.1	—
Informetrica (Dec. 1983)	64.90	65.08	67.06	68.75	69.55	66.82	64.7	64.0	65.9	68.0	69.1	69.8
PEAP (Dec. 1983)	64.54	64.64	66.97	68.89	69.01	67.19	64.67	64.04	65.03	68.40	68.96	69.05
Conference Board of Canada (Sept. 1983)												
Economic Council of Canada (Oct. 1983)[a]	63.2	63.3					63.0	62.3	64.0			
Department of Finance (Apr. 1983)	65.2	65.5					64.7	64.0	67.2			
For reference:			**1967–73**	**1974–81**	**1957–81**	**1982**			**1966**	**1973**	**1981**	**1982**
Actual			58.2	62.3	60.4	64.0			57.3	59.7	64.7	64.0

Source: Actual, Statistics Canada, *Historical Labour Force Statistics*, cat. no. 71-210 (Ottawa: Statistics Canada, 1982), p. 215.
a. Old labour force.

TABLE C-27 Variable: GNP (Canada) in Current $

	Average Growth Rate (% per year)						Levels ($ billions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	8.7	9.4	9.9	9.5	9.2	9.4	339.1	356.6	558.5	1,186.6	1,868.7	3,779.2
High Trend	9.0	9.7	9.4	—	—	—	339.1	356.6	567.1	1,162.6		
Low Trend	9.0	9.7	11.6	—	—	—	339.1	356.6	567.6	1,366.0		
					2000–2005							**2005**
Informetrica (Oct. 1983)	8.8	9.5	8.1	7.9	—	8.3	331.3	349.1	549.6	1,025.1	1,496.0	—
Informetrica (Dec. 1983)	8.0	8.5	7.5	7.0	7.7	7.5	339.1	356.6	537.1	957.8	1,345.4	1,946.7
PEAP (Dec. 1983)	8.3	9.0	7.4	6.7	6.7	7.5	339.1	356.6	547.4	971.4	1,343.4	1,861.7
Conference Board of Canada (Sept. 1983)	6.8	7.2					339.1	356.6	503.9			
Economic Council of Canada (Oct. 1983)	8.7	9.0					331.3	356.4	547.3			
Department of Finance (Apr. 1983)	8.8	9.5					331.3	348.9	549.0			
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		6.8	10.4	13.5	9.9	5.2		32.0	61.8	123.6	339.1	356.6

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 3, computer printout.

TABLE C-28 Variable: Real GNE of Canada

	Average Growth Rate (% per year)						Levels (1971 $ billions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	2.0	3.3	3.3	3.1	2.8	2.8	136.1	130.7	153.1	198.4	230.9	288.4
High Trend	2.6	4.0	3.7				136.1	130.7	158.5	212.2		
Low Trend	1.5	2.8	2.7				136.1	130.7	149.2	184.6		
					2000–2005							**2005**
Informetrica (Oct. 1983)	2.3	3.7	3.0	3.0		2.8	134.5	128.1	153.8	194.7	226.0	—
Informetrica (Dec. 1983)	2.1	3.4	3.2	2.8	2.8	2.7	136.1	130.1	154.0	198.0	227.6	261.4
PEAP (Dec. 1983)	2.1	3.4	2.8	2.1	2.2	2.4	136.1	130.1	153.7	191.7	213.1	237.4
Conference Board of Canada (Sept. 1983)	0.8	1.9					136.1	130.1	143.0			
Economic Council of Canada (Oct. 1983)	2.0	3.1					134.5	130.0	151.6			
Department of		**1982–88**										
Finance (Apr. 1983)	2.7	4.2					134.5	128.1	157.4			
Department of Finance (Feb. 1984)		3.8										
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		4.6	5.4	3.0	4.3	−4.4		47.6	74.8	107.8	136.1	130.1

Source: Actual, See Table C-27.

TABLE C-29 Variable: "Potential" Real GNE of Canada

	Average Growth Rate (% per year)						Levels					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)[a]												
Long Trend	3.0	2.9	3.0	2.8	2.5	2.9	142.3	147.2	169.6	214.2	245.6	299.8
High Trend	3.3	3.2	3.6	—	—	—	142.3	147.2	172.6	228.4		
Low Trend	2.8	2.7	2.5	—	—	—	142.3	147.2	167.8	204.6		
Informetrica (Oct. 1983)												
Informetrica (Dec. 1983)												
PEAP (Dec. 1983)												
Conference Board of Canada (Sept. 1983)												
Economic Council of Canada (Oct. 1983)												
Department of Finance (Mar. 1984)	2.4	2.4					137.5	140.7	158.6			
		1956–66	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
For reference: Actual		4.9	5.3	3.5	4.6	2.3		45.1	73.0	104.9	137.6	140.7

Source: Actual, Canada, Department of Finance, *Agrégats budgétaires corrigés des variations cycliques* (Ottawa: The Department, 1983), mimeographed.

a. Desired private business product.

TABLE C-30 Variable: Productivity of Canada (real GNE per person employed)

	Average Growth Rate (% per year)						Levels (1971 $'000)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	0.8	1.3	1.4	1.9	1.7	1.3	12.5	12.3	13.1	14.6	16.0	18.3
High Trend	1.1	1.5	1.5	—	—	—	12.5	12.3	13.3	15.0		
Low Trend	0.7	1.1	0.9	—	—	—	12.5	12.3	13.0	14.0		
					2001–2005							**2005**
Informetrica (Oct. 1983)	1.1	1.7	1.5	1.4	—	1.4	12.3	12.1	13.2	14.8	15.9	—
Informetrica (Dec. 1983)	1.4	1.9	1.6	1.2	1.2	1.4	12.5	12.3	13.5	15.4	16.3	17.3
PEAP (Dec. 1983)	1.0	1.6	0.8	1.1	1.4	0.9	11.0	10.8	11.7	12.5	13.2	14.1
Conference Board of Canada (Sept. 1983)[a]	0.5	1.0					12.0	11.8	12.3			
Economic Council of Canada (Oct. 1983)	1.2	1.4					12.6	12.6	13.5			
Department of Finance (Apr. 1983)	1.0	1.5					12.3	12.1	13.1			
Department of Finance (Feb. 1984)	**1982–88** 1.3											
For reference:			**1966–73**	**1973–81**	**1966–81**	**1981–82**			**1966**	**1973**	**1981**	**1982**
Actual			2.5	0.2	1.3	−1.2			10.3	12.3	12.5	12.3

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), computer printout.
a. Productivity in private non-agricultural sector.

TABLE C-31 Variable: Labour Force of Canada

	Average Growth Rate (% per year)						Levels (millions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	1.6	1.8	1.5	1.0	0.9	1.4	11.8	11.9	13.0	14.7	15.4	16.6
High Trend	1.9	2.1	1.7	—	—	—	11.8	11.9	13.3	15.1	—	—
Low Trend	1.4	1.6	1.5	—	—	—	11.8	11.9	12.9	14.5	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	1.7	1.9	1.3	1.0	—	1.3	11.8	11.9	13.1	14.4	15.1	—
Informetrica (Dec. 1983)	1.5	1.7	1.3	1.2	1.0	1.3	11.8	11.9	12.9	14.4	15.2	15.9
PEAP (Dec. 1983)	1.4	1.5	1.6	1.0	0.7	1.4	11.8	11.9	12.8	14.5	15.3	15.8
Conference Board of Canada (Sept. 1983)	1.2	1.3					11.8	11.9	12.7			
Economic Council of Canada (Oct. 1983)[a]	1.5	1.7					11.6	11.7	12.7			
Department of Finance (Apr. 1983)	1.8	2.1					11.8	11.9	13.2			
Department of Finance (Feb. 1984)		**1982–88** 1.8										
For reference:		**1956–66**	**1966–73**	**1973–81**	**1966–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual			3.1	3.1	3.1	0.4			7.5	11.3	11.8	11.9

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), computer printout.
a. Old labour force statistics definition.

TABLE C-32 Variable: Employment in Canada

	Average Growth Rate (% per year)						Levels (millions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	1.2	2.1	1.9	1.2	1.1	1.5	10.9	10.6	11.7	13.6	14.4	15.7
High Trend	1.5	2.5	2.1	—	—	—	10.9	10.6	12.0	14.2	—	—
Low Trend	0.8	1.6	1.8	—	—	—	10.9	10.6	11.5	13.2	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	1.1	2.0	1.5	1.6	—	1.4	10.9	10.6	11.7	13.2	14.2	—
Informetrica (Dec. 1983)	0.7	1.5	1.6	1.6	1.6	1.3	10.9	10.6	11.4	12.9	14.0	15.1
PEAP (Dec. 1983)	1.1	2.0	1.9	1.0	0.7	1.4	10.9	10.6	11.7	13.6	14.3	14.8
Conference Board of Canada (Sept. 1983)	0.5	1.3					10.9	10.6	11.3			
Economic Council of Canada (Oct. 1983)	0.8	1.7					10.7	10.4	11.3			
Department of Finance (Apr. 1983)	1.6	2.6					10.9	10.6	12.0			
Department of Finance (Feb. 1984)		2.5										
For reference:			**1966–73**	**1973–81**	**1956–81**	**1981–82**			**1966**	**1973**	**1981**	**1982**
Actual			2.8	2.8	2.8	−3.3			7.2	8.8	10.9	10.6

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1984), p. 3, computer printout.

TABLE C-33 Variable: Unemployment Rate in Canada

	Average Level (%)						Levels (%)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	10.8	10.8	8.2	6.7	5.7	8.6	7.6	11.1	9.9	7.4	6.4	5.1
High Trend	10.5	10.4	7.7	—	—	—	7.6	11.1	9.5	6.4	—	—
Low Trend	11.0	11.0	8.5	—	—	—	7.6	11.1	10.7	8.8	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	11.1	11.2	9.7	7.1	—	9.5	7.6	11.3	10.4	8.6	5.9	—
Informetrica (Dec. 1983)	11.6	11.8	11.3	9.0	6.3	10.8	7.6	11.0	12.0	10.2	8.1	5.1
PEAP (Dec. 1983)	10.4	10.3	7.4	6.4	6.4	7.7	7.6	11.1	9.1	6.4	6.4	6.5
Conference Board of Canada (Sept. 1983)	11.2	11.3					7.6	11.1	11.1			
Economic Council of Canada (Oct. 1983)	11.4	11.5					7.6	11.1	11.1			
Department of Finance (Apr. 1983)	10.7	10.6					7.6	11.1	8.8			
Department of Finance (Feb. 1984)	**1982–88** 10.0											
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		5.5	5.2	7.3	6.0	11.1		3.3	3.3	5.5	7.6	11.1

Source: Actual, Canada, Department of Finance, *Agrégats budgétaires corrigés des variations cycliques* (Ottawa: The Department, 1983).

TABLE C-34 Variable: "Natural" or "Non-Accelerating Inflation" Unemployment Rate in Canada

	Average Level (%)						Levels (%)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2005**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)												
Informetrica (Dec. 1983)												
PEAP (Dec. 1983)	5.7	5.6	5.3	5.3	5.6	5.4	5.9	5.8	5.5	5.2	5.4	5.7
Conference Board of Canada (Sept. 1983)												
Economic Council of Canada (Oct. 1983)												
Department of Finance (Apr. 1983)	6.2	6.2					6.3	6.3	6.2			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		4.6	5.6	7.3	5.7	7.0		4.5	4.8	6.3	7.1	7.0

Source: Actual, Canada, Department of Finance, *Agrégats budgétaires corrigés des variations cycliques* (Ottawa: The Department, 1983).

TABLE C-35 Variable: Inflation in Canada — CPI

	Average Growth Rate (% per year)						Levels (1971 = 100)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend	6.3	5.5	6.2	6.2	5.9	6.2	236.9	262.5	342.4	553.5	706.5	1,120.8
High Trend	5.9	5.0	5.2				236.9	262.5	334.3	501.5		
Low Trend	7.4	6.7	8.8				236.9	262.4	362.3	709.2		
					2000–2005							
Informetrica (Oct. 1983)[a]	6.1	5.2	4.6	4.4	—	5.0	228.7	252.7	326.0	466.7	578.8	—
Informetrica (Dec. 1983)[a]	5.7	4.6	3.7	3.7	4.2	4.3	233.2	258.4	323.2	431.2	516.1	633.6
PEAP (Dec. 1983)	6.2	5.3	4.9	4.6	4.5	5.2	237.0	262.0	339.0	496.0	622.0	774.0
Conference Board of Canada (Sept. 1983)	6.2	5.3					236.9	262.5	340.5			
Economic Council of Canada (Oct. 1983)	6.5	5.6					236.9	262.6	345.3			
Department of Finance (Apr. 1983)	5.7	4.7					236.9	262.5	330.1			
Department of Finance (Feb. 1984)		**1982–88** 5.0										
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		2.0	4.4	9.7	5.1	10.8		68.5	83.5	112.8	236.9	262.5

Source: Actual, CANSIM D451000.

a. Consumer expenditure, Implicit Deflator, 1971 = 100.

TABLE C-36 Variable: Inflation in Canada — CPI, Excluding Food and Energy

	Average Growth Rate (% per year)						Levels (1971 = 100)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2005**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)[a]	6.2	5.4	4.5	4.4	—	5.0	214.2	236.5	306.9	437.8	541.8	—
Informetrica (Dec. 1983)[a]	5.6	4.7	3.6	3.6	4.2	4.3	219.4	242.6	304.9	404.2	483.3	592.5
PEAP (Dec. 1983)												
Conference Board of Canada (Sept. 1983)												
Economic Council of Canada (Oct. 1983)												
Department of Finance (Apr. 1983)	5.4	3.6					208.6	231.1	285.2			
For reference:				**1971–81**		**1981–82**				**1973**	**1981**	**1982**
Actual				8.5						108.7	208.6	231.1

Source: Actual, CANSIM D451444.

a. Consumer Expenditure — Implicit Deflator, excluding food, oil, gas, electric utilities, 1971 = 100.

