DISCUSSION PAPER

A STRUCTURAL ANALYSIS OF THE CANADIAN ECONOMY TO 1990

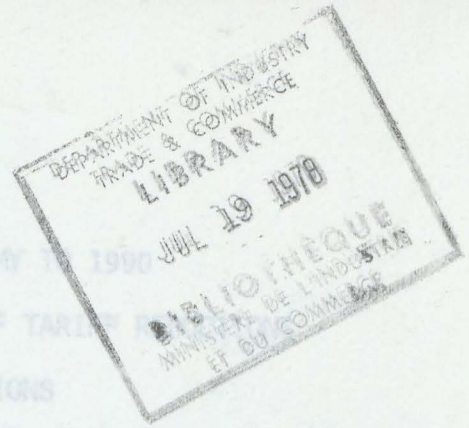Government   Gouvernement
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A STRUCTURAL ANALYSIS OF THE CANADIAN ECONOMY TO 1990

WITH QUANTITATIVE ESTIMATES OF THE POTENTIAL IMPACT OF TARIFF REDUCTIONS IN THE TOKYO ROUND OF TARIFF NEGOTIATIONS

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A STRUCTURAL ANALYSIS OF THE CANADIAN ECONOMY TO 1990

MAY 1978

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Canada.

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ANALYTICAL OVERVIEW

In recent years both the government and private sectors have expressed a growing concern with regard to economic and social issues whose understanding and resolution require a more comprehensive and longer term framework of analysis. These areas of concern have included such topics as energy policy and related investment in alternative supplies and methods of distribution, the state of the environment and the quality of life, inflation and unemployment policies related to basic structural changes in the market economy, the role of government, major investment projects and their financial and economic impacts, and relations between and among the industrial and developing nations. Within this context the Federal Department of Finance has issued a set of "Medium Term Projections and Targets"[1] as a macroeconomic background to medium-term economic strategy, to provide a framework "within which potential problem areas or constraints can be identified and sectoral issues analyzed".[2] Consistent with this objective, this paper is intended to present a structural perspective to these targets, with an emphasis on manufacturing, as well as an analysis of the potential impact on these targets of tariff reductions in the Tokyo Round of Multilateral Trade Negotiations (MTN).

The Department of Industry, Trade and Commerce (I.T.&C.) maintains an ongoing developmental and analytical program aimed at bridging the gap between the aggregative "top down" approach of macroeconomics and the more detailed "bottom up" approach of sectoral analysis. The accounting core for this program is the Canadian Explor Model (CEM).[3] For this paper a base case has been developed, disaggregated to sixty-eight sectors within the CEM. This project has involved bringing together in a consistent manner the macroeconomic scenario, the detailed input from other government departments and sector specific information from the Industry Sector Branches (ISB's) within the Department of Industry, Trade and Commerce. As such, it is the product of both departmental and interdepartmental co-operation and scrutiny.

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1) "Canada's Economy, Medium Term Projections and Targets", February 1978, Department of Finance, Ottawa.

2) ibid, p. 1.

3) Overview available from: Macro Economic Structural Analysis Group
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The Canadian Explor Model as developed by Industry, Trade and Commerce is not a forecasting tool. Rather, it is a structural model used for the simulation of the impacts on the Canadian economy of major institutional or structural developments. Previous applications of the model have included a detailed analysis of the effects of the various Northern Gas Pipeline proposals on production and employment.[1] The model is one of a long term nature providing snapshots of the economy at five year intervals and as such was not designed to pick up cyclical or short-run developments. The MTN simulations which are being run on this base case have been undertaken in an attempt to show, in some sectoral detail, how sensitive the Canadian economy could be to tariff reductions which are postulated to be phased in during the 1980-1990 period. Since there is no way of knowing at this time the specifics and timing of the ultimate MTN agreements and since we are not using a dynamic annual model, this analysis should not be interpreted as being indicative of the actual adjustment path which is to be traced to the year 1990, but rather the eventual or end result of such shifts based on certain explicit assumptions.

