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The National Energy Program After Three Years: An Economic Perspective*

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2.1 INTRODUCTION: THE NATURE OF OUR CURRENT ENERGY PROBLEM

The objective of this paper is to survey the main economic problems created by the finite nature and increasing relative cost of Canada's non-renewable hydro-carbon energy resources, and the policies - both federal and provincial - which have attempted to come to grips with them. The survey will take a retrospective view on the recent jurisdictional and revenue-sharing disputes between governments, the energy industry and consumers within Canada, and will analyze the likely implications for the future of the resulting scenario with respect to energy supply, demand, pricing, revenue distribution and the macroeconomy.

The paper is organized under seven main headings. This first section is concerned with the nature of our current energy problem, and the balance between energy supplies and energy demand. The next five sections examine the nature and economic implications of both the National Energy Program (NEP) of October 28, 1980, and the New Energy Agreement (NEA) of September 1, 1981, between the Government of Canada and the Province of Alberta. These measures were subsequently amended by Alberta's Oil and Gas Activity Program (OGAP) (announced April 13, 1982), by the federal government's National Energy Program, Update 1982 (released May 31, 1982), and by the amendments to the NEA agreed upon by the Governments of Canada and Alberta on June 30, 1983. A few references will also be made to the agreements negotiated with the other producing (or potentially producing) provinces, British Columbia, Saskatchewan and Nova Scotia (signed September 24, 1981, October 26, 1981 and March 2, 1982, respectively), and to other important influences on the energy scene that have occurred over the last year or so.

Specifically, in successive sections, the price increases agreed upon and those, if any, which are now forecast to occur are considered (section 2); subsequently, both resource taxation and incentive payments to the industry are assessed (section 3), which then leads into the issues of resource jurisdiction and revenue-sharing (sections 4 and 5). Foreign ownership and Canadianization issues are discussed in section 6, while the final section (7) is concerned with macroeconomic

issues and the probable impact of petroleum energy developments in the 1980s.

This review is primarily concerned with the central impact of the NEP and its aftermath on netbacks to the primary oil and natural gas industry, and with the impact of reduced cash flows on exploration and development activity and potential future supplies of oil and natural gas from the western sedimentary basin. Included will be an investigation of the financial requirements of the oil and gas sector, and the role of both buoyant and stable netbacks from existing oil and gas extraction in the ability of this sector to finance continued exploration and development activity from both internal and external (borrowed) sources. Such a review of the current fiscal arrangements for the industry may well be of considerable importance in suggesting appropriate broad policy changes that should be included in subsequent (or reopened) energy agreements if the basic objectives of security of supply and overall economic efficiency are to be achieved.

The fundamental problem associated with non-renewable hydro-carbon energy resources is one of supply. Each year, the world's remaining reserves of low-cost conventional crude oil are reduced by the consumption demands of the world economy, and their replacement generally requires us to pursue alternative sources of supply whose extraction and development will inevitably be more costly. Thus, the supply problem is essentially one of cost.

The high cost of alternative energy resources requires a pricing mechanism which allocates the remaining stock of low-cost reserves gradually for consumption purposes over time. Prices which are too low create excessive consumption today at the expense of future consumption possibilities. They also inhibit the development of replacement energy resources, as well as the development of new production technologies appropriate to a world of higher real energy costs. On the other hand, prices which are efficient for inter-temporal resource allocation, and which are sufficient to bring forth new supplies, will also generate economic rents (a form of surplus) for the current owners of existing pools of low-cost energy resources as these are extracted and thereby gradually depleted through time.

Canada is fortunate in possessing substantial hydro-carbon energy resources. Indeed, we currently export appreciable quantities of natural gas to the United States. On the other hand, we also import considerable quantities of conventional crude oil to supply markets in Eastern Canada. Taking all energy resources into account (including our substantial hydro-electricity generating capacity), Canada is a net exporter of energy commodities. Her Achilles heel, however, is conventional crude oil. These points are illustrated in Table 1.

Although Canada is energy self-sufficient in an overall sense, she is not self-sufficient in crude oil. Indeed, about one-fifth of her annual consumption needs are filled by importing conventional crude oil from a variety of foreign sources of supply. Although the considerable resources of the tar sands, the Beaufort Sea and nearby Arctic Islands, and the Hibernia and associated fields off the East Coast may eventually be developed, only a small proportion of these resources is currently being commercially extracted, and it will take an immense amount of capital investment and (in some cases) technological innovation to bring more of these expensive

TABLE 1

Canada's Trade in Energy-Related Products, 1975-82
(Customs Basis)

	1975	1976	1977	1978	1979	1980	1981	1982
				($ Billions)				
Exports								
Petroleum and Coal	4.2	3.4	3.0	3.3	5.1	6.1	6.3	6.5
Crude petroleum	3.1	2.3	1.8	1.6	2.4	2.9	2.5	2.7
Refined petroleum and coal products	0.5	0.6	0.6	1.0	1.9	2.3	2.6	2.5
Coal and other	0.6	0.6	0.7	0.8	0.8	0.9	1.1	1.3
Natural Gas	1.1	1.6	2.0	2.2	2.9	4.0	4.4	4.8
Electricity	0.1	0.2	0.4	0.5	0.7	0.8	1.1	1.1
Radioactive Ores	0.1	0.1	0.1	0.2	0.4	0.2	0.2	0.4
TOTAL	5.4	5.3	5.5	6.2	9.1	11.1	12.0	12.7
Imports								
Petroleum and Coal	4.2	4.0	4.2	4.4	5.8	8.4	9.6	6.7
Crude petroleum	3.3	3.3	3.2	3.5	4.5	6.9	7.9	4.9
Coal	0.6	0.5	0.6	0.6	0.9	0.8	0.8	0.9
Other (1)	0.3	0.2	0.3	0.3	0.4	0.7	0.9	0.9
TOTAL	4.2	4.0	4.2	4.4	5.8	8.4	9.6	6.7
Balances								
Petroleum and Coal	0.0	-0.6	-1.1	-1.1	-0.6	-2.2	-3.3	-0.2
Crude petroleum	-0.2	-1.0	-1.5	-1.9	-2.1	-4.0	-5.4	-2.2
Other	0.2	0.4	0.3	0.7	1.5	1.7	1.8	1.6
Other	1.2	1.8	2.5	2.9	4.0	5.0	5.7	6.2
TOTAL	1.2	1.2	1.4	1.8	3.4	2.7	2.4	6.0

Note: Totals may not add due to rounding.

(1) Includes other crude bituminous substances, fuel oil, lubricating oil, coke of petroleum and coal, and other petroleum and coal products.

Source: Statistics Canada, Exports, annual, cat. 65-202; Imports, annual, cat. 65-203; and Summary of External Trade, monthly, cat. 65-001.

resources to market. In the meantime, and for the foreseeable future, our remaining stocks of conventional crude oil, which are located largely in the three westernmost provinces, will continue to experience gradual depletion.

Prior to 1973, Canadians had become accustomed to considering themselves abundant in energy resources, especially crude petroleum and natural gas, and, accordingly, growth in demand for primary energy surged. Although world prices began to increase markedly in late 1973, this entrenched Canadian attitude led to widespread resistance to raising domestic petroleum prices to levels more closely approximating those of the world oil market. Consequently, while other industrial nations (with the initial exception of the United States) raised their prices to world levels fairly rapidly, thereby lowering their annual rate of growth of energy demand, Canada lagged behind on the pricing issue and, not surprisingly, annual energy consumption grew at a noticeably higher rate here.

Although economic logic strongly suggests that Canada should have moved fairly rapidly towards world oil prices, a variety of reasons have been employed as partial justification for keeping wellhead prices for oil and gas below the levels that market forces would otherwise dictate. The validity of at least three of these reasons is questionable. The fact that there is a heavy degree of foreign ownership in the energy sector may provide an argument for taxation of energy rents, but not for shading internal wellhead prices from world prices. The fact that energy pricing policies may have inflationary side effects does not provide a good counter-argument to the basic need to establish appropriate relative prices. Nor do reasons connected with providing the Central Canadian manufacturing sector with low energy prices to enable it to obtain a competitive edge over foreign producers have much validity. Not only are fuel costs a rather small proportion of total costs in many industrial processes, but also the maintenance of artificially low prices for just one type of input is more likely to encourage the perpetuation of inefficient production technologies than to enhance overall competitiveness in relationship to foreign manufacturing industries.

The main stumbling block in obtaining a more rational and efficient energy pricing policy has been the difficulty of agreeing on an appropriate sharing of the rents obtainable from our remaining stocks of low-cost conventional crude oil and natural gas among producing firms, energy consumers, and provincial and federal governments. Nevertheless, a policy of maintaining petroleum prices well below world market levels is likely to have several adverse effects. Existing supplies of conventional crude oil are likely to be consumed more rapidly due to the reduced incentive to conserve them. Shifts to alternative more abundant energy sources such as natural gas, and to new energy-conserving industrial and transportation technologies, are likely to be inhibited. Moreover, the development of more expensive sources of supply, such as deeper geological formations, oil sands and off-shore deposits is less likely to occur. In addition to this, the continued reliance upon expensive (and possibly insecure) imported oil supplies may put an unnecessary strain on the balance of payments, putting downward pressure on the domestic currency in international money markets, or necessitating larger foreign borrowing and possibly higher real (or inflation-adjusted)

interest rates. This reliance may also enlarge the federal government's deficit through the subsidization of imported oil, as appears to have been the case in Canada prior to the establishment of the petroleum compensation charge under the NEP.

With respect to natural gas supplies, we are for the next few years substantially better off, and indeed a policy of substituting natural gas for fuel oil in industrial and home heating uses probably makes sense over the present decade. A change in their relative price is an essential ingredient in shifting demand away from the commodity in short supply, and towards that with which we are more generously endowed, and for which the longer-term reserve picture looks reasonably buoyant. Nevertheless, the recent growth in our reserves of natural gas could easily turn around if reasonably favourable netbacks are not provided to our natural gas producing industry.

The National Energy Program (NEP), launched in October 1980, had three basic objectives: security of energy supply, Canadianization of the oil and natural gas industry, and fairness in pricing and revenue-sharing. Essentially, this program attempted to hold down the wellhead or producer prices of conventional crude oil and natural gas in relationship to world market prices, and to increase consumer prices of these products to aid in conservation (with natural gas prices increasing less fast than oil prices to aid substitution of gas for oil). The NEP also sought to generate large-scale revenues for the federal government from the tax wedges proposed between these two sets of prices and from the petroleum and natural gas revenue tax (PGRT), initially set at 8 percent of net production revenues, and to create incentives for further exploration and development of non-conventional hydro-carbon energy resources, particularly by Canadian firms on lands outside existing provincial boundaries.

Although the NEP was supposedly designed to ensure security of oil supply for Canada, it is clear that it represented mostly a "demand-side" solution, for the program involved only a minimal increase in the wellhead price of conventional crude oil. Prices to consumers were augmented substantially, however. The blended or refinery-gate price from late October, 1980, until October 1, 1981, increased by $9.55/barrel, or 51 percent, from $18.50/barrel to $28.05/barrel; but only $2.00/barrel of this represented a wellhead price increase for domestic producers. The remaining $7.55/barrel represented federal government levies, which include the Petroleum Compensation Charge (PCC), designed to finance the subsidy provided to users of high-priced imported crude or oil sands production, and the $1.15/barrel Canadian Ownership Charge (COC), which assisted with financing the Petro-Canada take-overs of Petrofina Ltd. and the marketing and refining operations of BP (Canada) Ltd. In consequence, the blended price of crude petroleum exceeded the wellhead price ($18.75/barrel until October 1, 1981) by $9.30/barrel. The Toronto city-gate price for natural gas also rose under the NEP, but all of the increase prior to the New Energy Agreement (NEA) of September, 1981, accrued to the federal government as a result of its Natural Gas and Gas Liquids Tax (NGGLT), then set at 45¢/thousand cubic feet (mcf), and its Canadian ownership levy of 15¢/mcf.

In addition to this, the PGRT reduced producer netbacks from the wellhead prices of both oil and natural gas. The ensuing consequences

of the NEP were not surprising. Drilling rigs and skilled manpower moved to the United States and many of the rigs and crews remaining in Canada became unemployed. This substantial under-utilization of capacity continues to exist today. Sales of oil and gas rights (licenses and leases) by provincial governments fell by more than 60 percent in 1981 compared with their 1980 levels, and continue to remain very depressed today. Although conditions in the U.S. oil and gas industry have also been depressed, and buyer resistance in the United States to high export prices for Canadian natural gas has played an important role in the severe slowdown in industry activity in the western sedimentary basin, the NEP has probably been the most substantial single cause of this down-turn.

None of this has boded well for security of future energy supply. Indeed, it is quite perplexing how the erosion of producer netbacks was supposed to achieve this. Undoubtably, the NEP has also adversely affected the rate of economic growth in western Canada, and helped to generate both substantial unemployment and numerous commercial bankruptcies. Some important adverse effects have spilled over into the Eastern Canadian manufacturing sector as new orders for industrial equipment have been reduced considerably. Higher unemployment has thus been generated elsewhere, not only for this reason but also because the rate of in-migration of job-seekers into the western provinces has slowed to approximately zero.

The NEA, which covers the period from September 1, 1981 to December 31, 1986, made several important modifications to the NEP, especially with respect to pricing policies. Basically, the NEA was an arrangement whereby the Alberta government acknowledged the federal government's ability to collect substantial new forms of tax revenues from the provincial oil and gas sector in exchange for substantially higher producer prices for oil and natural gas than those contained in the NEP. Thus, the NEA does go a considerable way to rectify the pricing problems created by the NEP. Although the first priority in any compromise solution should have been to re-establish an appropriate fiscal framework for the industry, and only after accomplishing this should one have worried about the distribution of public-sector revenues between governments, in retrospect it is pretty clear that this was not really achieved. Since the NEA was signed, substantial downwards revisions to the forecast benchmark world market price for oil have led to important modifications to our internal pricing, royalty and (to some degree) taxation arrangements. These arrangements are described in the next two sections of this paper.

2.2 CURRENT PRICING ARRANGEMENTS

Two basic categories of oil were distinguished in the NEA, namely old oil and new oil. Conventional crude oil discovered prior to January 1, 1981, is designated as old oil, whereas oil discovered after that date, or produced from the oil sands and off-shore sources, or by tertiary recovery techniques from existing pools, is designated as new oil.

The federal government has conceded that the wellhead price of old oil should be increased more rapidly than under the NEP, at $4.50/barrel during 1981 and 1982. For the next four years, this figure may increase at the rate necessary to keep domestic prices at no more than 75 percent of the actual international price of oil (or average cost of

imported crude oil laid down at Montreal) less transportation costs from Alberta to Montreal, provided that this does not exceed $8.00/barrel per year (more precisely, $4.00/barrel on each six-month anniversary date).

In fact, since the international price of oil has recently fallen to about $38.00/barrel in Canadian funds (with a world f.o.b. price of about $29.00 U.S./barrel), the current wellhead price of $29.75/barrel set on January 1, 1983, has already breached the 75 percent cap by approximately $3.00/barrel, after appropriate allowances for transportation costs (see Table 2). The June 30, 1983, Canada/Alberta Amending Agreement freezes this wellhead price at $29.75/barrel as long as it remains within the 75-100 percent of world price band. One of the consequences of the much lower forecast for world oil prices is that all revenue-sharing and netback estimates calculated under the NEA, and to a considerably lesser degree those under the NEP, Update 1982, must now be judged to be totally misleading.

For new oil, permissible producer wellhead prices are more generous than for old oil. Indeed, the New Oil Reference Price (NORP) closely approximates the actual international price for oil. However, no increases are permitted in the NORP that would render this price larger than the international price less transportation costs to Montreal. In fact, the NORP has tracked downwards from about $43.00/barrel in early 1982 to about $37.00/barrel at present. Since it is now projected that world oil prices will remain level in nominal U.S. dollar terms throughout 1984 and 1985 at around $29.00 U.S./barrel, and then rise at no more than 1 percent per annum in real terms until the end of the decade, the possibilities for the NORP are similarly circumscribed if this forecast turns out to be accurate.

The reference point for pricing natural gas is now the Alberta border rather than the Toronto city-gate as under the NEP, so that transportation costs from Alberta to Toronto will not directly influence what producers receive. The natural gas price was scheduled to increase by 25¢/mcf every six months commencing February 1, 1982, or by $2.50/mcf in total over the five years of the NEA (see Table 3). Pipeline tariffs, the federal NGGLT and the federal COC imply a Toronto city-gate price which is considerably larger than the Alberta border price. However, the NGGLT is supposed to be regulated so as to generate a Toronto city-gate price which is approximately equal to 65 percent of the BTU equivalent price of crude oil at the Toronto refinery gate; that is, the blended price of oil, which includes the PCC and the COC. Although the NGGLT once rose to 68¢/mcf, it is now projected to decline to zero with the lower profile projected for the blended price of oil. Indeed, under the Canada-Alberta Amending Agreement of June 30, 1983, the NGGLT falls to zero on February 1, 1984, and the Alberta border price increases are limited to about 16¢/mcf on that date and no increase on August 1, 1984, in order to maintain the 65 percent BTU equivalency with the blended price of oil at least until February 1, 1985.

The lower price for natural gas than for crude petroleum for an equivalent amount of energy is designed to encourage substitution of natural gas for oil by energy users, and is supported by provisions in the NEP for lump-sum subsidies for those who convert to natural gas from oil. Higher prices for both fuels will undoubtedly lead to greater conservation efforts on the part of consumers. But the supply

TABLE 2

Schedule of Prices and Taxes per Barrel: Conventional (Old) Crude Oil and New Oil Reference Price (NORP)

	NEP Wellhead Oil Price	Maximum New Agreement Wellhead Oil Price	Projected Actual New Agreement Wellhead Oil Price	Estimated Pipeline Tariffs	Estimated Petroleum Compensation Charge (PCC)	Estimated Blended Oil Price	New Oil Reference Price (Estimated Wellhead)	Import Cost ($Cdn/bbl)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Oct. 1, 1981	18.75	21.25	21.25	1.55	8.15	30.95	-	43.00
Jan. 1, 1982	19.75	23.50	23.50	1.58	6.30	31.38	45.92	41.33
July 1, 1982	20.75	25.75	25.75	1.58	6.30	33.63	43.00	41.33
Jan. 1, 1983	21.75	29.75	29.75	1.71	3.76	35.22	44.71	38.61
July 1, 1983	22.75	33.75	29.75	1.71	3.76	35.22	40.86	36.20
Jan. 1, 1984	25.00	37.75	29.75	1.75	3.76	35.26	39.11	36.70
July 1, 1984	27.25	41.75	29.75	1.75	3.76	35.26	39.65	36.70
Average 1985	30.62	47.75	29.75	1.75	3.76	35.26	39.65	36.70
Average 1986	37.00	55.75	29.75	1.77	3.76	35.28	41.00	38.50

Notes: 1. The world f.o.b. price of oil is approximately $29.00 U.S./barrel (or $36.00 Canadian/barrel) at time of writing. It is projected to remain approximately stationary during 1983, 1984 and 1985, and then increase by about 2 percent in real terms in 1986 using the U.S. wholesale price index as the projected inflation factor.

2. Over the period 1981-1986, the New Energy Agreement of September 1, 1981, stipulates that the Petroleum Compensation Charge (PCC) is to be set so as to leave no revenue in excess of the amount required to finance oil import compensation and the subsidy on oil qualifying for the NORP. The current charge of $3.76/barrel seems excessive from this perspective, and ought to be reduced to about $2.80/barrel in the near future. The blended oil price given in the table includes transportation charges (pipeline tariffs) to Montreal but excludes the Canadian ownership charge of $1.15/barrel.

3. The Amendment of June 30, 1983 to the New Energy Agreement stipulates that, if the international price of oil increases, no increases will take place in the conventional wellhead price that would render this price larger than 75 percent of the actual international price of oil (or average cost of imported crude oil laid down at Montreal) less transportation costs to Montreal. It also stipulates that, should the international price decrease, the domestic price shall be adjusted so as not to exceed 100 percent of the international price, less transport costs to Montreal. Thus the domestic wellhead price will remain at $29.75 as long as this price remains within the 75 percent-100 percent of world price band.

4. The Amending Agreement also allows oil under the Special Old Oil Price (SOOP) program and qualifying infill wells to receive the NORP effective from July 1, 1983. As under the original Agreement, no increases will take place in the NORP that would render this price larger than the actual international price less transport costs to Montreal.

5. We are indebted to officials at Energy, Mines, and Resources Canada for assistance with the preparation of some of the numbers contained in this table.

TABLE 3

Schedule of Prices and Taxes per Thousand Cubic Feet (mcf): Natural Gas

	NEP Pre-Tax City-Gate Price	New Agreement Alberta Border Price	Estimated Pipeline Tariffs	New Agreement Estimated Natural Gas Tax (NGGLT)	New Agreement Estimated Toronto City-Gate Price	Fall 1983 Estimated Natural Gas Tax (NGGLT)	Fall 1983 Estimated Toronto City-Gate Price	Fall 1983 Estimated Alberta Border Price
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Oct. 1, 1981	2.60	1.82	.78	.45	3.05	.45	-	-
Feb. 1, 1982	2.75	2.07	.87	.65	3.59	.65	-	-
Aug. 1, 1982	2.90	2.32	.94	.68	3.94	.68	-	-
Feb. 1, 1983	3.05	2.57	.95	.74	4.28	.48	4.00	2.57
Aug. 1, 1983	3.20	2.82	1.00	.91	4.73	.16	3.96	2.82
Feb. 1, 1984	-	3.07	1.00	.96	5.03	0	3.98	2.98
Aug. 1, 1984	-	3.32	1.00	1.06	5.38	0	3.98	2.98
Feb. 1, 1985	-	3.57	1.05	1.07	5.69	0	4.03	2.98
Aug. 1, 1985	-	3.82	1.05	1.20	6.07	0	4.03	2.98
Feb. 1, 1986	-	4.07	1.10	1.37	6.54	0	4.08	2.98
Aug. 1, 1986	-	4.32	1.10	1.52	6.94	0	4.08	2.98

Notes:

1. The export price of gas is approximately $5.40 Canadian/mcf ($4.40 U.S./mcf) at time of writing. An incentive price of $4.05 Canadian/mcf ($3.30 U.S./mcf) exists for volumes exceeding 50 percent of existing contract volumes.

2. The Toronto city-gate (or wholesale price) includes transportation charges (pipeline tariffs) from the Alberta border to Toronto but excludes the Canadian ownership charge of 15¢/mcf, which applies to natural gas as well as to oil. It should, however, be noted that the Alberta government has agreed to pay Market Development Incentive Payments out of the Alberta border price to finance capital expansion of gas distribution systems and sales promotion programs in Eastern Canada. These payments will be as high as 30 percent of the Alberta border price for all new volumes of gas sold for industrial and home heating uses there.

3. Over the period 1981-1986, the New Agreement stipulates that the natural gas and gas liquids tax (NGGLT) on domestic sales is to be set at a level generating a parity relationship between the wholesale price of natural gas at the Toronto city-gate and the average price of crude oil at the Toronto refinery gate (the blended price) of approximately 65 percent. The maintenance of such a relationship will require that the NGGLT be set to zero by early 1984.

response by producers is not so clear cut, for two other factors must be taken into account, namely expected future prices and taxation arrangements affecting producer netbacks.

First, the domestic prices of both new and old oil are tied to the world oil price and may not exceed it, or 75 percent of it, respectively. It is now abundantly clear that the world oil price will not augment as rapidly as hypothesized under the NEP, Update 1982, let alone the NEA, and may well decline further before it rises again. Even with the recovery in economic activity in the western world, the existing high world price per barrel of oil will continue to depress overall demand for crude petroleum despite some inventory restocking demand which will soon appear. Under Saudi Arabian leadership, OPEC has found that it has to restrict supplies substantially just to maintain the current price of about $29.00 U.S./barrel, let alone increase it.

The OPEC nations undoubtedly also recognize that any additional hike in their price, even if accompanied by disciplined supply restrictions on the part of members, will only encourage the development of high-cost alternative supplies in the industrialized world. These include reserves found off-shore from Atlantic Canada, in the Canadian Arctic, the oil sands of Alberta, oil shales in the United States and elsewhere, as well as the tertiary recovery of existing conventional oil. Indeed, the realization that world oil prices will not increase as previously thought is unquestionably one of the main reasons why oil companies have not proceeded with the early development of resources such as the oil sands, and have restricted their other exploration and development expenditures.

The second set of factors affecting industry supply responses are the taxes being imposed and their impact upon the net returns to producers. The next section discusses these taxation issues.

2.3 TAXES ON INDUSTRY REVENUES

A main thrust of the NEP was to appropriate for the federal government a sizeable share of the economic rents (that is, returns above those available in alternative uses of investible funds) which are available from oil and gas production. Given the negative impact of the NEP on oil industry exploration and development activity, some may have expected that the federal-provincial energy accord (NEA) would result in lower tax rates for the industry. Yet, this definitely did not occur. Any improvement in the industry's net returns comes from higher prices, not lower taxes, under the NEA. Subsequent changes in royalty arrangements under the Alberta government's OGAP program and in taxation arrangements under the federal government's NEP, Update 1982, became necessary, however, when the realization of a lower world oil price profile became self-evident.

The most important new federal tax, the Petroleum and Natural Gas Revenue Tax (PGRT), was originally set under the NEP at 8 percent of production revenues, after deducting operating costs (but not provincial royalties). This tax was the major factor which seriously eroded oil company netbacks between 1980 and 1981, and thereby discouraged new exploration and development. The September, 1981, accord did not remove or reduce this tax, but as a net result of two amendments increased it even further. On the one hand, the industry was permitted to deduct a 25 percent resource

5. to leave intact the existing provincial royalty rates and federal PGRT rates for the foreseeable future.

The fact that this agreement took place with a minimum of public confrontation, and the fact that it represents to all concerned a reasonably sensible compromise on the difficult issues of oil and gas pricing and taxation, should reduce the uncertainty and instability of industry expectations that has no doubt characterized the last three years. The main problems remaining are the pricing and marketing of natural gas for export to the various regions of the United States, and the current level of the PGRT, which will become increasingly onerous if (as projected in Table 4) real netbacks decline from 1983 onwards.

Table 4 does, however, confirm that real (and nominal) dollar netbacks for both oil and natural gas were seriously eroded in 1981 from 1978-80 levels by the impact of the NEP, and especially the PGRT, on the producing industry. Indeed, relative to 1980, and with the possible exception of "new-old" oil, these netbacks on an effective tax basis were eroded in real terms by more than one-third on EMR's own estimates. Even with all the new measures put in place, it is now projected that netbacks on "old-old" oil will not be restored to 1980 levels in real terms until the latter half of 1983. On old and new gas, real dollar netbacks are not restored until after the end of the energy agreement, if at all, unless there is a totally unexpected rebound in the marketability of Canadian gas in the U.S., which would affect netbacks through the revenue "flow-back" system currently in place.

Unless one believed that netbacks were much too large in the 1978-80 period, and that the erosion of them would not affect producers' expectations and confidence, the consequences of the severe real netback erosion for exploration and development activity at a time of high real interest rates should have been at least broadly anticipated. Cash flows from existing production are important for firms to extend their exploration and development activity, since these cash flows largely determine their ability to borrow on either debt or equity account.

The recent extension of NORP oil prices to SOOP oil and to oil produced from newly-drilled infill wells will provide greater cash flow to producers. Nevertheless, insofar as netbacks have gradually been restored, it has largely been through provincial royalty relief. Implicitly, therefore, the Alberta government is now paying a significant proportion of the PGRT out of its own revenues.