TABLE C-37 Variable: Inflation in Canada — GNE Deflator

	Average Growth Rate (% per year)						Levels (1971 = 100)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	6.6	5.9	6.4	6.2	6.2	6.4	249.1	274.2	364.7	597.9	809.2	1,310.5
High Trend	6.2	5.5	5.5	—	—	—	249.1	274.2	357.6	547.8		
Low Trend	7.3	6.8	8.7	—	—	—	249.1	274.2	380.4	739.8		
					2000–2005							**2005**
Informetrica (Oct. 1983)	6.4	5.6	5.0	4.7	—	5.3	246.3	272.4	357.4	526.5	662.0	—
Informetrica (Dec. 1983)	5.8	4.9	4.2	4.1	4.7	4.7	249.1	274.2	348.8	483.7	591.1	744.8
PEAP (Dec. 1983)	6.1	5.4	4.5	4.5	4.5	5.0	249.0	274.0	356.0	507.0	630.0	784.0
Conference Board of Canada (Sept. 1983)	5.9	5.1					249.1	274.2	352.4			
Economic Council of Canada (Oct. 1983)	6.6	5.7					246.3	274.2	361.0			
Department of Finance (Apr. 1983)	6.0	4.2					246.3	272.6	348.7			
Department of Finance (Feb. 1984)		**1982–88** 5.2										
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		2.1	4.8	10.2	5.4	10.1		67.4	82.6	114.6	249.1	274.2

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), computer printout.

TABLE C-38 Variable: Canadian Wage Rate, Wages, Salaries and Supplementary Labour Income per Paid Person Employed

	Average Growth Rate (% per year)						Levels ($'000)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	6.8	6.0	7.6	7.4	6.4	7.3	17.7	19.7	26.4	47.3	67.6	111.0
High Trend	6.8	6.0	6.6	—	—	—	17.7	19.7	26.4	44.0	—	—
Low Trend	7.7	7.0	9.2	—	—	—	17.7	19.7	27.6	55.8	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)[a,b]	7.0	6.3	6.3	6.2	—	6.5	17.2	19.1	25.9	42.2	57.0	—
Informetrica (Dec. 1983)[a,b]	6.5	5.6	5.6	5.5	6.2	5.9	17.9	19.9	26.1	40.4	52.9	71.5
PEAP (Dec. 1983)	5.3	4.7	5.3	5.6	5.9	5.4	15.8	17.1	21.5	32.5	42.6	56.8
Conference Board of Canada (Sept. 1983)	6.1	5.3					355.4[c]	390.8	506.9			
Economic Council of Canada (Oct. 1983)[a]	8.5	7.1					17.6	20.3	28.7			
Department of Finance (Apr. 1983)	6.4	4.7					259.0[d]	284.1	375.1			
For reference:			**1966–73**	**1973–81**	**1966–81**	**1981–82**			**1966**	**1973**	**1981**	**1982**
Actual			8.2	11.1	10.5	11.0			4.4	7.6	17.7	19.7

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 31, computer printout.

a. Wages, salaries and supplementary labour income.
b. Total employment not just paid, Industrial Composite.
c. Average weekly wages and salaries, Industrial Composite.
d. Includes military pay.

TABLE C-39 Variable: Canadian Current Account Balance (current dollars) as Percent of GNP

	Average Level (% of GNP)						Levels (% of GNP)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	−0.6	−0.8	0.1	0.9	0.9	0.4	−1.7	0.8	−1.0	0.6	0.9	0.7
High Trend	−0.3	−0.5	0.3	—	—	—	−1.7	0.8	−0.6	0.6	—	—
Low Trend	−0.7	−0.9	0.6	—	—	—	−1.7	0.8	−1.2	1.1	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	−0.9	−1.2	−1.2	−1.0	—	−1.0	−1.6	0.8	−1.7	−0.9	−1.2	—
Informetrica (Dec. 1983)	0.4	0.3	1.0	0.4	−1.0	0.6	−1.7	0.9	0.5	0.9	−0.2	−1.5
PEAP (Dec. 1983)	0.0	−0.9	0.1	0.9	1.6	0.8	−1.7	0.9	−0.3	0.5	1.1	1.7
Conference Board of Canada (Sept. 1983)	0.9	0.9					−1.7	0.9	1.0			
Economic Council of Canada (Oct. 1983)	0.0	−0.1					−1.6	0.9	−0.3			
Department of Finance (Apr. 1983)	1.0	1.0					−1.6	0.8	0.5			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		−2.5	−0.1	−1.8	−1.6	0.8		−4.3	−1.9	0.1	−1.6	0.8

Source: Actual, Canada, Department of Finance, *Economic Review* (1983), pp. 122, 137.

TABLE C-40 Variable: Exchange Rate ($US/$Cdn)

	Average Level ($US/$Cdn)						Levels ($US/$Cdn)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	82.9	83.3	87.6	91.0	94.3	86.9	83.4	81.0	84.3	89.5	92.0	96.2
High Trend	82.9	83.3	87.6	—	—	—	83.4	81.0	84.3	89.5	—	—
Low Trend	79.8	79.6	78.8	—	—	—	83.4	81.0	77.1	78.2	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	82.7	83.0	82.9	82.7	—	82.8	83.4	81.0	83.2	82.6	82.2	—
Informetrica (Dec. 1983)	82.0	82.2	84.0	84.3	84.3	83.4	83.4	81.0	83.5	84.3	84.3	84.3
PEAP (Dec. 1983)	82.0	82.0	84.0	86.2	87.0	84.7	83.3	81.3	82.6	85.5	86.2	87.7
Conference Board of Canada (Sept. 1983)	82.0	82.2					83.4	81.1	83.8			
Economic Council of Canada (Oct. 1983)	80.5	80.4					83.4	81.1	79.8			
Department of Finance (Apr. 1983)	81.0	81.0					83.4	81.0	81.0			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		108.7	96.2	91.7	99.0	81.0		102.0	92.6	1.00	83.3	81.3

Source: Actual, Canada, Department of Finance, *Economic Review* (1983), p. 224.

TABLE C-41 Variable: Canadian Terms of Trade (Deflator: Exports of Goods and Services) × 100% (Deflator: Imports of Goods and Services)

	Average Growth Rate (% per year)						Levels (1971 = 100)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2008**	**2005**
DRI Canada (Oct. 1983)												
Long Trend	0.1	0.5	1.1	0.7	1.0	0.7	103.2	101.4	104.1	113.8	117.7	127.5
High Trend	0.4	0.8	1.4	—	—	—	103.2	101.4	105.6	117.5	—	—
Low Trend	−0.3	−0.1	0.7	—	—	—	103.2	101.4	101.1	106.6	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	0.1	0.5	0.3	0.2	—	0.2	105.1	103.4	106.0	108.9	109.9	—
Informetrica (Dec. 1983)	0.4	0.8	0.2	−0.2	0.1	0.2	103.2	101.3	105.5	107.2	106.1	106.6
PEAP (Dec. 1983)	0.2	0.7	1.0	0.4	0.5	0.6	103.0	101.0	105.0	113.0	115.0	118.0
Conference Board of Canada (Sept. 1983)	0.6	1.0					103.7	102.1	107.2			
Economic Council of Canada (Oct. 1983)	−0.2	0.53					105.3	101.3	104.0			
Department of Finance (Apr. 1983)	0.7	1.2					105.1	103.5	109.9			
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		−0.4	0.5	−0.1	0.0	−1.5		105.8	102.2	105.6	105.1	103.5

Source: Actual, Canada, Department of Finance, *Economic Review* (1983), p. 179.

TABLE C-42 Variable: Private, Non-Residential Real Net Capital Stock in Canada

	Average Growth Rate (% per year)						Levels (1971 $ billions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	3.6	3.4	4.5	4.3	4.0	4.1	228.0	238.0	281.4	399.1	491.4	672.0
High Trend	3.6	3.4	4.9	—	—	—	228.0	238.6	282.1	415.0	—	—
Low Trend	3.4	3.2	3.6	—	—	—	228.0	238.6	278.9	369.9	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)[a]	4.2	4.2	4.6	4.7	—	4.5	324.6	338.7	415.7	594.7	749.4	—
Informetrica (Dec. 1983)[a]	4.0	3.9	4.1	4.3	4.5	4.1	325.0	339.4	410.8	567.1	698.2	868.8
PEAP (Dec. 1983)	3.2	2.8	5.0	4.6	3.9	4.3						
Conference Board of Canada (Sept. 1983)[b]	2.8	2.2					107.3	179.7	200.6			
Economic Council of Canada (Oct. 1983)	3.4	3.4					190.49	197.26	232.74			
Department of Finance (Apr. 1983)	3.4	3.2					198.01	206.8	242.62			
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		5.7	5.2	4.7	5.2	4.5		75.8	131.5	187.9	271.7	284.0

Source: Actual, Statistics Canada, *Fixed Capital Flows and Stocks*, cat. no. 13-210, Annual 1926–1978, 1982, p. 1; total manufacturing and non-manufacturing industries (excluding housing).

a. Gross capital stock.

b. Private non-agricultural stock.

TABLE C-43 Variable: Capital-Output Ratio in Canada (private, non-residential real net capital stock, real GNE)

	Average Ratio						Ratios					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	1.8	1.8	1.9	2.1	2.2	2.0	1.7	1.8	1.8	2.0	2.1	2.3
High Trend	1.8	1.8	1.9	—	—	—	1.7	1.8	1.8	2.0	—	—
Low Trend	1.8	1.8	2.0	—	—	—	1.7	1.8	1.9	2.0	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)[a]	3.8	3.8	4.1	4.5	—	4.0	3.4	3.8	3.8	4.3	4.6	—
Informetrica (Dec. 1983)[a]	3.8	3.8	3.9	4.2	4.4	4.0	3.4	3.8	3.8	4.1	4.3	4.6
PEAP (Dec. 1983)												
Conference Board of Canada (Sept. 1983)	1.9	1.9					1.6	1.9	1.9			
Economic Council of Canada (Oct. 1983)	1.5	1.5					1.4	1.5	1.5			
Department of Finance (Apr. 1983)	1.6	1.6					1.5	1.6	1.5			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		1.8	1.8	1.9	1.8	2.2		1.6	1.8	1.7	2.0	2.2

Source: Actual, Real GNE, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa, The Department, 1983), p. 3. Net Capital Stock, Statistics Canada, *Fixed Capital Flows and Stocks*, cat. no. 13-210, Annual 1926–1978 (Ottawa: Statistics Canada, 1982), p. 1. Total manufacturing and non-manufacturing industries (excluding housing).

a. Gross Capital Stock: Real GDP less public administration, education + health, imputed rent.

TABLE C-44 Variable: Ratio of Personal Disposable Income to GNP in Canada

	Average Level (% of GNP)						Levels (% of GNP)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	68.0	67.3	64.9	64.2	64.0	65.7	68.6	71.6	66.3	64.4	64.2	63.9
High Trend	68.1	67.3	65.2	—	—	—	68.6	71.6	66.7	64.8	—	—
Low Trend	68.3	67.7	67.2	—	—	—	68.6	71.6	67.3	67.5	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	67.1	66.3	63.7	61.6	—	64.2	68.2	70.8	65.3	62.4	61.0	—
Informetrica (Dec. 1983)	67.7	67.0	64.8	64.1	63.3	65.6	68.6	71.6	66.0	64.3	63.9	62.8
PEAP (Dec. 1983)	67.4	66.8	65.2	64.2	63.9	64.8	68.6	71.6	65.8	64.9	63.9	63.9
Conference Board of Canada (Sept. 1983)	69.4	69.0					68.6	71.6	69.8			
Economic Council of Canada (Oct. 1983)	68.1	67.4					68.2	71.6	66.5			
Department of Finance (Apr. 1983)	66.5	65.7					68.2	70.8	63.4			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		67.6	64.1	66.5	66.3	71.6		66.0	64.5	64.5	68.6	71.6

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 23, computer printout.

TABLE C-45 Variable: Canadian Personal Savings Rate as Percent of Personal Disposable Income

	Average Level (%)						Levels (%)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	12.2	11.6	11.4	10.6	10.0	11.5	13.8	15.1	11.2	10.9	10.4	9.7
High Trend	12.6	12.0	10.9	—	—	—	13.8	15.1	11.7	10.2	—	—
Low Trend	12.0	11.5	11.9	—	—	—	13.8	15.1	10.8	12.3	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	10.4	9.7	9.8	10.4	—	10.1	12.4	13.7	9.3	10.2	10.6	—
Informetrica (Dec. 1983)	11.9	11.3	10.8	11.4	11.6	11.3	13.8	15.1	10.4	11.3	11.5	11.7
PEAP (Dec. 1983)	10.9	10.0	8.1	6.7	6.4	8.2	13.8	15.1	8.0	7.9	6.4	6.2
Conference Board of Canada (Sept. 1983)	12.7	12.1					13.8	15.1	12.4			
Economic Council of Canada (Oct. 1983)	12.4	11.8					12.4	15.1	11.0			
Department of Finance (Apr. 1983)	11.5	11.1					12.4	13.7	9.3			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		5.6	6.4	10.9	7.5	15.1		4.9	6.7	9.1	13.8	15.1

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 25, computer printout.

TABLE C-46 Variable: Components of Real Demand — Consumer Expenditure in Canada

	Average Growth Rate (% per year)						Levels (1971 $ billions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	2.4	3.3	3.5	3.3	3.2	3.1	83.0	81.2	95.5	125.4	147.7	189.9
High Trend	3.1	4.1	4.1	—	—	—	83.0	81.2	99.5	137.1	—	—
Low Trend	2.0	2.8	2.8	—	—	—	83.0	81.2	93.4	116.6	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	2.5	3.5	2.7	2.8	—	2.7	83.5	81.5	96.9	119.9	137.4	—
Informetrica (Dec. 1983)	2.5	3.4	3.2	3.1	3.0	3.0	83.0	81.2	96.0	123.2	144.1	166.8
PEAP (Dec. 1983)	2.7	3.7	2.7	2.2	2.4	2.6	83.0	81.2	97.2	120.3	134.2	151.3
Conference Board of Canada (Sept. 1983)	1.4	2.1					82.96	81.21	90.14			
Economic Council of Canada (Oct. 1983)	2.1	3.1					83.54	81.15	94.58			
Department of Finance (Apr. 1983)	2.3	2.7					83.5	81.5	95.8			
Department of Finance (Feb. 1984)		**1982–88** 3.3										
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		4.4	5.5	3.3	4.4	−2.1		28.4	43.8	63.9	83.0	81.2

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 6, computer printout.