The CEM incorporates an input-output system and is capable of providing both macro results for the Canadian economy and consistent structural detail in terms of both external trade and domestic activity variables. The potential domestic macro and sectoral economic results of the implementation of a general formula for tariff reduction are thus highlighted in a policy neutral setting. This situation is contrasted with both the hypothetical effects of Canada's "opting out" of such negotiations, and the adjustments implicit in the target projection for the Canadian economy through the same period. Included here as well are a set of impacts indicating the sensitivity of these two basic results to different equilibrium adjustments and assumptions, as well as a more qualitative assessment of the effects of other suppositions. It is hoped that this analysis can be used along with that of other studies to give some feeling for the likely future structure of the Canadian economy and the potential impact of the Tokyo Round of tariff negotiations, which will place industry and government in a better position to develop policies and programs to obtain the maximum benefit from the changing economic environment, while at the same time facilitating the inevitable adjustment process.

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1) "Canadian Industrial and Manpower Requirements and Content for a Northern Gas Pipeline", Department of Industry, Trade and Commerce, July 1977.

THE TARGETS TO 1990

SCENARIO

The Department of Industry, Trade and Commerce has developed a simulation base for the Canadian economy disaggregated to sixty-eight sectors within the Canadian Explor Model (CEM). The macroeconomic scenario follows the medium term recovery track to 1981 and target GNE growth path to 1990 developed by the Department of Finance. The methodology is briefly described below. The forecast was begun from a demographic scenario in which specific assumptions were made regarding the fertility rate and the level of net immigration. These assumptions were then placed into a demographic model, to obtain the age/sex distribution of the population. Long run labour force participation rates were combined with estimates of the age/sex distribution of the population to obtain estimates of the labour force. Long run unemployment rates were developed from trends in unemployment rates by age and sex and this estimate was combined with the estimate of the labour force to obtain the aggregate level of employment. Finally, a long run trend in labour productivity (GNE/Employee) was developed from historical patterns and this estimate was multiplied by the level of employment to obtain the potential level of real Gross National Expenditure (GNE) for each year. Since the current level of economic activity is below the potential GNE, the Department of Finance developed a scenario which placed the economy on the target growth path by 1981. Tables 1 and 2 below indicate the values to 1990 for the major scenario inputs.

TABLE 1

BASE CASE

MACROECONOMIC SCENARIO AND ASSUMPTIONS

DEMOGRAPHIC	1970	AAGR[1]	1980	AAGR	1985	AAGR	1990
Fertility Rate	2.33	-	1.8	-	1.8	-	1.8
Net Immigration (Thousands)	89,000		100,000		100,000		100,000
Total Population (Millions)	21,297	1.24	24,100	1.24	25,630	1.15	27,134
Total Households (Millions)	5,784	3.40	8,078	2.28	9,044	1.80	9,889
FOREIGN							
Index of US Real GNP	1.00	3.68	1.435	4.05	1.75	3.31	2.06
US Manuf. & Mining Wage/Hr. ($)	4.50	8.77	10.43	7.42	14.92	7.50	21.42
Exchange Rate (Can./US)	1.044	-	.93	-	.93	-	.93
DOMESTIC							
Consumer Expenditures ($1970 M.)	50,327	5.86	88,995	4.30	109,847	3.35	129,507
Government Expenditures ($1970 M.)	16,630	3.46	23,364	4.72	29,418	3.35	34,683
Residential Construction ($1970 M.)	3,500	5.79	6,142	-.87	5,880	1.64	6,377
Economy Average Wage Rate ($)	6,158	9.55	15,334	7.36	21,867	8.05	32,207

1) Average Annual Growth Rate in per cent.