As we shall argue in the next section, just as it bought back jurisdictional control over its own resources by agreeing to pay the Petroleum Incentive Payments (PIPs) on provincial lands in exchange for inducing the federal government to apply a zero rate of natural gas tax on exported gas, the Alberta government has now attempted to buy back some moderate prosperity for the industry by providing royalty relief to help bring real netbacks back towards their pre-PGRT standing. The consequences of all this for revenue distribution are not inconsiderable, and will be discussed in more detail in a later section.

TABLE 4

Netback Calculations for Conventional Crude Oil and Natural Gas
Produced in Alberta
(Constant 1981 Dollars)

Year	Old-Old Oil ($/barrel)	New-Old Oil ($/barrel)	NORP Oil ($/barrel)	Old Gas ($/mcf)	New Gas ($/mcf)
			Large Crown Producers		
1975	5.23	6.52		0.41	0.46
1976	5.09	6.57		0.59	0.72
1977	5.33	7.07		0.71	0.88
1978	6.07	8.08		0.80	1.01
1979	6.13	8.04		0.90	1.15
1980	6.49	8.53		1.05	1.36
1981	4.20	7.20	6.80	0.61	0.90
1982	5.88	9.35	13.49	0.70	0.92
1983	7.22	11.18	11.39	0.75	0.93
1984	6.33	10.82	9.82	0.71	0.89
1985	5.75	10.36	9.39	0.71	0.90
1986	5.00	10.93	9.45	0.74	0.94
			Small Crown Producers		
1983	9.79	14.14	14.61	1.01	1.20
1984	8.80	14.00	12.77	0.98	1.16
1985	8.02	13.43	12.25	0.98	1.17
1986	7.08	14.01	12.36	1.02	1.22

Notes: 1. Source: These figures were obtained from officials at the Department of Energy, Mines, and Resources, Canada. These netbacks are calculated on an "effective" tax basis and imply certain reinvestment assumptions that may not materialize, and, indeed, could be quite misleading if interest rates are high and volatile. Netbacks on a full-tax basis (where corporate profits taxation rates applied are considerably higher) are much lower than these numbers throughout. The lower portion of the table indicates that small producers receive larger benefits from the PGRT tax credit contained in the NEP Update 1982. The Consumer Price Index has been used as a deflator throughout.

2. Old-old (COOP) oil refers to oil discovered after March 31, 1974. New-old (SOOP) oil refers to oil discovered after March 31, 1974, but before January 1, 1981. The same March 31, 1974, break point divides old natural gas from new natural gas. NORP oil refers to all oil discovered after January 1, 1981, and to certain categories of tertiary and synthetic production begun before that date. Under the terms of the Alberta-Ottawa Amending Agreement of June 30, 1983, the new oil reference price (NORP) was extended to all oil discovered after March 31, 1974, (new-old oil), and to production from infill drilling within pre-NORP entities. Alberta royalty rates differ on these five categories of primary energy, and it is notable that Alberta's Oil and Gas Activity Program (OGAP) of April 1982 allocated largest royalty reductions to old-old oil and to old natural gas, for which the NEP had the most severe netback eroding effects (35 percent and 42 percent, respectively) in real terms. Average Alberta royalty rates for these five categories of primary energy after OGAP are as follows:

Old (Pre-1974) Oil 37%
New (1974-1980) Oil 25%
NORP (Post-1980) Oil 23%
Old (Pre-1974) Gas 41% (38% if low productivity well)
New (Post-1974) Gas 33% (30% if low productivity well)

3. These netback calculations are based on the Amended Canada/Alberta Memorandum of Agreement of June 30, 1983, and therefore include the reclassification of SOOP to NORP as well as the important effects of Alberta's OGAP program. They therefore differ from the expected netbacks that may have been perceived by the industry from the vantage point of 1981 or 1982. As a check on these EMR netback figures, comparisons were made with those compiled in the latest (August 1983) Lewis Engineering Profitability Analysis Service report. Although there were numerous discrepancies, overall both series proved to be consistent with each other.

2.4 JURISDICTIONAL AND RELATED ISSUES

In the post-NEP, pre-NEA interlude, it became clear to most observers that prices for petroleum and natural gas and the division of revenues were not the sole concerns of the two levels of government, particularly the provincial governments. The latter perceived the NEP as an undisguised attempt by the federal authorities to enhance their jurisdiction over resource development in this country (at least oil and gas resources), a contravention of provincial rights under the British North America Act (and now the Constitution of Canada). The decision by the federal government to tax not only domestically used natural gas, but also gas exports, was particularly offensive to the provinces.

Alberta responded to the NEP by delaying approval of new oil sands plants and reducing oil production, thus asserting provincial control over the pace of resource development and exploitation in the province. Since this response meant that greater imports of crude oil were necessary, it was also a way of putting pressure on the federal government to relax its stance.

Under the terms of the NEA, Ottawa withdrew the natural gas and gas liquids tax on exports of natural gas (while still asserting the right to levy it). This provision, along with the higher wellhead gas and oil prices, was a key factor in permitting an agreement to be reached. Since about one-third of all gas produced is currently exported, the removal of this tax improves the returns to gas producers and reduces potential federal revenues.

Concurrently, the Government of Alberta took over the administration and financing of the federally-based PIPs for exploration work within the province, thereby seeming to regain more complete control over provincial energy development. This greater involvement is expected to cost the province $2.8 billion over the life of the agreement, which seemingly offsets the reduction in federal tax revenues from natural gas exports. In retrospect, however, this may have been a poor financial deal from the perspective of the province. Indeed, if the tax on natural gas exports had been kept level with the tax on domestic gas, it would not now be projected to earn much revenue in any case, indicating that Alberta paid a heavy price for retaining jurisdictional control over the PIPs.

This reallocation of responsibilities for PIPs still does not alter the fact that the incentives for exploration and development on federal lands, principally in the Arctic and off-shore on the East coast, will be higher than those in the conventional oil and gas producing areas. In effect, higher cost frontier resource developments are being encouraged at the expense of potentially lower cost ones in the western Canadian sedimentary basin, a situation which makes little sense from the point of view of the optimal timing of exploration and development of potential oil and gas pools. From this perspective, one might interpret the $5.4 billion of Alberta incentives, including both drilling incentives and royalty relief, partly as an attempt to redress this imbalance while also shoring up industry revenues more generally. Indeed, this may be exactly what Ottawa had hoped would occur.

Two comments remain to be made on the PIPs question. First, to the extent that Alberta-financed incentive payments are capitalized into land lease and bonus bids, some of these payments will return to the

provincial government. In any event, whether the incentives turn out to be too generous or too lean, the consequences are internalized to one level of government through these capitalization effects. Secondly, in taking over the PIPs program, the Alberta government has been involved in an exercise in buying back jurisdictional control over its own resources. Saskatchewan and British Columbia, which are letting Ottawa administer and finance the PIPs within their own borders, have apparently not felt the issue was as important to them.

Some observers have taken the view that the Ottawa-Alberta jurisdictional dispute is to be blamed for the cancellation of construction of additional oil sands plants, most notably the Alsands plant, and that if approval had been given sooner, construction would have commenced and would be continuing now in spite of high interest rates and the slow-down in the advance of world oil prices. It is true that soon after the unilateral publication of the NEP in October, 1980, Alberta announced that approval for new oil sands plants would be delayed until a comprehensive energy arrangement was negotiated with the federal authorities. Yet, when one examines the April, 1982, generosity of the governmental assistance offered to Alsands, the last proposal to remain potentially active, this view is not easily upheld.

The two levels of government were willing to provide up to 50 percent of the share capital, and each make loan guarantees of 34 percent of the private participants' pre-production outlays. No payments would be required until after start-up, while at the same time no tax or royalty payments would be due until the loans were repaid. These and other provisions would have provided the private oil companies at least a 20 percent nominal return on their investment. It appears likely that if these provisions were not sufficient inducements to cause the partners to proceed, they would not have been enough to keep them going even if they had commenced earlier. The uncertainty regarding future world oil prices, possible concerns about whether the two governments would change the rules of the game in mid-stream, coupled with exceptionally high interest rates, have been the main deterrents, not merely the federal-provincial jurisdictional disputes per se.

Another dimension to the Ottawa-western Canada conflict arose two years ago. It had to do with the shut-in production capacity of oil in western Canada while extensive imports by the Montreal refineries were continuing. Although the now rescinded Alberta production cutbacks may have stimulated this situation, it should have quickly rectified itself. In the NEP, Update 1982, the federal government argued that there was no overall incentive for Eastern refineries to buy foreign crude oil instead of western oil because, if imports were lower priced, it would lower the mean cost per barrel of imports and hence reduce the average federal subsidy paid to refiners of foreign crude. It admitted, however, that if individual refiners can get foreign shipments at below the average price, they can benefit significantly from so doing; and it allowed that before April 1, 1982, compensation per barrel was set prior to the month when the oil was imported. The implication of this was that if all refiners could buy spot shipments at below the projected price for compensation purposes, all of them could gain from this lag in the compensation formula.

To the extent that shut-in capacity in western Canada is allowed to

continue, all Canadians lose as foreign producers receive revenues that could have been distributed among the domestic industry, provincial and federal governments and Canadian consumers. Some measures, including removal of the lag in the compensation formula and increased exports of certain categories of crude oil, have been announced by Ottawa to minimize these losses.

An additional area of potential disagreement between Ottawa and Alberta concerns natural gas exports to the United States. These have recently been running much below both contracted levels and the potential of the industry. In its statement on April 13, 1982, Alberta suggested a number of changes to enhance gas exports. First, the National Energy Board's "short-term deliverability test" was labelled as too restrictive and inconsistent with the historical record, since it assumed that no increments to reserves of natural gas would occur during the next five years. The recommendation that this assumption be relaxed has now been implemented.

Second, because in many instances the quantities of gas being exported are substantially less than those contracted for, a realistic assessment is being made of the amounts that will actually be taken under existing contracts so that the balance can be freed for delivery under other contracts. Flexibility in price and contract conditions, depending upon where in the U.S. the sales are to be made, also seems to be required in order to compete with existing local market situations. The current one-price policy on all gas exports does not allow for this leeway, although an 11 percent reduction in that price has already been implemented. Whether or not a further reduction would expand natural gas export revenues remains a moot point, though it is clear that such an expansion would be an additional method of stimulating further exploratory and development activity by the oil and gas industry. Under pressure from the U.S. authorities, the export price has been lowered a further 25 percent on all quantities exceeding 50 percent of existing contract volumes. The effects of this reduction, as yet, remain unclear.

Finally, there remain jurisdictional problems with respect to off-shore resources. Although a Canada-Nova Scotia Agreement on Off-shore Resource Management and Revenue Sharing was signed on March 2, 1982, satisfactory arrangements between the federal government and Newfoundland for the development of the Hibernia oil field are, despite a Supreme Court ruling in Ottawa's favour, awaiting further inter-governmental negotiations.

A negotiated solution is badly needed to the jurisdictional and revenue-sharing dispute between Ottawa and Newfoundland over the Hibernia and other off-shore oil fields. Given the fact that local jurisdictional control is bound to be necessary to some extent, and the fact that Newfoundland is currently Canada's least prosperous province, I am one of those who would err on the side of generosity towards the Newfoundland position. Given a relatively flat profile for world oil prices, and the high cost of exploration and development in the Northern Atlantic waters, the expected economic rents obtainable from Hibernia and other off-shore developments cannot be so substantial that it would make that much difference to the average Canadian taxpayer whether the federal government captured a share of these rents or not. In other words, Newfoundland should be permitted to harness this resource development opportunity to its own abundantly evident fiscal,

income-generation and employment needs.

2.5 REVENUE-SHARING

The energy agreements signed in the fall of 1981 between each of the three western producing provinces and the federal government were expected to yield substantial additional revenues to the two levels of government as well as to industry, compared to those projected in the NEP. With the subsequent levelling out and reduction in world oil prices, however, the updated total returns to the three parties are expected to be down by some 37 percent compared to the 1981 agreements. The largest drop will be experienced by the federal government, with the provinces (chiefly Alberta, which generates between 85 percent and 90 percent of all oil and gas revenues) not far behind. Industry revenues after operating costs will be down by a smaller percentage (see Table 5).

The reasons why the governments bear the largest portion of the expected decline are twofold. Revenue from their taxation arrangements, which are essentially designed to skim off the economic rent or return over and above that necessary for the industry to continue supplying oil and gas to the market-place, are naturally reduced as anticipated prices and therefore economic rents diminish. Secondly, 1982 saw reductions in tax and royalty rates and improvements in incentive systems by the Alberta and federal governments estimated at $5.4 billion and $2.0 billion, respectively. These were conceived to soften, for the industry, the adverse effects of the 1981 federal-provincial energy agreements and the subsequent reduction in the anticipated rate of oil price increase.

The NEP and the 1981 agreements reduced the federal dependence upon the corporate income tax for extracting revenues from the petroleum and natural gas industry. Yet the recent tax changes have restored somewhat the prominence of the corporate tax as a federal revenue source. The increase in the estimated share of net Ottawa revenues coming from the corporation income tax may well be due to a recognition by federal authorities that this tax is a more efficient revenue raiser than the IORT.

The numbers in Table 5 are somewhat misleading, however. On the one hand, they may be overly optimistic with respect to the revenues that the provinces, especially Alberta, can expect to receive from land sales. At the same time, they make no allowance for required infrastructure investment costs borne by provincial governments to support industry activity. On the other hand, the federal revenues are understated (and industry revenues overstated) since the federal PIPs on Canada Lands have no explicit place (and do not belong) in a revenue-sharing table pertaining to revenue shares from production on provincial lands.

In addition to this, the consumer share of potential net revenues is omitted from the table. Notice, first, that the federal share nets out the subsidy on both imported and new oil from the petroleum compensation charge (PCC) receipts. The PCC receipts are excluded on the grounds that they are not intended to exceed the amount needed to subsidize consumers using imported oil or new oil eligible to receive the world price. It is appropriate to exclude that portion of the PCC used to provide the world price to new domestic production, including synthetic production.

TABLE 5

Revenue-Sharing Estimates
(Billions of Dollars)

	Sept. 1981 to Dec. 1986 Totals				1981 to 1984 Annual Figures			
	Energy Agreements Autumn 1981	Energy Update Spring 1982	Revised Estimates Fall 1983	Percent Change From 1981	1981 Annual	1982 Annual	1983 Annual	1984 Annual
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Government of Canada								
Canadianization Levy	$ 1.5	$ 1.6	$ 4.7		$ 0.6	$ 0.9	$ 0.7	$ 0.6
Natural Gas & Gas Liquids Tax	13.8	4.1	2.2		0.8	1.2	0.6	0.0
Oil Export Tax	0.7	1.6	1.3		0.4	0.3	0.1	0.0
Incremental Oil Revenue Tax	7.1	3.7	0.5		-	0.3	0.1	0.3
Petroleum & Natural Gas Revenue Tax	23.0	16.6	10.9		1.1	1.7	1.9	2.1
Petroleum Incentive Payments	(7.4)	(8.9)	(7.7)		(0.5)	(1.1)	(1.5)	(1.5)
Corporate Income Tax	22.0	16.9	15.9		1.3	1.6	2.2	2.3
Surplus Petroleum Compensation Charge	0.1	0.0	0.0		(0.1)	0.3	(0.1)	(0.1)
Land Payments	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Sub-Total	$ 60.8	$ 35.6	$ 27.8		$ 3.5	$ 5.1	$ 4.0	$ 3.7
Percent of Total	(28.5)	(22.0)	(20.6)	54.3	(23.0)	(27.4)	(20.0)	(18.4)
Provincial Governments								
Royalties and Freehold Tax	$ 64.0	$ 42.2	$ 30.0		$ 4.6	$ 5.3	$ 5.8	$ 6.0
Land Payments	9.7	9.7	2.9		0.8	0.5	0.7	0.7
Oil Export Tax	0.7	1.6	1.3		0.4	0.3	0.1	0.0
Corporate Income Tax	4.3	3.3	3.1		0.2	0.4	0.4	0.5
Petroleum Incentive Payments	(4.3)	(4.3)	(2.8)		(0.4)	(0.5)	(0.6)	(0.8)
Royalty Adjustments	0.0	0.0	0.0		0.0	0.0	(1.0)	(1.0)
Sub-Total	$ 74.4	$ 52.5	$ 34.5		$ 5.6	$ 6.0	$ 5.3	$ 5.4
Percent of Total	(34.8)	(32.4)	(25.6)	53.6	(37.3)	(32.3)	(26.7)	(26.6)

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	Sept. 1981 to Dec. 1986 Totals				1981 to 1984 Annual Figures			
	Energy Agreements Autumn 1981	Energy Update Spring 1982	Revised Estimates Fall 1983	Percent Change From 1981	1981 Annual	1982 Annual	1983 Annual	1984 Annual
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
continued...								
Industry								
Cash Flow	$ 76.4	$ 70.3	$ 64.8		$ 5.9	$ 6.4	$ 8.1	$ 8.4
Petroleum Incentive Payments	11.6	13.2	10.5		0.9	1.6	2.1	2.3
Land Payments	(9.7)	(9.7)	(2.9)		(0.8)	(0.5)	(0.7)	(0.7)
Other Adjustments	0.0	0.0	0.0		0.0	0.0	1.0	1.0
Sub-Total	$ 78.3	$ 73.8	$ 72.4		$ 6.0	$ 7.5	$ 10.6	$ 11.1
Percent of Total	(36.7)	(45.6)	(53.8)	7.5	(39.7)	(40.3)	(53.3)	(55.0)
Total Revenues	$ 213.6 (100%)	$ 161.9 (100%)	$ 134.7 (100%)	36.9	$ 15.0 (100%)	$ 18.7 (100%)	$ 19.9 (100%)	$ 20.2 (100%)

Sources: Columns 1 and 2: Canada, Department of Energy, Mines, and Resources, The National Energy Program: Update 1982. Information Notes Table 1.
Column 3: Canada, Department of Finance, The Fiscal Plan, Background Paper to the Budget, April 19, 1983, Tables 2.5 and 3.1;
Alberta Treasury, 1983 Budget Address, March 24, 1983, Table A2 and author's own estimates.
Columns 5 and 6: Petroleum Monitoring Agency Canada, Canadian Petroleum Industry, Monitoring Survey 1982, Ottawa: Supply and Services Canada, Table 8, p. 5-2.
Columns 7 and 8: Figures were provided by officials at the Department of Energy, Mines, and Resources Canada.

Note: Columns 1 through 6 are based upon revenue sharing for the entire Canadian petroleum industry, whereas Columns 7 and 8 refer to only the Alberta sector, which accounts for approximately 85 percent of total Canadian production. In our view, the industry share from Alberta production in columns (7) and (8) is overstated, since it should only include Alberta's PIPs and not the federal PIPs payable on exploration and development activity in other provinces and (more especially) Canada Lands. Similar reasoning suggests that the federal share is equivalently understated.

Such payments have already been included in the tabulations showing provincial royalties, industry receipts and the federal income tax. But the share designated to reduce the price of imports is essentially a tax the federal government is levying on domestic producers to provide a subsidy to consumers of imported petroleum products. Over the five years of the agreement, the subsidy on imported oil is expected to average around $1 billion per year.

In addition to this, notice that the Ottawa policy of keeping prices of domestically produced old oil and natural gas below world market prices is also equivalent to taxing producers of oil and gas (and especially the producing provinces) and using the tax to subsidize consumers. Therefore, it makes sense to count the value of this "tax" as part of the consumer revenue share as well[1]. Even if it is assumed that the market price for natural gas at the U.S. border is at best only 75 percent of the BTU equivalent world price of oil, the value of this combined federal "tax" on oil and gas is substantial over the life of the New Energy Agreement, averaging about $3.0 billion per year. The value of this benefit to consumers of subsidized oil and gas divides about equally between the oil and gas accounts. The largest portion of it has, however, already accrued during the 1981-1983 period.

By permitting the federal government to improve markedly its revenue share in the energy agreement, and by making its 1982 reductions in net taxes on the industry approximately three times the amount the federal government has granted, the Alberta government has, at least implicitly, agreed to make considerable contributions from its potential non-renewable resource revenues to the federal government and Canadian energy consumers. These contributions represent a clear-cut bottom line for

a. getting the economy moving again;
b. recognizing the revenue distribution problem, and
c. re-establishing jurisdictional control over provincially-owned resources.

Thus, a rent-sharing scheme has now implicitly been put in place, in which Alberta has already made major concessions in sharing potential petroleum and natural gas revenues with the rest of Canada. No one should now expect Alberta to contribute generously to a further inter-provincial rent-sharing scheme, as some have suggested should be the result of continuing negotiations on federal-provincial fiscal arrangements. Other provincial jurisdictions with substantial hydro-electricity generating capacity capture large-scale economic rents for the public sector, and/or choose to distribute them to consumers within the province instead. These must also be accounted for in any revised federal-provincial equalization scheme.

With the recent decline in oil industry activity and in the buoyancy of its oil and gas revenues, the government of Alberta now finds itself with a budgetary situation much more like that in other provinces. Indeed, it has been running an annual General Revenue Fund (GRF) deficit for two years now, and will continue to do so in the current budget year. This deficit is being covered in part by taking all the nominal interest earnings (projected at about $1.5 billion) out of the Alberta Heritage Savings Trust Fund (AHSTF), in part by cutting the non-renewable resource revenue transfer to the AHSTF from 30 percent to 15 percent of net revenues received (about $650 million), and in part by borrowing from the money market. In fact, the remaining resource revenue transfer of about

$650 million will hardly be sufficient to keep the nominal AHSTF capital sum of $13.7 billion (or 1.4 times current annual GRF expenditures) from falling in real terms. Thus, as recent events have demonstrated, Alberta has now reached the point at which provincial tax rates, especially including the provincial personal income tax rate, must begin to be increased if the government is to maintain its pattern of outlays on the provision of public goods and services to Alberta residents.

Put differently, the Alberta government accounts are now in significant real (or inflation-adjusted) deficit even when the AHSTF is taken into account along with the GRF. A considerable expansion in natural gas exports might put them back into substantial surplus in the mid-1980s, but for the foreseeable future it is no longer possible to argue that Alberta's fiscal capacity is much larger than that of other Canadian governments. Moreover, if the recent collapse in Alberta's overall rate of economic growth, and virtual tripling of her unemployment rate despite a cessation in net immigration, are any indication for the future (and the cancellation of the Alsands and Cold Lake projects, the postponement of several large-scale petro-chemical developments, and especially the projection of much flatter world energy prices would suggest that they are), we should no longer expect the Alberta economy, or the western regional economy more generally, to out-perform the rest of the Canadian economy by anything like the wide margins that it did prior to the fall of 1980; indeed, quite the opposite seems likely to occur. That will in part be due to the aftermath of Ottawa's National Energy Program. But it will also be due to the fact that, like all the OPEC countries, our main petroleum producing region will fall on relatively less buoyant times as the world supply-demand balance for fossil fuels makes flatter real energy prices and netbacks the rule for the next few years. Indeed, the Alberta economy will remain sluggish until such time as several additional tar sands and heavy oil developments of medium size become economic to build, or until U.S. gas markets pick up, perhaps in mid-1986[2].

2.6 FOREIGN OWNERSHIP, CANADIANIZATION AND THE NATIONAL ENERGY PROGRAM

One of the objectives of the NEP has been the Canadianization of the petroleum and natural gas industry. The target is for 50 percent of oil and gas production to be Canadian owned by 1990. The elimination of tax write-offs and the replacement of them with drilling and other exploration incentives (PIPs), which are substantially greater for companies having a high percentage of Canadian ownership, is a major policy change designed to assist in achieving this objective. In consequence, foreign-owned firms now find it more difficult to continue their exploration activities in Canada. Thus, the tendency has been created for them either to sell out or to find some working arrangements with Canadian firms whereby their operations can qualify for the most favourable exploration incentives. At the same time, their current and anticipated netbacks have been eroded through the new pricing and taxation regime. The resulting impact on their share prices has lowered the costs of buying them out for Canadians. Alberta has explicitly accepted the Canadianization objective by agreeing to administer and finance the PIP program within the province.

The Canadianization program has

had some success. Between the time the NEP was first announced in October, 1980 and early 1983, Canadian ownership of the industry had increased from 28 percent to nearly 35 percent. Over a dozen sizeable foreign corporations were acquired by Canadian interests during this time period, and two domestic corporations, Petro-Canada and Dome, are now among the top ten companies in terms of upstream revenues. However, much of this shift in ownership reflects trends which began well before the NEP was announced.

This change has not been without its problems. In particular, the United States has perceived the incentives program to imply outright discrimination against foreign companies, and has proposed that such discrimination be removed. It has also objected to the 25 percent back-in provision for Petro-Canada on potential frontier developments on Canada Lands. Concurrently, it has raised concerns about the Foreign Investment Review Agency (FIRA) with its requirement that foreign takeovers of Canadian firms, or even of foreign subsidiaries in Canada, clearly show significant benefits to Canada. So far, however, any U.S. retaliation to these Canadianization objectives has been too subtle and diffuse to identify clearly.

A second issue concerns the possible downward pressure on the Canadian dollar that results from the outflow of funds involved in the purchase of domestic subsidiaries of foreign oil companies. The magnitude of such purchases has been perhaps as high as $15 billion since the NEP was announced. This appears to have been part of the reason for the Canadian dollar's weakness during 1981. A recent study by the Bank of Montreal (1981) suggests that the dollar may have been weakened by 1 1/2 U.S. cents between October, 1980, and June, 1981, as a consequence of take-over activity. This estimate is based on the assumption that even if the companies buying the foreign subsidiaries were to borrow U.S. dollars from Canadian chartered banks (which at the end of July, 1981, had over 40 percent of their total assets, or $140 billion, in foreign currency) and use these to pay the foreign shareholders, the banks would have wanted to cover themselves in the forward market by selling Canadian dollars[3]. In turn, the downward pressure that would be exerted on the Canadian currency in the forward market would be felt in the spot market. The study also suggests that, because exchange market participants would expect there to be some such pressure on the dollar, such anticipations would, in themselves, work towards their own realization.

In the future, the debts must be serviced; to the extent that interest payments are greater than the dividend payments previously foreign-owned firms would have made to their shareholders abroad, downward pressure on the Canadian dollar will ensue. The Bank of Montreal study estimates that if the pace of takeover activity that occurred up to June, 1981 (about $2 billion per quarter) continued for the entire year, the downward pressure on the Canadian dollar would peak in about two years at 1 1/4 U.S. cents. If the takeover activity continued for three years at about $1.6 billion per quarter, the Bank's model suggests that the Canadian dollar would settle about 5 U.S. cents below what it would otherwise have been. However, it is not clear that this work adequately reflects the concurrent changes taking place in the Canadian economy, such as the reduction in oil imports that should result from higher domestic oil prices. These would place partially offsetting upward pressure on the Canadian

dollar.

Nevertheless, it is unfortunate that the takeover activity stimulated by the discriminatory tax and incentives system instituted under the NEP came at a time when it was difficult enough to manage our monetary and exchange rate policy in the face of record high U.S. interest rates. The resulting softness in the Canadian dollar added, perhaps unnecessarily, to both our overall inflation rate and our real interest rates. Indeed, the Canadian dollar did fall by 4.5 U.S. cents over the two years subsequent to the NEP, and the uncovered interest rate differential widened from between 2 (for long-term yields) and 3 (for short-term yields) percentage points above its historic norm during a similar period.

The point needs to be made, however, that if less dependence on foreign capital is desired in the longer-term, greater savings by governments and the private sector are essential. It makes little sense to Canadianize the oil and gas industry at the expense of de-Canadianizing other industries in the process. Artificially stimulated takeovers of existing foreign-owned assets neither create new producing assets, nor are they necessary to stem some hypothetical outflow of potential oil and gas rents when alternative fiscal measures are at hand if required.