TABLE C-47 Variable: Components of Real Demand — Canadian Government Current Expenditure on Goods and Services

	Average Growth Rate (% per year)						Levels (1971 $ billions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	1.8	2.0	2.8	2.9	2.9	2.5	23.1	23.2	25.6	32.0	36.9	46.4
High Trend	2.2	2.6	2.7	—	—	—	23.1	23.2	26.3	32.6	—	—
Low Trend	1.4	1.5	2.1	—	—	—	23.1	23.2	25.0	29.5	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	2.0	2.3	2.6	2.4	—	2.3	23.0	23.2	25.9	31.5	35.4	—
Informetrica (Dec. 1983)	1.5	1.7	1.8	1.8	1.7	1.7	23.1	23.2	25.2	29.0	31.7	34.6
PEAP (Dec. 1983)	1.0	1.1	1.4	1.3	1.1	1.2	23.1	23.2	24.5	27.3	29.1	30.8
Conference Board of Canada (Sept. 1983)	0.9	1.0					23.1	23.2	24.4			
Economic Council of Canada (Oct. 1983)	1.4	1.5					23.0	23.2	25.0			
Department of Finance (Apr. 1983)	3.2	3.7					23.0	23.1	27.8			
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		4.1	5.7	1.9	3.9	0.5		9.0	13.4	19.8	23.1	23.2

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 6, computer printout.

TABLE C-48 Variable: Components of Real Demand — Canadian Government Capital Expenditure

	Average Growth Rate (% per year)						Levels (1971 $ billions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	2.3	2.1	1.7	1.8	1.9	1.9	3.8	3.9	4.3	4.9	5.4	6.2
High Trend	2.3	2.1	1.7	—	—	—	3.8	3.9	4.3	4.9	—	—
Low Trend	2.3	2.0	1.7	—	—	—	3.8	3.9	4.3	4.9	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)[a]	3.0	3.2	3.2	2.9	—	3.0	3.7	3.8	4.4	5.6	6.5	—
Informetrica (Dec. 1983)[a]	2.7	2.5	3.2	2.6	2.4	2.9	3.8	3.9	4.4	5.7	6.4	7.2
PEAP (Dec. 1983)	1.9	1.1	1.5	1.5	1.3	1.6	3.7	4.0	4.1	4.6	5.0	5.3
Conference Board of Canada (Sept. 1983)	1.8	1.5					3.8	3.9	4.2			
Economic Council of Canada (Oct. 1983)	−0.3	−1.4					3.7	3.9	3.6			
Department of Finance (Apr. 1983)	2.8	2.9					3.7	3.7	4.3			
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		8.8	1.8	0.0	3.9	3.3		1.4	3.3	3.8	3.8	3.9

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 6, computer printout.

a. Inventory Investment by government not included.

TABLE C-49 Variable: Components of Real Demand — Canadian Residential Construction

	Average Growth Rate (% per year)						Levels (1971 $ billions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	1.1	6.7	1.5	1.5	1.8	1.3	5.9	4.6	6.3	7.1	7.6	8.8
High Trend	1.7	7.6	1.5	—	—	—	5.9	4.6	6.6	7.4	—	—
Low Trend	−0.5	4.7	1.0	—	—	—	5.9	4.6	5.7	6.2	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	−1.1	4.1	0.5	1.7	—	0.3	5.8	4.5	5.5	5.7	6.1	—
Informetrica (Dec. 1983)	−0.7	4.5	0.7	0.7	0.4	0.2	5.9	4.6	5.7	6.0	6.6	6.3
PEAP (Dec. 1983)	2.4	8.5	1.6	0.6	0.4	1.6	5.9	4.6	6.8	7.8	8.0	8.2
Conference Board of Canada (Sept. 1983)	1.4	7.1					5.9	4.6	6.4			
Economic Council of Canada (Oct. 1983)	−1.2	3.5					5.8	4.5	5.4			
Department of Finance (Apr. 1983)	3.0	9.3					5.8	4.5	7.0			
Department of Finance (Feb. 1984)		**1988** 6.9										
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		1.3	9.5	−0.1	3.0	−23.1		2.8	3.2	6.0	5.9	4.6

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 6, computer printout.

TABLE C-50 Variable: Housing Starts in Canada

	Average Level ('000 units)						Levels ('000 units)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	181.0	191.0	164.0	147.0	136.0	165.0	180.0	130.0	179.0	157.0	143.0	132.0
High Trend	191.0	203.0	176.0	—	—	—	180.0	130.0	192.0	167.0	—	—
Low Trend	165.0	172.0	125.0	—	—	—	180.0	130.0	145.0	116.0	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	155.2	161.0	145.4	137.2	—	146.3	178.0	126.0	153.0	133.0	138.0	—
Informetrica (Dec. 1983)	160.6	167.5	162.0	156.6	154.4	160.1	178.0	126.0	167.0	154.0	156.0	149.0
PEAP (Dec. 1983)												
Conference Board of Canada (Sept. 1983)	165.0	172.0					180.0	130.0	195.0			
Economic Council of Canada (Oct. 1983)	164.8	172.7					178.3	125.2	167.5			
Department of Finance (Apr. 1983)	182.0	192.0					180.0	131.0	200.0			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		140.8	216.3	216.7	186.2	125.9		127.3	134.5	268.5	178.0	125.9

Source: Actual, Canada, Department of Finance, *Economic Review* (1983), p. 159.

TABLE C-51 Variable: Components of Real Demand — Non-Residential Fixed Investment in Canada

	Average Growth Rate (% per year)						Levels (1971 $ billions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	0.5	3.0	4.9	3.7	3.5	3.2	22.9	20.4	23.6	34.5	41.4	54.4
High Trend	0.9	3.5	6.0	—	—	—	22.9	20.4	24.2	38.4		
Low Trend	−0.7	1.5	3.1	—	—	—	22.9	20.4	21.9	28.0		
					2000–2005							**2005**
Informetrica (Oct. 1983)	2.4	5.4	5.1	5.4	—	4.3	22.3	19.7	25.7	38.3	49.8	—
Informetrica (Dec. 1983)	0.2	2.7	4.8	4.0	4.9	3.1	22.9	20.4	23.3	33.9	41.3	52.4
PEAP (Dec. 1983)	0.3	2.8	6.3	3.2	3.2	3.5	22.9	20.4	23.3	37.9	44.3	51.8
Conference Board of Canada (Sept. 1983)[a]	−3.9	−2.4					22.9	20.4	18.1			
Economic Council of Canada (Oct. 1983)	1.6	3.8					22.3	20.4	24.5			
Department of Finance (Apr. 1983)	2.1	5.0					22.3	19.7	25.2			
Department of Finance (Feb. 1984)		**1982–88** 4.6										
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		4.6	3.5	5.7	4.6	−11.2		7.4	11.5	14.7	22.9	20.4

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 6, computer printout.

a. Plant and equipment.

TABLE C-52 Variable: Components of Real Demand — Canadian Inventory Change

	Average Change (as % of preceding year's GNE)						Change (1971 $ billions)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend	0.4	1.0	0.8	0.6	0.6	0.7						
High Trend	0.6	1.1	0.7	—	—	—						
Low Trend	0.4	0.9	0.5	—	—	—						
					2000–2005							
Informetrica (Oct. 1983)	0.4	0.9	1.0	1.0	—	0.8	0.7	−3.2	1.5	1.9	2.3	—
Informetrica (Dec. 1983)	0.1	0.6	0.9	0.9	1.0	0.6	0.6	−3.2	1.2	1.8	2.2	2.6
PEAP (Dec. 1983)							0.8	−3.3	1.0	1.2	1.4	1.6
Conference Board of Canada (Sept. 1983)	−0.2	0.2					0.5	−2.4	0.3			
Economic Council of Canada (Oct. 1983)	0.2	0.7					0.7	−3.3	0.7			
Department of Finance (Apr. 1983)	−0.4	0.5					0.6	−3.3	1.4			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		1.0	0.8	0.7	0.8	−2.4		1.1	1.4	1.4	0.6	−3.2

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 7, computer printout.

TABLE C-53 Variable: Components of Real Demand — Canadian Exports of Goods and Services

	Average Growth Rate (% per year)						Levels (1971 $ billions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	4.2	5.3	3.3	2.6	2.7	3.4	33.7	33.2	43.0	55.8	63.6	78.9
High Trend	5.4	6.9	3.8	—	—	—	33.7	33.2	46.2	62.5	—	—
Low Trend	3.6	4.7	3.0	—	—	—	33.7	33.2	41.7	52.6	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	2.5	3.3	3.4	3.2	—	3.0	33.0	32.6	38.2	49.8	58.2	—
Informetrica (Dec. 1983)	2.0	2.7	2.8	2.7	2.7	2.5	33.7	33.2	37.9	47.3	54.0	61.6
PEAP (Dec. 1983)	3.8	4.9	3.8	3.7	3.8	3.8	33.7	33.2	42.2	57.0	68.0	82.4
Conference Board of Canada (Sept. 1983)	2.2	3.0					33.7	33.2	38.4			
Economic Council of Canada (Oct. 1983)	2.7	3.2					33.0	33.2	38.8			
Department of Finance (Apr. 1983)	2.2	2.7					3.1	−0.2	4.8			
		1982–88										
Department of Finance (Feb. 1984)		5.6										
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		6.0	9.0	3.2	5.9	−1.6		8.0	14.3	26.2	33.7	33.2

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 7, computer printout.

TABLE C-54 Variable: Components of Real Demand — Canadian Imports of Goods and Services

	Average Growth Rate (% per year)						Levels (1971 $ billions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	3.7	7.0	3.8	3.1	3.8	3.6	37.3	33.1	46.3	62.3	72.5	97.9
High Trend	4.9	8.5	4.7	—	—	—	37.3	33.1	49.8	72.0	—	—
Low Trend	2.7	5.8	2.7	—	—	—	37.3	33.1	43.7	54.1	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	2.9	5.7	3.5	3.8	—	3.4	37.1	33.2	43.9	57.6	69.5	—
Informetrica (Dec. 1983)	1.0	3.6	2.8	3.3	3.8	2.4	37.3	33.1	39.5	49.4	58.1	70.1
PEAP (Dec. 1983)	3.3	6.5	4.5	3.7	4.0	3.9	37.3	33.1	45.3	64.3	77.0	93.8
Conference Board of Canada (Sept. 1983)	0.8	3.4					37.3	33.1	39.0			
Economic Council of Canada (Oct. 1983)	1.2	4.4					37.1	33.1	41.0			
Department of Finance (Apr. 1983)	1.3	4.8										
Department of Finance (Feb. 1984)		**1982–88** 6.0										
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		4.6	8.2	3.7	5.3	−11.3		10.2	16.0	27.8	37.3	33.1

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 7, computer printout.

TABLE C-55 Variable: Composition of Demand in Current $, Consumer Expenditure as Percent of GNP in Canada

	Average Level (% of GNP)						Levels (% of GNP)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	58.0	57.8	56.0	56.1	56.6	56.6	57.1	58.8	57.2	55.9	56.3	56.8
High Trend	57.8	57.6	56.6	—	—	—	57.1	58.8	57.2	56.7	—	—
Low Trend	58.4	58.3	57.8	—	—	—	57.1	58.8	58.4	58.0	—	—
					2000–2005							**2005**
Informetrica (Oct. 1983)	58.2	58.0	55.9	53.8	—	56.1	57.7	59.0	57.5	54.6	53.2	—
Informetrica (Dec. 1983)	58.2	58.1	56.5	55.6	54.8	56.8	57.1	58.8	57.8	55.8	55.3	54.3
PEAP (Dec. 1983)	59.2	59.3	59.3	59.3	59.2	59.3						
Conference Board of Canada (Sept. 1983)	59.2	59.3					57.1	58.8	59.7			
Economic Council of Canada (Oct. 1983)	57.9	57.8					57.7	58.8	57.7			
Department of Finance (Apr. 1983)	57.1	56.8					57.7	59.0	56.0			
Department of Finance (Feb. 1984)	**1982–88** 61.5											
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		63.9	59.2	57.9	60.7	58.8		62.7	59.7	57.7	57.1	58.8

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 3, computer printout.

TABLE C-56 Variable: Composition of Demand in Current $, Non-Residential Fixed Investment as Percent of GNP in Canada

	Average Level (% of GNP)						Levels (% of GNP)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	14.0	13.8	16.5	17.1	17.4	15.9	16.5	15.2	15.1	16.9	17.3	17.6
High Trend	13.9	13.6	16.5	—	—	—	16.5	15.2	14.9	16.9	—	—
Low Trend	13.9	13.7	15.4	—	—	—	16.5	15.2	14.6	15.8	—	—
					2001–2005							**2005**
Informetrica (Oct. 1983)	15.3	15.3	18.3	21.0	—	18.0	16.6	15.2	16.8	19.7	22.0	—
Informetrica (Dec. 1983)	14.2	14.0	15.8	17.5	19.4	15.7	16.6	15.2	14.5	16.8	18.1	20.3
PEAP (Dec. 1983)	13.5	13.2	16.1	17.3	17.9	16.7						
Conference Board of Canada (Sept. 1983)	12.8	12.3					16.5	15.2	12.2			
Economic Council of Canada (Oct. 1983)	14.8	14.7					16.6	15.2	15.9			
Department of Finance (Apr. 1983)	14.0	13.8					16.6	15.2	15.1			
Department of Finance (Feb. 1984)	**1982–88** 14.4											
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		13.9	13.2	14.5	13.9	15.2		15.7	16.0	13.1	16.5	15.2

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 3, computer printout.

TABLE C-57 Variable: Composition of Demand in Current $, Exports as Percent of GNP in Canada

	Average Level (% of GNP)						Levels (% of GNP)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	28.6	28.7	29.4	28.7	27.6	29.0	29.7	28.4	29.6	29.1	28.3	27.0
High Trend	29.0	29.1	30.3	—	—	—	29.7	28.4	30.6	30.1	—	—
Low Trend	28.9	28.9	31.1	—	—	—	29.7	28.4	30.3	31.0	—	—
					2001–2005							**2005**
Informetrica (Oct. 1983)	27.3	27.0	26.9	26.2	—	26.8	30.0	28.8	27.0	26.7	26.0	—
Informetrica (Dec. 1983)	27.0	26.7	26.8	27.0	26.1	26.9	29.7	28.5	26.8	27.2	26.6	25.7
PEAP (Dec. 1983)	28.3	28.3	30.2	32.5	34.6	32.1						
Conference Board of Canada (Sept. 1983)	28.2	28.2					29.7	28.4	28.8			
Economic Council of Canada (Oct. 1983)	27.6	27.4					30.0	28.4	27.2			
Department of Finance (Apr. 1983)	27.0	26.6					30.0	28.6	26.7			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		19.4	23.6	27.1	23.0	28.4		19.8	21.1	24.9	29.7	28.4

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 2, computer printout.