TABLE 2

BASE CASE

LABOUR MARKET AND PRICES

LABOUR MARKET	1960	AAGR[1]	1965	AAGR	1970	AAGR	1975	AAGR	1980	AAGR	1985	AAGR	1990
Labour Force (,000)	6,411	2.18	7,141	3.30	8,399	3.67	10,060	2.42	11,340	1.83	12,419	1.27	13,320
GNE/Employee	8.65	2.71	9.89	1.81	10.82	1.21	11.49	2.72	13.13	2.36	14.71	2.0	16.21
Production/Employee	-	-	18.24	1.09	19.26	****	2.69[2] ****		25.10	2.49	28.39	2.09	31.48
Unemployment Rate (%)	7.0	-	3.9		5.7		6.9		6.6		5.9		5.7
PRICES (1970=1.0)													
Export Price	.80	2.16	.89	2.35	1.00	11.06	1.69	5.89	2.25	4.02	2.74	5.5	3.58
Import Price	.80	2.16	.89	2.35	1.00	9.27	1.56	6.53	2.14	4.02	2.60	5.5	3.40
GNE Price Deflator	.74	2.07	.82	4.48	1.00	8.45	1.50	5.60	1.97	4.04	2.38	5.5	3.18

1) Average annual growth rate in per cent

2) 1970-1980 AAGR

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Input from the Department of Energy, Mines and Resources (EMR) was obtained from "An Energy Strategy for Canada", EMR, 1976, and this information was supplemented by the Mineral Policy Series, EMR, 1976 (Series Number MR147 - MR164). The work on minerals was also cross-checked by Industry Sector Branch officers within Industry, Trade and Commerce (I.T.&C.). It was possible to develop from the energy strategy paper an outlook for the growth in consumption of energy by household and by fuel source and these estimates were converted into consumer expenditures and used as input to the CEM model. Energy investment was given for two scenarios by EMR. The low price scenario maintains the future price of domestic crude oil at the 1975 price in constant dollars. This means that the price of crude oil increases with the rate of domestic inflation. In the high price scenario, the price of domestic crude oil reaches the world price of oil by 1978 and increases with the general rate of inflation thereafter. The assumption in the base case is that the Canadian price of crude oil will move with that of the U.S. to the world price by 1980. Since this scenario is close to the EMR high price scenario, the energy investments in the base case as a per cent of GNE for each energy source were made consistent with those suggested in the EMR publication for that scenario. Also included in the base case are production constraints for the oil and gas sectors consistent with the EMR supply forecasts.

The Industry Sector Branches of I.T.&C. were asked to comment in detail on the long run outlook within the Finance scenario for the sectors for which they were responsible. The areas of emphasis were technological change and productivity growth, investment projects and plans, and international market trends. Sectoral comments were then analyzed and cross-checked through discussions between different Industry Sector Branches and finally the growth estimates for different sectors were checked for consistency within CEM against the macroeconomic scenario. It should be emphasized that this procedure was limited by the definitions of the sectors in the model and the ability of the Industry Sector Branches to relate to them.

MACROECONOMIC PROJECTIONS

In this section the discussion centres on the growth in real GNE and it components, combined with a description of the underlying factors contributing to the pattern of growth. The historical and projected values for the components of GNE are presented in Table 3. The average annual growth in real GNE fell from 5.62 per cent between 1960 and 1965 to 4.65 per cent between 1970 and 1975. In sharp contrast to these trends, the GNE growth is targetted to rise to 5.27 per cent in the five year period 1975 to 1980; a recovery comparable to that of 1960 to 1965. Moreover, in order to attain the 1980 levels of GNE, the average growth between 1977 and 1980 would be 5.76 per cent. Clearly, this target level of growth presumes both a favourable sectoral and macroeconomic environment.

TABLE 3

BASE CASE

COMPONENTS OF GNE 1960 TO 1990

(MILLIONS OF $1970)