2.7 MACROECONOMIC ISSUES AND ENERGY DEVELOPMENTS IN THE 1980S

Once an energy accord had been reached between Ottawa and the oil and gas producing provinces, the energy sector might have expected some assurance that many of the important rules of the game would not be changed for a five year period. The major item of doubt remaining in the accord was the course of international prices for oil. Since these did not increase as hypothesized, it was to be expected that some important renegotiations of taxes and royalties would be bound to occur, particularly if at least some large-scale energy projects were going to proceed.

The macroeconomic implications of large-scale energy-related investment projects are considerable, but it is outside the scope of this paper to attempt any thorough discussion of them. Suffice it to say that care will have to be taken to ensure that these expensive projects are not subsidized so heavily that they proceed while lower priced conventional oil and gas development is neglected; that they are scheduled so as not to create serious sectoral bottlenecks and additional severe inflationary problems; that financing of them is accomplished in a way that both encourages and utilizes domestic savings and minimizes foreign exchange and balance of payments disruption; that appropriate purchasing policies are employed which reach a reasonable balance between importing cheaper foreign equipment and stimulating technological development and employment domestically; and that the potentially enormous pollution effects of such plants are controlled. Important inter-regional questions also arise with respect to the economic linkages or inter-regional spillovers from potential large-scale energy projects, including those regionally-specific impacts which work through the Canadian balance of payments and the international value of the Canadian dollar.

Important questions can be raised concerning the collection and distribution of economic rents from energy resource developments (and this pertains as much to Quebec's

hydro-electricity potential as it does to western Canada's fossil fuel potential). Indeed, a serious study needs to be made to compare the implications of various rent-distribution schemes for intra-regional and inter-regional income distribution and the efficiency of labour and capital market responses. The provincial underpricing of electricity, natural gas or petro-chemical feedstocks has different developmental and efficiency implications than the lowering of provincial labour income taxes and/or sales taxes, implying the underpricing of government services more generally. There may also exist an optimal trade-off between the resource allocative inefficiencies resulting from preventing the inter-regional terms-of-trade from adjusting as far as they ought, and those which may result from fiscally induced migration.

It has not been possible in recent years to separate energy policy developments from overall fiscal policies. Moreover, since energy price changes do impact on the overall rate of inflation, and on the level of employment in both energy-producing and energy-using sectors and regions, monetary and exchange rate policies do not remain immune from energy questions either. For example, whenever there is a substantial change in the inter-regional terms of trade, the monetary and exchange rate policy which may seem to be most appropriate from the perspective of an energy-using region may well look to be somewhat inappropriate from the perspective of an energy-producing region, or vice versa. In any case, the macroeconomic implications of energy pricing policies will inevitably depend upon what concurrent monetary policies are implemented.

As far as fiscal policy is concerned, it is crucial to ensure that the fiscal regimes faced by all investment projects are reasonably comparable, so that lower cost resource developments proceed before higher cost ones. To provide higher prices or lower taxation and royalty arrangements for more risky projects (let us say because they are on Canada Lands rather than provincial lands) will only distort the time profile of resource development completions, leading to serious economic inefficiencies. It is for this reason that corporate profits taxation, when combined with the absence of special tax concessions and write-offs, is to be preferred to revenue taxation of the form exemplified by the PGRT and IORT. The less interventionist we can become, and the smaller the number of specially designed tax levers and incentive schemes pertaining to particular projects or, more generally, to particular industries, the better will the goal of economic efficiency be served. Indeed, it is now time to consider dismantling all the heavily interventionist mechanisms contained in the NEP.

The Economic Council of Canada and the C.D. Howe Research Institute are just two of the influential agencies which have recently recommended that the domestic wellhead price for conventional crude oil now be raised to world levels in light of the current flatness in world oil prices. This would help to ease the remaining damage done to the energy sector by the massive sectoral tax increase imposed in 1981 through the impact of the NEP. Indeed, the rationale for this tax increase can only be explained if it is clearly understood that the main objective of the NEP was to transfer a substantial proportion of resource revenue potential out of the province of Alberta. Since the justification for this wealth transfer is fast disappearing, and since the NEP has also had demonstrably perverse

effects on both economic efficiency and security of energy supply, it is now time for Ottawa to deregulate the energy sector. In my view, the numerous changes that have had to be made to the NEP since its inception clearly demonstrate how misconceived it was.

Put differently, it is impossible to avoid the conclusion that the fundamental purpose of the NEP was really to create and sustain a large scale transfer of wealth from the Province of Alberta to the rest of Canada. Judged solely by this principal aim of wealth redistribution, the NEP has been successful. Since significant wealth destruction has occurred in the process, however, this redistributive objective has definitely been a negative-sum game.

Moreover, if world oil prices continue to be flat in nominal U.S. dollar terms, and if natural gas markets in the United States do not rebound substantially, then there will soon no longer be much room in the fiscal system for any special federal taxation arrangements pertaining only to the primary oil and gas industry. These levies include the petroleum and natural gas revenue tax (PGRT), the incremental oil revenue tax (IORT), the natural gas and gas liquids tax (NGGLT) and the Canadiand ownership charge (COC). On the other hand, the federal government should not be financing special industry incentives, including both depletion allowances and petroleum incentive payments (PIPs), to the extent that it is now doing on both provincial and federal lands. (It is not paying for PIPs in the Alberta segment now in any case.) On balance, with provincial royalties being non-deductible, this would still leave the federal government with a significant positive share of revenues from the industry through the regular channels of the corporate income tax.

Such an elimination of substantial federal distortions, especially if coupled with price deregulation by the federal government, would go a long way to improving overall industry efficiency and the prospects for security of energy supplies. In other words, since the wealth redistribution argument in favour of the NEP is fast disappearing, my bottom line conclusion is that after three years of costly experimentation the NEP should now, in large part, be dismantled.

NOTES

* Significant portions of this paper have been adapted from joint work completed earlier by Bruce Wilkinson and myself. While acknowledging my deep appreciation for his involvement in this earlier collaboration, I alone should be held responsible for the tone and contents of the present paper. I am also grateful for the helpful comments provided to me by Alix Granger, John Helliwell, Richard Hyndman, Melville McMillan, Ken Norrie and Campbell Watkins on earlier versions of this paper, and to Edwin Rilkoff for his excellent research assistance.

[1] That the total subsidy or benefit to oil consumers consists of two parts should be self-evident from the following algebra. Let Pw, Pb, and Pa be the world price, the blended price and the Alberta wellhead price of conventional crude oil, respectively, and let D and M be the total consumption of domestic and imported crude oil, respectively. Then the total consumer benefit from the consumption of subsidized oil may be approximated by

$$(P_w - P_b)(D + M).$$

However, if the oil compensation account is to break even, then (ignoring oil receiving the NORP)

$$(P_b - P_a)\ D = (P_w - P_b)M.$$

It follows from this that the total consumer benefit from this consumption of subsidized oil equals the sum of two parts, namely

$$(P_w - P_b)\ D + (P_b - P_a)D.$$

Notice that this sum is also equal to

$$(P_w - P_a)D.$$

[2] See the accompanying analysis in this issue, by the author, on the recent Alberta budget.

[3] That the chartered banks have been used in the takeover moves seems evident. Their foreign currency loans booked in Canada rose by 62 percent on a year-over-year basis during the first half of 1981 as compared with 7 percent in the equivalent period in 1980.

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Inter-Farm Variation of Grain Production and Transportation Costs, Yields, and Net Income in Saskatchewan and Management Implications*

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Prairie farmers and government policy makers must know that farm size is the most important source of inter-farm variation in the average cost of grain production and transportation, and net income. Unlike manufacturing plants, the average transportation cost for grain farms in the Canadian Prairies is a decreasing function of output, thus augmenting economies of farm size. One often neglected but important inter-farm difference is management efficiency which also determines inter-farm variation of cost, yield and net farm income. Findings from the cost, yields, and net income models are consistent between single and multi-crop samples.

3.1 INTRODUCTION

Economies of size in farming have been a continuing concern of economists and the subject will remain as an important issue as technological advances continue. On the Canadian Prairies as elsewhere technological developments have changed the optimum farm size in the past; they will undoubtedly influence it in the future. Moreover, in contrast to industrial corporations, in which ownership is separated from management, grain farms in the Canadian Prairies have been predominantly family owned and operated, relying heavily on family labour and they will likely remain so. Despite these continuing characteristics of the family farm, however, the Canadian Prairie grain farm business has changed a lot in recent decades largely due to technological changes.

[1] This research was completed while with the Research Branch, Canadian Transport Commission, Ottawa, Ontario.

One of the most important changes has been that farm size has increased substantially and the number of farms has declined over time. For example, between 1951 and 1976, the number of farms in Saskatchewan decreased nearly 40 percent, from 112,018 to 69,450. Small farms (759 acres or less) decreased in number by 60 percent; large farms (1,600 acres or more) increased by 160 percent (Johnson 1977).

These size shifts have been accompanied by changes in internal operational characteristics: more mechanization and technological intensity, better educated farm operators, increased use of cash cost inputs such as fertilizers, herbicides and insecticides, and better cultivation practices (Johnson 1978). The task of managing a modern farm, therefore, is a complex matter and this complexity is compounded by the long-term trend to increased farm size.

Nevertheless, individual farms have different characteristics and constraints at a given point in time, in terms of farm size, soil fertility, grain hauling distance to the elevator, managerial skills, capital intensity and so forth. The authors feel that these differences result in inter-farm variation in the selection of cropping programs, in the cost of production and transportation, in yields and in net farm income. And that these differences are amenable to study using econometric methods.

The purpose of this paper is, therefore, to attempt to explain inter-farm variation in (1) costs, (2) yields, and (3) net farm income based on inter-farm differences in characteristics and constraints. To do this, econometric methods were used to analyze 1977 cross-sectional data for 661 grain specialized farms in Saskatchewan. The cost models in particular will examine economies of size in grain production and delivery by farm truck. In addition, this paper attempts to show the role of management efficiency in explaining inter-farm variation of cost, yields, and net farm income.

In earlier studies with respect to farm size, economies or diseconomies associated with transportation activities (such as delivery of grain to country elevators) were largely neglected. Industrial economics indicates that average transportation costs limit optimal plant size (Scherer, 1973). In Prairie grain farming, it is the authors' contention that this is not the case and this paper illustrates that economies of scale in farming and in transportation reinforce each other, creating pressure for farms to grow in size.

3.2 THE DATA

Briefly, accounting records of Saskatchewan farms (including statements of farm income, cash flow, as well as assets, liabilities, and the owner's equity) were collected by IST - Canfarm Ltd. of Guelph, Ontario in 1977 through a special survey; there were 661 grain farms. The distribution of these farms by soil zone is: 172 farms in the brown soil zone, 199 farms in dark brown, and 290 in black. Within this sample of 661 farms, there were 59 farms that had earned 90 percent or more of their income from wheat (which was their sole grain crop). This subset was selected for supplementary analysis.

3.3 THE MODELS

The analysis in this paper is based on four independent behavioral equations (i.e., equations 1, 2, 5 and 6) that model the impacts of specific recognizable factors on costs of grain farming and transportation, on yields, and on net farm income. Full details of the model specification are to be found in the Appendix (Table 1).

In general terms, the model exploring inter-farm variation in grain production costs includes independent variables such as the size of the farm (measured in kilograms of output of grain), soil fertility (measured as the inverse of the rate of fertilizer application), the extent of reliance on hired labour, the degree of specialization in grain farming as opposed to other revenue earning activities, and the efficiency of the farmer as a manager. In addition, dummy variables for the three major soil zones were included as an approximation to geographic and climatic factors[1].

As hypothesized above, managerial efficiency of the grain producer is of considerable importance; a whole new way of examining this question was prepared for this study, based on the idea of a "technical efficiency index" put forward by Hubele, Kadlec, Robbins and Kemper (1966). In each of the following cases, the higher the index, the more efficient the manager.

The first approach was to develop a cost effectiveness index (CEI), defined as the predicted average cost per seeded acre divided by the actual average cost per seeded acre. The predicted cost per seeded acre, estimated by Ordinary Least Squares, can be found in Table 3 of the Appendix. The second approach to estimating managerial skills was to develop a yield effectiveness index (YEI) defined as the actual yield per seeded acre divided by the predicted yield per seeded acre. The predicted yield per seeded acre was estimated using the Average Yield equations (Appendix Table 5). The third approach was through the use of a yield/cost ratio (YCR). This ratio was defined as the actual yield per seeded acre divided by the actual average cost per seeded acre.

All of these alternatives were used in the course of this study. In each of these cases, the lower the actual cost given yield, or the higher the actual yield achieved by the producer given cost, the more efficient he is deemed to be at mixing the available inputs to obtain desired level of output and return.

In addition to the production cost model just described, a model to examine the economies or diseconomies of volume or distance associated with trucking grain to primary delivery points was prepared[2]. The basic idea behind this model is that with increasing volumes of grain to be handled, or increasing distances to haul, ceteris paribus, the unit cost will decrease as the fixed costs are spread over more units. Because of the distribution of primary elevators in the Canadian prairies, delivery distance is held to be independent of farm size as long as the elevator configuration in Western Canada remains unchanged, a fact of fundamental importance[3]. This is quite different than the usual manufacturing plant examples used in traditional economic analysis. There, because manufacturing plants are forced to ship to customers over an increasing geographic radius with increasing output, the extent of the market and the cost of reaching it determines the optimal size of the firm as per unit transportation cost is an increasing function of output level. Therefore, as demonstrated by Scherer, the optimum firm size in the

FIGURE 1a

Comparison of Long-Run Average Cost Curves of
Manufacturing Plants

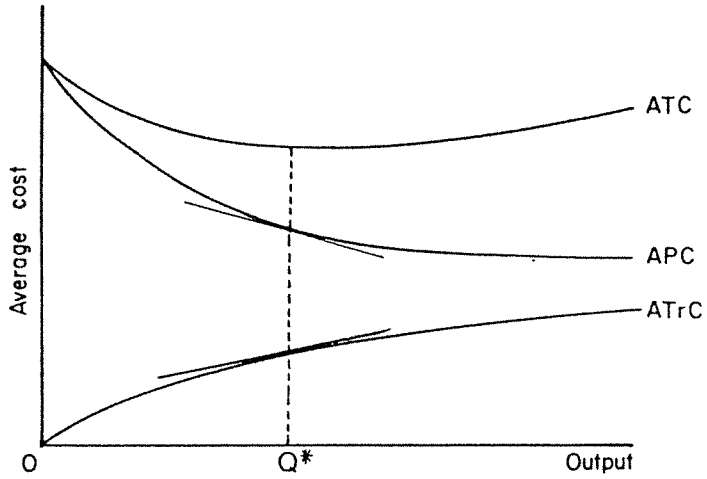
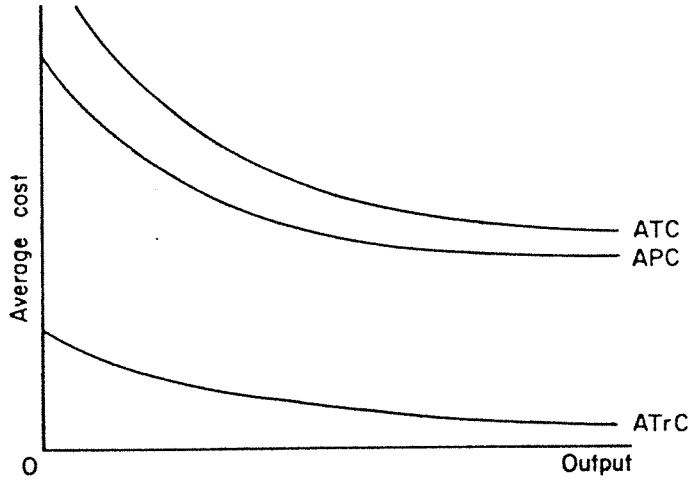


FIGURE 1b

Comparison of Long-Run Average Cost Curves of
Saskatchewan Grain Farms



Where: ATC = Average total cost
APC = Average production cost
ATrC = Average transportation cost
Q* = Minimum efficient size of manufacturing plant

Note: 1. The above figures give the general shape of the curve but not the precise magnitude in terms of dollars.
2. Figure 1b above, corresponds to equations 1(APC), 3(ATrC) and 4(ATC) in the Appendix (see the Cost Models in Table 1).

managerial (skill, education, entrepreneurship, etc.).

In common with industrial economics, managerial skills are one of the most important inputs in farming. The farmer with the greatest managerial skills will combine other inputs (fertilizers, pesticides, labour and land) in a manner approaching the optimum, with the probable result that the success will permit him to add further land and then other inputs, reinforcing the growth of farm size pattern mentioned.

New technology enables farmers to explore real economies of scale. The existence of economies of size which is shown by the cost model is one of the most important forces favouring farm size growth for the Canadian grain farms in the Prairies. As size grows, pecuniary economies (financial) are also attainable. Due to data limitations, however, sources of economies are not broken down by real vs. pecuniary. The existence of economies of size is further confirmed by the net farm income model since net income is positively related to size. This is not surprising since the cost function is a special case of the profit function to fixed output.

Since economies of scale in production is well documented in the literature (e.g., Bardhan (1975); Fleming and Uhm (1981); Hubele et al (1966); Johnson (1977); Longworth and McLeland (1972); Madden (1976)), it will not be elaborated further in this paper. However, economies of farm trucking is relatively less known so that it warrants some further comments. Economies of farm trucking can be attained by farm managers as farm operations grow in size. As discussed earlier in the average transportation cost model, it was confirmed that economies of volume given distance or economies of long-haul given volume (or both) exist in Saskatchewan. Due to a lack of data in the Canfarm data base, the truck size variable was not explicitly included in the model specification. Therefore, the extent to which cost savings can be achieved as truck size increases has not been explored by using the trucking cost model shown in Table 4.

To deal with the question of the economies of farm truck size, additional trucking cost data was obtained from Trimac Consulting Services Ltd. in Calgary, Alberta[4]. Exhibit 1 illustrates the change in the average cost in cents per tonne-kilometers over varying haul distances and truck sizes, based upon a set of assumptions. Note that the columns in Exhibit 1 show the extent of economies of distance given truck size and volume of grain to be hauled while the rows represent economies of truck size with assumed level of volume to be hauled given distance to be travelled. Alternatively, rows can represent the extent of economies of volume with assumed truck size. The annual volume to be hauled varies by truck size in this illustration because a larger sized truck will require more tonnes to be carried in order to be economical to operate. The assumed age of the truck is 5 years old and the value for annual kilometers for the commercial sized truck is 80,000 kilometers[5].

The truck size 3, 5, 8 and 10 ton trucks represent configurations typical of vehicles that would be owned or leased by farmers while the 15, 25 and 40 ton vehicles represent typical grain handling commercial sized trucks available through farm ownership or single trip or seasonal contracts with commercial fleet owners.

The management implications are such that as farm size grows, from 100 tonnes to 500 tonnes of grain production, for example, given a

hauling distance of 40 kilometers, the extent of trucking cost savings by a substitution of truck size (from 3 ton to 10 ton) would be about 20.26 cents per tonne-kilometer. This represents about 70 percent reduction in per unit cost. Assuming that distance also changes to 80 kilometers (from 40), the cost savings available from substituting truck size (from 3 ton to 10 ton) for the same volume increase could be about 20.97 cents per tonne-kilometer or about 73 percent. Similarly, managers can realize further of economies of truck size by using commercial trucks providing the volume is large enough. The extent of cost savings from the use of commercial size trucks is also illustrated in Exhibit 1.

3.6 CONCLUDING REMARKS

As demonstrated in this study, the inter-farm variation of production and transportation costs, yields, and net farm income is largely explained by the inter-farm differences in operational characteristics and constraints. This study found that the most important such characteristic is farm size. However, one often neglected but important inter-farm difference is management efficiency. It is extremely difficult to quantify but an attempt was made to measure it by: (a) a cost effectiveness index, (b) a yield effectiveness index and (c) the yield/cost ratio. Even though none of these is a perfect measure of management efficiency, they do show consistent performance in the cost, yield and net farm income models.

Findings of this study support the concept that large farms have a cost advantage not only in grain production activity, but also in grain delivery to country elevators. Unlike modern manufacturing plants, grain farms in Saskatchewan face declining average transportation cost per kilogram as output to be hauled increases; or declining average transportation cost per kilogram-mile as output and/or distance increases. Therefore, the declining average transportation cost due to economies of volume and/or distance when output increases augments economies of size in grain production instead of limiting farm growth. Grain farms in Saskatchewan have been growing in size and they will probably continue to grow until economies of size are exhausted. Conversely, small farms may well continue to disappear in the process and may result in a further reduction in population in rural communities. The observed changes, over time, in farm size and accompanied internal operational characteristics are primarily caused by technological change and farm owners' ability to adapt to this new technology and make input factor substitutions. These are managerial functions.

Finally, it is clear to the authors that any changes in government policies such as incentive programs, tax laws, freight-rates, and the grain delivery system in Western Canada should be carefully examined before their implementation to determine their differential impact on farms in terms of farm size, management skills, capital availability and intensity of use, and the intensity of cash cost inputs. It is the authors' suggestion that further research is needed on the differential impact of government policies vis-a-vis individual farm units in Canada. This is particularly true for the effects of tax laws on farm size, where such work is long overdue.

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TABLE 1

The Model Specifications

A. Cost Model

1. $APC_{ij} = f(S_{ij}, FE_{ij}, SLCW_{ij}, SP_{ij}\ MGT_{ij}, DDB, BDLK, E_{ij})$

2. $ATrC^*_{ij} = f(S_{ij}, M_{ij}, Z_{ij}\ DDB, DBLK, E_{ij})$

3. $ATrC_{ij} = ATrC^*_{ij} . M_{ij}$ (technical relationship)

4. $ATC_{ij} = APC_{ij} + ATrC_{ij}$ (accounting relationship)

B. Yields Model

5. $YD_{ij} = f(FEA_{ij}, SLCWA_{ij}, FAA_{ij}, PEA_{ij}, MGT_{ij}, SAQA_{ij},$
$SP_{ij}, OBA_{ij}, RFA_{ij}, DDB, DBLK, E_{ij})$

C. Net Farm Income Model

6. $NFI_{ij} = f(S_{ij}, FE_{ij}, SLCW_{ij}, SP_{ij}, MGT_{ij}, SAQA_{ij},$
$FAA_{ij}, M_{ij}, DDB, DBLK, E^{ij}$

Where i = 1, 2, 3, --- 661 (Number of Sample Farms)

j = 1, 2, 3, (Number of Soil Zones)

Variable Descriptions

APC: The average production cost per kilogram of the ith farm in the jth soil zone in dollars;

APCA: The average production cost per seeded acre in dollars;

ATC: The average total cost per kilogram (production plus trucking) in dollars;

ATRC: The average trucking cost per unit of output in dollars;

ARrC*: The average trucking cost per output-mile in dollars;

DDB: Dummy variable for dark brown soil zone (1 for the farms located in black soil, 0 for otherwise);

DBLK: Dummy variable for black soil zone (1 for the farms located in black soil, 0 for otherwise);

TABLE 3

Estimated Parameters of Average Production Cost Model
(Per Seeded Acre)

Variables	All Farms in the Sample (661 Farms)		Wheat Specialized Farms (59 Farms)	
	1	2	3	4
Constant	35.618*	34.083*	13.332*	46.120
	(8.883)	(7.960)	(3.516)	(0.579)
$1/SA_{ij}$	3338.260*	2996.794*	1848.453*	1899.322*
	(10.663)	(9.444)	(3.512)	(2.967)
FEA_{ij}	2.463*	2.245*	1.817*	1.812*
	(17.271)	(15.209)	(4.674)	(4.569)
$SLCWA_{ij}$	1.246*	1.232*	0.534	0.498
	(16.755)	(16.999)	(1.151)	(1.016)
PEA_{ij}	2.899*	2.940*	2.520*	2.504*
	(10.596)	(11.034)	(3.726)	(3.513)
SP_{ij}	-26.645*	-24.929*		-33.434
	(-5.350)	(-5.106)		(-0.388)
FAA_{ij}		0.031*	0.036*	0.038*
		(6.269)	(2.719)	(2.738)
DDB		-1.973		-3.993
		(-0.771)		(-0.742)
DBLK		-5.603**		-0.486
		(-2.293)		(-0.079)
F	321.423	219.954	51.557	31.073
$\bar{R}^2$	0.708	0.726	0.813	0.806

Figures in parentheses are t-statistics.
* t value is significant at 1 percent level
** t value is significant at 5 percent level
*** t value is significant at 10 percent level
( ): brackets on exponent are decimal point adjustments,

e.g., $0.399^{(-2)} = 0.00399$.

TABLE 4

Estimated Parameters of Average Transportation Cost Model
(Per Kilogram-Mile)

Variables	All Farms in the Sample (661 Farms) 1	2	3	4
Constant	$-0.125^{(-4)}$ (-0.338)	$0.502^{(-4)}$ (1.208)	$0.142^{(-3)}$* (4.867)	$0.244^{(-3)}$* (6.555)
$1/S_{ij}$	40.781* (15.897)	29.147* (6.154)		-19.779* (-3.932)
$1/M_{ij}$	$0.115^{(-2)}$* (20.543)	$0.114^{(-2)}$* (21.083)		$0.321^{(-5)}$ (0.038)
$1/S_{ij} \cdot 1/M_{ij}$			282.124* (33.687)	282.000* (16.108)
DDB	$-0.746^{(-4)}$*** (-1.691)	$-0.234^{(-3)}$* (-4.493)	$-0.708^{(-4)}$*** (-1.875)	$-0.267^{(-3)}$* (-6.041)
DBLK	$-0.133^{(-3)}$* (-3.269)	$-0.121^{(-3)}$** (-2.365)	$-0.101^{(-3)}$** (-2.911)	$-0.165^{(-3)}$* (-3.806)
$DDB.1/S_{ij}$		35.248* (5.588)		42.278* (7.891)
$DBLK.1/S_{ij}$		-2.233 (-0.358)		12.395** (2.315)
F	173.746	132.589	393.843	195.631
$\bar{R}^2$	0.511	0.545	0.641	0.674

Figures in parentheses are t-statistics.
* t value is significant at 1 percent level
** t value is significant at 5 percent level
*** t value is significant at 10 percent level
( ): brackets on exponent are decimal point adjustments,

e.g., $0.399^{(-2)} = 0.00399$.

SYMPOSIUM ON PROVINCIAL BUDGETS:

British Columbia Provincial Budget, 1984

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4.1 INTRODUCTION

In the last two budgets drastic cuts in expenditure have been justified by the claim that fiscal restraint was necessary to save the province from economic disaster. In this paper we examine the validity of this claim.

As the budget speeches have pointed out, the world recession caused both a decline in provincial revenues and an increase in the number of persons receiving welfare payments. At the same time higher expenditures on health services were made necessary by a rising medical fee schedule and higher hospital costs. The Minister of Finance has concluded that British Columbia must either raise tax rates or cut expenditures. The alternative of running larger deficits was rejected.

In this paper we point out that claims about the harmful effects of deficits are invalid in the current circumstances in British Columbia. There are sound economic reasons for running a deficit during a recession. In fact, there is no structural deficit in the British Columbia provincial budget and, in spite of the recession, a surplus is likely in 1984/85. The financial condition of the British Columbia government is one of the best in Canada. We conclude that although the recession has caused severe economic difficulties for British Columbia, there is no financial justification for the policy of restraint.

4.2 THE DANGERS OF DEFICITS

The idea that deficits should be avoided is regarded as self-evident by many people. But it is not by any means self-evident. Given that revenues vary over the business cycle, balancing the budget year by year would mean that expenditures would fluctuate from year to year because of factors outside of the province's control. Such a policy is simply bad management. No successful business operates by adjusting expenditures to meet revenues on a short term basis. A sensible fiscal policy is to fund worthwhile expenditures in a deficit year either with funds carried over from previous surplus years or with debt that may be repaid in future surplus years. The level of expenditures should be kept reasonably stable but should be allowed to vary with economic conditions, rising in recessions when larger social service and

welfare expenditures are called for. Revenues will change annually according to provincial, national, and world-wide economic conditions. The surpluses and deficits incurred over time by this fiscal policy should be managed by a sensible asset and debt policy.