TABLE C-58 Variable: Composition of GNP: Wages, Salaries and Supplementary Labour Income plus Military Pay and Allowances as Percent of GNP in Canada

	Average Level (% of GNP)						Levels (% of GNP)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)[a]												
Long Trend	56.3	55.9	54.8	53.0	49.0	54.8	57.2	58.4	55.3	54.3	52.2	46.3
High Trend	56.6	56.2	54.4	—	—	—	57.2	58.4	55.6	53.6	—	—
Low Trend	56.7	56.3	54.5	—	—	—	57.2	58.4	55.9	54.0	—	—
					2001–2005							
Informetrica (Oct. 1983)	56.0	55.6	54.5	54.3	—	54.9	56.9	57.8	55.0	54.2	54.3	—
Informetrica (Dec. 1983)	56.6	56.1	54.5	54.8	55.3	55.3	57.7	59.0	55.3	54.4	54.9	55.6
PEAP (Dec. 1983)	55.7	55.2	52.3	51.5	50.8	52.0	57.7	59.0	53.8	51.8	51.3	50.7
Conference Board of Canada (Sept. 1983)	57.9	57.7					57.7	59.0	58.0			
Economic Council of Canada (Oct. 1983)	58.2	58.0					56.9	59.0	58.9			
Department of Finance (Apr. 1983)	56.0	55.5					57.0	58.0	55.0			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		52.3	55.1	57.1	54.6	59.0		50.4	52.8	54.9	57.7	59.0

Source: Actual, Canada, Department of Finance, *Annual National Accounts Historical (ANAH)* (Ottawa: The Department, 1983), p. 36, computer printout.

a. Excludes military pay and allowances.

TABLE C-59 Variable: Composition of GNP: Corporate Profits plus Inventory Valuation Adjustment: as Percent of GNP in Canada

	Average Level (% of GNP)						Levels (% of GNP)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	7.3	7.8	8.9	9.9	10.6	8.6		4.8	7.7	9.5	10.1	10.9
High Trend[a]	9.1	9.7	11.8	—	—	—	9.7	5.9	10.9	12.2	—	—
Low Trend[a]	9.1	9.7	10.7	—	—	—	9.7	5.9	10.6	10.0	—	—
					2001–2005							**2005**
Informetrica (Oct. 1983)[b]	8.3	9.0	7.7	5.9	—	7.4	7.7	4.9	8.9	7.0	5.3	—
Informetrica (Dec. 1983)	8.0	8.6	8.4	6.7	5.6	7.8	7.7	4.8	8.8	7.6	6.3	5.2
PEAP (Dec. 1983)	8.9	9.5	10.7	10.3	11.0	10.5	7.7	4.8	10.4	10.5	10.4	11.3
Conference Board of Canada (Sept. 1983)	8.3	9.0					7.7	4.8	9.5			
Economic Council of Canada (Oct. 1983)[c]	7.8	8.3					7.7	4.8	7.7			
Department of Finance (Apr. 1983)	8.1	8.7					7.7	5.2	9.9			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		10.4	9.6	9.5	9.9	4.8		11.5	10.4	10.6	7.7	4.8

Source: Actual, Canada, Department of Finance, *Economic Review* (1983), p. 143; *ANAH*, p. 16.

a. Excludes IVA.

b. Includes only non-agricultural IVA.

c. Excludes government enterprises.

TABLE C-60 Variable: Money Supply (M1) in Canada

	Average Growth Rate (% per year)						Levels ($ billions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	8.0	9.4	9.3	9.4	8.9	8.9	25.5	25.8	40.4	82.2	128.8	254.9
High Trend	8.6	10.2	9.1	—	—	—	25.5	25.8	41.8	83.6	—	—
Low Trend	8.0	9.4	10.2	—	—	—	25.5	25.8	40.4	87.8	—	—
Informetrica (Oct. 1983)												
Informetrica (Dec. 1983)												
					2000–2005							**2005**
PEAP (Dec. 1983)	6.9	8.1	6.8	6.3	6.0	6.7	25.5	25.8	37.9	64.3	87.2	116.7
Conference Board of Canada (Sept. 1983)	6.6	7.8					25.4	25.5	37.2			
Economic Council of Canada (Oct. 1983)	11.0	12.5					27.2	28.2	50.8			
Department of Finance (Apr. 1983)	11.9	14.0					25.3	25.8	49.7			
For reference:		**1956–66**	**1966–73**	**1973–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		4.4	9.2	7.1	6.6	10.0		4.7	7.2	13.4	23.3	25.6

Source: Actual, Bank of Canada printout, annual average of monthly average of Wednesdays (Ottawa: The Bank).

TABLE C-61 Variable: Money Supply (M2) in Canada

	Average Growth Rate (% per year)						Levels ($ billions)					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	10.3	10.4	10.2	9.2	9.0	10.0	116.7	127.7	209.6	454.4	707.0	140.7
High Trend	11.3	11.7	9.5	—	—	—	116.7	127.7	222.1	459.0		
Low Trend	10.7	11.0	13.7	—	—	—	116.7	127.7	215.2	601.1		
Informetrica (Oct. 1983)												
Informetrica (Dec. 1983)												
					2000–2005							**2005**
PEAP (Dec. 1983)	3.6	8.3	7.3	6.8	6.5	6.0	153.4	127.7	190.2	334.4	464.7	636.6
Conference Board of Canada (Sept. 1983)	5.1	4.3					116.7	127.5	157.1			
Economic Council of Canada (Oct. 1983)												
Department of Finance (Apr. 1983)	13.2	11.1					102.7	127.7	215.8			
For reference:		**1956–66**	**1970–73**	**1973–81**	**1970–81**	**1981–82**		**1956**	**1970**	**1973**	**1981**	**1982**
Actual			12.4	15.0	14.3	14.8			25.6	36.3	111.2	127.7

Source: Actual, Bank of Canada printout, annual average of monthly average of Wednesdays (Ottawa: The Bank).

TABLE C-62 Variable: Short-Term Interest Rate in Canada (90-day prime corporate paper)

	Average Level (%)						Levels (%)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	11.0	10.4	9.1	8.2	7.8	9.5	18.3	14.2	10.4	8.3	8.1	7.5
High Trend	9.3	8.3	7.0	—	—	—	18.3	14.2	7.5	6.6	—	—
Low Trend	13.6	13.4	12.7	—	—	—	18.3	14.2	13.6	13.3	—	—
					2001–2005							**2005**
Informetrica (Oct. 1983)	10.4	9.7	7.8	7.1	—	8.4	18.3	14.2	9.6	7.7	6.9	—
Informetrica (Dec. 1983)	10.5	9.7	8.2	6.8	6.7	8.5	18.3	14.2	10.1	7.5	6.7	6.7
PEAP (Dec. 1983)	10.0	9.1	6.5	6.0	6.0	7.1	17.9	14.1	7.9	6.1	6.0	6.0
Conference Board of Canada (Sept. 1983)	10.4	9.7					18.3	14.2	8.9			
Economic Council of Canada (Oct. 1983)	11.5	10.9					18.3	14.2	8.8			
Department of Finance (Apr. 1983)	8.3	7.1					18.3	14.2	6.1			
For reference:		**1957–66**	**1968–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1968**	**1973**	**1981**	**1982**
Actual			6.5	10.9	9.0	14.2			6.8	7.5	18.3	14.2

Source: Actual, Canada, Department of Finance, *Economic Review* (1983), p. 233.

TABLE C-63 Variable: Long-Term Interest Rate in Canada (Industrial: McLeod, Young, Weir)

	Average Level Rate (% per year)						Levels (%)					
	1981–87	**1982–87**	**1988–95**	**1996–2000**	**2001–2008**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	13.2	12.6	11.4	10.8	10.4	11.8	16.2	15.9	12.5	10.9	10.6	10.2
High Trend	12.1	11.4	9.9	—	—	—	16.2	15.9	10.7	9.4	—	—
Low Trend	14.5	14.2	14.8	—	—	—	16.2	15.9	14.9	16.2	—	—
					2001–2005							**2005**
Informetrica (Oct. 1983)	12.6	11.9	10.1	9.0	—	10.6	16.2	15.9	11.8	9.7	8.6	—
Informetrica (Dec. 1983)	12.8	12.2	9.3	7.7	7.4	10.0	16.2	15.9	11.9	8.0	7.5	7.2
PEAP (Dec. 1983)	12.4	11.8	8.5	7.9	7.9	9.2	16.5	15.6	10.8	8.1	7.9	7.9
Conference Board of Canada (Sept. 1983)	12.8	12.1					16.2	15.9	10.7			
Economic Council of Canada (Oct. 1983)	12.9	12.4					16.2	15.9	11.4			
Department of Finance (Apr. 1983)	11.0	10.2					16.2	15.9	7.6			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1956–81**	**1981–82**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		5.6	8.3	11.4	8.2	16.1		4.6	6.5	8.5	16.2	15.9

Source: Actual, Statistics Canada.

TABLE C-64 Variable: Total Government Sector Balance in Canada — National Accounts Basis — Percent of GNP

	Average Level (% of GNP)						Levels (% of GNP)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	−4.3	−4.1	−1.1	−0.3	0.8	−1.8	−1.1	−5.3	−2.7	−0.1	0.4	1.0
High Trend	−4.0	−3.8	−0.3	—	—	—	−1.1	−5.3	−2.1	0.8	—	—
Low Trend	−4.5	−4.3	−2.2	—	—	—	−1.1	−5.3	−3.2	−0.9	—	—
					2001–2005							**2005**
Informetrica (Oct. 1983)	−3.4	−3.1	0.6	2.8	—	−0.1	−1.2	−5.1	−1.0	1.8	3.6	—
Informetrica (Dec. 1983)	−4.2	−4.0	−0.4	0.2	0.2	−1.4	−1.1	−5.3	−2.0	0.1	0.3	0.9
PEAP (Dec. 1983)	−3.2	−2.9	−0.4	0.6	0.4	−0.2	−1.1	−5.3	−1.4	0.3	0.6	0.3
Conference Board of Canada (Sept. 1983)	−4.8	−4.7					−1.1	−5.3	−4.6			
Economic Council of Canada (Oct. 1983)	−4.6	−4.5					−1.2	−5.3	−2.7			
Department of Finance (Apr. 1983)	−3.9	−3.7					−1.2	−5.3	−1.8			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		−1.0	0.8	−1.6	−0.7	−5.3		0.8	0.7	1.0	−1.1	−5.3

Source: Actual, Canada, Department of Finance, *Agrégats budgétaires corrigés des variations cycliques* (Ottawa: The Department, 1983), Table 6.3.

TABLE C-65 Variable: Federal Government Balance in Canada — National Accounts Basis — Percent of GNP

	Average Level (% of GNP)						Levels (% of GNP)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	−5.4	−5.3	−2.1	−0.6	−0.1	−2.7	−2.1	−5.7	−3.9	−1.1	−0.5	0.2
High Trend	−5.1	−5.0	−1.3	—	—	—	−2.1	−5.7	−3.5	0.0	—	—
Low Trend	−5.4	−5.4	−2.6	—	—	—	−2.1	−5.7	−4.1	−1.3	—	—
					2001–2005							**2005**
Informetrica (Oct. 1983)	−4.9	−4.7	−1.6	0.3	—	−2.1	−2.4	−6.1	−3.1	−0.6	0.9	—
Informetrica (Dec. 1983)	−5.1	−4.9	−2.0	−1.4	−0.7	−2.8	−2.1	−5.8	−3.4	−1.6	−1.2	−0.4
PEAP (Dec. 1983)	−4.3	−4.0	−1.5	−0.4	−0.3	−1.1	−2.1	−5.8	−2.6	−0.8	−0.3	−0.3
Conference Board of Canada (Sept. 1983)	−5.6	−5.6					−2.1	−5.7	−5.8			
Economic Council of Canada (Oct. 1983)	−5.5	−5.4					−2.4	−5.8	−4.0			
Department of Finance (Apr. 1983)	−4.9	−4.7					−2.4	−6.0	−3.1			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		−0.4	0.2	−2.5	−0.9	−5.7		1.9	0.4	0.3	−2.1	−5.7

Source: Actual, Canada, Department of Finance, *Agrégats budgétaires corrigés des variations cycliques* (Ottawa: The Department, 1983), Table 6.3.

TABLE C-66 Variable: Provincial Local Hospital Sector Balance in Canada — National Accounts Basis — Percent of GNP

	Average Level (% of GNP)						Levels (% of GNP)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	0.1	0.2	0.4	0.6	0.5	0.4	0.0	−0.6	0.4	0.6	0.6	0.4
High Trend	0.2	0.4	0.5	—	—	—	0.0	−0.6	0.6	0.4	—	—
Low Trend	0.1	0.2	0.0	—	—	—	0.0	−0.6	0.2	0.1	—	—
					2001–2005							**2005**
Informetrica (Oct. 1983)	0.3	0.3	0.9	1.2	—	0.8	0.2	−0.1	0.8	1.1	1.3	—
Informetrica (Dec. 1983)	−0.1	0.0	0.9	1.1	0.9	0.7	−0.0	−0.6	0.5	1.2	1.0	0.9
PEAP (Dec. 1983)	−0.3	0.4	0.5	0.6	0.4	0.4	−0.0	−0.6	0.4	0.5	0.5	0.3
Conference Board of Canada (Sept. 1983)	−0.2	−0.2					0.0	−0.6	0.3			
Economic Council of Canada (Oct. 1983)	−0.2	−0.2					0.2	−0.6	0.3			
Department of Finance (Apr. 1983)	0.2	0.3					0.2	−0.4	0.7			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		−0.8	−0.7	−0.3	−0.6	−0.6		−1.0	−0.8	−0.5	0.0	−0.6

Source: Actual, Canada, Department of Finance, *Agrégats budgétaires corrigés des variations cycliques* (Ottawa: The Department, 1983), Table 6.3.

TABLE C-67 Variable: CPP/QPP Sector Balance in Canada — National Accounts Basis — Percent of GNP

	Average Level (% of GNP)						Levels (% of GNP)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	0.9	0.9	0.5	0.3	0.3	0.6	1.0	1.1	0.8	0.4	0.3	0.3
High Trend	0.9	0.9	0.5	—	—	—	1.0	1.1	0.8	0.4	—	—
Low Trend	0.9	0.9	0.4	—	—	—	1.0	1.1	0.8	0.4	—	—
					2001–2005							**2005**
Informetrica (Oct. 1983)	1.2	1.2	1.3	1.3	—	1.3	1.0	1.0	1.3	1.3	1.4	—
Informetrica (Dec. 1983)	1.0	0.9	0.7	0.5	0.4	0.7	1.0	1.1	0.9	0.5	0.4	0.4
PEAP (Dec. 1983)	0.8	0.8	0.7	0.5	0.3	0.5	1.0	1.1	0.7	0.6	0.4	0.3
Conference Board of Canada (Sept. 1983)	1.0	1.0					1.0	1.1	1.0			
Economic Council of Canada (Oct. 1983)	1.1	1.1					1.0	1.1	1.0			
Department of Finance (Apr. 1983)	0.8	0.7					1.0	1.1	0.6			
For reference:		**1957–66**	**1966–73**	**1974–81**	**1966–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual			1.3	1.2	1.3	1.1			1.1	1.2	1.0	1.1

Source: Actual, Canada, Department of Finance, *Agrégats budgétaires corrigés des variations cycliques* (Ottawa: The Department, 1983), Table 6.3.