	1960	AAGR[1]	1965	AAGR	1970	AAGR	1975	AAGR	1980	AAGR	1985	AAGR	1990
Consumer Expenditure	32,624	4.50	40,649	4.35	50,327	6.27	68,211	5.46	88,995	4.30	109,847	3.35	129,507
Investment (Public & Private)	8,754	7.00	12,278	3.40	14,515	6.49	19,877	4.10	24,300	5.65	31,992	4.45	39,764
Residential Construction	2,476	5.34	3,212	1.73	3,500	6.32	4,755	5.25	6,142	-.87	5,880	1.64	6,377
Government Expenditure	8,683	5.86	11,542	7.57	16,630	4.32	20,549	2.60	23,364	4.72	29,418	3.35	34,683
Exports Goods & Services	8,694	7.66	12,573	10.98	21,167	2.28	23,693	6.97	33,187	4.96	42,269	3.35	50,489
Imports Goods & Services	10,159	6.45	13,883	7.80	20,214	7.58	29,128	5.55	38,158	4.46	47.471	4.27	58,510
Residual	-250	-	-237	-	-345	-	-	-	-	-	-	-	-
Change in Inventories	780	-	1,705	-	105	-	-394	-	1,265	-	-	-	-
GNE	51,602	5.62	67,839	4.78	85,685	4.65	107,580	5.27	139,095	4.33	171,935	3.31	202,309

1) Average Annual Growth Rate in per cent.

Medium Term Recovery (to 1981)

The medium term recovery in the economy is essentially export led. There are a number of assumptions which have been made, contributing to the growth in exports. It is assumed that the United States will continue its recovery through this period and thus generate a growing market for Canadian exports. Another key factor is a strong improvement in the price competitiveness of Canadian exports. During the 1970's Canadian wage settlements outpaced by a wide margin the growth in wage rates in the United States. It is assumed that wage inflation in the two countries will be more comparable in the latter part of the 1970's. As well Canadian unit labour costs are assumed to improve owing to a combination of lower wage inflation and a high level of productivity growth. From Table 2 it may be noted that the growth rate in productivity (GNE/Employee) between 1975 and 1980 is more than double the rate experienced between 1970 and 1975. This growth rate in productivity is not unprecedented in terms of previous recoveries. In fact the growth rate in productivity between 1975 and 1980 is equal to the productivity growth in the recovery between 1960 and 1965. The price competitiveness of Canadian exports is aided by the assumption of a 93¢ dollar throughout the period.

Between 1975 and 1980 consumer expenditures grow at 5.46 per cent, a rate slightly higher than the growth in GNE for the same period (Table 3). This represents a revival of consumer confidence over the level of 1977. The underlying assumption for this growth in consumer expenditures is a decline in the personal savings ratio to eight per cent from almost eleven per cent in 1977. This decline in the savings rate is directly related to the assumption regarding domestic price stability; the rationale being that uncertainty about future price levels encourages consumers to save more of their disposable income.

Although the growth in investment (public and private non-residential) between 1975 and 1980 at 4.10 per cent is significantly below the growth in GNE for the same period (Table 3), its growth between 1978 and 1980 outstrips that of GNE. During the period 1978 to 1980 three components of investment grow at different rates. Non-residential business investment is expected to grow at the same rate, energy investment at a rate substantially higher, and public investment a rate lower than that of GNE. The net result is an annual growth in total investment of 7.4 per cent, 1978 to 1980.

The recovery track to 1980 paints a bright picture for Canada both in terms of macro economic and sectoral growth. For example, the growth in GNE, although combined with a high level of productivity growth, is still sufficient to reduce the unemployment rate from its current level of 8.6 per cent to 6.6 per cent by 1980. At the same time the aggregate growth path implies an optimistic outlook for a number of sectors which are currently facing economic hardship. Consequently, one could envision a number of policies and strategies necessary to facilitate this recovery. The Department of Industry, Trade and Commerce has published a number of discussion papers (sector profiles) on various sectors of the economy. These sector profiles are intended to address the important issues and policy questions facing these sectors.

GNE Growth Path (1981-1990)

After the medium term recovery to 1981, the annual growth in GNE falls, producing an average rate of 3.31 per cent in the period 1985 to 1990 as compared to 5.27 per cent in the recovery period and 4.33 per cent in the first five years of the decade. From Table 2, one can note a steady decline in the labour force and productivity growth for the period after 1980. These two factors combine to produce the decline in GNE growth rates once the recovery to 1981 is fulfilled.