An argument frequently made against government deficits is that they tend to raise interest rates, thus "crowding out" private spending on new capital equipment and so, indirectly, restricting the growth of output. This argument does not apply to British Columbia, where both the government and business borrow at interest rates determined in the large North American capital market. The additional financial borrowing resulting from a larger British Columbia government deficit does not have a large enough impact in this market to affect the cost of credit to other borrowers.

An alternative argument is that government deficits contribute to inflation which, in addition to its other undesirable effects, also leads to the "crowding out" of private spending. But in British Columbia's open economy and with the present high unemployment rate, this is not an outcome that can be seriously expected. A larger government deficit leads to a larger demand for goods and services, both directly and indirectly through spending by those who receive payments from the government or are relieved of taxes. In British Columbia's open economy much of this demand, though by no means all, "spills out" to the rest of Canada, the United States and elsewhere. The remainder increases employment and output in the province. It does not raise prices, given present conditions of unemployment and unused capacity.

These effects were in fact acknowledged in the budget of 1983/84 by the appropriation of $415 million, about one-third of the resulting deficit, for the express purpose of stimulating employment. "This employment stimulation initiative meets the commitment, made earlier this year, to provide a major expenditure injection for creation of immediate employment relief" (British Columbia Budget 1983, p. 9). There appears to be some inconsistency between this initiative and the statement that "we cannot spend our way out of the recession" (p. 7), or the statement that "we cannot significantly affect the health of our economy by spending or consuming more ourselves" (British Columbia Budget 1984, p. 1). On the contrary, the fact that the health of the economy did not improve greatly can be attributed in part to the fact that government expenditures did not increase enough.

Another reason for the conventional wisdom's aversion to deficits is based on the fear of "living beyond our means." A family, business, or government that spends more than it takes in must either be running down its assets or going into debt. No one's assets are infinite, and in any case, running down the assets means that less income will be available in the future so that the problem of "living beyond our means" will be aggravated. Going into debt leads to interest charges. If a government borrows from its own residents, interest payments are a transfer from taxpayers to debt holders and there is no net drain of payments from the economy. In British Columbia's open economy, however, a large proportion of the interest payments go to other regions of Canada and abroad, and thus represent a loss of income to British Columbia.

The fact that interest payments are a burden does not mean, of course, that one should never go into debt. It makes good business

TABLE 1

The Size of the British Columbia Deficits
($ Millions)

Year[1]	B. C. Public Accounts		Adjusted Public Accounts		Statistics Canada Financial Management System		Statistics Canada National Income Accounts	
	Surplus (1)	Cumulative Average (2)	Surplus (3)	Cumulative Average (4)	Surplus (5)	Cumulative Average (6)	Surplus (7)	Cumulative Average (8)
1972	97	97	106	106	128	128	104	104
1973	146	121	242	174	240	184	267	185
1974	(10)	78	27	125	17	128	116	162
1975	(410)	(44)	(166)	52	(460)	(19)	(142)	86
1976	97	(16)	163	74	161	17	58	81
1977	205	21	304	113	233	53	393	133
1978	271	56	287	138	204	75	379	168
1979	592	117	657	203	593	140	475	206
1980	(257)	76	(213)	156	144	140	159	201
1981	(184)	50	(100)	131	560	182	364	217
1982	(984)	(44)	(954)	32	218	185	224	218
1983[2]	(1307)	(150)	(1307)	(79)	(1229)	67	N.A.	N.A.
1984[2]	(671)	(190)	(201)	(89)	N.A.	N.A.	N.A.	N.A.

[1] Year is fiscal year beginning April 1 of designated year for B.C. Public Accounts, Adjusted Public Accounts, and the Financial Management System figures and is calendar year for the National Income Account figures.

[2] Estimated.

Sources: Columns (1) to (4): B.C. Financial Statements for the Fiscal Year Ended March 31, 1978, pp. A11-A13.
B.C. Public Accounts 1982/83, pp. B21, B24.
B.C. Budget 1984, p. 20.
Columns (5) to (6): Statistics Canada Cat. No. 68-205 and 68-207, various issues, Table 7 and computer print-outs.
Columns (7) and (8): Statistics Canada Cat. No. 13-213, 1967-82, Table 3.

unprecedented since the 1930s. A cyclical deficit is greater when the cyclical depression is greater. Second, the aggravation of the depression in British Columbia by the provincial government's budgetary policies. Third, the inclusion in the government expenditure figures of transfers to extra-budgetary units of the government, and other items that reflect the disposition of savings rather than expenditure. We now turn to these accounting problems.

Since not all units of the provincial government are included in the budget accounts, these accounts do not give a true picture of the transactions between the government and the private sector. For example, a deficit can be created in the Consolidated Revenue Fund by transferring funds to Crown corporations, even though taxes and other revenues received from the private sector exceed payments for goods and services and transfers to the private sector. Secondly, a deficit can be created by including in expenditures items that fall into none of the above categories, such as loans to the private sector, revaluation of assets, and distribution of assets.

Column (3) of Table 1 represents a rough attempt to estimate the deficit after adjustments for these problems. It deducts from the deficit (or adds to the surplus) investments, advances, and grants to Crown corporations, other investments and advances, and asset revaluations and asset distribution associated with the B.C.R.I.C. disaster. The cumulative average of the adjusted surplus is shown in column (4). Every year up to and including the 1982/83 fiscal year shows a cumulative average surplus. Thus the correct reading of the statistical record confronting the government when it embarked on the 1983/84 budget exercise should have been that the British Columbia economy had a structural tendency to generate surpluses rather than deficits.

In 1983/84 the severe depression would have produced a large deficit for any feasible fiscal policy. If the expenditure cuts had not been made, the deficit would have been larger by perhaps one or two hundred million dollars. The statistical record suggests that a larger deficit in 1983/84 would not have been a matter for concern from the point of view of long-run fiscal soundness.

In the 1984/85 budget, $470 million of the projected deficit of $670 million represents a transfer to B.C. Rail in order to reduce the its debt. That is a discretionary intra-governmental transfer which could easily have been deferred and should be ignored when thinking about the province's structural revenue base and expenditure needs. When it is deducted the projected deficit is reduced to $200 million. This is well within the government's record of errors of estimate. The 1984/85 budget figures show that in the 1983/84 budget, revenue was underestimated by nearly $300 million. Thus it is reasonable to expect that the corrected deficit for 1984/85 is not significantly different from zero. Again, there is no evidence of a structural deficit.

The suggestion that the government finances of British Columbia contain a structural surplus rather than a deficit is strengthened when Statistics Canada's compilations are examined. Columns (5) to (8) of Table 1 show provincial government surpluses and deficits for Statistics Canada's Financial Management System and on a National Accounts basis. As mentioned before, the first adds to the budget figures the accounts of certain government agencies, such as the Workers' Compensation Board and the Medical Services Commission. It also adopts somewhat

TABLE 3

Net Interest Payments - British Columbia Provincial Government

Fiscal Year Starting April 1	Excess (Shortfall) of Interest Payments Over Interest Receipts ($ Million)		(1) as a Proportion of other Provincial Government Revenue (Percent)	(1) as a Proportion of Provincial GDP (Percent)
	Provincial Accounts (1)	Statistics Canada National Accounts System[1] (2)	(3)	(4)
1972	(34.4)	(50)		
1973	(43.3)	(60)		
1974	(83.3)	(97)		
1975	(59.5)	(86)		
1976	(32.2)	(61)		
1977	(52.5)	(97)		
1978	(78.0)	(105)		
1979	(139.9)	(204)		
1980	(206.4)	(258)		
1981	(194.6)	(295)		
1982	(63.0)	(303)		
1983[2]	74.3	N.A.	1.1	0.2
1984[2]	167.6	N.A.	2.2	0.3

[1] Calendar Year corresponding to first 9 months of fiscal year.
[2] Estimates

Source: Column (1) and (3): 1973-78: B.C. Financial Statements for the Fiscal Year Ended March 31, 1978, pp. A11-A13.
1979-83: B.C. Public Accounts 1982/83, pp. B20-B23.
1984-85: Budget 1984 pp. 59, 21.
Column (2): Statistics Canada No. 13-213, 1967-82. Tables 3, 7.
Column (4): Estimate and forecast of GDP for corresponding calendar year: Budget 1984. pp. 36, 57.

revenues or the provincial economy, and a less restrictive fiscal policy would not have encountered any significant obstacles on this score.

4.5 BRITISH COLUMBIA'S ABILITY TO BORROW

Finally, we consider whether the dramatic expenditure cuts we have witnessed can be justified by the need to maintain a good credit rating for the government. Considering the eagerness with which the world's lenders have advanced funds to Mexico, Brazil, Argentina, Poland, and other countries on the verge of fiscal collapse, it is hardly likely that deficits twice or three times as large as those of the last two years would have seriously impaired British Columbia's ability to borrow. The difference between a good and less good credit rating could have been at most something in the order of a quarter of a percentage point on the interest rate.

But would the credit rating have been any worse if B.C. had run a larger deficit? A counter-cyclical fiscal policy would have led to a larger deficit but would also have led to more employment, real output, and a higher growth rate. In determining the credit-worthiness of British Columbia, lenders do not simply consider the government's current budget, but also the economic prospects of the entire economy, both private and public sectors. These prospects would have been better with a larger deficit.

A major item in determining the financial status of the British Columbia government is the record of assets and liabilities. Lenders want to know whether there is adequate equity, the excess of assets over liabilities, to make the loan safe. Since the government not only borrows on its own account but also guarantees the loans of Crown corporations, lenders would presumably like to see a balance sheet consolidating the accounts of the government and its Crown corporations. The closest we can get to this is the consolidated balance sheet published in the provincial Public Accounts in which the accounts of the government are consolidated with those of some Crown corporations, namely those serving government departments or implementing government programs. In addition, the government's net equity in Crown corporations selling goods and services to the public is taken into account. The resulting "taxpayer's equity," the excess of assets over liabilities, and its year-to-year change, is shown in Table 4.

It is possible that the government was concerned about the recorded drop in taxpayer's equity (row (4) of Table 4) from $1.4 billion in March 1982 to less than one-tenth of this amount in March 1983. This record, however, is based on an accounting practice that ignores most of the real assets owned by the government and its Crown corporations. This omission can be partially corrected by using the values of fixed assets (at original cost less estimated depreciation) given in various notes in the Public Accounts. When these are added, the revised figures of taxpayer's equity are given in row (7) of Table 4. The drop between 1982 and 1983 looks considerably less dramatic since it is only of the order of 20 percent. Moreover, the net equity of nearly $4 billion at March 31, 1983 looks adequate to sustain a very large volume of borrowing. The recorded values of the fixed assets are undoubtedly too low owing to the rise in market values in recent years.

Even adding these estimates of the government's fixed assets gives a very incomplete picture of the

TABLE 4

Taxpayer's Equity - Province of British Columbia
Consolidated Statement
($ Million)

		Fiscal Year Starting April 1 1982	1981	1980	1979
(1)	Taxpayer's equity at start	1357.8	1498.5	1710.4	1256.8[1]
(2)	Add excess of revenue over expenditure	(1218.3)	(335.9)	(353.3)	503.5
(3)	Add change in equity in commercial Crown corporations	(22.9)	195.1	141.4	(49.9)
(4)	= Taxpayer's equity at year-end	116.6	1357.8	1498.5	1710.4
(5)	Add net fixed assets of consolidated Crown corporations	905.3	765.3	602.3	512.9
(6)	Add estimated net fixed assets of government departments[2]	2900.0	2900.0	2888.7	2601.9
(7)	= Revised estimate of taxpayer's equity at year-end	3921.9	5023.1	4989.5	4825.2

[1] Estimated. Differs from reported figure of 1255.2 owing to changes in accounting practice. See Public Accounts 1981/82, p. C8.

[2] Figures for 1981 and 1980 are reported in Public Accounts 1980/81, p. C17 as "recorded on a memorandum basis in the Consolidated Revenue Fund." Figures for 1983 and 1982 are rough minimum estimates based on the data for 1981 and 1980.

Source: B.C. Public Accounts, 1982/83, 1981/82, 1980/81.

province's credit-worthiness since the most valuable asset is omitted. This is the power to levy taxes on the province's economic activity. As we have seen, even when output and employment are impaired by depression, financing of the accumulated deficits is forecast to require only two percent of provincial revenues.

We conclude that there is nothing in the provincial government's balance sheet or its capacity to obtain revenue that would justify concern for its credit rating and consequent expenditure cuts.

There are, however, further aspects of the province's financial position not reflected in this balance sheet, that a lender might want to consider. The risk involved in the province's guarantee of the debt of "commercial" Crown corporations (whose accounts are not consolidated with the government's in Table 4) depends on how one evaluates the commercial prospects of these corporations. On March 31, 1983 the guaranteed debt of these "commercial" Crown corporations amounted to $8860 million, most of it accounted for by B.C. Hydro ($7661 million) and B.C. Railway ($877 million) [1]. It is possible that a lender might entertain doubts about the commercial soundness of these two enterprises in view of repeated discussions in the media concerning Hydro's tendency to build dams in excess of requirements and the doubtful prospects of B.C. Rail's new Tumbler Ridge Branch Line. It is not surprising that the government wants to replace outside borrowing for the Tumbler Ridge Branch Line, estimated to have cost $455 million, by "contributing equity capital financing as permitted by economic conditions. The province will recover a portion of these costs from revenue generated by this project (North East Coal)."[2] And if the revenue is not forthcoming, the province can follow the time-honoured practice of writing off losses in B.C. Rail. "During the year ended March 31, 1980, in view of the cumulative deficit of the Railway, the province's investment, which amounted to $185,572,900 at March 31, 1980, was written down to one dollar. An additional investment of $45 million made in March 1982 has been written off."[3]

Until the taxpayers' money has replaced the funds borrowed for the branch line, the government will provide "annual grants equivalent to the amount of interest charged by the Railway to its operations." But the government's guarantees to B.C. Rail (or, more accurately, its creditors) in connection with North East Coal go further:

> The Railway will incur in relation to this project, the cost of additional coal related rolling stock and equipment as well as the cost of upgrading other facilities and improving lines in addition to the Tumbler Ridge Branch Line. It is anticipated that the Railway will recover these costs from increased revenues generated by this project. However, the province has assured the Railway that if revenues are not sufficient to cover those costs that the Railway will be kept whole (Sic) [4].

Thus it is a plausible interpretation of current budgetary policy that welfare recipients must suffer in order to enable the government to subsidize its unsound business ventures and pay off their creditors, in an effort to maintain its credit rating.

Comparing data in Budget 1984 (pp. 29, 64) with those in the Public Accounts one finds further guaranteed debt for dubious commercial ventures: $57

million for B.C. Place as of December 31, with $74 million more to be borrowed in 1984/85, and $38 million for Expo 86 with $100 million more to be borrowed in 1984/85 which, press reports suggest, is a seriously understated figure. The debt of B.C. Transit rose by $165 million between March and December of 1983, with $318 million to be borrowed in 1984/85, presumably for A.L.R.T. Further increases in the debt of B.C. Hydro and B.C. Rail are also indicated.

4.6 CONCLUSION

We conclude that there is no good fiscal reason for the government's policy of "restraint." The policy may have the questionable aim of freeing up funds to guard against the possibility of the government's unsound commercial investment projects undermining its credit rating. The provision in the 1984/85 budget of $470 million to reduce the debt of B.C. Rail makes sense as an attempt to partially "repair" the damage to the government's reputation due to mistaken investment decisions.

As we have indicated before, however, the cost of any possible damage to the credit rating is trivial, one-eighth or one-quarter of a percentage point on the interest rate, and the increased rate would only apply to new borrowing and refunding of maturing debt[5]. Concern about the credit rating cannot possibly justify the expenditure cuts and the creation of unemployment and misery that the last two budgets have entailed. Moreover, the damage done to the economy by the government's unsound investment decisions cannot be repaired. What the government's fiscal policy does is to transfer the resulting losses to the shoulders of those least able to bear them: welfare recipients and those deprived of employment by the "restraint" measures.

NOTES

[1] Public Accounts 1982/83 Vol. 1, pp. C24, C28, C29. Our figure does not include the provincially guaranteed debt of local governments, hospitals, school districts, colleges and universities.

[2] Ibid. p. C21.

[3] Ibid. p. C17.

[4] Ibid. p. C21.

[5] The downgrading of B.C. Hydro's rating by Moody's Investors Service from "AAA" to "AA1" in July 1983 meant one-eighth of one percent more in interest charges. Nevertheless, it was cited by government ministers as justifying their budget-slashing (Winnipeg Free Press, July 13, 1983, p. 12).

Alberta Provincial Budget, 1984

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The budget brought down by the provincial treasurer of Alberta, Louis Hyndman, on March 27, 1984, was clearly one of expenditure restraint. General Revenue Fund (GRF) expenditures in fiscal 84/85 are projected to remain at $9.6 billion, in line with actual forecast expenditures for fiscal 83/84, which ended on March 31, 1984. Of these budgeted expenditures, approximately $7.9 billion are classified as operating expenditures, while $1.7 billion are classified as capital expenditures. Revenues are projected to be about $9.4 billion in comparison with forecast revenues for 83/84 of $9.0 billion. No new provincial taxes are proposed within the budget, but it should be noted that Alberta's personal income tax rates were increased from 38.5 percent to 43.5 percent of basic federal personal income tax on January 1, 1984.

In consequence, the GRF deficit projected for 84/85 is $258 million, down from an estimated $566 million in 83/84, and (if the same accounting framework were used) an actual deficit of $752 million in 82/83. Each of these figures assumes that all the investment income (roughly $1.5 billion in each year) from the Alberta Heritage Savings Trust Fund (AHSTF) is transferred into the GRF, in order to increase GRF revenues and thereby reduce the resulting size of the GRF deficit, and that the non-renewable resource revenue transfer to the AHSTF remains at the 15 percent level (down from 30 percent in earlier years). The resulting non-renewable resource revenue transfer to the AHSTF is projected to be $651 million in fiscal 84/85, which is only barely sufficient to maintain the real value of the AHSTF intact. This value is forecast to be approximately $13.7 billion on March 31, 1984, so that the real value of the AHSTF will decline in the coming year if, as seems likely, the inflation rate exceeds 4 3/4 percent.

The large spending departments include hospitals and medical care ($2,283 million), Social Services and community health ($1,223 million), education ($1,158 million), advanced education ($871 million) and transportation ($842 million). The large revenue sources include non-renewable resource revenues ($3,553 million), which consist chiefly of crude oil and natural gas royalties, personal income taxes ($1,741 million), AHSTF investment income ($1,530 million), payments from the Government of Canada ($968 million) and corporate income taxes

($615 million). From these numbers, it is easy to see that the transfer of the AHSTF investment income is treated as a major revenue source, and that the main downside risk in the revenue picture is related to non-renewable resources, especially natural gas royalties given the sluggish nature of gas export markets in the United States.

Although the recession bottomed out in November 1982 in many parts of Canada, with Ontario in particular experiencing a full year of recovery in 1983, Alberta has remained mired in recession. Only in 1984, have any real signs of recovery been witnessed here. In large part, the depth of the Alberta recession emanates from the fact that we were hit by a triple whammy:

1. a regionally-specific, federally-imposed fiscal restraint policy, better known as the National Energy Program,

2. a major fall in investment activity triggered by the high real interest rates which accompanied North America's tight monetary policy of 1980-82, and

3. a decline in the external terms of trade (the price of provincial exports, especially energy exports, relative to the price of provincial imports).

In consequence, the boom-bust phenomenon has been more acutely felt in Alberta than in most other parts of Canada.

Largely because world oil prices and U.S. natural gas markets are now expected to remain flat for at least the next two years, the province of Alberta will at best follow the rest of the country out of the recession by at least one full year. Indeed, no one should now expect the Alberta economy to out-perform the rest of the Canadian economy. Quite the opposite seems more likely to occur. That will in part be due to the aftermath of Ottawa's National Energy Program. But it will also be due to the fact that, like all OPEC countries, our main petroleum-producing region has fallen on relatively less buoyant times as the world supply-demand balance for fossil fuels makes flat real energy prices and netbacks the rule for the next few years. Indeed, the Alberta economy will remain sluggish until such time as several additional tar sands and heavy oil developments of medium size become economic to build, or until U.S. gas markets pick up, perhaps in mid-1986.

With the decline in energy industry activity and in the buoyancy of its oil and gas revenues, the government of Alberta now finds itself with a budgetary situation much more like that in other provinces. As recent events have demonstrated, Alberta has now reached the point at which provincial tax rates, especially including the provincial personal income tax rate, must begin to be increased if the government is to maintain its pattern of outlays on the provision of public goods and services to Alberta residents. Put differently, the Alberta government accounts are now in real (or inflation-adjusted) deficit even when the AHSTF is taken into account along with the GRF. Expenditure restraint plus the personal income tax increase have, however, limited the size of this deficit.

Although a considerable expansion in natural gas exports might put the accounts back into substantial surplus in the latter part of the 1980s, for the foreseeable future it is no longer possible to argue that Alberta's fiscal capacity is much larger than that of other Canadian

provincial governments. The potential growth in the AHSTF has effectively been absorbed into the federal government's revenues, largely through the continuation of the petroleum and natural gas revenue tax (PGRT) initially imposed under the National Energy Program (NEP). Alberta's $5.4 billion royalty relief and drilling incentive package, the Oil and Gas Activity Program (OGAP) of April 1982, may be regarded as an attempt to restore real oil and gas netbacks partway towards the position at which they stood before the PGRT was unilaterally imposed by the federal government under the NEP. Implicitly, therefore, the Alberta government is now paying a significant proportion of the PGRT out of its own revenues.

The Alberta government finds itself with a structural adjustment problem to cope with as well as a recession problem. Although the recession problem might call for fiscal stimulation, and indeed we received some considerable stimulation through expanded capital expenditures in the Spring 1982 provincial budget, which was followed in that budget year with the OGAP royalty relief program and the interest-shielding aspects of the Alberta Resurgence Program (ARP), the structural adjustment problem continues to call for the opposite remedy. The decline in our terms of trade, or the price of our exports (especially crude oil and natural gas) relative to the price of our imports, requires not only that we cut our fiscal cloak according to the cloth of lower projected growth in both provincial product and population, but also reduce our real wage levels in the public as well as the private sector back down towards national average levels. These adjustments are essential if we are to wean ourselves from our reliance on conventional crude oil and natural gas revenues as the main source of our previous prosperity, and to move towards a more diversified but slower-growing provincial economy. The implicit wage guideline contained in the government's budgetary strategy is an important ingredient in this adjustment process.

Where, then, does this leave the Alberta economy? Output growth in 1984 may rebound to about the 2.5 percent level, considerably slower than the national average, which I project to be about 4 percent. The unemployment rate, which tripled as the recession took hold despite a complete cessation of net immigration and the commencement of net out-migration, will remain high, in large part because the outlook for renewed expansion in the construction industry continues to look bleak on all fronts, including the residential, commercial, industrial, petro-chemical and possibly the transportation and utilities sectors as well. As recent budgets have demonstrated, we should expect no further real growth in public sector capital outlays to tide us over the private sector investment shortfall.

Real investment activity has suffered a major decline from the high levels experienced prior to 1981 both because of the recession - inducing high real interest rates and because of the structural fall in the terms of trade. However, real private consumption activity should now hold up despite the personal income tax increase that hit us all last January, largely because many people have already factored the likelihood of such tax increases into their savings plans. Inflation rates will be somewhat lower than the national average, largely because housing and real estate prices will remain flat, and because wage gains will be relatively small in comparison with those that may begin to be seen in Ontario and elsewhere.

Nevertheless, as Alberta households and business firms begin to get their balance sheets in order, and appropriately adjusted to our new circumstances, this province will surely begin to revive its spirit of entrepreneurship. It has the human abilities and physical resources to succeed eventually in generating a full recovery from its end-of-boom hangover. Don't count us out in the latter half of the 1980s.

Manitoba Provincial Budget, 1984

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The Minister of Finance himself has called it a "consolidation and development" budget; the Conservatives have called it a "Tory" budget; others have found little to say for or against it; and still others seem satisfied with it.

One plausible explanation for the variety of comments on this budget may be that Manitoba's Minister of Finance has struck a happy medium between activism in the job and development fronts on the one hand, and "financial prudence" (if not restraint) on the other. Manitoba's government has long been supportive of overall government expansion to create jobs, and now seems to believe that the province is at a "take-off" point as far as private investment is concerned; but it has also had to pay some attention to a rather disturbed financial market that was looking more and more closely at credit ratings, including Manitoba's. By way of an opening summary, I would say that the Minister of Finance has done as good a job as could be done with such contradictory objectives.

6.1 THE PRESENTATION OF THE BUDGET

The opposition, through MLAs and its vocal academic advisor, have constantly been hammering at the total numbers of Manitoba's deficit and per capita debt without much thought or analysis of the composition of either the deficit or the debt. A credible attempt was made in the budget presentation to put these numbers in proper perspective, by looking into their composition.

With respect to the deficit, estimated at a total of $488.6 million, a distinction was properly made between total deficit (total budgetary requirements) and net operating deficit (total deficit excluding investment expenditures). The net operating deficit for the year was $167.5 million, a much more palatable figure for those concerned with government overspending, and indeed a much more proper indicator of the government's deficit position from the financial point of view.

The distinction between total budgetary requirements and net operating deficit is, however, valid only under the assumption that investment projects undertaken by the government will be productive and profitable; this requirement is, of course, not always satisfied in all

projects, be they private or government. And if a project does go sour and is scrapped, it will then be proper to count its depreciation as part of the net operating deficit.

The logic of the above argument implies that the net operating deficit should be calculated as total deficit minus net (not gross!) capital expenditure; any depreciation not covered by the revenues of the respective project should be part of the net operating deficit. This is not how the government presents the budget, however. The net operating deficit is calculated as total budgetary requirements minus gross (not net) capital expenditure, and is therefore understated by the amount of depreciation.

The importance of the above point obviously depends on whether depreciation is a substantial amount in relation to the total deficit. Moreover, this criticism should be seen in the proper perspective. Manitoba has made substantial progress in the presentation of its budget compared to other provinces.

As for the outstanding provincial debt, the total of $6289 per person is properly reduced (by the sinking fund of $720 per capita) to $5569 per person. As well, that component of the debt which reflects productive and profitable investments is called "self-sustaining" and is subtracted from the total, yielding a net per capita debt financed by taxpayers amounting to $2304 per person; against this debt there are assets (estimated by Clarence Barber) of total value of $4000 per person. This presentation, proper from an economic - and financial - point of view, may help dispell unjustifiable fears and concerns spread upon the layman by press commentaries sadly lacking in analytical depth.

The government ascribes about 50 percent of last year's operating deficit to insufficient equalizatio payments by the Federal Government and expresses the hope that th situation will be corrected in th near future.

6.2 BUDGETARY MEASURES

So much for presentation. Bu what about fiscal action?

I have already referred to th contradictory nature of the govern ment's apparently concurrent objec tives of job creation, developmen and restraint. In this light, th budget seems to achieve an admirabl mixture, holding almost every majo expenditure down and achieving a overall increase in spending of 3.! percent, while incorporating a smal dose of job creation measure (through the much-touted Jobs Fund and some investment incentives; al these at the cost of a small tobacc and diesel fuel tax. The budge does not even miss the lip servic to social welfare objectives: small income tax rebate is intro duced, estimated to save low-incom Manitobans a total of $3.5 million and an average $55 per person.

