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

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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