During the 1980's a number of interesting characteristics emerge. As noted above, the scenario for the 1980's is strongly determined by demography. From Table 1, one can note a steady decline in the growth rate in household formation. In fact, the increase in the stock of households in the 1980's is less than the increase in the 1970's. This accounts for the relatively low growth in the level of residential construction in the 1980's compared to earlier periods and the decline in the share of GNE going to residential construction (Table 4).

TABLE 4

BASE CASE

DISTRIBUTION OF GNE 1960 TO 1990

(PERCENTAGES)

	1960	1965	1970	1975	1980	1985	1990
Consumer Expenditure	63.22	59.92	58.73	63.40	63.98	63.89	64.01
Investment (Public & Private)	16.96	18.10	16.94	18.48	17.47	18.61	19.65
Residential Construction	4.80	4.73	4.08	4.42	4.41	3.42	3.15
Government Expenditures	16.82	17.01	19.41	19.10	16.80	17.11	17.14
Exports of Goods & Services	16.85	18.53	24.70	22.02	23.86	24.59	24.96
Imports of Goods & Services	-19.69	-20.46	-23.49	-27.50	-27.43	-27.61	-28.92
Change in Inventories	1.52	2.51	.12	.37	.91	-	-
Residual	-.48	-.38	-.40	.29	-	-	-
GNE	100.00	100.00	100.00	100.00	100.00	100.00	100.00

The growth rate in non-residential investment dominates the growth in GNE during the 1980's. Between 1980 and 1990 the average annual growth in non-residential investment is 5.50 per cent compared to an average annual growth in GNE of 3.82 per cent. The main underlying reason for this is the continued growth in energy investment, particularly investment in electrical power generation through this period. In terms of shares of GNE, non-residential investment increases from 17.47 per cent in 1980 to 19.65 per cent in 1990 (Table 4).

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Generally, the other economic aggregates follow the pattern set by the demographic variables through the 1980's. Consumption and government expenditure growth fall through the period. This results in a slowing in the growth rates for production and the domestic market and contributes to a decline in growth for imports. Export growth declines in the period 1981 to 1990 due to the slow down in U.S. growth in the 1980's and the stabilization of Canadian unit labour costs vis a vis the United States, which follows the recovery. What is interesting to note is that the openness of the Canadian economy to trade does not expand at nearly the same rate during the 1980's as was the case during the 1960's and early 1970's. That is to say, the export and import shares of GNE do not increase markedly in the 1980's and as a result, Canadian vulnerability to external influences does not increase appreciably.

SECTORAL PROJECTIONS

The distribution of employment across the major subsectors of the economy: resources, construction, manufacturing, utilities and services is presented in Table 5. During the 1980's the share of total employment in resources and manufacturing declines while the share for construction and services increases. Essentially these results are continuations of historical trends.

TABLE 5

BASE CASE

DISTRIBUTION OF EMPLOYMENT BY MAJOR SUBSECTOR [1]

1970 TO 1990

(PERCENTAGES)

	1970	1975	1980	1985	1990
Resources	9.78	8.31	7.35	6.80	6.47
Construction	5.54	5.72	5.54	5.83	6.19
Manufacturing	20.75	19.31	18.07	17.28	16.76
Utilities	1.15	1.16	1.08	1.07	1.06
Services	62.78	65.50	67.96	69.02	69.52
Total	100.00	100.00	100.00	100.00	100.00

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1) CEM commodity aggregations are based on census of manufacturing data. Thus historical distributions may differ from other published sources.

The levels and changes in employment for these major sectors are presented in Table 6. This table highlights the decreasing levels of future requirements for job creation, even with the economy at full employment, that will characterize the Canadian situation in the years to come. As expected, the bulk of total employment creation is the service sectors. In the manufacturing sector 164,000 jobs are created in the 1980's. This compares with an estimated 215,000 in the 1970's. However, what is interesting to note is that the employment creation both in total and in manufacturing is targetted to be much greater in the five year period 1975 to 1980 than between 1970 and 1975. The high growth rates for economic activity in the medium term recovery account for this result.