More specifically, the Manitob Jobs Fund is to continue in opera tion in 1984-1985, with a change i direction from short-term to long term job creation. A total of $21 million is committed to the fund fo the coming year (this include $118.8 million in non-budgetary au thority), and is spread over busi ness development, housing, urban de velopment and human resources, an community and capital assets. Ex penditures on health, education an welfare are estimated to rise b about 6 percent, those on agricul ture by 7.2 percent.

On the tax front, tobacco taxe are raised by 12.5 cents per pack age, and the diesel fuel tax i raised by 1.5 cents per litre, wit

expected increases in revenues of $19.3 million annually.

Moreover, a good development incentive is provided to prospective investors in manufacturing and processing, through an investment tax credit of 6 percent of investments in new buildings, machinery and equipment.

Finally, small employers are relieved of the health and education levy (payroll tax), which caused many complaints in the past as being an administrative nuisance.

6.3 EVALUATION

Full evaluation of the budget of a government should include political as well as economic criteria. I will comment on the economics of the budget alone, however insufficient and incomplete such comment may be by itself.

On purely economic and financial criteria, then, I would find the budget timid at best, given the current economic conditions. the The national economy is not rushing into a recovery, and while Manitoba may in fact be at a "take-off" point (transport agreements, hydro sales, aluminum plant and potential potash mines) job creation and maintenance could use a bit more stimulus than the budget provided. But then, the aim of restraint (or "prudence" if one prefers the term!) would have been compromised, though properly so in my opinion.

With expenditures on services such as health, education and welfare, a 6 percent rise may help achieve more efficiency in some sectors while it may really hurt others; careful study of the actual needs of each sector may not be unjustified if the "financial prudence" strategy is to continue.

As for the 7.2 percent increase in expenditures on agriculture, no information was provided on how these expenditures would be targeted. Without such information, I see no obvious economic reason why the increase should be so much higher than average. Agriculture is a competitive industry par excellence, and should be left to its own devices to achieve efficiency and proper production and price levels; fluctuations might have to be smoothed, but the 7.2 percent increase in expenditure on the industry does not seem to be for that purpose (though the latter is sought to be achieved through separate stabilization programs).

Tax increases do not seem objectionable in magnitude, and in any case one of them (tobacco) is effected on goods that belong to the Finance Minister's traditional plundering ground.

As for tax incentives, the temporary 6 percent investment tax credit seems sensible. However, only time will show whether it is the cost of investment and production that keeps investment down in Manitoba (as some fellow economists would have us believe) or whether it is low demand conditions that are responsible. If the latter is the case, then more expansion rather than more tax incentives would do the job better.

Finally, on the social welfare front, the small income tax rebate is rather insufficient, given past rates of inflation. Herein lies another victim of the contradictory aims of development/ expansion and fiscal "prudence" as defined by the Conservatives.

But how has the government of this province fared in a national context? While all provinces (except Quebec) have reduced their deficits (as compared to last year) by an average of 29.3 percent in their new budgets, Manitoba has reduced its (total) deficit by .6 percent.

It appears, then, that given the

general climate about governments and their deficits, it may be fair to put criticism aside: the Manitoba government has stood bravely alone against a rush to reduce deficits before the recovery is firmly in place. The only unfortunate point is that Manitoba's actions are simply not enough to pull the national economy out of the recession.

But if recession stays and deficits deepen as a consequence, one should look anywhere else than here for scapegoats. Manitoba's Minister of Finance has certainly not contributed to more unemployment and misery.

New Brunswick, Newfoundland and Labrador, Nova Scotia and Prince Edward Island Provincial Budgets, 1984

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NEW BRUNSWICK

7.1 OBJECTIVES

The March 1984 Budget was presented by the Honourable John B. M. Baxter, Q.C., Minister of Finance. From the beginning of his address there is concerned reference to the deficit on ordinary account and the growth of government debt (p. 1). Mr. Baxter, however, is encouraged by trends in the economy in 1983/84 and the emergent "financial picture" of the province (pp. 4-6). He anticipates a "broadly-based economic recovery in New Brunswick this year with real GDP increasing by 4.2 percent" (p. 10). On pp. 12-25 he outlines his fiscal strategy. In doing so, he reasons that:

a. the Canadian economy generally has been suffering from a series of economic difficulties;
b. that no province can easily free itself of that;
c. that "governments have committed themselves to more public spending than the growth in the economy can support";
d. government deficits have resulted but,
e. this cannot continue - governments must "reduce their spending and their share of the economic pie ... Canada will be better off after this when government, business, labour and various interest groups ... work together ... to improve our lot..." (p. 13).

The clearest statement of objectives appears thereafter:

> ...in New Brunswick's case we have very limited tax room, thus the only sensible fiscal strategy is one which reduces the deficit by restricting the growth of government spending and encouraging growth of the private sector. This strategy will yield permanent productive jobs and a larger tax base from which improved social programs can be financed in the future (p. 13).

There are five elements to the Budget plan (p. 14):

1. a three year strategy to correct the deficit problem;
2. economic initiatives;
3. social initiatives;
4. internal management initiatives;

and
5. revenue measures.

In general then, the objectives being pursued in New Brunswick are similar to those being pursued in the other Atlantic Provinces. In fact, in his address, Mr. Baxter mentions that there had been two important federal-provincial meetings in 1983 - one in June, and the other in December. "At the June meeting, attention was focussed on inflation and possible problems posed by the termination of several public sector restraint programs then in place across the country" (p. 8). The December meeting "concentrated on the economy and the respective fiscal positions of the provinces and the federal government. All Ministers were in general agreement that it was important to continue public sector spending restraint in 1984/85."

7.2 EXPENDITURES

Gross ordinary expenditures are expected to increase by about 5 percent in money terms, which translates into zero or negative growth in real terms. So, in this respect, New Brunswick is adhering to the above objectives. Capital expenditures are expected to increase by about 11 percent, but, since it is small relative to ordinary expenditures, the combined expenditures' growth rate is still only 6 percent (as noted in Appendix tables of Budget Speech).

As Mr. Baxter points out, "the Government's capital budget is a major factor in the provincial construction industry's work load and supports many jobs in that industry" (p. 20). About 70 percent of the increase in capital spending is in support of "economic development" and major projects which are as follows (pp. 20-21):

1. a major highway construction program ($121.6 million);
2. completion of Woodstock Community College Campus ($3.5 million);
3. construction of the Sud-est Community College ($4 million);
4. continuation of the Greater Moncton Sewage Treatment Plant ($4 million);
5. Phase I of an integrated Radio Communication System in the Province ($4 million).

On pages 16-20 there are a number of other "economic development measures" all intended "to encourage private sector growth." There are both tax and expenditure initiatives. Among the latter are:
1. a venture capital program;
2. forgivable interest free loans to qualifying small businesses;
3. a short term job creation program "focussing on specific target groups such as employable Social Assistance Clients, those who have exhausted their unemployment entitlements, youth and students";
4. funds for new sub-agreements in agriculture, forestry, minerals and planning;
5. grants to swine producers;
6. funds to implement a new Fish Health Management Program, and
7. funds for selected educational programs.

As indicated in his statement of objectives, the government is committed to improving social programs and making social initiatives. There are various specific areas of support listed on pages 22-23. These all fall into the general categories of health, education and welfare.

On pages 23-34 there is an outline of "some of the measures that will be introduced in 1984/85 to make the administration of government more efficient and cost effective." For example, a productivity task force and improvement fund is

to be established. Also, there will be the hiring of additional auditors. These are among the government's "internal management initiatives."

7.3 REVENUES

Gross ordinary revenues are expected to grow by 9 percent this year. As in the case of other Atlantic Provinces, the bulk of this growth is expected to come from the province's own sources of revenue. Funds from the federal government at the present time account for about 43 percent of total revenues. However, these are only expected to increase by about 4 percent this year. This means the government of New Brunswick is expecting a 13 percent increase in their own sources of funds.

New Brunswick's main own sources of funds are:

a. personal income tax;
b. social services and education tax;
c. real property tax, and
d. gasoline and motor fuels tax.

As already indicated, in the aggregate these are expected to increase by 13 percent this year. In making this estimation the government must be keeping in mind the expected rates of inflation and real income growth. There are some projections given in the Budget (p. 2 of "The Fiscal Plan"). The sum of inflation and rate of real income growth is estimated to be about 9 to 10 percent. There then seems to be an implicit assumption of tax revenue elasticity - percent change in tax revenue to percent change in money income - of about 1.4. This may be slightly on the high side.

Primary sources of federal funds are equalization payments, EPF (Established Programs Financing), welfare and education. The first two are expected to grow by only 4 to 5 percent this year. Although welfare funds are not as large, they are expected to increase by about 10 percent. However, funds for education are to decrease by about $1 million.

Mr. Baxter devotes pages 7 to 9 of his speech to "federal-provincial fiscal relations." He relates how at the joint federal-provincial meeting of December 1983 he had "described New Brunswick's serious structural deficit to the federal Minister of Finance..." and that "our situation and concerns have been spelled out in detail to officials of the Federal Department of Finance ... that equalization revenues are inadequate and we have advanced some ideas for adjusting federal programs to help us achieve a more stable financial position."

With regard to "other fronts of federal-provincial fiscal relations, problems remain largely unresolved. Over the past 12 months the provinces continued to press the federal government to work out an acceptable arrangement for health care financing... (However,) the federal government introduced a new Canada Health Act which has the potential to make it more difficult and costly for us to operate our health care system" (p. 9).

Previously we had mentioned that the government of New Brunswick made some tax initiatives for purposes of encouraging private sector growth. "One of the most important of these is a tax holiday for small business. Effective January 1, 1984, the current New Brunswick small business corporate income tax rate will be reduced from 9 percent to zero" (pp. 16-17).

Finally, the Budget contains three other revenue measures:

1. effective September 1, 1984, all non-sponsored students will have

to pay a tuition fee for regular Community College programs of one and two years duration;
2. effective January 1, 1984 the standard corporate tax rate will increase from 14 percent to 15 percent; and
3. there will be changes to the Metallic Minerals Tax Act.

7.4 FINANCIAL REQUIREMENTS

As it is expected that gross ordinary expenditures will grow by less than gross ordinary revenues for this year, a reduction in the deficit on ordinary account is expected. It will decrease from about $171 million to about $98 million. Although capital spending will grow significantly, capital recoveries will offset a large part of that. So, the budgetary deficit will fall from $377 million to $306 million. Non-budgetary accounts, such as "loans and advances," will make for combined "financial requirements" this year of about $380 million, which will be down from last year's figure of $450 million. So, if its estimates work out, the government of New Brunswick will accomplish its objective with respect to deficit reduction.

Mr. Baxter devotes pages 14 to 16 to his "strategy to correct the deficit problem." The first reason he gives for reducing the deficit is the interest cost. "Interest on the debt is a serious drain on provincial resources... If we allow these large deficits to continue, more and more of our tax revenue will be used for interest on the debt." It was only because of the recent recession that the government departed from its traditional practice of maintaining a surplus on the ordinary account. It is hoped that with economic recovery the province can return to a surplus by 1986/87.

Source:
Province of New Brunswick Budget 1984-1985, presented by the Honourable John B. M. Baxter, Q. C., Minister of Finance.

NEWFOUNDLAND AND LABRADOR

7.5 OBJECTIVES

The 1984 budget was presented by the Honourable John F. Collins, Minister of Finance and President of the Treasury Board, at the third session of the 39th General Assembly of the House of Assembly on Tuesday, March 20, 1984.

In his opening remarks, Mr. Collins notes the consequences of the recent worldwide recession for budgetary deficits of governments generally. However, the present and future represent "healthier more realistic times." The economy seems to have stabilized and at this stage is poised for a period of moderate growth.

Four key elements constitute the 1984 budget strategy:
a. reduce the current account deficit;
b. implement a broadly based expenditure restraint program;
c. avoid new tax measures and major tax increases;
d. institute measures to promote economic activity and encourage private investment.

Elements (a) and (d) are very similar to objectives in Nova Scotia. The same might also be said for element (c). The biggest

which when combined with net capital expenditures of $174 million and debt retirement of $80 million result in total financial requirements of $286 million.

7.9 OFFSHORE RESOURCES

Mr. Collins devotes the last three pages of the Budget Speech to "Offshore Resources - the Quest for Equality" (pp. 19-22). This goes along the following lines:

a. the longer-term outlook for the Newfoundland economy is closely related to offshore development;
b. the danger here is that, like past history, these natural resources will be controlled by outside interests, including the federal government;
c. other provinces have received better deals from Canada than Newfoundland; therefore,
d. Newfoundland seeks equality with other provinces.

7.10 SUMMARY

As with Nova Scotia, deficit reduction will depend on economic recovery and there is confidence that much of this will occur in the private sector. However, Newfoundland is showing more restraint in government spending and greater strides at cutting taxes. Both provinces see offshore resources as playing an important role, both now and in the future.

Source:
Newfoundland and Labrador Budget, 1984. Presented by the Honourable John F. Collins, F.R.C.P. (E.), Minister of Finance and President of the Treasury Board.

NOVA SCOTIA

7.11 OBJECTIVES

The Nova Scotia budget, brought down on Friday, March 23, 1984, has three objectives:

a. deficit reduction;
b. maintain critically important health, education and other services; and
c. economic growth and employment, especially within the private sector.

Repeatedly, the Minister refers to such objectives in his Budget address (1. pp. 1-3, 11, 32-33).

One does not need much expertise in economics to realize that achieving all of these goals at the same time is difficult, if not impossible. "Deficit reduction" demands increased taxes or reduced government spending, but the other objectives require the opposite. Even the minister admits to this problem on page 28, when he states that "the government could have further reduced or even eliminated the deficit by introducing massive cutbacks in the health and education areas." We will return to this matter later in our analysis.

Such objectives are otherwise laudable. The past recessionary period in Canada hit hard on employment in Nova Scotia. The unemployment rate is about 13 percent. The economy is nevertheless showing good signs of recovery. In the meantime, a substantial deficit of $240 million has developed which requires close scrutiny. However, Nova Scotians do not seem willing to

sacrifice essential services.

7.12 EXPENDITURES

Gross expenditures are estimated to be $3.2 billion. About one-half of this is for health and education. Another 16.5 percent is for "service to the public debt." The remainder is spread among other government functions.

This represents an increase of 10.4 percent over the previous year. In real terms, once the inflationary factor is eliminated, it represents a hefty 5.1 percent increase. This easily suggests that government is doing more than just holding the line on expenditures; the expenditures policy is clearly expansionary.

The most dramatic increase in ordinary expenditure is in "services to the public debt," or, in other words, interest expenses, which account for about 44 percent of the increase. On average, other ordinary expenditures will increase about 7 percent, which will largely be absorbed by increases in cost of living (1. A21).

Capital expenditures will be about $361 million. Over 40 percent of this will be for transportation and communications. Resource development takes another 25 percent. Sizeable amounts have also been allocated to health and education.

The total increase in capital spending represents an increase of 35 percent over the year before. So, while government might be trying to hold the line on ordinary expenditures, this certainly is not the case with capital spending. It has also linked this with its objectives of growth and employment (1. p. 17).

7.13 REVENUES

Gross revenues are estimated at $2.6 billion. About 58 percent of this will come from provincial sources; the rest will come from equalization grants, established programs financing and other federal sources.

The above estimate of gross revenues represents a 10 percent increase over 1983/84. In real terms it represents an increase of 4.7 percent (1. A8). It is noteworthy, however, that the bulk of this increase is estimated to come from provincial sources. Of the total increase of about $239 million, provincial sources are expected to generate nearly $200 million. The percentage increase in federal sources may not even be enough to cover the cost of living.

About two-thirds of provincial revenues are generated from two sources: income taxes and the health services tax. Both sources are expected to generate hefty increased revenues for 1984/85. Income taxes are estimated to be about 13 percent higher, while revenue from health services tax is expected to be about 18 percent higher (1. A10).

The foregoing has great significance for the size of the deficit. Should there be less economic growth than projected, income tax revenues, as well as health services tax revenues, will be less. This, given projected expenditures, would make it more difficult to reduce the deficit. For example, if everything else (ordinary expenditures and revenues) grow as expected, there would have to be combined income tax and health services tax revenues of $978 million. It is estimated that these revenues will in fact total $1,019 million (1. A18). This gives us some idea of the shaky premise on which deficit reduction is based.

All provincial taxation rates are to remain the same with the exception of the tobacco tax. The tax rate on cigarettes is raised from 1.4 cents per cigarette to 2 cents. The tax rate on other tobacco products is increased from 35 percent to 50 percent of the retail price. According to the Minister, Nova Scotia "tobacco tax rates are still among the lowest in the country" (1. p. 12).

The higher tax rate on tobacco products will help to boost revenues from the health services tax. One source predicts up to $15 million more as a result of this tax. The remaining increase in health services tax revenue, about $50 million, will come from offshore activities.

The upcoming fiscal year marks the first time that the province will receive direct revenues from offshore activities pursuant to the Canada-Nova Scotia Offshore Agreement. These monies relate to sales tax revenues that have accrued to Nova Scotia as a result of exploration off its coast, since the 1982 signing of the agreement (1. p. 13).

7.14 FINANCIAL REQUIREMENTS

A comparison of gross expenditures and revenues reveals that expenditures are expected to outstrip revenues. Gross expenditures exceed gross revenues by about $555 million.

This difference can also be thought of as a function of

a. the difference between ordinary expenditures and revenue, more popularly known as the "deficit"; and
b. capital expenditures.

In 1984/85, it is expected these will be about $194 million and $361 million respectively.

In the Budget address, a great deal is made over deficit reduction. We have already alluded to this several times in our analysis. We cannot help but think too, how simple it is to confuse "deficit reduction" with "reduction in borrowing requirements." The latter is certainly not true for 1984/85. In fact the $555 million spread alluded to above represents about an 11 percent increase over 1983/84. This means that there is more pressure on government to borrow in this current budget.

7.15 SUMMARY

The status of the budget is clearly expansionary and should help to maintain essential services as well as promote growth and employment. The current operating deficit may come down as well, provided economic recovery is not aborted. However, this should not mask the fact that borrowing requirements are much higher than the year before.

Sources:
Budget Address, Province of Nova Scotia, 1984/85. Honourable Greg Kerr, Minister of Finance, 33 pp. plus Appendix, 25 pp.

Budget Highlights, Province of Nova Scotia, 1984/85, 2 pp.

Mail-Star, Halifax, Nova Scotia, March 24, 1984.

Notes, March 9, 23 and 30, 1984. Dr. Bill Gillis, M.L.A., Liberal Finance Critic.

PRINCE EDWARD ISLAND

7.16 OBJECTIVES

The Budget Speech was delivered by the Honourable Lloyd G. MacPhail, Minister of Finance and Tourism, and Chairman of Treasury Board, on April 10, 1984.

Mr. MacPhail opened his remarks by reminding the Assembly that his government is committed to the goal of a balanced budget on current account. He regards deficit reduction by all governments as necessary for easing the burden on financial markets and thereby allowing for the expansion of private industry investment and employment (p. 1). Later (pp. 24-27), he indicated his government's intention of restraining government spending and not imposing any additional taxes. Therefore, in general, the objectives being pursued in Prince Edward Island are much like those in Nova Scotia and Newfoundland.

As is typical for budget speeches, Mr. MacPhail provides an overview of trends for his province's economy and compares these to economies elsewhere. He sounds cautiously optimistic. Among other things, he notes that during 1983 "Prince Edward Island was the only province in Canada to experience sufficiently strong employment gains to reduce the unemployment rate from its 1982 level" (p. 3).

This is Mr. MacPhail's sixth budget. In his speech he notes how current forecasts of spending for 1983/84 are much below that anticipated while revenues are up, on account of the recovery. So, the 1983/84 deficit is much lower than anticipated.

7.17 EXPENDITURES

Expenditures on current account are expected to be in the order of $440 million. This represents about a 5 percent increase over 1983/84 in money terms and practically no increase in real terms. So, in this respect the government seems determined to restrain its spending (Budget Summary after p. 28).

Estimated capital expenditures are much smaller at only about $24 million. However, this does represent a large 41 percent increase over 1983/84.

In his speech, Mr. MacPhail expresses his appreciation to the public, the civil service and management personnel of government "in attempting to assist us out of very difficult economic circumstances." He goes on to say that "the war has not yet been won," that he sees "several more battles" in the current fiscal year (p. 23). He then proceeds to state that:

a. "the public must learn to live with fewer services and less support from government in order to maintain costs within sustainable levels";
b. "the civil service will shortly be entering into the restraint program...";
c. "we must continue the restraint effort on government expenditure while being sensitive to the real need of those who are least able to provide for themselves...";
d. "government must, at the same time, ensure that it continues support for the private sector in order to build upon the economic recovery which began in 1983."

As a result of efficiencies gained and adjustments to previous programs, the government feels it is

able to undertake some new initiatives and expand certain programs. These include:

a. an expanded program of highway reconstruction;
b. a small business incentive program to assist small firms to expand to meet market opportunities;
c. additional funding to accelerate efforts of Department of Fisheries in developing the near-shore/offshore fleet;
d. assistance to Souries Hospital in land purchase and planning for new facilities;
e. a pilot project for developing computer technology awareness in junior high schools; and
f. an educational program on seatbelt safety.

7.18 REVENUES

Revenues on current account are expected to be about $432 million. This represents less than a 4 percent increase over 1983/84. It also falls short of current expenditures by about $8 million.

The Current Revenue table at the end of the speech helps shed some light on the problem. Slightly over one-half of revenues to Prince Edward Island are from the government of Canada. There are seven categories listed: equalization; Canada Assistance Plan; Canada Employment; Development Plan; Established Programs Financing; Extended Health Care; and Other. In the aggregate, there is no increase in funding over the 1983/84 level of about $213 million. There will be some increase in equalization, Canada Assistance Plan, Extended Health Care and Other. However, this will be offset by decreases in Canada Employment, Development Plan, and Established Programs Financing. In fact, Mr. MacPhail addresses some aspects of federal funding in his speech on pp. 12-18. As for EPF funding, he states that it is "no longer a reliable basis for long term planning of our Health and Post Secondary Education Systems" (p. 14).

As for its own sources of funds, Prince Edward Island forecasts a healthy 8 percent growth. The bulk of these revenues are derived from taxes, including sales and income taxes. It is interesting to note that while Nova Scotia is faced with a similar problem of not being able to obtain significant increase in federal funding, it forecasts significantly higher revenue growth from its own sources. Of course, in Nova Scotia's case the extra revenues will be assisted by higher tobacco taxes and the offshore activities.

More than once, Mr. MacPhail shows he is reluctant to impose new taxes (pp. 27, 27). The only revenue measure has to do with the commission paid to vendors for the collection of tax revenue (p. 27).

The estimated 8 percent increase in tax revenues from its own sources, of course, depends on a healthy growth in the economy. If forecasted growth is too high, the consequence will be an even higher deficit. Nova Scotia faces the same problem.

7.19 BORROWING REQUIREMENTS

According to Budget Summary (after p. 28), the deficit on current account of $8 million combined with net capital spending of about $21 million will partly be "financed" by an "increase in sinking fund assets," leaving a "deficit" of nearly $10 million - a sizeable increase over 1983/84.

A "cash requirements" table at the end of the speech shows the budgetary "deficit" of $29 million

along with other needs which require financing. These include "repayment of Alberta Heritage Fund Loan ($22 million)," net advances to Crown corporations ($16.3 million)." Altogether, total cash requirements are $77.5 million - a substantial increase over 1983/84. Such requirements will be met in three ways:

a. debenture issues ($50 million);
b. Canada Pension Plan ($11.5 million); and
c. increase in unfunded debt ($16 million).

7.20 FINAL COMMENTARY

Although the Prince Edward Island government appears to be committed to the goal of reducing the deficit and borrowing requirements, it is not able to achieve these objectives in the current budget. It has shown determination to restrain current spending but not capital spending. It has been wise to refrain from tax increases so as not to abort economic recovery, but automatic growth in its own sources of revenues will, although significant, not be sufficient to finance the growth in its spending, while reducing the deficit and borrowing requirements. Too much of its revenue depends on federal sources and these are not expected to increase in the aggregate. So, the Prince Edward Island government has in fact brought in a budget that in many ways runs contrary to its own desires. It is faced with a year of high borrowing requirements - much higher than the year before. It is difficult to see how this will be resolved in the future. Perhaps more restraint should be placed on capital spending. However, one cannot help but wonder how much growth in the economy depends upon such spending.

Source:
Province of Prince Edward Island, Budget Speech and Estimates, 1984. Presented by the Honourable Lloyd G. MacPhail, Minister of Finance and Tourism and Chairman of the Treasury Board.

ANALYSTS' NOTEBOOK:

The Interpretation and Application of Tobit Regression

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The Manitoba Basic Annual Income Experiment (MINCOME) was conducted to investigate, among other issues, the effects of income supplementation on work incentive or labour supply. In a recent paper published in the Western Economic Review, Ehnes and Simpson (1983) provided an initial analysis of labour supply behaviour from the MINCOME baseline data, using Tobit regression. The purpose of this note is to examine the Tobit regression technique in more detail and to extend Ehnes and Simpson's analysis by providing a useful decomposition of the regression results. An application of this decomposition to social policy analysis will be discussed to conclude this note.

8.1 TOBIT REGRESSION

The use of microdata, or data on individual economic units such as MINCOME participants, often results in the analysis of truncated variables. Hours worked, for example, is truncated at zero hours[1]. This violates the assumption that hours worked are normally distributed about the regression line, which is necessary for ordinary least squares to provide an optimal regression procedure. Consider equation (1) from Ehnes and Simpson (1983, p.18).

$$H = a_0 + a_1.WM + a_2.WF + a_3.YN + a_4.A + a_5.SCHOOL + a_6.DEP + a_7.EDUC + a_8.RACE + e \quad \ldots (1)$$

where H is annual hours worked;
WM is the imputed male wage rate;
WF is the imputed female wage rate;
YN is unearned income;
A is age;
SCHOOL indicates student status, and
DEP represents the number of dependents under 16 years of age.

The problem arises because hours worked, H, and hence the error term, e, is truncated ($H \geq 0$). Ordinary least squares regression, with or without the zero observations (H=0 for those who do not work), will be biased or inconsistent.

A standard solution to the problem is Tobit regression, which assumes that there is an underlying linear model which forms the basis for observed hours worked (zero or

TABLE 1

Decomposition of the Relevant Labour Supply Estimates From Tobit Regression for Adult Males in MINCOME

Independent Variable	Coefficient	Tobit Regression Coefficient	Tobit Slope Coefficient[1]	Due to Change in Hours Worked[2]	Due to Change in Participation[3]
WM	a_1	111.8	107.75	91.0	16.75
WF	a_2	-23.5	-22.67	-19.14	-3.53
YN	a_3	- 0.18	- 0.171	- 0.144	-0.02

[1] The expected change in hours worked from a one unit change in the independent variable, evaluated at the mean expected annual hours (1570.197) and the mean of the independent variable ($3.98 for WM, $0.92 for WF, and $1,327.50 for YN).

[2] The expected change in hours worked, attributable only to those already working positive hours, from a one unit change in the independent variable, evaluated as in footnote 1.

[3] The expected change in hours worked, attributable only to those previously not working any hours, from a one unit change in the independent variable, evaluated as in footnote 1.

positive). We can think of this underlying model as an index related to preferred hours of work. Until the index reaches some threshold level, individuals do not work (H=0) [2]. Beyond the threshold level, the index and hours worked coincide. The important point is that the index may be assumed to be normally distributed about its regression line such that consistent regression techniques may be developed. For further details on the Tobit maximum likelihood procedure, interested readers should consult Tobin (1958), Amemiya (1973), or Maddala (1977).