TABLE C-68 Variable: Total Government Expenditure in Canada, All Levels of Government Consolidated[a] as Percent of GNP

	Average Level (% of GNP)						Levels (% of GNP)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2005**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
DRI Canada (Oct. 1983)												
Long Trend												
High Trend												
Low Trend												
Informetrica (Oct. 1983)[a]	45.2	44.8	41.1	39.0	—	41.8	42.7	47.4	43.1	40.1	38.2	—
Informetrica (Dec. 1983)	46.1	45.8	40.7	39.5	38.9	42.1	42.7	47.3	43.9	39.7	39.3	38.5
PEAP (Dec. 1983)	46.6	46.5	41.3	38.1	36.1	39.2	42.7	47.3	45.2	39.3	37.4	35.3
Conference Board of Canada (Sept. 1983)	43.5	44.4					39.0	43.1	44.5			
Economic Council of Canada (Oct. 1983)	47.0	46.9					42.7	47.3	45.3			
Department of Finance (Apr. 1983)												
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		29.6	35.5	40.8	34.8	47.3		25.7	30.9	36.5	42.7	47.3

Source: Actual, Canada, Department of Finance, *Agrégats budgétaires corrigés des variations cycliques* (Ottawa: The Department, 1983), Table 5.2.
a. Total capital plus current expenditure, including all transfers except intergovernmental transfers.

TABLE C-69 Variable: Current Canadian Government Expenditures on Goods and Services, All Levels of Government as Percent of GNP

	Average Level (% of GNP)						Levels (% of GNP)					
	1982–87	**1983–87**	**1988–95**	**1996–2000**	**2001–2008**	**1982–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2008**
DRI Canada (Oct. 1983)												
Long Trend	21.2	21.1	19.9	19.2	19.0	20.1	20.2	21.6	20.8	19.5	19.1	18.9
High Trend	21.0	20.9	19.6	—	—	—	20.2	21.6	20.4	19.2	—	—
Low Trend	21.1	21.0	19.3	—	—	—	20.2	21.6	20.6	17.9	—	—
					2001–2005							**2005**
Informetrica (Oct. 1983)	20.9	20.7	20.3	20.2	—	20.4	20.2	21.7	20.2	20.2	20.1	—
Informetrica (Dec. 1983)	20.9	20.7	19.9	20.2	20.6	20.3	20.2	21.7	20.4	19.9	20.4	20.8
PEAP (Dec. 1983)	20.7	20.5	18.4	17.3	16.5	17.7	20.2	21.7	19.9	17.7	17.0	16.2
Conference Board of Canada (Sept. 1983)	20.9	20.8					20.1	21.6	20.4			
Economic Council of Canada (Oct. 1983)	20.8	20.6					20.1	21.7	20.0			
Department of Finance (Apr. 1983)	21.3	21.2					20.1	21.7	20.8			
For reference:		**1957–66**	**1967–73**	**1974–81**	**1957–81**	**1982**		**1956**	**1966**	**1973**	**1981**	**1982**
Actual		14.7	18.4	20.0	17.4	21.6		13.8	15.8	18.6	20.2	21.6

Source: Actual, *ANAH*, p. 1.

TABLE C-70 Growth of Real Domestic Product and Shares of GDP (current $) in Canada by Industry as Forecasted by the Economic Council of Canada

	Average Real Growth Rate						% Share of Current $ GDP[b]					
	1981–87	1982–87	1987–95	1995–2000	2000–( )	1981–2000	1981	1982	1987	1995	2000	( )
Agriculture	1.4	0.9					3.8	3.9	3.0			
Forestry	1.8	6.4					0.7	0.6	0.6			
Fishing, hunting and trapping[a]												
Metals	−3.9	0.8					1.8	1.3	1.0			
Mineral fuels	4.5	6.2					4.5	5.0	7.7			
Non-metal mining	2.8	7.6					0.5	0.4	0.5			
Manufacturing	0.8	3.7					20.5	18.6	18.7			
Durables	0.6	4.2					10.1	8.7	8.9			
Non-durables	1.1	3.2					10.3	9.9	9.8			
Construction	1.6	3.7					5.9	5.7	5.7			
Transportation and storage	1.0	2.9					5.9	5.7	5.5			
Communications	1.7	1.6					3.3	3.4	3.4			
Electrical power	0.4	4.8					3.2	3.3	3.5			
Other utilities												
Trade	0.8	2.8					10.5	10.2	11.5			
Finance, insurance, and real estate	2.5	3.2					9.3	9.8	8.8			
Education, health and business services	2.4	3.0					19.3	20.2	19.6			
Public administration	2.0	1.7					7.4	8.2	7.6			
Defence	1.3	1.4					0.9	0.9	0.9			
Total	1.7	3.1					96.6	96.3	97.1			

a. Included with agriculture.
b. Shares do not add to 100.0 due to exclusion of rent.

TABLE C-70.1 Growth of Real Domestic Product and Shares of GDP (current $) in Canada by Industry as Forecasted by DRI Canada

	Average Real Growth Rate						% Share of Current $ GDP					
	1981–87	1982–87	1987–95	1995–2000	2000–2008	1981–2000	1981	1982	1987	1995	2000	2008
Agriculture	2.3	2.1	1.8	1.7	1.3	1.9						
Forestry	3.1	8.2	2.6	1.8	2.0	2.6						
Fishing, hunting and trapping	6.4	4.6	3.4	2.7	2.8	4.2						
Metals	−1.2	4.4	2.5	1.8	1.7	1.1						
Mineral fuels	0.8	1.1	1.9	1.9	1.7	1.5						
Non-metal mining	2.0	7.8	2.6	2.0	2.1	2.2						
Manufacturing	1.4	4.3	2.8	2.4	2.3	2.2						
Durables	1.0	4.6	3.0	2.5	2.3	2.2						
Non-durables	1.8	4.1	2.5	2.3	2.2	2.2						
Construction	2.6	4.9	2.8	2.2	2.2	2.6						
Transportation and storage	0.6	2.4	3.4	3.4	2.9	2.5						
Communications	4.8	5.3	6.0	5.5	4.3	5.3						
Electrical power	1.7	2.2	2.6	3.1	2.6	2.4						
Other utilities	1.9	1.8	2.0	1.6	2.1	1.8						
Trade	1.2	3.3	3.2	3.0	2.7	2.5						
Finance, insurance, and real estate	2.8	3.4	3.8	3.4	3.2	3.4						
Education, health and business services	2.0	2.6	3.5	4.2	3.8	3.2						
Public administration Defence	2.4	2.3	2.1	2.3	2.4	2.3						
Total	1.9	3.3	3.2	3.2	2.9	2.8						

TABLE C-70.2 Growth of Real Domestic Product and Shares of GDP (current $) in Canada by Industry as Forecasted by Informetrica (October 1983)

	Average Real Growth Rate						% Share of Current $ GDP					
	1981–87	1982–87	1987–95	1995–2000	2000–2005	1981–2000	1981	1982	1987	1995	2000	2005
Agriculture	2.258	2.178	2.895	2.969	—	2.713	3.386	3.286	3.032	2.717	2.587	
Forestry	−0.634[a]	3.370	2.499	2.835	—	1.586	0.727	0.610	0.627	0.616	0.637	
Fishing, hunting and trapping	5.914	4.178	3.386	3.929	—	4.513	0.179	0.172	0.215	0.198	0.178	
Metals	0.955[a]	6.926	5.941	4.763	—	4.034[a]	1.453	0.896	1.239	1.536	1.553	
Mineral fuels incl. coal	5.412	7.092	4.123	2.928	—	4.220	3.231	4.965	5.316	6.569	6.614	
Non-metal mining	1.812[a]	7.450	3.161	3.209	—	2.745	0.534	0.332	0.424	0.466	0.467	
Manufacturing	1.509[a]	4.548	3.419	3.277	—	2.774	21.114	18.841	20.266	20.012	19.473	
Durables	1.261[a]	4.970	3.955	3.712	—	3.033	10.074	8.831	10.228	10.585	10.619	
Non-durables	1.772[a]	4.120	2.841	2.775	—	2.485	11.040	10.009	10.219	9.427	8.854	
Construction	1.558	3.627	3.172	3.316	—	2.697	6.439	5.786	6.257	6.815	7.380	
Transportation and storage	2.227	3.925	3.080	3.308	—	2.870	5.497	5.593	5.264	4.891	4.780	
Communications	3.321	4.085	3.370	3.393	—	3.361	2.716	2.957	2.694	2.633	2.604	
Electrical power	2.746	3.338	2.983	2.658	—	2.822	2.778	2.801	2.899	3.246	3.570	
Other utilities	3.577	3.775	2.724	2.373	—	2.900	0.622	0.644	0.688	0.766	0.836	
Trade	2.093[a]	4.383	3.194	3.318	—	2.878	11.022	10.697	10.196	9.012	8.474	
Finance, insurance, and real estate (incl. HGY)	1.846	2.119	1.991	1.933	—	1.930	11.278	12.600	12.105	11.972	11.779	
Education, health and business services	1.878	2.394	2.336	2.519	—	2.239	21.357	22.355	20.433	20.064	20.115	
Public administration Defence	2.723	2.624	2.508	2.368	—	2.539	7.669	8.440	8.064	8.163	8.168	
Total	2.031	3.478	2.903	2.909	—	2.628	[b]	[b]	[b]	[b]	[b]	

a. RLS different by 1 or more percentage points. b. Should add to about 100 (discrepancy of less than 1 percent).

TABLE C-70.3 Growth of Real Domestic Product and Shares of GDP (current $) in Canada by Industry as Forecasted by Informetrica (December 1983)

	Average Real Growth Rate						% Share of Current $ GDP					
	1981–87	1982–87	1987–95	1995–2000	2000–2005	1981–2000	1981	1982	1987	1995	2000	2005
Agriculture	2.62	2.57	3.50	3.22	3.13	3.15	3.31	3.30	3.19	3.54	3.58	3.51
Forestry	1.78[a]	6.29[a]	2.32	2.18	1.94	2.11	0.78	0.71	0.72	0.69	0.68	0.67
Fishing, hunting and trapping	2.35	3.37	3.72	3.73	3.21	3.29	0.19	0.20	0.20	0.15	0.14	0.14
Metals	−0.63[a]	4.87	1.34	1.05	0.84	0.64[a]	1.23	1.02	0.77	0.51	0.39	0.27[b]
Mineral fuels incl. coal	3.40	4.84	4.74	2.70	2.99	3.78	4.24	4.35	5.76	7.11	7.07	6.78
Non-metal mining	1.52[a]	5.92	3.66	2.24	1.73	2.61	0.47	0.42	0.53	0.66	0.69	0.68
Manufacturing	1.55[a]	4.52	4.05	3.28	3.22	3.05	20.43	17.48	20.57	20.62	20.41	20.76
Durables	1.12[a]	4.83	4.86	3.66	3.79	3.35	9.89	7.70	9.81	10.21	10.29	10.45
Non-durables	1.99[a]	4.22	3.19	2.85	2.53	2.72	10.54	9.78	10.75	10.41	10.12	10.31
Construction	0.07	2.48	3.76	2.90	3.29	2.35	6.25	5.76	4.97	5.75	6.26	6.99
Transportation and storage	1.42	3.42	3.29	3.18	3.09	2.66	5.49	5.74	5.33	4.88	4.63	4.47
Communications	3.52	3.78	3.47	3.43	3.36	3.47	2.68	2.93	2.73	2.49	2.45	2.40
Electrical power	2.85	3.51	3.52	3.05	3.01	3.19	2.87	3.44	3.25	2.78	2.70	2.72
Other utilities	2.58	2.58	2.46	1.88	1.86	2.35	0.64	0.80	0.72	0.57	0.53	0.50
Trade	1.93	3.75	3.39	3.14	3.18	2.86	10.95	10.65	9.91	8.76	8.33	7.97
Finance, insurance, and real estate (incl. HGY)	1.93	2.20	2.04	1.84	1.81	1.95	11.31	12.10	12.01	12.12	12.11	11.89

Education, health and business services	1.81	2.18	2.48	2.38	2.27	2.24	21.53	22.79	21.28	20.79	21.02	20.93
Public administration Defence	2.16	1.94	1.61	1.69	1.69	1.81	7.61	8.31	8.02	8.04	8.33	8.60
Total	1.81	3.16	3.09	2.75	2.75	2.60	c	c	c	c	c	c

a. RLS different by more than 1 percentage point. b. Pessimistic assumption regarding the prices of metals. c. Should add to about 100 (discrepancy of less than 1 percent).