TABLE 6

BASE CASE

CHANGES IN EMPLOYMENT BY MAJOR SECTOR

1970 TO 1990

(THOUSANDS OF MANYEARS)

	1970	CHANGE	1975	CHANGE	1980	CHANGE	1985	CHANGE	1990
Resources	747.2	-21.3	725.9	7.3	733.2	14.8	748.0	10.8	758.8
Construction	427.3	76.7	500.0	52.6	552.6	89.1	641.7	84.4	726.1
Manufacturing	1,584.9	101.4	1,686.3	114.9	1,801.2	100.2	1,901.4	64.0	1,965.4
Utilities	88.0	13.5	101.5	6.2	107.7	9.4	117.1	7.6	124.7
Services	4,796.3	924.3	5,720.6	1,053.7	6,774.3	820.0	7,594.3	557.4	8,151.7
Total	7,639.7	1,094.6	8,734.3	1,234.7	9,969.0	1,033.5	11,002.5	724.2	11,726.7

Although the changes in the distribution of employment in the major subsectors are smaller during the 1980's than in 1970's, there remain large structural adjustments to be overcome. Some traditionally high growth sectors such as forest products and minerals are expected to have below average growth during the 1980's. Conversely sectors such as fishing, chemicals and precision instruments which require different skills and indicate alternative geographic growth poles, are expected to have high growth rates. We have seen some evidence of this changing structure of the labour market in Canada already, with the movement of technical, and engineering skills to Alberta.

Resources

Employment in resources (defined as primary agriculture, minerals, oil and gas, and basic forestry sectors) as a share of total employment declines at a steep rate; falling from 9.78 per cent in 1970 to 6.47 per cent in 1990. Basically this results from a combination of factors. Firstly, due to the slowing down of population growth and limits to food consumption the demand for food products grows at a slower rate. This results in a slow growth in the domestic market for primary agriculture. Internationally there are no large changes expected in terms of the export share of production and the import penetration of the domestic market. The sole exception is the fishing sector. With the imposition of the 200 mile fishing limit, fish stocks are expected to improve and an expansion of the fishing industry is expected. It must be emphasized, however, that the increased production in this sector will not result in exceptionally large increases in employment, due to expected productivity gains. Corresponding to the increase in production in this sector there will be a requirement for updating and expansion of the existing fishing fleet. This could potentially be a boon for the shipbuilding industry in Eastern Canada.

A second factor contributing to the slow growth in the resource sectors is the outlook for minerals. Throughout the period to 1990, Canada will be facing increased competition from developing countries. This problem is compounded by projected lower growth levels in economic activity in most industrialized nations. No attempt was made to take into account recent developments concerning undersea mining and the displacement of land based mining operations. This situation is currently an item for discussion at the Law of the Sea Conference. Clearly, expansion of undersea mining operations could adversely affect the Canadian mining outlook. Finally, consistent with the energy strategy paper supply forecast, the increase in output for the oil and gas sector is expected to be slow. This contributes to a relatively constant level of employment and increasing import share throughout the 1980's.

Construction

The share of total economy employment in the construction sector climbs during the 1980's from 5.54 to 6.19 per cent. This reflects the increasing importance of investment as a share of GNE. As well, productivity gains in this sector are not expected to be as great as for other sectors of the economy. This is due to the fact that the technological advances which created increased rates of productivity growth in the past, through mass construction and prefabrication of housing for example, have peaked, while technology in other areas such as pipeline construction are not expected to change in a way so as to substantially increase present productivity trends. Consequently, a given level of construction output generates more employment than for other sectors such as those in manufacturing.

Services

A continuation of the trend towards an increasing share of total employment in the service sectors is expected. This is a trend which is evident in most of the major industrialized nations. As incomes rise, there is an increasing portion of the budget devoted to the consumption of services. What is important to note is that the rapid increase in the service share of total employment during the present decade slows substantially during the 1980's. In the 1970's the share increases approximately five percentage points compared to less than two percentage points in the 1980's.