Because the Tobit regression model is non-linear, its interpretation is more difficult than the standard linear ordinary least squares model. In the standard (least squares) model, the coefficient estimates (a1, a2, etc., in equation (1)) represent the "slope" or expected change in hours worked resulting from a one unit increase in the corresponding independent variable. This slope is constant for all values of the independent variable. In the Tobit model, however, the size of the expected change in hours worked from a unit increase in the independent variable depends on the value of the independent variable at which the change occurs. Hence the Tobit regression coefficient represents the slope at some particular value of

TABLE 2

Decomposition of the Labour Supply Elasticity Estimates From Tobit Regression for Adult Males in MINCOME.

	Total	Due to Changes in Hours Worked	Due to Changes in Participation
Income Elasticity	- 0.680	- 0.574	- 0.106
Substitution Elasticity	0.945	0.798	0.147
Gross Wage Elasticity	0.265	0.224	0.041

Note: The elasticity estimates are calculated as

$N_y = WM \cdot a_3$ (income elasticity)

$N_s = (a_1 - HM \cdot a_3) \cdot WM/HM$ (substitution elasticity)

and $N = WM \cdot a_1/HM$ (gross wage elasticity)

where $N = N_y + N_s$ and all elasticities are evaluated at the mean values for WM ($3.98) and HM (1615.1 hours) in the sample. The coefficient estimates a_1, a_2,, a_3 are obtained in Table 1.

the independent variable.

A reasonable convention is to evaluate the slope at the mean value of the corresponding independent variable. These Tobit slope coefficients are compared to the Tobit regression coefficients from Ehnes and Simpson (1983, p.20) in Table 1. All results are derived from the original Tobit estimates in that study, but only the relevant coefficients a1, a2, and a3 are shown. Thus the estimate of a1, for example, indicates that a $1.00 increase in the wage rate for males would increase annual hours worked for males by 107.75 hours, only slightly different from the Tobit regression estimate of 111.8 hours.

A useful decomposition of the Tobit results is possible. The slope, or expected change in hours worked from a one unit increase in the independent variable, consists of the expected change in hours worked arising from those already working (H>0 before) plus the expected change in hours worked arising from those who begin working (H=0 before) [3]. McDonald and Moffitt (1980) provide a method to calculate these distinct effects, and hence decompose the Tobit estimates into what are referred to as "changes in hours worked" and "changes in participation" in the final two columns of Table 1. Thus the expected increase of 107.75 hours, referred to in the previous paragraph, would consist of an increase of 91.0 hours from those already working and an increase of 16.75 hours attributable

to those entering the work force.

The estimates in the last three columns of Table 1 are converted into elasticities in Table 2. The income elasticity estimates indicate that a ten percent increase in income (e.g., welfare assistance) will reduce annual hours worked by 6.8 percent. This will consist of a 5.7 percent reduction in annual hours worked for those already working and a 1.1 percent reduction in annual hours due to work force withdrawal. The gross wage elasticity estimates indicate that a ten percent increase in wages (e.g., a tax reduction or wage subsidy) will increase hours worked by 2.65 percent, consisting of 2.24 percent due to those already working and 0.41 percent due to work force entry.

8.2 AN APPLICATION AND A WARNING

In this Review, Simpson and Hum (1984) simulate the work incentive effects of possible variations to the Manitoba Work Incentive Plan for adult females. They use estimates of labour supply elasticities from the United States, which are not decomposed in the manner above[4]. Hence independent estimates of the effects of the Plan variations on employment and caseload must be made. The method above, however, would provide useful information on changes in hours due to changes in employment status (work force withdrawal or entry). Of course, the results above apply to adult males and are only illustrative pending results for adult females from MINCOME. They do suggest, however, that about 85 percent of the changes in hours worked arise from those already working. Changes in employment status, which introduce further program cost calculations due to changes in the size of the program, are relatively insignificant and may be safely ignored. Whether results are similar for adult females remains to be seen.

Tobit regression analysis provides a useful means of estimating regressions with truncated dependent variables and decomposing the estimates into effects on those above and at the truncation point, respectively. The reader is warned, however, that the validity of this decomposition rests upon the validity of the Tobit assumptions - specifically, the validity of the underlying linear index model and its stipulated relationship to the observed truncated variable (hours worked in our example). While these assumptions seem reasonable for many situations, there may be cases in which they are misleading. If one believes, for example, that some independent variables in the model do not have the same proportional effect on those already working as they do on those not yet working (or those who might stop working), then the Tobit decomposition will be inaccurate. In such cases, the researcher must rely upon longitudinal data (rather than cross-sectional baseline data) to assess changes in work status and hours worked independently. Fortunately, MINCOME will provide precisely this type of data for future investigation of this and other questions.

NOTES

[1] Note that this problem would not arise using aggregate data where average hours worked in a population would never be zero.

[2] This corresponds to the usual concept of a corner solution where preferred or equilibrium hours worked are actually negative and the individual is out of equilibrium because hours worked cannot be negative.

[3] Or stop working in the case of a negative coefficient.

[4] In fact many of the estimates are derived from inappropriate least squares procedures.

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A Look at Poverty Lines: Measuring Income Adequacy*

Social Planning Council of Metropolitan Toronto.

9.1 INTRODUCTION

The existence of various income support programs in itself suggests a socially-accepted concern with the inadequacy of incomes and with the need to provide a basic income floor to all persons and families in our society. Though there is still wide disagreement as to what an appropriate minimum income would be for a given family or individual depending on particular circumstances, poverty line measures are an attempt to develop an acceptable yardstick against which to assess the adequacy of such income support.

9.2 DEFINING POVERTY

In advanced industrial countries such as Canada, poverty can only be understood in terms of relative deprivation - that is, in terms of insufficient access to certain goods and services which are available to most other people and which have come to be accepted as basic to a decent standard of living. Thus, the level of income adequacy varies over time, relative to the norm accepted by the community generally.

In this sense, families and individuals are considered to be living in poverty when the resources available to them are inadequate to obtain the diet, living conditions and amenities customary in the society to which they belong. There appear to be two common threads running through much of the discussion about poverty in Canada, each reflecting a different emphasis:

1. the notion of an income sufficient to provide for the basic necessities of life and to enable effective family functioning and full and equal participation in community life (income adequacy);

2. concern about the need to reduce disparities in opportunities, including a reduction in the degree of income inequality in society generally (income equality).

The choice of focus on issues relating to income "inadequacy" and income "inequality" gives rise to two broad approaches in defining poverty. Measures which focus on inequality look at poverty in relation to average income or average living standards. Measures which emphasize income inadequacy look at poverty in terms of securing an

9.3 STATISTICS CANADA'S REVISED LOW-INCOME CUT-OFFS

The most widely used poverty lines in Canada are the "Low-Income Cut-Offs," revised annually by Statistics Canada. Though Statistics Canada stresses that its low-income cut-offs are not intended to serve as official poverty lines, they are widely regarded as such by welfare advocacy groups, pension reform groups and civil servants.

The low-income cut-offs are derived from consumer expenditure data on the basic necessities of food, shelter and clothing. Statistics Canada begins by identifying the proportion of gross income that the average Canadian household spends on these basic necessities. The low income cut-off is set at the income level where households on average are spending an additional 20 percent of their income on these items. Any family or individual with an income at or below this level is considered to be living in poverty.

The low-income cut-offs were first established in 1961. At that time, the average proportion of expenditures spent on food, clothing and shelter was 50 percent. Thus, households which on average spent 70 percent or more of their income on these basic necessities were judged by Statistics Canada to be experiencing financial hardship.

The low-income cut-offs are adjusted annually using the consumer price index, and have been revised in order to reflect changes in average consumer expenditure data twice, in 1969 and again in 1978. At the time of the last revision, the average Canadian household spent 38.5 percent of their income on food, shelter and clothing. Therefore, the low-income cut-offs were set at levels where households on average spent 58.5 percent of their incomes on these basic necessities. Current proposals call for future revisions to occur at regular four year intervals.

One of the most frequent criticisms levelled at the low-income cut-offs concerns the arbitrary nature of selecting a 20 percent differential to indicate a poverty level income. Clearly, low-income households do spend a demonstrably larger proportion of their disposable incomes on the basic necessities. But there is no real explanation as to why this 20 percent gap was eventually selected, and it appears that any other number might have been chosen just as easily.

Further, the 20 percent differential was initially developed in relation to average family expenditures on basic necessities of 50 percent. That is, as the difference between an expenditure of 70 percent and 50 percent, thus resulting in a ratio of 1.4:1. Had this ratio been maintained for subsequent revisions to the low-income cut-offs, poverty level incomes would be derived on the basis of households spending more than 53.9 percent of their incomes on food, shelter and clothing rather than the current 58.5 percent.

Statistics Canada varies the amount of the cut-offs depending on household size and the population of the place of residence. This results in a set of 35 poverty lines. The 1984 figures have been estimated by the National Council of Welfare assuming an inflation rate for calendar year 1984 of 5.0 percent and are shown in Table 1.

TABLE 1

National Council of Welfare Estimates of Low-Income Lines for 1984.

	Population of Area of Residence				
No. in Family	500,000 and over	100,000 - 499,999	30,000 - 99,999	Less than 30,000	Rural
1	$ 9,900	$ 9,403	$ 8,820	$ 8,154	$ 7,322
2	13,063	12,397	11,567	10,733	9,569
3	17,473	16,560	15,476	14,396	12,814
4	20,136	19,136	17,890	16,640	14,812
5	23,464	22,216	20,719	19,303	17,223
6	25,627	24,213	22,633	21,050	18,804
7 or more	28,207	26,709	24,963	23,214	20,719

Source: 1984 Poverty Lines: National Council on Welfare, Health & Welfare Canada, March, 1984.

9.3.1 C.C.S.D. Poverty Lines

The Canadian Council on Social Development poverty lines are based on a measure of income inequality, with families and individuals living on incomes less than half of the average family income deemed to be living in poverty. Initially adapted from the staff minority report of the Special Senate Committee on Poverty, published as "The Real Poverty Report,"[1] the C.C.S.D. approach begins by establishing 50 percent of average family income as the poverty line for the average household.

It then applies a weighting system of family size income units to adjust the poverty line for households of different sizes. A family of one person gets three income units; a family of two receives five units; a family of three, six units; and each larger size family one additional income unit. The C.C.S.D. method involves "centering" their poverty line by applying the average family income for Canada to a particular household unit size, and then adjusting for different sized units using the weighting system outlined above. Prior to 1982, the C.C.S.D. had used a four-person family to centre their poverty line.

However, in 1982 a re-evaluation took place. It was noted that between 1971 and 1981, the size of the average Canadian family had dropped from about 3.8 persons to 3.3 persons. Therefore, the C.C.S.D. decided to restructure their approach by using the three-person unit to centre their poverty line. Thus, they set the poverty line for a three-person household at 50 percent of average family income, with adjustments for households of different sizes made on the basis of the weighting system noted previously.

The use of a "centering" technique relating to a particular household size produces a less precise,

more approximate measure than would result from incorporating annual changes in the size of the average family directly. Unlike the Statistics Canada low-income cut-offs, the C.C.S.D. poverty lines are not adjusted according to the size of place of residence. Table 2 attempts to estimate the C.C.S.D. poverty lines for 1983 using a projected average family income for Canada of $34,250.

9.3.2 Senate Committee Poverty Lines

A third set of poverty line measures can be derived from a somewhat more complicated method put forward by the Special Senate Committee on Poverty in 1971. Like the low-income cut-offs, the Senate Committee poverty lines are based on a measure of expenditure rather than simply income. In developing their approach, the Committee wanted a measure that would be sensitive to changes in both national average incomes and family size.

At the time, the Senate Committee was primarily concerned with establishing goals for a guaranteed income. Using budgetary standards developed by Health and Welfare Canada, and assessing this against average consumer expenditure data, the Committee devised what it considered an acceptable income floor for basic necessities.

TABLE 2

Canadian Council on Social Development Estimated Poverty Lines For 1983

Family Size	Amount ($)
1	8,562
2	14,271
3	17,125
4	19,979
5	22,833

Source: Statistics Canada, Income Distribution by Size in Canada, 1980 and 1981 (preliminary).

This "initial" level of adequacy for a family of four for the year 1969 was established at $3,500 or about 12 to 14 percent above the comparable amount using the low-income cut-offs for that year. In 1969, the low-income cut-offs assumed that, on average, families living below the poverty line were spending 70 percent of their incomes on basic necessities. The Senate poverty lines were calculated on the basis that the income guarantee levels represented 70 percent of their respective poverty lines.

The Senate Committee poverty lines are adjusted for family size according to the same formula as the C.C.S.D. poverty lines using "family size equalizer points." Again, a

family of one receives three points, a family of two receives five points, a family of three gets six points, and so on.

In order to update the poverty line annually, the Committee developed an escalator mechanism which incorporates both changes in average disposable incomes (after taxes) and changes in average family size. The Senate poverty line incorporates elements of both the income inequality and income inadequacy approach. Estimates of the Senate Committee poverty lines for 1983 are shown in Table 3. It should be noted that the more complicated formula makes precise estimates difficult for the current year.

TABLE 3

Senate Committee Poverty Lines Estimated for 1983

Family Size	Amount ($)
1	8,734
2	14,557
3	17,469
4	20,380
5	23,292

Sources: Statistics Canada, Income Distribution by Size in Canada, 1980 and 1981 preliminary; Revenue Canada, Canadian Taxation Statistics (various years); Canadian Statistical Review, Section 3 (Tables on Disposable Income) (various years); 1981 Census.

Like the C.C.S.D. lines, it makes no adjustment for size of place of residence. Unlike the C.C.S.D. poverty measure, it can be adjusted annually to reflect changes in the size of the average family. The C.C.S.D. method simply locks in on a three or four-person family and adjusts all other family size units in relation to that.

9.3.3 Toronto Budget Guidelines

A fourth poverty measure is the income adequacy standards developed by the Social Planning Council of Metropolitan Toronto in their Guides For Family Budgeting. The adequate budget approach used in the Guides is based on establishing standards for a minimum basket of goods and services deemed necessary for the proper social and physical development of persons and families in Metropolitan Toronto.

The standards define basic needs by expenditure categories including food, shelter, clothing, health care, personal care, transportation,

recreation and household items. The standards are differentiated according to family size, the age and sex of family members, and activity level and employment status of adults. The Guides result in income adequacy levels sufficiently above subsistence to ensure good health and self-respect, but still substantially below average community living standards.

The net budgetary requirements of different household sizes for 1983 have been estimated in Table 4. Net budgetary requirements include income needed to purchase the minimum basket of goods and services, but excludes income taxes and other transfers. The household incomes resulting from the budget guide standards tend to represent 50 to 55 percent of median Ontario incomes for households of that size.

TABLE 4

Social Planning Council Budget Guides Estimated Income Requirements for 1983

Family Size	Amount ($)
1	11,530
2	15,390
3	19,710
4	23,570
5	27,360

Note: The amounts shown represent averages of the different family compositions which might occur for each family size.

The budget guideline approach has the advantage of associating income levels to the costs of purchasing a particular basket of needed goods and services in the marketplace. As such it represents the most readily understood approach, and can relate household income to a given level of living or lifestyle.

Its difficulties relate to the need to make adjustments for other jurisdictions across the country, as the budgeted amounts have been specifically developed on the basis of Toronto needs and prices. However, the basic quantity standards should not be that difficult to replicate and adjust to suit the differing needs and situations of other regions and centres across Canada.

9.3.4 Montreal Diet Dispensary Budget

A final poverty line measure also based on a budget adequacy approach is that of the Montreal Diet Dispensary as contained in their Budgeting For Basic Needs. The Diet Dispensary approach differs from the Social Planning Council budgets in that it is oriented toward a subsistence living standard for families in need. The basic needs budget is a "bare-bones" approach designed to

support and maintain family functioning during the short-term while in receipt of social assistance. These standards were established in the late 1950s and have not been appreciably revised since, except for repricing.

The basket of goods and services in the Montreal Diet Dispensary's budget costs are on the whole about 35 to 50 percent less than the basket contained in the Guides For Family Budgeting. Much of this difference can be explained on the basis of specific considerations such as much higher rental rates in the Toronto area, a higher proportion of meat and fish in the dietary standards used for Toronto, and the need to include O.H.I.P. premiums in the Toronto budget.

The Montreal budget contains extremely limited amounts for several items, notably recreation, gifts, communications, alcohol and tobacco consumption. On balance, the lower quantity and price standards contained in the Montreal budget reflect its acceptance of the aims and objectives of government social assistance programs as a basis for arriving at income adequacy standards. The 1983 costs for the items contained in the Diet Dispensary budget are shown in Table 5.

TABLE 5

Montreal Diet Dispensary Basic Needs Budget Estimated Income Requirements for 1983

Family Size	Amount ($)
1	5,340
2	7,644
3	9,792
4	11,556
5	13,212

Note: Budgeted amounts are those from the most recent repricing in June, 1983

9.4 POVERTY MEASURES - STRENGTHS AND WEAKNESSES

As a means of assessing the adequacy of household incomes and a variety of income security programs, each poverty measure carries with it some strengths and limitations. This section will highlight briefly the merits and problems associated with three of the poverty lines under discussion - the low-income cut-offs, the C.C.S.D. poverty line, and the Toronto budget guide standards.

The two other measures have been excluded from further discussion. The Senate Committee line has been dropped due to its complexity, difficulty in updating, and the fact that it has fallen into disuse in recent years. The Montreal Diet Dispensary's basic needs budget has been omitted because it has not been

revised conceptually since the late 1950s, and conforms to a subsistence rather than a relative deprivation approach to assessing income adequacy.

9.4.1 The Low-Income Cut-Offs

On the positive side, the low-income cut-offs differentiate income requirements on the basis of family size and the size of urban area in which the household lives. Its lines are derived from national data and are therefore appropriate as a basis for assessing the adequacy of federal income security programs. Finally, the cut-offs are easily maintained and published and updated annually.

On the negative side, the consumer expenditure patterns which establish the community norms for spending on the basic necessities of food, clothing and shelter are typically four to seven years out of date. Concerns have been expressed that the substantial differences between the poverty level in the smallest and largest communities, a disparity of up to 36 percent, may not accurately reflect the costs of living faced by these families but rather the higher incidence of poverty in rural communities. The arbitrary nature of the 20 percent expenditure differential has already been discussed.

In addition, the low-income cut-offs make no adjustment for family composition (number of adults, children); nor do they make allowances for variations in local market conditions as they relate to expenditures on food, shelter or other major items. This limits their usefulness in assessing provincial and local income support programs.

9.4.2 The C.C.S.D. Poverty Line

On the positive side, the C.C.S.D. line is readily updated and revised and is widely disseminated to voluntary agencies and welfare advocacy groups. It also distinguishes income requirements on the basis of family size and is derived from national data.

Its disadvantages relate to the arbitrary nature of selecting a benchmark of 40, 50 or even 60 percent of average family income as the poverty line, as well as its failure to adapt for changes in family composition and local conditions. The problems created by the "centering" method in terms of precision and accuracy have already been noted.

9.4.3 The Social Planning Council Budget Guide Standards

The budget guidelines published by the Social Planning Council have the distinct advantage of being readily understood in that they are based on an identifiable basket of goods and services and their associated costs. This budget adequacy approach allows for a clear and precise relationship to be drawn between income deficiency and having to do without certain needed goods and services. In addition, the budget guides can be adapted for changes in family composition and life style, including the age and sex of adults and children.

The disadvantages include the great amount of detailed pricing and expenditure data required to regularly update the Budget Guides, and the difficulty in using costs based on Metropolitan Toronto to make inferences about costs in other areas across Canada.

The Budget Guides should prove useful in examining the adequacy of provincial and local income support

programs in that the methodology can be adapted to suit local conditions. However, by their nature, they would appear difficult to use in assessing income adequacy more generally on a national basis.

9.5 THE ADEQUACY OF INCOME SUPPORT PROGRAMS

These various approaches to measuring income adequacy provide useful yardsticks by which to gauge the adequacy of government income support programs. The following analysis reviews current pension rates and social assistance benefits in Ontario, as well as minimum wage incomes in relation to the poverty indicators previously discussed.

Though there is a moderate amount of variation among the three adequacy measures cited, the general pattern is remarkably consistent (see Table 6). All three approaches indicate that a couple living on a combined pension are living at or close to full income adequacy. Pensioners living alone however, are as much as 32 percent below adequacy depending on the measure employed.

TABLE 6

Adequacy of Income Support Programs in Ontario, 1983

	As a Percent of:		
	Low-Income Cut-Offs (Large Urban)	C. C. S. D. Poverty Lines	Budget Guides[1]
Pension Income			
Single Person	70.9	78.9	67.6
Couple	102.2	90.1	92.3
General Welfare			
Mother, 1 Child	46.6	41.1	44.1
2 Parents, 2 Children	41.3	40.1	39.2
Minimum Wage Income			
Household Size / Employed Adults			
2 / 1	57.9	51.0	47.3
3 / 1	43.3	42.5	36.9
4 / 2	75.1	72.9	61.8
5 / 2	64.4	63.8	53.2

[1] Adjusted for family composition

The monthly benefits payable under General Welfare Assistance in Ontario result in incomes equal to less than half of adequacy. The

level of adequacy which results from working for the minimum wage is greatly influenced by both the number of persons in the household and the number of earners. Thus, while a three-person household with only one income earner results in adequacy levels of between 37 and 43 percent, comparable to welfare, a four-person household with two earners show adequacy levels of 62 to 75 percent.

A Gallup Poll conducted in March, 1983 which asked Canadians to identify the least amount of money needed by a family of four in order to make ends meet, produced income requirements similar to some poverty measures. Nearly 70 percent identified incomes of $300/week or more, and nearly 40 percent considered $400/week or more as the basic amount. A weekly income of $350 to $400 results in an annual amount of between $18,000 and $21,000.

Thus, a substantial discrepancy exists between both public perceptions of the minimum income requirements of families and various income adequacy measures on the one hand, and the actual level of income support provided by various public programs on the other. This would seem to reflect societal attitudes towards the disadvantaged, in particular the view that the poor are largely responsible for their own circumstances and as such are not deserving of more generous public programs.

Concern has been expressed that many Canadians remain unconvinced that the adequacy levels represented by the low-income cut-offs, C.C.S.D. poverty line, and the Toronto budget guides constitute poverty level incomes. This has led to a re-thinking of poverty measures, and to the desire to formulate an approach which is credible with both policy-makers and the public generally.

There is clearly a need to be able to present poverty measures in a way that conveys the lifestyle and expenditure choices facing such households. In this respect, the budget needs approach of the Toronto Social Planning Council has a distinct advantage over either the low-income cut-offs or the C.C.S.D. poverty line.

It has been suggested that a two-tier approach to defining income adequacy may also be desirable. Under this approach, two levels of well-being would have to be identified - a minimum adequate, but "scraping by" level and a bare-bones "poverty" level - each with its own expenditure package. The first measure would serve as the long-term target against which to assess the adequacy of public income support programs. The second, more limited poverty measure would be used to gauge whether current income support levels meet even the most basic standards of income sufficiency.

Both levels of living would be based on judgements relating to lifestyles and the expenditure package needed to support them. While the "scraping by" expenditure package would likely result in income requirements similar to current adequacy measures, the new, more limited, "poverty" level would have a largely subsistence expenditure package connected with it.

The new "poverty" measure might more closely resemble the basic needs basket of goods and services in the budget of the Montreal Diet Dispensary, a measure which accepts government income maintenance payments as given.

The arguments in favour of establishing a subsistence concept of poverty hinges primarily on its political saleability. It can be readily demonstrated to the public that households living below even this minimum level of income are living in poverty. As such, the

argument continues, it will be much easier to mobilize public opinion in favour of ensuring that all income support programs at least provide this minimum amount.

The arguments against such an approach are also compelling. By accepting the notion that mere subsistence is a valid basis upon which to establish levels of income support, welfare advocates might find themselves legitimizing inadequate income security programs and would seriously undermine arguments based on concepts of relative deprivation and income inequality. Such concepts have formed the foundation of poverty measurement and informed public debate about the adequacy of income security programs for nearly 20 years.

A systematic review of national family budget standards in the U.S., conducted in 1980, clearly points in a different direction. The study argued for the abandonment of a "basket of goods" approach relying on detailed quantity standards, and instead favoured the adoption of a four-tier measurement system based on relative deprivation and income inequality.

The review began by identifying the median expenditure level for a two-parent, two-child reference family as a normative standard. It then established three other living levels - the social minimum, the lower living and the social abundance standards - in relation to the norm. These three living levels range from 50 percent of the median expenditure level to 1.5 times that level.

The U.S. study asserts that at incomes below 50 percent of those experienced by the median family, data clearly demonstrate that widening material inadequacies increasingly threaten the ability to participate in the social mainstream. They therefore rejected any concept of poverty below this level as seriously limiting the opportunities available to the poor to make choices about their own lives and those of their children with dignity.

9.6 CONCLUSIONS

This article has examined a number of yardsticks by which researchers and policymakers measure the adequacy of government income support programs and incomes generally. The major findings can be summarized as follows:

1. In Canada, most measures of poverty are based on the notion of relative deprivation - the lack of sufficient resources to acquire certain goods and services which are available to most other people and have come to be accepted as basic to a decent standard of living.

2. Poverty measures tend to focus on questions of income inadequacy (budget needs approach) or income inequality (disparity between poverty level and average living standard).

3. All poverty measures provide adjustments for family size, while some include further adjustments based on regional or local conditions or family and household composition.

4. Most poverty measures have some conceptual difficulties associated with them, whether these relate to complexity, arbitrariness, a lack of adaptability, or difficulty in translating resulting incomes into lifestyle characteristics that the public can understand.

NOTES

* This is a revised version of an article published in Social Infopac (Social Planning Council of Metropolitan Toronto). The original excerpt was prepared by David Thornley with Jeffrey Patterson.

[1] I. Adams, W. Cameron, B. Hill and P. Penz, The Real Poverty Report (Hurtig, Edmonton: 1971).

Social Infopacs are available on a subscription basis ($10.00 per year) from:

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Book Review

Review for 65 and Older: A Report by the National Council of Welfare on the Incomes of the Aged, Government of Canada, February, 1984, (76 pp.)

This is a government report which provides various income figures for the elderly in Canada. It is a good government report in terms of providing easy to read and easy to understand national statistical data. The figures are taken from censuses and from the Statistics Canada survey of consumer finances. It provides a statistical profile of aging in Canada in terms of numbers and percents of individuals by age and over time. It then provides numerous details on various aspects of dollar income and discusses non-dollar subsidies.

One of the things that I like most about this report is that it presents details for both men and women, and in doing so illustrates very dramatically the distinctive situation of elderly women. It also analyzes different age groups among the elderly themselves, distinguishes between those living in families versus those who are unattached, and provides some data by provinces.

On the whole it is clearly written although there are a few places where the language becomes a bit aggravating. For example, on page 11 they talk about increased life expectancy and about average lifespans, an uncommon usage of the word lifespan. On page 60, they state homes owned by the elderly tend to "fetch" a lower price on the housing market. On page 62 they talk about Canadians 65 and older benefiting from free or subsidized health care delivered in the home or the community. It would be more accurate to state that such health care is at no cost to the consumer or simply refer to it as subsidized. Free is inaccurate and misleading. Other than these few irritations, the report tends not to stray much from fact. Indeed, this is probably appropriate since the couple of forays into interpretation are sometimes treacherous. One example appears at the end on page 68 where it is noted by the year 2001, six in ten aged Canadians will be women, most of them living alone. This is true only if current living arrangements are projected to that time period. If in fact living arrangements change drastically, as suggested by some, we may see more elderly women living together. It is the assumption of continuity of the status quo which may not be correct.