TABLE C-70.4 Growth of Real Domestic Product and Shares of GDP (constant $) in Canada by Industry as Forecasted by the Institute for Policy Analysis

	Average Real Growth Rate						% Share of Current $ GDP					
	1981–87	1982–87	1987–95	1995–2000	2000–2005	1981–2000	1981	1982	1987	1995	2000	2005
Agriculture, fishing and trapping	2.0	1.9	1.6	1.4	1.2	1.7	2.8	3.0	2.8	2.5	2.4	2.3
Forestry	3.1	8.0	1.8	1.2	1.1	2.1	0.6	0.5	0.7	0.6	0.6	0.6
Metals and non-metal mining	−1.0	3.8	1.6	0.9	0.5	0.6	1.5	1.2	1.3	1.2	1.1	1.0
Mineral fuels	1.5	1.9	1.7	0.8	1.4	1.4	1.2	1.2	1.2	1.1	1.0	1.0
Manufacturing												
Durables	0.7	3.5	1.8	1.1	1.0	1.3	21.6	20.0	20.1	18.7	17.9	16.9
Non-durables												
Construction	0.6	3.1	2.7	1.2	1.0	1.6	6.2	5.8	5.7	5.7	5.4	5.1
Transportation and storage	0.3	2.1	2.0	1.3	1.2	1.3	6.5	6.2	5.9	5.5	5.3	5.1
Communications	5.1	5.7	6.4	5.3	5.2	5.7	4.2	4.6	5.1	6.8	7.9	9.2
Electrical power												
Other utilities	3.8	4.6	4.1	3.9	3.8	3.9	3.2	3.4	3.6	4.0	4.3	4.7
Trade	1.7	3.4	2.6	2.0	2.1	2.2	12.5	12.2	12.3	12.2	12.1	12.1
Finance, insurance, and real estate	2.9	3.4	3.4	2.3	2.4	3.0	13.2	13.9	14.0	14.7	14.9	15.1
Education, health and business services												
Public administration	2.6	2.9	2.6	2.0	2.1	2.4	26.4	27.9	27.4	27.1	27.0	27.0
Defence												
Total	1.9	3.3	2.8	2.1	2.2	2.3	100.0	100.0	100.0	100.0	100.0	100.0

TABLE C-70.5 Growth of Real Domestic Product and Shares of GDP (current $) in Canada by Industry, Historical

	Average Real Growth Rate					% Share of Current $ GDP				
	1956–66	1966–73	1973–81	1956–81	1981–82	1956	1966	1973	1981	1982
Agriculture	1.7	0.0	2.4	1.5	2.9	6.4	5.3	4.2	3.3	3.3
Forestry	3.0	3.7	0.0	2.2	−18.1	1.8	0.9	0.9	0.8	0.7
Fishing, hunting and trapping	1.4	−0.8	2.9	1.3	−2.6	0.2	0.2	0.2	0.2	0.2
Metals										
Mineral fuels	5.6	6.9	−1.5	3.6	−12.2	4.3	4.0	4.3	5.9	5.8
Non-metal mining										
Manufacturing										
Durables	5.2	5.6	1.8	4.2	−12.1	28.6	25.6	22.9	20.4	17.5
Non-durables										
Construction	4.2	2.6	2.4	3.2	−11.2	6.5	6.8	7.1	6.3	5.8
Transportation and storage	4.7	7.1	4.2	5.2	−3.9	7.9	6.5	5.7	5.5	5.8
Communications						2.1	2.6	2.7	2.7	2.9
Electrical power										
Other utilities	8.0	8.6	5.0	7.2	0.1	2.4	2.7	2.7	3.5	4.2
Trade	4.5	5.9	3.2	4.5	−6.7	12.5	12.0	11.7	11.0	10.6
Finance, insurance, and real estate	4.6	5.4	4.9	4.9	0.6	10.1	10.8	11.2	11.3	12.1
Education, health and business services	5.5	5.6	3.9	5.0	0.0	11.0	15.9	19.2	21.5	22.8
Public administration										
Defence	2.2	4.1	2.4	2.8	3.3	6.2	6.7	7.2	7.6	8.3
Total	4.6	5.3	3.1	4.3	−4.6	100.0	100.0	100.0	100.0	100.0

Source: Growth of Real Domestic Product and Shares of GDP (constant $) by industry. 1956, 1966, 1973, *Historical Statistics of Canada*, pp. 225–40. 1971 *GDP by Industry* 1981, pp. 61–213, 4. 1981, 1982 *Canadian Statistical Review*, October 1983, p. 26.

TABLE C-71 Employment Growth Rates and Shares in Canada as Forecasted by the Economic Council of Canada

	Average Growth Rate						% Share of Total Employment					
	1981–87	1982–87	1987–95	1995–2000	2000–( )	1981–2000	1981	1982	1987	1995	2000	( )
Agriculture	−1.4	0.03					4.8	4.6	4.2			
Forestry	−0.2	1.0					0.7	0.7	0.7			
Fishing, hunting and trapping												
Metals	−2.7	−0.9					0.8	0.8	0.7			
Mineral fuels	−18.4	−15.2					0.8	0.6	0.2			
Non-metal mining	−7.2	−2.5					0.2	0.2	0.1			
Manufacturing	−0.9	0.4					19.4	19.0	17.8			
Durables	−0.6	0.9					9.4	9.1	8.8			
Non-durables	−1.1	−0.1					10.0	9.9	9.1			
Construction	−0.1	1.9					5.9	5.6	5.7			
Transportation and storage	−1.1	−0.4					7.1	7.1	6.5			
Communications												
Electrical power												
Other utilities	−1.7	0.1					1.2	1.1	1.0			
Trade	1.2	2.4					17.2	17.3	17.9			
Finance, insurance, and real estate	−1.8	−1.5					5.4	5.6	4.7			
Education, health and business services	2.8	3.9					29.6	30.5	33.9			
Public administration Defence	−0.9	0					7.0	7.0	6.4			
Total	0.5	1.7					100.0	100.0	100.0			

a. Agriculture includes fishing, hunting and trapping. b. Shares may not add to 100 due to rounding.

TABLE C-71.1 Employment Growth Rates and Shares in Canada as Forecasted by Informetrica (October)

	Average Growth Rate						% Share of Total Employment					
	1981–87	1982–87	1987–95	1995–2000	2000–( )	1981–2000	1981	1982	1987	1995	2000	( )
Agriculture	−0.697	−0.040[a]	0.905	0.952	—	0.408	4.427	4.395	3.970	3.785	3.673	
Forestry	−1.141[a]	3.058	1.044	1.050	—	0.350	0.695	0.577	0.607	0.585	0.570	
Fishing, hunting and trapping	−0.955	0.587	−0.256	−1.090	—	−0.697	0.329	0.312	0.291	0.253	0.221	
Metals	−0.937[a]	3.844	4.341	1.985	—	2.029[a]	0.713	0.577	0.631	0.786	0.802	
Mineral fuels	0.392[a]	2.938	3.188	2.441	—	2.101[a]	0.878	0.804	0.841	0.959	1.001	
Non-metal mining	3.184[a]	7.331[a]	1.120	0.885	—	1.705	0.238	0.208	0.268	0.260	0.252	
Manufacturing												
Durables	0.440[a]	2.468	0.911	0.524	—	0.660	19.391	18.217	18.620	17.759	16.870	
Non-durables												
Construction	1.526	3.629	1.756	1.794	—	1.693	5.891	5.579	6.033	6.151	6.222	
Transportation and storage	2.517	3.954	2.242	2.523	—	2.402	4.912	4.857	5.332	5.648	5.921	
Communications	2.437	2.744	0.254	−0.218	—	0.813	2.195	2.290	2.372	2.147	1.966	
Electrical power												
Other utilities	−0.150[a]	0.954	1.258	0.731	—	0.673	1.162	1.135	1.077	1.055	1.013	
Trade	0.342	0.793	0.590	0.632	—	0.522	17.150	17.393	16.371	15.221	14.538	
Finance, insurance, and real estate	2.096	2.212	1.765	1.733	—	1.861	5.415	5.682	5.736	5.852	5.902	
Education, health and business services	1.570	1.778	1.959	2.244	—	1.911	29.627	30.785	30.421	31.516	32.590	
Public administration												
Defence	2.252	2.698	2.489	2.640	—	2.454	6.952	7.189	7.431	8.024	8.459	
Total	1.123	2.021	1.510	1.561	—	1.401						

a. RLS rate quite different.

TABLE C-71.2 Employment Growth Rates and Shares in Canada as Forecasted by Informetrica (December)

	Average Growth Rate						% Share of Total Employment					
	1981–87	**1982–87**	**1987–95**	**1995–2000**	**2000–2005**	**1981–2000**	**1981**	**1982**	**1987**	**1995**	**2000**	**2005**
Agriculture	−0.395	0.327	0.191	0.724	0.735	0.145	4.43	4.40	4.15	3.72	3.56	3.41
Forestry	−0.858[a]	3.420[a]	−2.062	−1.427	−1.385	−1.516	0.70	0.58	0.63	0.47	0.41	0.35
Fishing, hunting and trapping	−0.770	0.816	0.300	0.300	0.300	−0.039	0.33	0.31	0.30	0.27	0.26	0.24
Metals	−5.195[a]	−0.476	0.761	0.446	−0.724	−1.241[a]	0.71	0.55	0.50	0.47	0.44	0.39
Mineral fuels	−0.113[a]	1.850	1.549	2.548	3.252	1.282	0.88	0.82	0.84	0.84	0.87	0.95
Non-metal mining	−3.221[a]	2.840	1.575	0.681	0.454	−0.197[a]	0.24	0.19	0.20	0.20	0.20	0.19
Manufacturing												
Durables	−0.690	1.094	1.549	1.616	1.370	0.854	19.39	18.21	17.86	17.83	17.83	17.62
Non-durables												
Construction	−2.200	−0.913	2.340	1.827	2.267	0.751	5.89	5.58	4.95	5.26	5.31	5.49
Transportation and storage	−0.258	0.765	1.606	1.254	1.606	0.922	4.91	4.81	4.64	4.65	4.57	4.54
Communications	2.147	1.994	1.592	1.138	0.227	1.647	2.20	2.34	2.39	2.40	2.34	2.19
Electrical power		−2.382	−0.761	0.439	1.088	−1.133	1.16	1.13	0.93	0.78	0.73	0.71
Other utilities	−2.911	−2.382	−0.761	0.439	1.088	−1.133	1.16	1.13	0.93	0.78	0.73	0.71
Trade	0.644	1.165	0.954	0.756	0.793	0.804	17.15	17.39	17.11	16.30	15.62	15.00
Finance, insurance, and real estate	1.913	1.991	1.195	1.644	1.618	1.792	5.41	5.68	5.82	5.93	5.94	5.94
Education, health and business services	2.149	2.483	1.979	2.181	2.201	2.086	29.63	30.78	32.31	33.34	34.31	35.32
Public administration Defence	1.615	1.908	1.838	1.858	1.710	1.773	6.95	7.20	7.35	7.50	7.60	7.63
Total	0.684	1.496	1.568	1.613	1.612	1.300	Sum to 100 approximately					

a. RLS caution.

TABLE C-71.3 Employment Growth Rates and Shares in Canada as Forecasted by the Institute for Policy Analysis, University of Toronto

	Average Growth Rate						% Share of Total Employment					
	1981–87	1982–87	1987–95	1995–2000	2000–2005	1981–2000	1981	1982	1987	1995	2000	2005
Agriculture, fishing and trapping	0.0	0.0	−0.8	−1.2	−1.4	−0.7	4.8	4.9	4.5	3.6	3.2	2.9
Forestry	3.0	7.2	0.7	0.0	−0.7	1.3	0.6	0.6	0.7	0.7	0.6	0.6
Metals	−0.7	4.3	2.3	0.1	−0.4	0.8	1.5	1.2	1.3	1.4	1.3	1.3
Mineral fuels	0.7	0.8	0.7	−0.8	−0.4	0.3	0.4	0.5	0.4	0.4	0.4	0.3
Manufacturing												
Durables	−1.9	−0.1	−0.3	−1.4	−2.1	−1.1	19.6	18.1	16.4	13.8	12.3	10.7
Non-durables												
Construction	0.4	2.0	2.9	0.9	0.1	1.5	5.9	5.6	5.6	6.0	6.0	5.8
Transportation and storage	−1.2	0.9	0.4	−0.4	−0.9	−0.3	4.7	4.4	4.1	3.7	3.4	3.2
Communications	−0.9	0.5	1.1	−0.7	−1.2	0.0	2.4	2.3	2.2	2.0	1.9	1.7
Electrical power												
Other utilities	1.7	2.8	1.6	1.1	0.5	1.5	1.1	1.1	1.1	1.1	1.1	1.1
Trade	1.0	1.5	1.5	0.9	0.5	1.2	17.0	17.0	17.0	16.4	16.3	16.2
Finance, insurance, and real estate	2.2	2.4	2.3	0.7	0.4	1.9	5.4	5.6	5.8	5.9	5.9	5.8
Education, health and business services												
Public administration	3.0	3.2	3.2	2.2	1.9	2.8	36.5	38.4	40.8	45.0	47.6	50.6
Defence												
Total	1.1	1.9	1.9	1.0	0.7	1.4	100.0	100.0	100.0	100.0	100.0	100.0

TABLE C-71.4 Employment Growth Rates and Shares in Canada, Historical

	Average Growth Rate					% Share of Total Employment				
	1956–66	**1966–73**	**1973–81**	**1956–81**	**1981–82**	**1956**	**1966**	**1973**	**1981**	**1982**
Agriculture	−4.5	−2.2	0.4	−2.3	−3.9	15.2	7.6	5.3	4.4	4.4
Forestry	−4.3	0.7				2.0	1.0	0.9		
Fishing, hunting and trapping	2.6	0.0	4.2	−0.9	−16.9	0.4	0.3	0.3	2.9	2.5
Metals										
Mineral fuels	0.3	0.2				2.0	1.7	1.4		
Non-metal mining										
Manufacturing										
Durables	2.4	1.8	1.2	1.8	−9.1	23.7	23.8	22.0	19.4	18.2
Non-durables										
Construction	2.8	1.3	2.3	2.2	−8.5	6.6	6.9	6.1	5.9	5.6
Transportation and storage	0.9	3.1				8.8	7.6	7.7		
Communications			1.9	1.9	−3.2				8.3	8.3
Electrical power	2.4	3.7				1.1	1.1	1.1		
Other utilities										
Trade	2.5	3.5	2.8	2.9	−1.9	16.2	16.5	17.2	17.1	17.4
Finance, insurance, and real estate	4.6	3.5	4.3	4.4	1.2	3.5	4.4	4.8	5.4	5.7
Education, health and business services		4.8	4.4		0.5		23.0	26.1	29.6	30.8
Public administration	5.8			5.1		20.5				
Defence		4.8	2.8		0.0		6.1	7.0	7.0	7.2
Total	2.3	2.9	2.8	2.6	−3.3	100.0	100.0	100.0	100.0	100.0

Sources: 1956 employment figures — *Historical Statistics of Canada* 2d ed. D 266–289. 1966, 1973 employment — *Historical Statistics of Canada* figures (1960 SIC) 2d ed. D 290–317. 1973, 1981, 1982 — *Historical Labour Force Statistics* employment figures 71–201 Annual.

Notes: The 1956 figures are based on the 1948 SIC. Thus an adjustment factor was used to convert them approximately to a 1960 SIC. This was accomplished by calculating the average ratio for each industrial category for the four years in common between the two series. The adjustment factors used are as follows: (multiply) Agriculture (1.009); Forestry (/); Fishing and Trapping (/); Mining and Quarrying (/); Manufacturing (0.962); Construction (0.914); Transportation, Storage and Communications (1.148); Public Utilities (0.907); Trade (1.042); Finance, insurance and real estate (/); Service (0.998).