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Manufacturing

Manufacturing continues to experience the historical decline in its share of total employment. However, the loss in share during the 1980's is less than half of the 1970's. As opposed to the phenomenon in the construction and service sectors, where lower than average productivity growth contributes to an increasing share of employment over time, the manufacturing sector has higher than average productivity growth leading to a declining share of total employment.

Components of Manufacturing

In Table 7, the distribution of employment in manufacturing by major sectors is presented. The discussion below will describe generally the scenarios for these sectors and underline the reasons for the decline in the manufacturing share of total economy employment.

TABLE 7

BASE CASE

DISTRIBUTION OF EMPLOYMENT BY MAJOR MANUFACTURING SUBSECTOR

(PERCENTAGES)

	1970	1975	1980	1985	1990
Food Processing	15.06	14.32	13.29	12.65	11.89
Petroleum Products	.97	1.00	.97	.90	.86
Textiles	14.38	13.94	11.58	10.14	8.38
Forest Products	15.18	15.47	15.78	15.82	16.11
Chemicals	7.61	7.73	8.70	9.12	9.77
Metals	2.72	2.46	2.26	2.03	2.02
Misc. Hardware	8.36	8.49	8.72	9.15	9.89
Iron & Steel	3.94	4.11	4.19	4.25	4.76
Electrical Products	7.83	7.73	7.35	7.32	7.32
Transportation Equipment	8.62	8.78	9.16	9.19	9.38
Machinery	5.79	6.05	6.89	6.80	6.56
Misc. Manufacturing	9.54	9.92	11.11	12.63	13.06
Total Manufacturing	100.00	100.00	100.00	100.00	100.00

The food processing sector continues to decline in terms of its share of total manufacturing employment. As discussed previously the growth in demand for these sectors is expected to be low. This is mainly due to the physical limitations to food consumption on a per capita basis. The major exceptions are fish products and alcoholic beverages. Due to the imposition of the 200 mile fishing limit and increased efficiency in the fishing industry, the fish products sector is expected to grow quickly to 1985, mainly on the basis of increased exports. The growth in alcoholic beverages, although high in contrast to the other food and beverage industries, is lower than historical patterns. Generally, the level of total employment in the food and beverage industries remains constant to 1985 and decline to 1990.

Employment in the petroleum products sector as a share of total manufacturing employment is projected to decline throughout the 1980's. Basically, this is due to a combination of different factors in different time periods. Firstly, growth in output declines throughout the earlier period to 1980, following from the assumptions regarding energy conservation in both the residential and industrial sectors. Secondly, between 1980 and 1990 output of petroleum products grows at an average annual rate of 2.9 per cent. This growth, however, is offset by productivity increases and a relatively constant level of employment results.

Textile and leather products is another sector whose share of total manufacturing employment declines. Similar to the food processing sector, the domestic market growth for textiles is expected to be low. Even with a levelling off of import penetration after 1980 there is a relatively slow growth in output. When this is combined with productivity growth above the average for total manufacturing the result is a net loss in employment.

Forest products' share of employment in manufacturing increases to 1990. Output is expected to grow at a historically low average annual rate of 3.0 per cent due to increased international competition for pulp, paper and lumber. As well, there is declining domestic demand through reduced growth rates in residential construction and substitution of wood products by plastics (paper bags, furniture etc.). However, the slow growth in output is combined with an even slower growth in productivity, resulting in increased employment.

The share of manufacturing employment in chemicals increases from 7.73 per cent in 1975 to 9.77 per cent in 1990. Two components of the chemicals industry, plastic products and petrochemicals, are expected to grow at high annual rates. Throughout the 1980's, as referred to above, the increased substitution and use of plastics is expected to continue, generating a large growth in the domestic market. It is expected that Canadian producers will remain internationally competitive and maintain their share of the domestic market. The outlook for the petrochemical component is somewhat more mixed. By 1980 the world scale plants now under construction will be in full operation. The production from these new plants will have displaced some of the share of the domestic market satisfied by imports. As well, the export share of production will have increased. With fixed capacity during the 1980's as the domestic market increases, import penetration is expected to grow and the export share of production to decline. This leads to much slower growth rates for production in petrochemicals after 1980.