On the whole, however, the information is clearly presented, and does what good government reports do: present data from national surveys in a clear manner. It is therefore a good resource for individuals studying incomes and/or aging and who are interested in utilizing some of these figures in their own work.

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Leading Indicators*

Figure 1

Canada-United States Composite
Leading Indicator

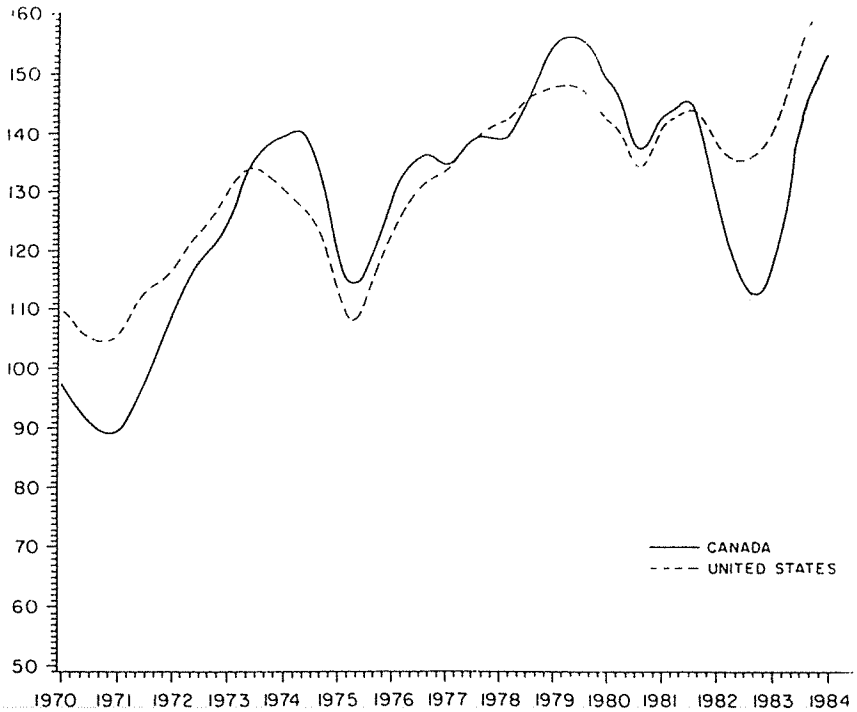


Table 1
Gross National Expenditure
% Change from same quarter last year

	1983 I	1983 II	1983 III	1983 IV	1984 I	1984 II	1984 III	1984 IV	1983	1984 *
Private Consumption	1.1	2.4	4.2	4.9	4.2	.	.	.	3.1	2.9
Public Consumption	0.1	-0.2	0.1	1.2	3.4	.	.	.	0.3	2.9
Investment	-9.9	-4.2	-0.7	-4.2	0.2	.	.	.	-4.9	1.6
-Public	2.2	0.7	2.1	1.1	2.9	.	.	.	1.5	2.4
-Residential	8.4	40.7	40.6	11.3	2.9	.	.	.	24.4	-4.8
-Non Residential	-18.3	-18.4	-13.4	-14.1	-6.4	.	.	.	-16.2	-0.7
-Mach.&Equipment	-13.6	-10.5	-6.6	-4.1	3.8	.	.	.	-8.8	7.1
Change in Stocks, %GNE	-1.5	-1.1	1.1	0.8	0.6	.	.	.	-0.2	0.6
Exports	0.5	2.2	2.1	21.6	25.1	.	.	.	6.4	32.5
Imports	-3.1	2.3	11.2	23.0	24.7	.	.	.	8.1	27.6
GNE	-0.8	2.2	4.8	7.1	5.9	.	.	.	3.3	4.4
**	8.0	7.6	7.8	5.1	3.3	.	.	.		

*: Average rate of growth based on the first available quarters, at annual rate.

**: % Change from previous quarter, at annual rate.

Figure 2
Unemployment Rate

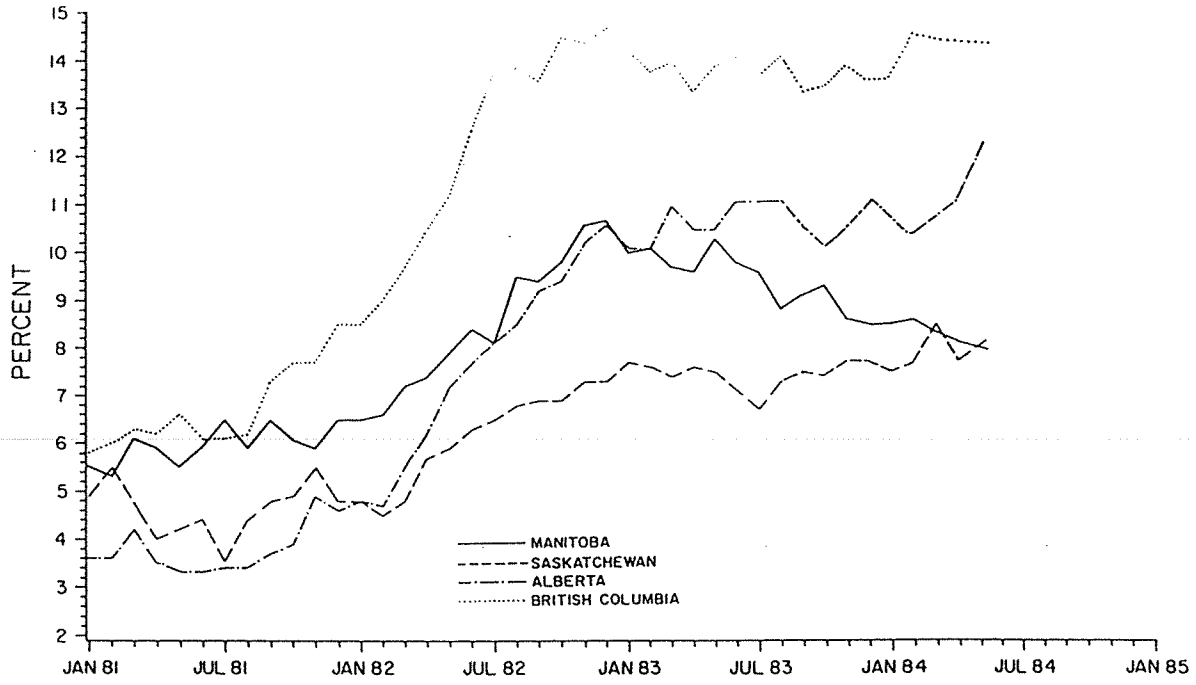


Figure 3

Employment
(Percent Change From Same Time Last Year)

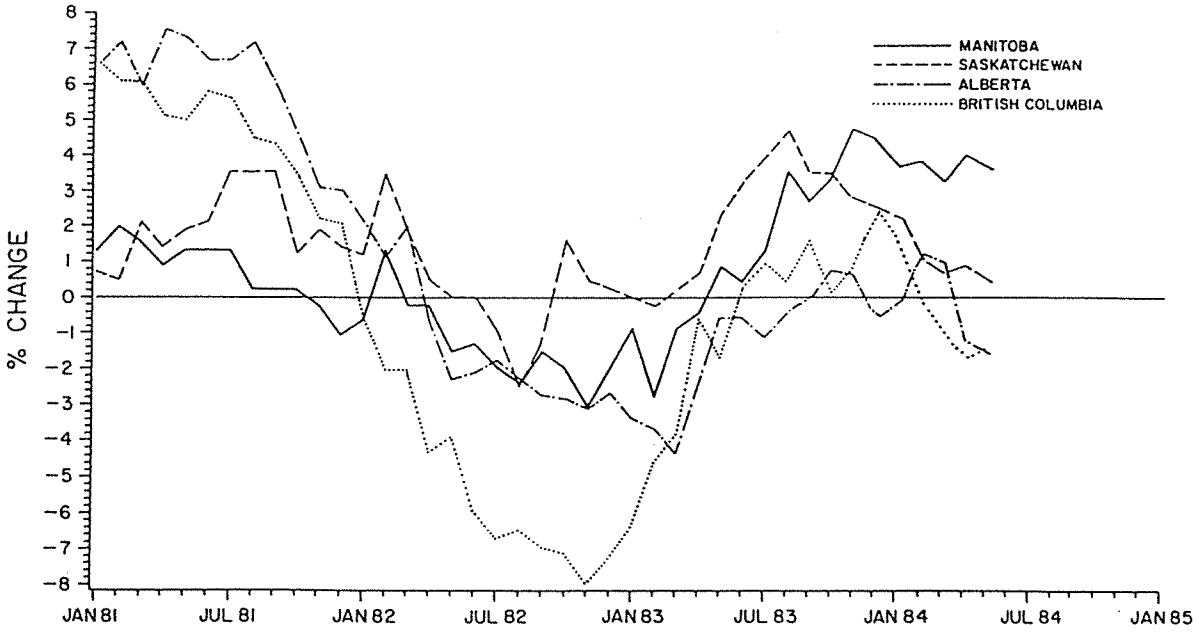


Figure 4

Help Wanted Index
(Quarterly)

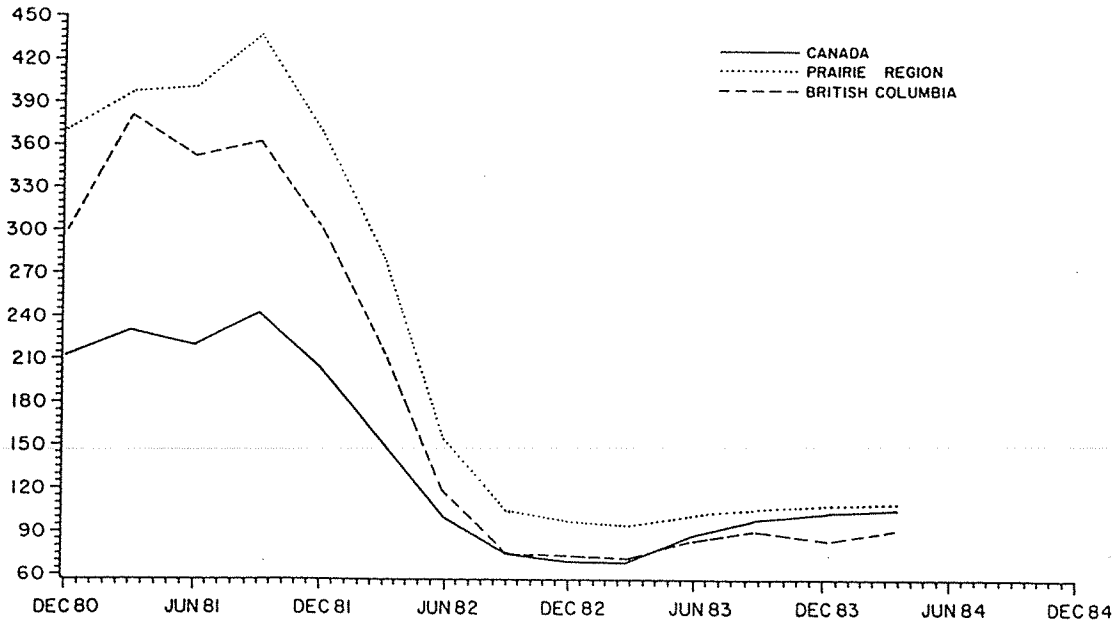


Table 2
Regional Employment and Unemployment
% Change from same quarter last year

	1983 I	1983 II	1983 III	1983 IV	1984 I	1984 II	1984 III	1984 IV	1983	1984 *
CANADA										
Labour Force	1.2	2.0	1.9	1.6	1.8	1.3p	.	.	1.7	1.6
Employment	-2.8	-0.0	2.6	3.5	3.2	2.1p	.	.	0.8	1.8
Unemployment Rate	12.5	12.3	11.6	11.1	11.3	11.6p	.	.	11.9	11.4
MANITOBA										
Labour Force	2.0	2.4	3.2	2.2	1.7	1.3p	.	.	2.5	1.3
Employment	-1.4	0.1	2.9	4.0	3.5	3.6p	.	.	1.4	3.3
Unemployment Rate	9.9	9.8	9.0	8.8	8.4	7.9p	.	.	9.4	8.1
SASKATCHEWAN										
Labour Force	3.2	3.7	4.3	2.9	1.6	0.9p	.	.	3.5	0.7
Employment	0.2	2.2	3.9	2.5	1.2	0.2p	.	.	2.2	-0.0
Unemployment Rate	7.5	7.3	7.1	7.5	7.8	7.9p	.	.	7.3	7.8
ALBERTA										
Labour Force	1.8	2.5	1.7	0.6	0.3	-0.7p	.	.	1.6	-0.7
Employment	-4.1	-1.3	-0.6	0.1	0.5	-1.7p	.	.	-1.5	-1.9
Unemployment Rate	10.7	10.8	10.9	10.7	10.5	11.7p	.	.	10.7	11.1
B. C.										
Labour Force	1.0	2.4	1.3	0.1	0.1	0.2p	.	.	1.2	0.9
Employment	-4.4	-0.1	1.3	1.0	-0.1	-1.8p	.	.	-0.6	-1.4
Unemployment Rate	14.0	13.7	13.7	13.7	14.2	15.4p	.	.	13.8	14.8

*: Average rate of growth based on the first available quarters, at annual rate.

p: Preliminary figure.

Table 2b
Regional Employment and Unemployment
% Change from previous quarter, at annual rate

	1983 I	1983 II	1983 III	1983 IV	1984 I	1984 II	1984 III	1984 IV	1983	1984 *
CANADA										
Labour Force	0.5	4.6	2.0	-0.6	1.4	2.5p	.	.	1.7	1.6
Employment	1.8	5.7	5.0	1.5	0.6	1.4p	.	.	0.8	1.8
Unemployment Rate	12.5	12.3	11.6	11.1	11.3	11.6p	.	.	11.9	11.4
MANITOBA										
Labour Force	2.7	2.9	1.3	1.8	0.8	1.3p	.	.	2.5	1.3
Employment	4.8	3.3	5.0	2.9	2.6	3.7p	.	.	1.4	3.3
Unemployment Rate	9.9	9.8	9.0	8.8	8.4	7.9p	.	.	9.4	8.1
SASKATCHEWAN										
Labour Force	5.0	3.5	2.6	0.6	-0.3	0.6p	.	.	3.5	0.7
Employment	3.5	4.1	3.4	-0.9	-1.8	0.3p	.	.	2.2	-0.0
Unemployment Rate	7.5	7.3	7.1	7.5	7.8	7.9p	.	.	7.3	7.8
ALBERTA										
Labour Force	-0.7	3.5	0.7	-1.0	-1.9	-0.7p	.	.	1.6	-0.7
Employment	-2.7	2.9	0.5	-0.2	-1.1	-6.0p	.	.	-1.5	-1.9
Unemployment Rate	10.7	10.8	10.9	10.7	10.5	11.7p	.	.	10.7	11.1
B. C.										
Labour Force	0.1	4.2	-0.3	-3.5	0.0	4.8p	.	.	1.2	0.9
Employment	2.4	5.5	-0.3	-3.5	-1.9	-1.5p	.	.	-0.6	-1.4
Unemployment Rate	14.0	13.7	13.7	13.7	14.2	15.4p	.	.	13.8	14.8

*: Average rate of growth based on the first available quarters, at annual rate.

p: Preliminary figure.

Table 3
Regional Prices and Wages
% Change from same quarter last year

	1983 I	1983 II	1983 III	1983 IV	1984 I	1984 II	1984 III	1984 IV	1983	1984 *
CANADA										
CPI, Total	7.6	5.9	5.3	4.6	5.2	4.5p	.	.	5.8	4.3
Average Weekly Earnings	6.9	7.6	7.9	7.0	5.7	.	.	.	7.3	1.7
MANITOBA										
CPI, Winnipeg	7.5	7.6	6.8	5.0	5.0	2.8p	.	.	6.7	3.0
Average Weekly Earnings	8.2	7.9	9.4	8.8	7.6	.	.	.	8.6	3.9
SASKATCHEWAN										
CPI, Regina	6.5	6.6	6.8	6.0	5.5	4.5p	.	.	6.4	3.9
CPI, Saskatoon	6.0	6.4	7.1	5.9	5.3	3.8p	.	.	6.3	3.6
Average Weekly Earnings	7.8	7.0	8.1	6.4	5.4	.	.	.	7.3	0.9
ALBERTA										
CPI, Edmonton	7.4	6.3	5.3	4.3	4.0	2.3p	.	.	5.8	2.5
CPI, Calgary	7.0	5.4	3.0	2.7	3.1	1.7p	.	.	4.5	2.3
Average Weekly Earnings	8.5	7.7	6.7	5.8	5.9	.	.	.	7.2	7.6
B. C.										
CPI, Vancouver	6.7	5.6	5.3	4.6	4.7	4.3p	.	.	5.5	4.1
Average Weekly Earnings	7.7	8.1	7.6	4.8	1.5	.	.	.	7.1	-1.5

*: Average rate of growth based on the first available quarters, at annual rate.

p: Preliminary figure.

Table 3b
Regional Prices and Wages
% Change from previous quarter, at annual rate.

	1983 I	1983 II	1983 III	1983 IV	1984 I	1984 II	1984 III	1984 IV	1983	1984 *
CANADA										
CPI, Total	2.5	5.7	6.6	3.5	4.9	2.9p	.	.	5.8	4.3
Average Weekly Earnings	3.1	10.5	8.1	6.4	-1.7	.	.	.	7.3	1.7
MANITOBA										
CPI, Winnipeg	1.9	11.2	4.8	2.4	2.0	2.0p	.	.	6.7	3.0
Average Weekly Earnings	6.2	10.5	18.1	1.0	1.6	.	.	.	8.6	3.9
SASKATCHEWAN										
CPI, Regina	4.1	7.1	8.0	4.6	2.5	2.8p	.	.	6.4	3.9
CPI, Saskatoon	5.1	8.8	7.7	2.2	2.6	3.0p	.	.	6.3	3.6
Average Weekly Earnings	1.9	10.2	16.2	-1.8	-2.0	.	.	.	7.3	0.9
ALBERTA										
CPI, Edmonton	3.9	8.4	3.5	1.6	2.7	1.3p	.	.	5.8	2.5
CPI, Calgary	1.2	7.2	-0.2	2.8	2.9	1.6p	.	.	4.5	2.3
Average Weekly Earnings	9.9	5.4	8.5	-0.1	10.0	.	.	.	7.2	7.6
B. C.										
CPI, Vancouver	3.7	5.6	7.2	1.8	4.1	4.0p	.	.	5.5	4.1
Average Weekly Earnings	11.0	11.4	3.6	-5.8	-2.4	.	.	.	7.1	-1.5

*: Average rate of growth based on the first available quarters, at annual rate.

p: Preliminary figure.

Figure 5

Consumer Price Index
(Percent Change From Same Month Last Year)

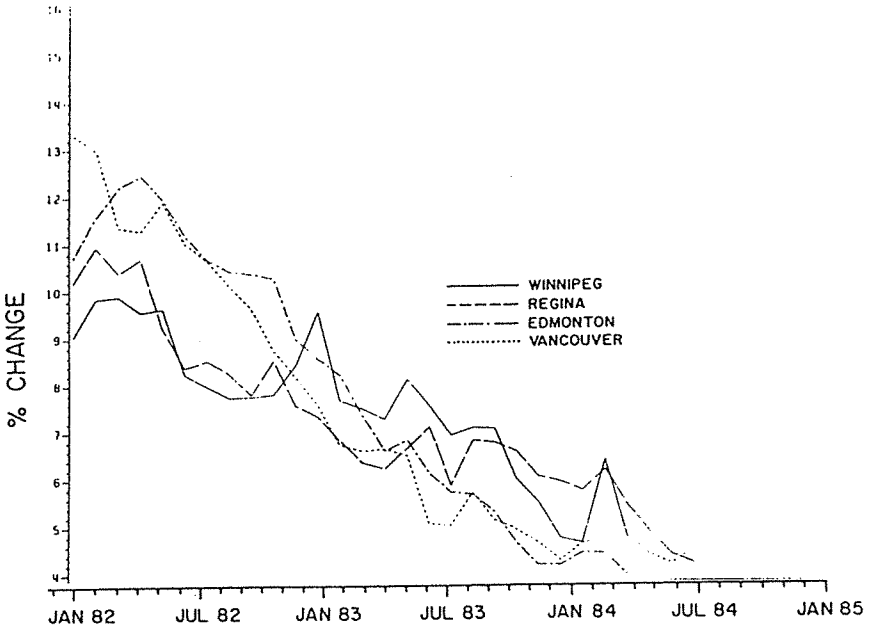


Figure 6

Average Weekly Salaries (Real)

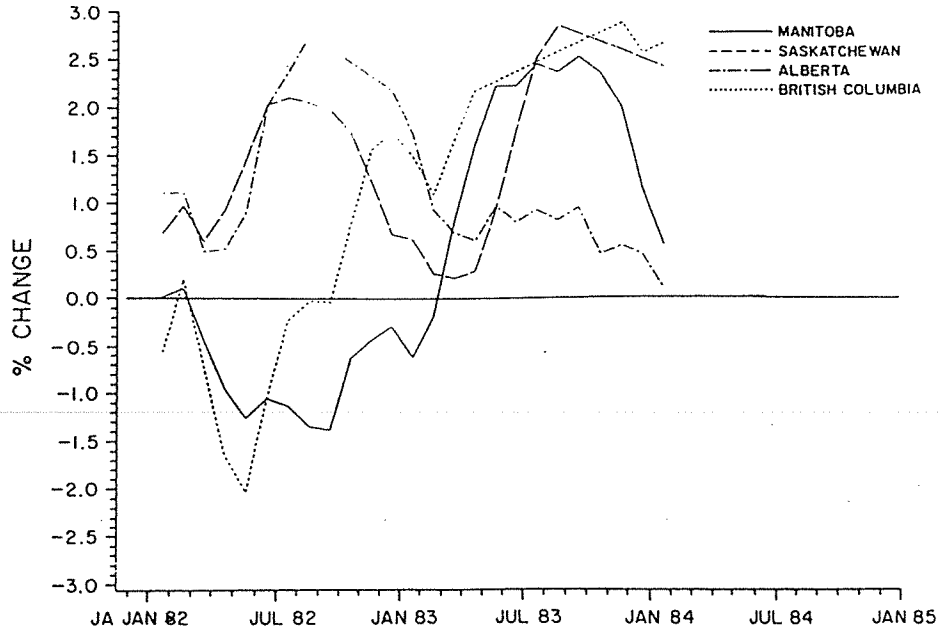


Table 4a
Regional Indicators of Economic Activity
% Change from same quarter last year

	1983 I	1983 II	1983 III	1983 IV	1984 I	1984 II	1984 III	1984 IV	1983	1984 *
CANADA										
Retail Trade	6.7	7.6	9.8	10.6	9.6p	.	.	.	8.7	8.4
Shipments	0.3	6.6	9.9	19.4	17.9	.	.	.	9.0	16.0
Housing Starts	0.0	83.3	37.9	-3.6	-9.9	.	.	.	25.0	4.3
MANITOBA										
Retail Trade	4.5	4.4	8.6	9.8	9.7	.	.	.	6.8	8.2
Shipments	-5.5	-1.1	-0.5	6.0	9.7	.	.	.	-0.3	-0.7
Housing Starts	400.0	166.7	600.0	33.3	0.0	.	.	.	200.0	20.1
SASKATCHEWAN										
Retail Trade	6.8	5.6	11.5	8.3	3.5	.	.	.	8.0	1.8
Shipments	-4.9	1.8	10.1	9.2	17.1	.	.	.	4.2	-0.1
Housing Starts	0.0	120.0	-28.6	-62.5	-22.2	.	.	.	-3.4	437.0
ALBERTA										
Retail Trade	1.8	1.6	5.3	4.1	2.1	.	.	.	3.2	1.7
Shipments	-7.7	1.1	4.3	8.4	11.1	.	.	.	1.5	-5.1
Housing Starts	-30.0	-34.3	-39.1	-40.0	-66.7	.	.	.	-35.2	-78.8
B. C.										
Retail Trade	-2.1	4.0	6.7	7.1	6.2	.	.	.	3.9	5.3
Shipments	-1.8	11.1	16.5	11.9	-1.0	.	.	.	9.3	-21.6
Housing Starts	-48.5	84.2	53.8	18.8	-11.8	.	.	.	12.3	-52.1

*: Average rate of growth based on the first available quarters, at annual rate.
p: Preliminary figure.
Note: Shipments are not seasonally adjusted.

Table 4b
Regional Indicators of Economic Activity
% Change from previous quarter, at annual rate.

	1983 I	1983 II	1983 III	1983 IV	1984 I	1984 II	1984 III	1984 IV	1983	1984 *
CANADA										
Retail Trade	11.6	10.8	11.7	8.3	7.6p	.	.	.	8.7	8.4
Shipments	20.5	22.0	17.9	17.3	14.7	.	.	.	9.0	16.0
Housing Starts	90.7	184.0	-78.7	-25.3	45.6	.	.	.	25.0	4.3
MANITOBA										
Retail Trade	7.0	8.6	13.7	9.8	6.6	.	.	.	6.8	8.2
Shipments	-16.6	60.0	-4.1	-1.4	-4.4	.	.	.	-0.3	-0.7
Housing Starts	671.6	555.4	-41.4	-89.3	144.1	.	.	.	200.0	20.1
SASKATCHEWAN										
Retail Trade	20.2	1.2	13.3	-0.3	0.4	.	.	.	8.0	1.8
Shipments	-23.1	140.5	21.1	-36.4	1.6	.	.	.	4.2	-0.1
Housing Starts	60.2	123.2	-95.7	-87.0	2864.2	.	.	.	-3.4	437.0
ALBERTA										
Retail Trade	9.4	-1.0	6.9	1.6	1.1	.	.	.	3.2	1.7
Shipments	-19.7	72.6	15.2	-13.4	-11.5	.	.	.	1.5	-5.1
Housing Starts	21.6	43.9	-86.3	-46.0	-88.4	.	.	.	-35.2	-78.8
B. C.										
Retail Trade	10.0	12.8	7.2	-1.0	6.2	.	.	.	3.9	5.3
Shipments	10.7	88.3	-13.1	-13.6	-32.1	.	.	.	9.3	-21.6
Housing Starts	27.4	1696.7	-89.3	-18.5	-61.2	.	.	.	12.3	-52.1

*: Average rate of growth based on the first available quarters, at annual rate.
p: Preliminary figure.
Note: Shipments are not seasonally adjusted.