Various other revisions made it necessary to calculate another adjustment factor for the years 1956, 1966 and 1973; employment figures for the years 1971 to 1975 from both the *Historical Statistics* and *Historical Labour Force Statistics* for each industrial category were obtained and an average ratio was computed for each. For 1956 these adjustment factors were multiplied by those used to convert its associated employment figures to the 1960 SIC.

The new adjustment factors are as follows: Agriculture (1.005); Forestry, Fishing, Trapping and Mining and Quarrying (0.982); Manufacturing (0.976); Construction (0.987); Transportation, Storage, Communications and other Utilities (1.005); Trade (1.003); Finance, insurance and real estate (1.033); Community, Business and Personal Service (1.014); and Public Administration (1.048).

TABLE C-72 Regional Output Growth Rates and Shares in Canada as Forecasted by Informetrica

	Average Real GDP Growth Rates						% Share of Current $ GDP					
	1981–87	1982–87	1987–95	1995–2000	2000–2005	1981–2005	1981	1982	1987	1995	2000	2005
Atlantic Provinces	2.7	3.7	2.7	2.2	2.4	2.5	5.7	5.8	6.1	6.2	6.3	6.2
Newfoundland	2.1	2.9	4.6	2.6	2.3	3.0	1.3	1.3	1.4	2.0	2.1	2.1
Prince Edward Island	3.4	4.2	2.4	2.4	2.3	2.6	0.3	0.3	0.3	0.3	0.3	0.3
Nova Scotia	3.0	4.1	1.9	1.6	2.3	2.2	2.3	2.3	2.5	2.2	2.1	2.1
New Brunswick	2.7	3.6	2.4	2.6	2.5	2.5	1.8	1.9	1.9	1.8	1.8	1.8
Quebec	1.4	3.0	2.9	2.7	2.6	2.4	22.9	22.2	21.9	20.9	20.8	20.8
Ontario	2.1	3.5	3.3	2.8	2.8	2.8	36.6	36.5	36.4	35.8	35.8	35.9
Prairie Provinces	1.8	2.6	3.3	2.9	2.9	2.8	22.5	23.1	23.9	25.6	25.9	25.9
Manitoba	2.5	3.3	2.8	2.7	2.5	2.7	3.8	3.8	3.8	3.7	3.7	3.6
Saskatchewan	2.4	3.1	2.8	2.5	2.5	2.6	4.4	4.3	4.4	4.4	4.4	4.3
Alberta	1.3	2.2	3.6	3.2	3.2	2.8	14.3	14.9	15.7	17.5	17.8	18.0
B.C. and Territories	1.0	2.7	2.9	2.6	2.6	2.3	12.4	12.4	11.7	11.4	11.3	11.2
British Columbia												
Yukon and Northwest Territories												
Total	1.8	3.1	3.1	2.8	2.7	2.6	100.0	100.0	100.0	100.0	100.0	100.0

TABLE C-72.1 Regional Output Growth Rates and Shares in Canada as Forecasted by the Institute for Policy Analysis, University of Toronto

	Average Real GDP Growth Rates						% Share of Current $ GDP					
	1981–87	1982–87	1987–95	1995–2000	2000–2005	1981–2000	1981	1982	1987	1995	2000	2005
Atlantic Provinces	2.5	3.0	3.0	2.1	2.2	2.6	5.9	6.0	6.1	6.3	6.2	6.3
Newfoundland	2.4	3.4	3.8	2.2	2.3	2.9	1.3	1.3	1.4	1.5	1.5	1.5
Prince Edward Island	2.0	2.3	2.4	1.9	1.9	2.2	0.3	0.3	0.3	0.3	0.3	0.3
Nova Scotia	2.8	3.1	3.0	2.2	2.2	2.7	2.5	2.6	2.6	2.7	2.7	2.7
New Brunswick	2.1	2.5	2.7	2.0	2.1	2.3	1.8	1.9	1.8	1.8	1.8	1.8
Quebec	1.7	2.7	1.9	1.2	1.4	1.7	23.0	22.8	22.7	21.3	20.4	19.7
Ontario	2.0	2.8	2.7	2.1	2.1	2.3	39.2	39.3	39.4	39.1	39.1	39.1
Prairie Provinces	1.8	2.4	3.3	2.5	2.5	2.6	19.4	19.6	19.2	20.0	20.4	20.8
Manitoba	1.8	2.3	2.5	2.0	2.0	2.1	3.9	3.9	3.8	3.7	3.7	3.7
Saskatchewan	2.8	3.0	3.1	2.3	2.4	2.8	3.6	3.7	3.8	3.9	3.9	4.0
Alberta	1.4	2.3	3.6	2.6	2.7	2.7	12.0	12.0	11.6	12.4	12.8	13.1
B.C. and Territories	2.1	3.2	3.6	2.7	2.7	2.9	12.5	12.2	12.6	13.3	13.8	14.2
British Columbia	2.1	3.2	3.5	2.7	2.7	2.8	12.2	11.9	12.3	13.0	13.4	13.8
Yukon and Northwest Territories	3.2	3.7	5.2	3.8	3.7	4.2	0.3	0.3	0.3	0.3	0.4	0.4
Total	1.9	2.8	2.8	2.1	2.2	2.3	100.0[a]	100.0	100.0	100.0	100.0	100.0

a. Approximately equal to 100; does not include external and discrepancy.

TABLE C-72.2 Regional Output Growth Rates and Shares in Canada, Historical

	Average Growth Rate (%)					% Share of Current $ GDP				
	1961–66	1966–73	1973–81	1961–81	1981–82	1961	1966	1973	1981	1982
Atlantic Provinces	5.2	4.9	2.6	4.0	−2.7	6.1	5.9	6.0	5.4	
Newfoundland	7.5	5.0	3.0	4.8	−5.6	1.2	1.3	1.3	1.2	
Prince Edward Island	3.8	5.1	2.4	3.7	−2.0	0.3	0.3	0.3	0.3	
Nova Scotia	3.9	4.4	2.8	3.6	−1.6	2.6	2.4	2.5	2.1	
New Brunswick	5.7	5.5	1.9	4.1	−2.3	2.0	1.9	1.9	1.8	
Quebec	6.5	4.7	2.7	4.4	−5.6	26.3	26.0	23.9	22.7	
Ontario	6.8	5.5	2.2	4.5	−4.4	41.0	40.8	41.1	37.7	
Prairie Provinces	6.5	5.1	4.9	5.4	−3.8	16.4	16.9	16.9	21.4	
Manitoba	5.1	4.9	2.1	3.8	−2.9	4.6	4.2	4.1	3.7	
Saskatchewan	8.9	1.4	3.3	4.0	−1.4	3.9	4.7	3.8	4.3	
Alberta	6.0	7.0	6.6	6.6	−4.8	7.9	8.0	9.0	13.4	
B.C. and Territories	7.8	6.5	4.1	5.9	−6.1	10.1	10.5	12.0	12.6	
British Columbia	7.7	6.5	4.2	5.9	−6.5	9.9	10.2	11.7	12.3	
Yukon and Northwest Territories	8.3	8.3	1.5	5.5	6.9	0.2	0.3	0.3	0.3	
Total	6.7	5.3	3.1	4.8	−4.7	100.0	100.0	100.0	100.0	

Sources: Regional Output Growth Rates and Shares. Current dollars, CANSIM. Real GDP, Conference Board printout.

TABLE C-73 Regional Population Growth Rates and Shares in Canada, Historical

	Average Growth Rate (%)					% Share				
	1956–66	1966–73	1973–81	1956–81	1981–82	1956	1966	1973	1981	1982
Atlantic Provinces	1.1	0.9	0.8	1.0	0.4	11.0	9.9	9.4	9.2	9.1
Newfoundland	1.7	1.2	0.7	1.3	0.3	2.6	2.5	2.4	2.3	2.3
Prince Edward Island	0.9	0.8	0.9	0.9	0.3	0.6	0.5	0.5	0.5	0.5
Nova Scotia	0.9	0.9	0.7	0.8	0.6	4.3	3.8	3.6	3.5	3.5
New Brunswick	1.1	0.7	0.9	0.9	0.4	3.5	3.1	2.9	2.9	2.8
Quebec	2.2	0.7	0.7	1.3	0.7	28.8	28.9	27.6	26.4	26.3
Ontario	2.6	1.9	1.1	1.9	1.0	33.6	34.8	35.9	35.4	35.4
Prairie Provinces	1.7	0.9	2.1	1.6	2.3	17.8	16.9	16.3	17.4	17.6
Manitoba	1.3	0.5	0.4	0.8	0.9	5.3	4.8	4.5	4.2	4.2
Saskatchewan	0.8	−0.8	0.8	0.4	1.2	5.5	4.8	4.1	4.0	4.0
Alberta	2.7	2.1	3.6	2.8	3.4	7.0	7.3	7.7	9.2	9.4
B.C. and Territories	3.0	3.0	2.2	2.7	1.4	8.9	9.6	10.7	11.6	11.6
British Columbia	3.0	3.0	2.2	2.7	1.7	8.7	9.4	10.4	11.3	11.3
Yukon and Northwest Territories	3.3	4.7	1.9	3.2	2.9	0.2	0.2	0.3	0.3	0.3
Total	2.2	1.4	1.2	1.7	1.2	100.0	100.0	100.0	100.0	100.0

Source: Statistics Canada.

TABLE C-73.1 Regional Households' Growth Rates and Shares in Canada as Forecasted by Informetrica (October)

	Average Growth Rates						% Share					
	1981–87	1982–87	1987–95	1995–2000	2000–( )	1981–2000	1981	1982	1987	1995	2000	( )
Atlantic Provinces	1.9	1.9	1.0	0.9		1.3	7.9	7.9	8.1	8.1	8.2	
Newfoundland	3.0	3.2	1.6	1.1		1.9	1.8	1.8	2.0	2.0	2.1	
Prince Edward Island	1.4	1.2	0.5	0.6		0.8	0.4	0.4	0.4	0.4	0.4	
Nova Scotia	1.7	1.7	0.8	0.7		1.1	3.2	3.2	3.2	3.2	3.2	
New Brunswick	1.3	1.3	1.0	1.0		1.1	2.5	2.5	2.5	2.5	2.5	
Quebec	0.5	0.1	0.5	0.7		0.5	26.5	26.5	24.9	23.9	23.9	
Ontario	1.8	1.8	1.1	0.8		1.2	36.6	36.4	37.1	37.5	37.6	
Prairie Provinces	2.4	2.2	1.3	0.6		1.4	17.1	17.3	18.0	18.5	18.3	
Manitoba	1.2	1.0	1.2	1.2		1.2	4.3	4.3	4.2	4.3	4.4	
Saskatchewan	1.7	1.4	0.9	0.7		1.1	3.9	4.0	4.0	3.9	3.9	
Alberta	3.2	3.1	1.5	0.2		1.7	8.9	9.0	9.8	10.2	10.0	
B.C. and Territories												
British Columbia[a]	1.7	1.5	1.0	0.9		1.2	11.8	11.9	11.9	12.0	12.0	
Yukon and Northwest Territories												
Total	1.6	1.4	1.0	0.8		1.1	100.0	100.0	100.0	100.0	100.0	

a. Population-based data defined only for British Columbia.

TABLE C-73.2 Regional Households' Growth Rates and Shares in Canada as Forecasted by Informetrica (January)

	Average Growth Rates						% Share					
	1981–87	1982–87	1987–95	1995–2000	2000–2005	1981–2005	1981	1982	1987	1995	2000	2005
Atlantic Provinces	1.7	1.6	0.9	0.4	−0.1	0.8	7.9	7.9	7.9	7.9	7.7	7.6
Newfoundland	1.5	1.3	1.6	1.3	−0.1	1.2	1.8	1.8	1.8	1.9	1.9	1.9
Prince Edward Island	2.6	2.6	0.9	0.3	−0.1	1.0	0.4	0.4	0.5	0.5	0.4	0.4
Nova Scotia	1.9	1.8	0.7	−0.2	−0.2	0.6	3.2	3.2	3.2	3.2	3.0	2.9
New Brunswick	1.4	1.2	0.5	0.6	0.1	0.6	2.5	2.5	2.5	2.4	2.3	2.3
Quebec	1.5	1.2	0.8	0.8	0.3	0.9	26.5	26.5	26.1	25.8	25.7	25.7
Ontario	1.7	1.6	1.2	0.9	0.4	1.1	36.6	36.4	36.6	37.1	37.2	37.3
Prairie Provinces	2.2	1.9	1.1	1.0	0.5	1.2	17.1	17.3	17.6	17.7	17.9	18.0
Manitoba	1.7	1.5	1.0	0.7	0.2	1.0	4.3	4.3	4.3	4.3	4.3	4.3
Saskatchewan	2.0	1.7	0.7	0.6	0.1	0.9	3.9	4.0	4.0	3.9	3.9	3.8
Alberta	2.4	2.1	1.3	1.3	0.7	1.5	8.9	9.0	9.3	9.5	9.7	9.9
B.C. and Territories												
British Columbia[a]	1.6	1.2	0.8	0.7	0.3	0.9	11.8	11.9	11.7	11.6	11.5	11.5
Yukon and Northwest Territories												
Total	1.7	1.5	1.0	0.8	0.3	1.0	100.0	100.0	100.0	100.0	100.0	100.0

a. Population-based data defined only for British Columbia.

TABLE C-74 Regional Employment Growth Rates and Shares in Canada as Forecasted by Informetrica (October)

	Average Growth Rate (%)						Share (%)					
	1981–87	1982–87	1987–95	1995–2000	2000–( )	1981–2005	1981	1982	1987	1995	2000	( )
Atlantic Provinces	1.6	2.5	1.4	1.6		1.5	7.5	7.6	7.7	7.7	7.7	
Newfoundland	2.3	3.6	1.9	1.6		2.0	1.7	1.7	1.9	1.9	1.9	
Prince Edward Island	0.9	1.2	1.1	1.4		1.1	0.4	0.4	0.4	0.4	0.4	
Nova Scotia	1.6	2.5	1.2	1.6		1.4	3.0	3.0	3.1	3.0	3.0	
New Brunswick	1.1	2.0	1.5	1.8		1.4	2.4	2.4	2.4	2.3	2.4	
Quebec	0.14	1.4	1.3	1.5		1.0	24.6	23.9	23.2	22.8	23.8	
Ontario	1.4	2.1	1.6	1.5		1.5	38.4	38.7	38.9	39.2	39.2	
Prairie Provinces	1.8	2.2	1.6	1.5		1.6	18.1	18.6	18.8	18.9	18.9	
Manitoba	1.2	1.6	1.8	2.0		1.7	4.2	4.3	4.2	4.3	4.4	
Saskatchewan	1.8	1.6	1.4	1.6		1.6	3.9	4.1	4.0	4.0	4.0	
Alberta	2.0	2.7	1.6	1.3		1.6	10.0	10.2	10.6	10.6	10.5	
B.C. and Territories												
British Columbia	1.1	2.3	1.5	1.7		1.4	11.4	11.2	11.4	11.4	11.4	
Yukon and Northwest Territories												
Total	1.1	2.0	1.5	1.6		1.4	100.0	100.0	100.0	100.0	100.0	

TABLE C-74.1 Regional Employment Growth Rates and Shares in Canada as Forecasted by Informetrica (January)

	Average Growth Rate (%)						% Share					
	1981–87	1982–87	1987–95	1995–2000	2000–2005	1981–2005	1981	1982	1987	1995	2000	2005
Atlantic Provinces	1.0	1.8	1.3	1.1	1.3	1.2	7.6	7.6	7.7	7.5	7.3	7.2
Newfoundland	0.7	1.1	2.5	1.3	1.3	1.6	1.7	1.7	1.7	1.8	1.8	1.8
Prince Edward Island	2.0	3.3	1.0	1.1	1.1	1.3	0.4	0.4	0.5	0.5	0.4	0.4
Nova Scotia	1.4	2.2	0.8	0.7	1.3	1.0	3.0	3.0	3.1	3.0	2.8	2.8
New Brunswick	0.6	1.5	1.0	1.4	1.3	1.0	2.4	2.4	2.4	2.3	2.3	2.2
Quebec	0.4	1.6	1.4	1.6	1.6	1.2	24.6	24.0	24.2	23.9	23.9	23.8
Ontario	0.9	1.6	1.7	1.7	1.6	1.5	38.3	38.6	38.8	39.2	39.3	39.4
Prairie Provinces	0.9	1.3	1.7	1.8	1.8	1.5	18.2	18.6	18.5	18.6	18.8	18.9
Manitoba	1.4	1.9	1.4	1.5	1.5	1.4	4.2	4.3	4.4	4.3	4.3	4.3
Saskatchewan	1.2	1.4	1.2	1.4	1.4	1.3	4.0	4.1	4.1	4.0	3.9	3.9
Alberta	0.6	1.0	2.0	2.0	2.0	1.7	10.0	10.2	10.0	10.3	10.5	10.7
B.C. and Territories												
British Columbia	−0.1	0.9	1.4	1.5	1.6	1.1	11.4	11.2	10.9	10.7	10.7	10.7
Yukon and Northwest Territories												
Total	0.7	1.5	1.6	1.6	1.6	1.4	100.0	100.0	100.0	100.0	100.0	100.0

TABLE C-74.2 Regional Employment Growth Rates and Services in Canada as Forecasted by the Institute for Policy Analysis, University of Toronto

	Average Growth Rate (%)						% Share					
	1981–87	1982–87	1987–95	1995–2000	2000–2005	1981–2000	1981	1982	1987	1995	2000	2005
Atlantic Provinces	1.3	2.3	2.0	1.3	1.0	1.6	7.3	7.3	7.4	7.4	7.6	7.6
Newfoundland	1.7	2.6	2.5	1.4	1.1	1.9	1.6	1.6	1.7	1.8	1.8	1.8
Prince Edward Island	1.7	2.9	1.2	1.0	0.7	1.3	0.4	0.4	0.4	0.4	0.4	0.4
Nova Scotia	1.5	2.3	2.0	1.3	1.0	1.7	2.9	2.9	3.0	3.0	3.1	3.1
New Brunswick	0.8	1.8	1.8	1.2	0.9	1.3	2.3	2.3	2.3	2.2	2.3	2.3
Quebec	0.6	1.8	0.9	0.0	−0.1	0.6	24.8	24.3	24.1	22.3	21.3	20.4
Ontario	1.2	2.0	1.8	1.0	0.8	1.4	37.9	38.2	38.3	38.0	38.1	38.2
Prairie Provinces	1.2	1.7	2.6	1.4	1.0	1.9	18.5	18.9	18.7	19.7	20.1	20.4
Manitoba	1.1	1.6	1.5	0.9	0.6	1.2	4.2	4.3	4.2	4.1	4.0	4.0
Saskatchewan	2.0	2.4	1.8	1.1	0.8	1.7	3.9	4.0	4.1	4.0	4.1	4.1
Alberta	0.9	1.4	3.3	1.7	1.2	2.2	10.5	10.6	10.4	11.6	12.0	12.3
B.C. and Territories												
British Columbia	1.1	2.3	3.0	1.7	1.3	2.1	11.5	11.3	11.5	12.6	13.0	13.4
Yukon and Northwest Territories												
Total	1.1	1.9	1.9	1.0	0.7	1.4	100.0	100.0	100.0	100.0	100.0	100.0

TABLE C-74.3 Regional Employment Growth Rates and Shares in Canada, Historical

	Average Growth Rate (%)					% Share				
	1956–66	1966–73	1973–81	1956–81	1981–82	1956	1966	1973	1981	1982
Atlantic Provinces	1.9	2.2	2.5		−2.8	8.7	8.0	7.8	7.6	7.6
Newfoundland		3.0	2.7		−1.6		1.7	1.7	1.7	1.7
Prince Edward Island		1.6	2.6		−2.1		0.5	0.4	0.4	0.4
Nova Scotia		2.0	2.3		−2.7		3.3	3.1	3.0	3.0
New Brunswick		2.0	2.6		−3.8		2.6	2.4	2.4	2.4
Quebec	2.8	2.0	1.8		−5.4	27.5	28.0	26.6	24.6	24.0
Ontario	2.4	3.2	2.7		−2.6	37.5	37.5	38.6	38.3	38.6
Prairie Provinces	2.3	2.4	4.0		−0.9	17.5	17.0	16.6	18.2	18.6
Manitoba		2.0	1.8		−1.1		4.8	4.6	4.2	4.3
Saskatchewan		0.7	2.9		0.2		4.5	3.9	3.9	4.1
Alberta		3.5	5.6		−1.1		7.7	8.1	10.0	10.2
B.C. and Territories										
British Columbia	3.3	4.3	3.9		−5.1	8.8	9.4	10.5	11.4	11.2
Yukon and Northwest Territories										
Total	2.5	2.8	2.8		−3.3	100.0	100.0	100.0	100.0	100.0

Source: Regional Employment Growth Rates, Statistics Canada, *Historical Labour Force Statistics*, cat. no. 71-201 (Ottawa: Statistics Canada, 1982), pp. 113–30, 300–309.

TABLE C-75 Regional Unemployment Rates in Canada as Forecasted by Informetrica (October)

	Average Level (%)						Level (%)					
	1982–87	1983–87	1988–95	1996–2000	2000–( )	1982–2000	1981	1982	1987	1995	2000	( )
Atlantic Provinces	14.84	14.86	13.48	10.57		13.14	11.84	14.78	13.81	12.24	9.31	
Newfoundland	16.96	16.96	14.54	11.43		14.49	12.73	16.99	15.59	13.00	10.32	
Prince Edward Island	14.49	15.13	13.26	10.10		12.82	11.00	11.27	14.68	11.77	8.98	
Nova Scotia	12.91	12.78	12.32	9.22		11.69	10.62	13.57	12.17	11.09	7.71	
New Brunswick	15.71	15.79	14.13	11.64		13.97	12.86	15.27	14.34	13.16	10.52	
Quebec	14.54	14.59	13.72	11.29		13.34	10.32	14.32	14.11	12.73	10.12	
Ontario	9.52	9.55	7.77	4.63		7.50	6.38	9.40	8.90	6.32	3.17	
Prairie Provinces	8.10	8.23	6.86	5.50		6.89	4.91	7.42	7.09	6.42	4.72	
Manitoba	9.55	9.79	8.62	6.81		8.44	6.19	8.34	8.91	7.94	5.78	
Saskatchewan	8.19	8.60	8.82	7.77		8.34	6.73	6.12	8.68	8.83	6.96	
Alberta	7.46	7.44	5.39	4.04		5.69	3.63	7.54	5.70	4.84	3.38	
B.C. and Territories												
British Columbia	11.24	11.15	10.01	6.99		9.60	6.79	11.73	10.69	8.96	5.50	
Yukon and Northwest Territories[a]												
Total	11.11	11.15	9.74	7.13		9.49	7.59	10.95	10.43	8.65	5.87	

a. Not defined; not part of labour force statistics.

TABLE C-75.1 Regional Unemployment Rates in Canada as Forecasted by Informetrica (January)

	Average Level (%)						Level (%)					
	1982–87	1983–87	1988–95	1996–2000	2000–2005	1982–2000	1981	1982	1987	1995	2000	2005
Atlantic Provinces	14.06	13.99	14.01	11.76	8.71	13.44	11.65	14.43	14.05	13.11	10.74	7.23
Newfoundland	18.13	18.42	15.71	10.96	8.20	15.23	14.14	16.67	18.19	13.16	10.00	6.93
Prince Edward Island	11.95	11.50	14.26	12.80	10.29	13.15	11.44	14.21	12.60	13.80	12.02	8.74
Nova Scotia	12.20	12.00	13.06	12.16	8.18	12.55	10.20	13.22	12.10	13.31	10.77	6.44
New Brunswick	13.80	13.70	13.90	11.68	9.46	13.28	11.70	14.29	13.69	12.66	11.06	8.17
Quebec	13.54	13.48	13.26	11.13	8.48	12.79	10.39	13.81	13.82	12.21	10.23	7.29
Ontario	10.03	10.80	9.14	6.27	3.01	8.67	6.58	9.76	10.24	7.62	5.13	1.72
Prairie Provinces	9.70	10.13	10.77	9.71	8.23	10.15	4.49	7.43	10.77	10.27	9.26	7.47
Manitoba	9.48	9.70	9.89	7.94	5.36	9.25	5.96	8.36	10.33	8.93	7.10	4.29
Saskatchewan	7.61	7.88	10.05	9.26	7.73	9.07	4.64	6.26	9.42	9.68	8.85	6.52
Alberta	10.59	11.20	11.44	10.58	9.52	10.95	3.79	7.51	11.50	11.05	10.26	9.01
B.C. and Territories												
British Columbia	14.57	15.06	14.06	11.46	8.18	13.54	6.70	12.13	15.34	12.76	10.37	6.31
Yukon and Northwest Territories[a]												
Total	11.65	11.78	11.39	9.08	6.32	10.86	7.59	10.99	12.09	10.23	8.16	5.10

a. Not defined; not part of labour force statistics.

TABLE C-75.2 Regional Unemployment Rates in Canada as Forecasted by the Institute for Policy Analysis, University of Toronto

	Average Level (%)						Level (%)					
	1982–87	1983–87	1988–95	1996–2000	2001–2005	1982–2000	1981	1982	1987	1995	2000	2005
Atlantic Provinces												
Newfoundland	17.3	17.4	14.4	12.9	13.0	14.9	13.9	16.8	15.9	13.5	13.0	12.7
Prince Edward Island	11.5	11.2	11.0	9.8	9.9	10.8	11.1	13.1	10.3	10.4	9.8	9.9
Nova Scotia	12.1	11.8	9.5	8.7	8.4	10.1	10.3	13.3	10.8	8.8	8.6	8.4
New Brunswick	14.3	14.3	12.1	10.5	10.5	12.4	11.5	14.2	13.6	11.0	10.4	10.5
Quebec	12.3	12.0	9.4	8.8	8.7	10.1	10.3	13.8	10.6	8.6	8.8	8.7
Ontario	8.7	8.5	5.9	5.5	5.6	6.7	6.6	9.9	7.3	5.4	5.6	5.6
Prairie Provinces												
Manitoba	8.3	8.3	6.1	4.3	4.6	6.3	5.9	8.5	7.7	5.0	4.4	4.6
Saskatchewan	6.3	6.4	4.7	3.6	3.7	4.9	4.7	6.2	5.8	3.8	3.6	3.8
Alberta	10.1	10.5	6.4	4.9	5.4	7.2	3.8	7.8	9.9	5.0	5.0	5.7
B.C. and Territories												
British Columbia	11.8	11.7	7.8	5.2	5.4	8.4	6.8	12.2	10.2	5.5	5.3	5.5
Yukon and Northwest Territories[a]												
Total	10.4	10.3	7.4	6.4	6.5	8.1	7.5	11.1	9.1	6.5	6.4	6.5

a. Not defined; not part of labour force statistics.

TABLE C-75.3 Regional Unemployment Rates in Canada, Historical

	Average Level (%)					Level (%)				
	1957–66	**1967–73**	**1974–81**	**1957–81**	**1982**	**1956**	**1966**	**1973**	**1981**	**1982**
Atlantic Provinces	9.6[a]	6.6	11.1		14.4	6.0[a]	5.4	7.8	11.7	14.4
Newfoundland		7.9	14.4		16.9		5.8	10.0	14.1	16.9
			1975–81					**1975**		
Prince Edward Island	—	—	10.1		13.1	—	—	8.0	11.4	13.1
Nova Scotia		5.8	9.4		13.2		4.7	6.6	10.2	13.2
New Brunswick		6.4	11.0		14.2		5.3	7.7	11.7	14.2
Quebec	7.2[a]	6.4	9.3		13.8	5.0	4.1	6.8	10.4	13.8
Ontario		4.2	6.4		9.8	2.4	2.6	4.3	6.6	9.3
Prairie Provinces	4.0[a]	4.2	4.3	4.1	7.4	2.2[a]	2.4	4.7	4.5	7.4
Manitoba		4.4	5.3		8.5		2.8	4.6	6.0	8.5
Saskatchewan		3.3	4.0		6.2		1.5	3.5	4.6	6.2
Alberta		4.4	4.0		7.5		2.5	5.3	3.8	7.5
B.C. and Territories										
British Columbia	6.4[a]	6.5	7.7		12.1	2.8[a]	4.6	6.7	6.7	12.1
Yukon and Northwest Territories										
Total	5.5[a]									

Sources: Regional Unemployment Rates: 1967–1982, Statistics Canada, *Labour Force Statistics*, cat. no. 71-201 (Ottawa: Statistics Canada, 1982), pp. 181, 195–207; 1957–1966, *Economic Review* (1976), p. 147.

a. Old labour force survey.

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