Figure 7

Capacity Utilization in Manufacturing
(Percent)

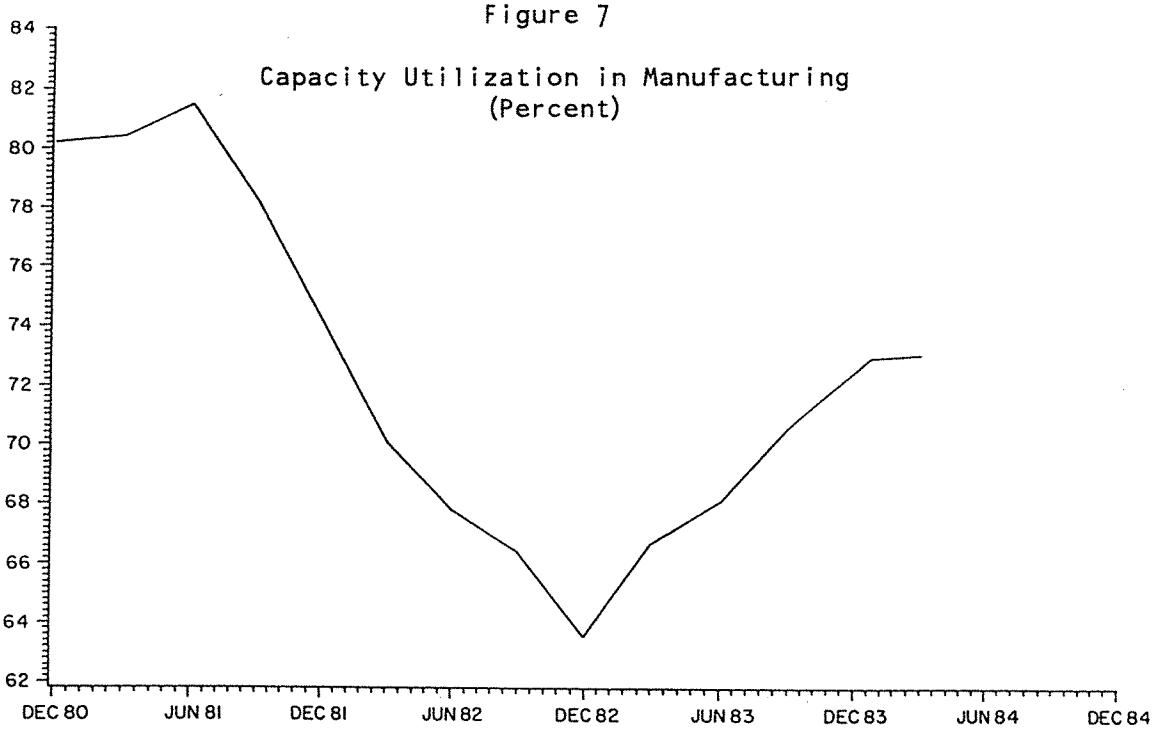
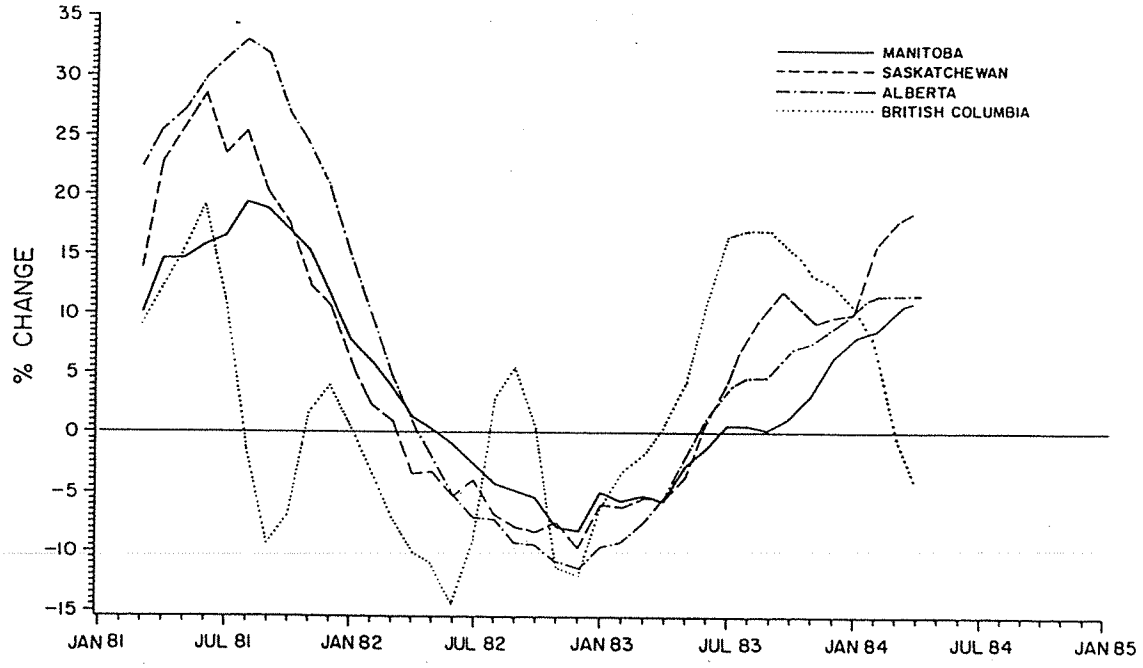


Figure 8

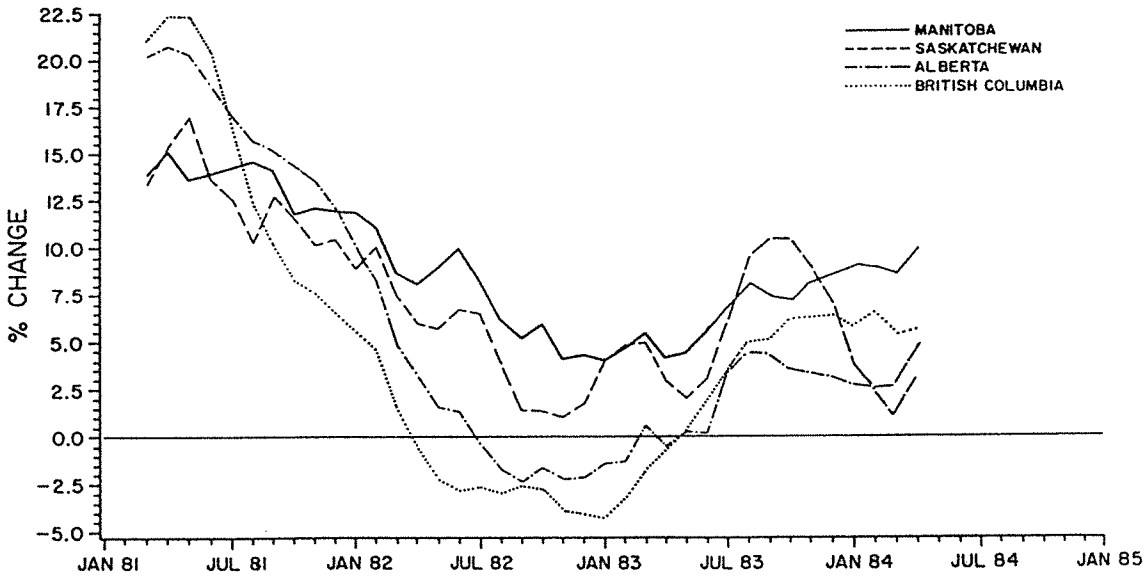
Shipments (Manufacturing)
(Percent Change Same Month Last Year)



Note: Three month moving average.

Figure 9

Retail Trade
(Percent Change Same Month Last Year)



Note: Three month moving average.

Figure 10

Wheat Board Price
(Cents/Bushel)

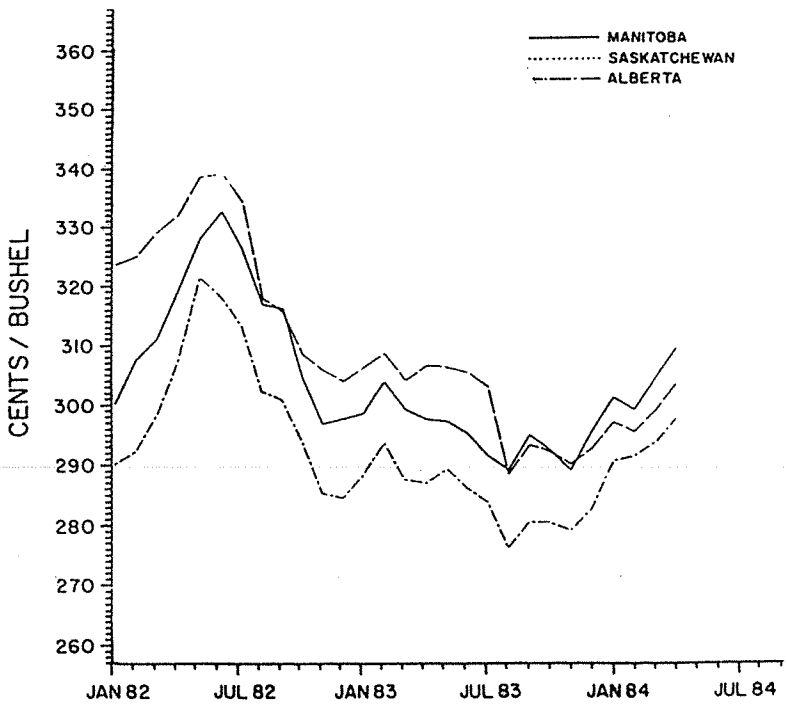


Figure 11

Money Supply

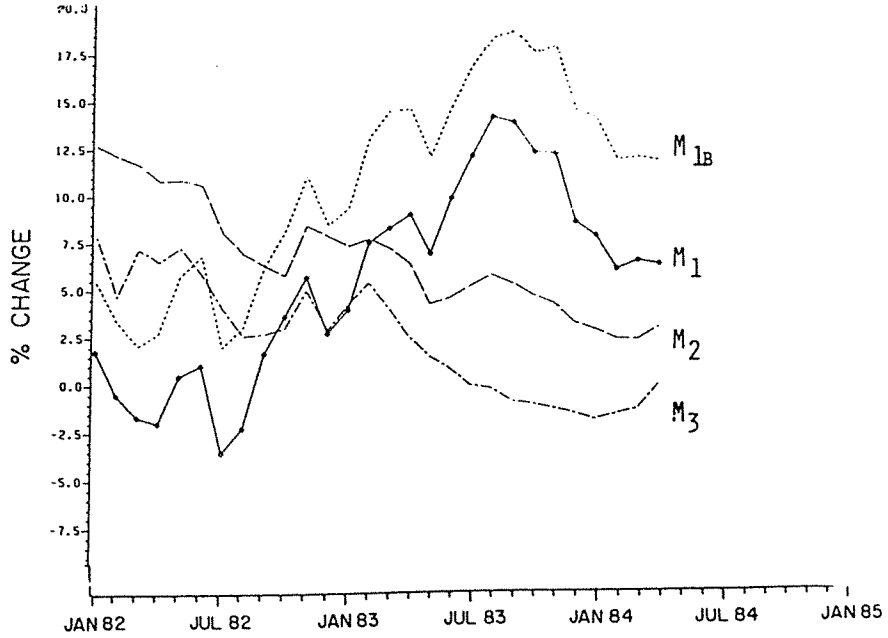


Figure 12

Bank Rate

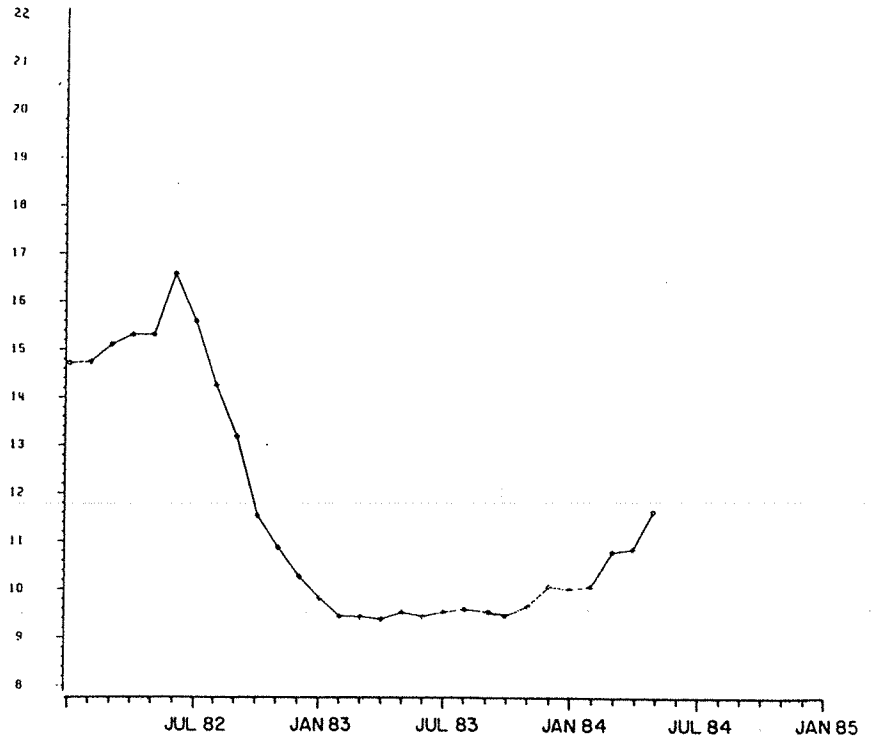


TABLE 5
Manitoba: Percent Changes From Same Month Last Year

DATE	CPI	REAL WAGES & SALARIES	SHIP-MENTS	UNEMPLOY-MENT RATE	EMPLOY-MENT	REAL RETAIL TRADE	REAL AVERAGE WEEKLY EARNINGS	LEADING INDUSTRY EMPLOYMENT: MANUFACTURIN
JAN83	7.7	-2.2	-1.5	9.9	-0.7	-3.8	0.9	-1.7
FEB83	7.5	-3.5	-9.4	10.1	-2.6	-5.0	-0.1	-1.7
MAR83	7.3	-3.5	-5.1	9.7	-0.9	0.4	1.0	-5.0
APR83	8.2	-3.9	-3.4	9.7	-0.7	-8.2	-0.2	-1.7
MAY83	7.6	-2.3	-0.6	10.0	0.7	-3.7	-0.2	3.4
JUN83	7.0	-2.1	0.4	9.8	0.2	3.3	1.2	1.7
JUL83	7.1	-2.4	0.2	9.3	1.8	3.7	1.7	3.4
AUG83	7.1	-0.7	-0.6	8.8	4.0	-0.3	2.3	3.4
SEP83	6.0	0.2	-1.2	9.0	2.9	1.9	3.5	8.8
OCT83	5.6	2.0	0.8	9.2	3.3	4.6	2.7	9.1
NOV83	4.8	3.4	10.7	8.6	4.3	4.9	3.7	7.4
DEC83	4.7	3.0	6.6	8.6	4.5	4.1	4.3	-1.7
JAN84	6.4	4.0	4.6	8.4	3.5	5.0	2.0	-6.8
FEB84	4.8	4.5	12.4	8.5	3.7	4.5	3.2	-1.8
MAR84	3.9	.	11.5	8.2	3.1	3.7	2.0	-1.8
APR84	3.4	.	8.4	8.0	3.9	12.0	.	-3.4
MAY84	2.7	.	.	7.8	3.5	.	.	0.0
JUN84	.	.	.	.	.	.	.	.
JUL84	.	.	.	.	.	.	.	.
AUG84	.	.	.	.	.	.	.	.
SEP84	.	.	.	.	.	.	.	.
OCT84	.	.	.	.	.	.	.	.
NOV84	.	.	.	.	.	.	.	.
DEC84	.	.	.	.	.	.	.	.

TABLE 6
Saskatchewan: Percent Changes From Same Month Last Year

DATE	CPI	REAL WAGES & SALARIES	SHIP-MENTS	UNEMPLOY-MENT RATE	EMPLOY-MENT	REAL RETAIL TRADE	REAL AVERAGE WEEKLY EARNINGS	LEADING INDUSTRY EMPLOYMENT: AGRICULTURE
JAN83	6.9	-2.0	-0.9	7.6	0.0	3.1	2.1	14.3
FEB83	6.4	-2.7	-4.8	7.5	0.5	-1.3	0.6	20.3
MAR83	6.2	0.4	-8.2	7.3	0.2	-1.0	0.9	9.9
APR83	6.7	-6.3	0.8	7.5	0.9	-1.6	-1.1	5.2
MAY83	7.1	-1.9	1.3	7.4	2.6	-4.3	0.1	3.4
JUN83	5.9	2.4	3.2	7.0	3.1	3.2	2.2	-1.1
JUL83	6.9	2.6	9.7	6.6	4.3	4.8	1.1	-4.2
AUG83	6.8	-2.1	11.8	7.4	4.5	4.3	0.3	-2.1
SEP83	6.6	-0.7	8.8	7.4	3.1	4.1	2.3	-10.7
OCT83	6.1	-0.2	14.1	7.4	3.1	5.9	0.6	-4.2
NOV83	6.0	1.1	2.5	7.4	2.3	1.9	0.3	3.6
DEC83	5.8	2.1	11.2	7.6	2.1	-1.1	0.3	2.5
JAN84	6.2	3.4	15.4	7.4	2.1	-3.4	0.2	1.2
FEB84	5.5	2.2	18.4	7.6	0.9	-1.6	-0.1	-2.4
MAR84	4.9	.	17.5	8.4	0.5	-0.7	-0.6	2.6
APR84	4.4	.	18.8	7.6	0.7	3.6	.	12.3
MAY84	4.2	.	.	8.0	0.2	.	.	4.3
JUN84	.	.	.	.	.	.	.	.
JUL84	.	.	.	.	.	.	.	.
AUG84	.	.	.	.	.	.	.	.
SEP84	.	.	.	.	.	.	.	.
OCT84	.	.	.	.	.	.	.	.
NOV84	.	.	.	.	.	.	.	.
DEC84	.	.	.	.	.	.	.	.

TABLE 7
Alberta: Percent Changes From Same Month Last Year

DATE	CPI	REAL WAGES & SALARIES	SHIP-MENTS	UNEMPLOY-MENT RATE	EMPLOY-MENT	REAL RETAIL TRADE	REAL AVERAGE WEEKLY EARNINGS	LEADING INDUSTRY EMPLOYMENT: CONSTRUCTION
JAN83	8.3	-3.0	-9.1	10.2	-3.6	-5.8	2.0	-29.1
FEB83	7.4	-3.5	-7.3	10.5	-3.9	-8.2	0.3	-28.2
MAR83	6.6	-4.4	-7.0	11.3	-4.9	-1.6	0.8	-29.1
APR83	6.9	-6.5	-2.8	10.7	-2.7	-7.6	0.4	-22.2
MAY83	6.2	-4.8	2.6	10.7	-0.6	-4.8	1.9	-11.8
JUN83	5.8	-4.5	3.0	11.0	-0.6	-0.5	1.7	-13.9
JUL83	5.7	-5.1	2.8	10.9	-1.2	1.4	1.5	-17.7
AUG83	5.3	-5.2	5.7	11.1	-0.4	-1.6	1.3	-21.0
SEP83	4.7	-4.2	4.2	10.6	-0.2	0.4	1.2	-25.4
OCT83	4.2	-5.4	10.3	10.2	0.6	0.1	1.5	-21.2
NOV83	4.2	-4.1	6.4	10.7	0.4	-0.8	1.9	-23.3
DEC83	4.5	-6.3	8.6	11.1	-0.7	0.2	1.1	-24.2
JAN84	4.5	-4.5	15.8	10.6	-0.3	-1.5	1.4	-19.3
FEB84	4.0	-3.9	9.0	10.3	1.0	-1.1	2.1	-12.7
MAR84	3.5	.	9.1	10.7	0.8	-2.9	1.8	-14.1
APR84	2.7	.	14.5	11.0	-1.4	5.2	.	-23.8
MAY84	2.2	.	.	12.0	-1.8	.	.	-26.8
JUN84	.	.	.	.	.	.	.	.
JUL84	.	.	.	.	.	.	.	.
AUG84	.	.	.	.	.	.	.	.
SEP84	.	.	.	.	.	.	.	.
OCT84	.	.	.	.	.	.	.	.
NOV84	.	.	.	.	.	.	.	.
DEC84	.	.	.	.	.	.	.	.

TABLE 8
B. C. : Percent Changes From Same Month Last Year

DATE	CPI	REAL WAGES & SALARIES	SHIP-MENTS	UNEMPLOY-MENT RATE	EMPLOY-MENT	REAL RETAIL TRADE	REAL AVERAGE WEEKLY EARNINGS	LEADING INDUSTRY EMPLOYMENT: MANUFACTURING
JAN83	6.8	-6.2	-0.6	14.3	-6.2	-9.9	1.0	-19.8
FEB83	6.6	-6.7	0.1	13.8	-4.0	-9.2	0.9	-12.9
MAR83	6.7	-6.3	-4.4	13.9	-2.9	-5.5	1.0	-11.2
APR83	6.5	-6.6	6.4	13.5	-0.1	-4.9	1.3	-7.8
MAY83	5.1	-2.9	11.3	13.7	-1.1	-1.4	3.0	-11.3
JUN83	5.1	-2.2	15.1	14.0	0.8	2.1	3.1	-3.8
JUL83	5.8	-0.3	22.4	13.7	1.4	0.8	1.9	-1.3
AUG83	5.2	6.3	13.1	13.9	0.8	0.6	2.7	-0.6
SEP83	5.0	1.4	14.3	13.5	1.8	2.7	1.9	0.0
OCT83	4.7	-1.8	18.2	13.6	0.1	4.5	0.5	-2.0
NOV83	4.3	-4.5	6.1	13.9	0.7	-1.2	-0.0	7.7
DEC83	4.7	-3.6	11.7	13.7	2.1	3.9	0.3	9.3
JAN84	4.8	-4.7	12.3	13.6	1.4	2.5	-2.4	10.9
FEB84	4.8	-6.6	-2.9	14.5	-0.4	1.1	-3.3	1.3
MAR84	4.4	.	-10.5	14.4	-1.3	0.8	-3.3	-4.0
APR84	4.2	.	-3.6	15.1	-1.9	3.5	.	-6.5
MAY84	4.6	.	.	15.6	-1.6	.	.	-3.4
JUN84	.	.	.	.	.	.	.	.
JUL84	.	.	.	.	.	.	.	.
AUG84	.	.	.	.	.	.	.	.
SEP84	.	.	.	.	.	.	.	.
OCT84	.	.	.	.	.	.	.	.
NOV84	.	.	.	.	.	.	.	.
DEC84	.	.	.	.	.	.	.	.

Note

* All data presented here were extracted from the CANSIM, University Base and processed using the Statistical Analysis System.

SOURCES AND DEFINITIONS

		Series No on CANSIM
Average Weekly Earnings,	Alberta	D704160
	British Columbia	D704316
	Canada	D700169
	Manitoba	D704010
	Saskatchewan	D704060
Bank Rate		B14006
Change in Stocks		D40613
Composite Leading Index,	Canada	D99475
	United States	D99486
CPI,	Calgary	D133160
	Edmonton	D132953
	Regina	D132539
	Saskatoon	D132746
	Total	D130000
	Vancouver	D133367
	Winnipeg	D132331
Degree of Utilization of Production Capacities in Manufacturing		B60003
Employment,	Alberta	D769068
	British Columbia	D769231
	Canada	D767608
	Manitoba	D768792
	Saskatchewan	D768930
Exports		D40618
GNE		D40593
Help Wanted Index	Canadian Statistical Review (Stats. Canada)	
Housing Starts,	Alberta	D845669
	British Columbia	D845670
	Canada	D4945
	Manitoba	D845667
	Saskatchwan	D845668
Imports		D40620

Investment,	Total	D40601
	Public	D40602
	Residential	D40608
	Non-Residential	D40609
	Machinery and Equipment	D40610
Labour Force,	Alberta	D769067
	British Columbia	D769230
	Canada	D767606
	Manitoba	D768791
	Saskatchewan	D768929
Leading Industry Employment,	Alberta	D771553
	British Columbia	D771562
	Manitoba	D771532
	Saskatchewan	D770343
M1		B1627
M1A		B1624
M2		B1630
M3		B1628
Private Consumption		D40594
Public Consumption		D40600
Real Average Weekly Earnings,	Alberta	D704160/D132953
	British Columbia	D704316/D133367
	Canada	D700169/D130000
	Manitoba	D704010/D132331
	Saskatchewan	D704060/D132539
Real Wages and Salaries,	Alberta	D5245/D132953
	British Columbia	D5246/D133367
	Manitoba	D5243/D132331
	Saskatchewan	D5244/D132539
Retail Trade,	Alberta	D651171
	British Columbia	D651347
	Canada	D650087
	Manitoba	D650907
	Saskatchewan	D651083
Shipments,	Alberta	D310702
	British Columbia	D310723
	Canada	D310030
	Manitoba	D310660
	Saskatchewan	D310681

Unemployment Rate,	Alberta	D769070
	British Columbia	D769233
	Canada	D767611
	Manitoba	D768794
	Saskatchewan	D768932
Wheat Board Price,	Alberta	D239123
	Manitoba	D239117
	Saskatchewan	D239120

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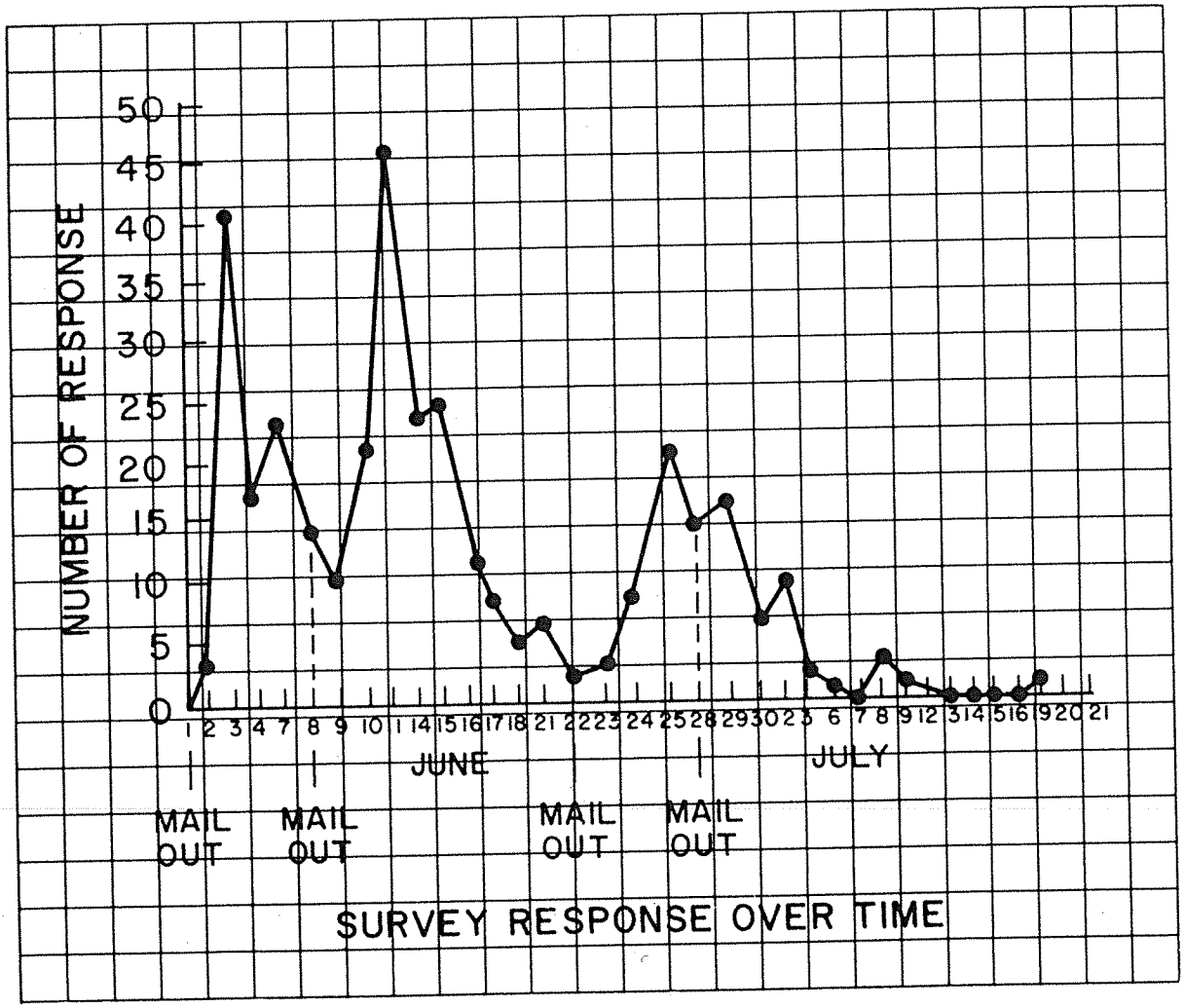
Survey Research Manual



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