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The metals sector continues its decline as a share of total manufacturing. This result is consistent with the scenario of increased foreign competition in minerals and slow growth in domestic demand.

Miscellaneous hardware increases its share of manufacturing employment to 1990. Essentially this is a continuation of the high levels of historical output growth due to the investment component of the targets. Historically this sector has had low levels of productivity growth and this trend is expected to continue after 1980. This combination of a high level of growth in output and a low growth in productivity yields a high level of employment growth.

The share of manufacturing employment in the iron and steel sector also increases over time. Output growth in this sector is quite high to 1980 under the assumption that the peak demand for pipeline steel will be in 1980. After 1980 the demand for steel grows at approximately the same rate as GNE. However, productivity growth in the sector is expected to be below the average for total manufacturing and consequently iron and steel increases its share of total employment.

During the 1980's the electrical products sector share of total employment is expected to remain relatively constant. This masks the relative health of the different subsectors comprising this industry. Output growth for both appliances and electrical household equipment is expected to be slower than the growth in GNE. Both face increased import penetration of the domestic market and lower export shares of production, despite the requirement that the recent consolidation and rationalization that has taken place in the major applicance sector results in the restructured industry overcoming historical experience and increasing its market share through import replacement. This is in contrast to electrical industrial equipment and precision instruments, both of which will experience a high growth in the size of their domestic markets. Although there will be some increased import penetration, the growth in output in these sectors will exceed that of GNE. Productivity in electrical industrial equipment and precision instruments is expected to be quite high, but the levels of output growth are sufficient to induce an increase in the level of employment. In summary the electrical products sector has both high and low output growth components with resulting offsetting employment effects.

The share of transportation equipment in total manufacturing employment increases slowly to 1990. Again, this is a sector of the economy which has a large variation with respect to the outlook for its various components. Two subsectors, aircraft and shipbuilding, are expected to experience relatively constant employment to 1990. The two largest subsectors in the transportation industry, autos and auto parts, continue to have strong growth rates in output, although at lower levels than recent experience due to a decline in the growth of the driver age population.

The share of total manufacturing employment in the machinery sector declines between 1980 and 1990, although these shares are still higher than the levels between 1970 and 1975. As indicated earlier, the bulk of the production for the Northern Gas Pipeline is in 1980. This fact, combined with a high level of investment growth between 1977 and 1980, generates a high level of demand for machinery. With a maintained share of the domestic market, the contribution to total manufacturing employment by the machinery sector is expected to rise to 1980. After 1980, growth in both output and productivity for this sector is expected to be higher than for total manufacturing.

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Miscellaneous manufacturing consists of many consumer expenditure related commodities. Growth in demand for these commodities will continue to be high due to higher real incomes and an increasing share of the budget devoted to consumer goods as opposed to food. These goods for the most part represent relatively low productivity sectors and consequently the high growth in demand generates large increases in employment, increasing their shares in total manufacturing.

TARIFF IMPACTS

BACKGROUND

The current Multilateral Trade Negotiations (MTN) are the seventh round of tariff-reducing negotiations held under the General Agreement on Tariffs and Trade (GATT) since 1947, when the GATT framework was established as a forum for the settlement of trade disputes and the negotiations of mutual reductions in trade barriers. The most recent round of negotiations was the "Kennedy Round", which was concluded in 1967. The "Kennedy Round" resulted in mutual reductions among the participating countries of slightly more than 30% in the rates of tariffs on industrial products according to the principle, used then for the first time, of across-the-board cuts of a certain percentage of the rates. This approach is also being taken in the current round of negotiations, although it has been modified to provide for an element of "harmonization", which will result in higher rates of duty being reduced by a greater proportion than lower rates.

The current round is more wide-ranging and ambitious than previous negotiations. The goal of a 40% weighted average cut, now being contemplated for reductions in industrial products, is somewhat higher than that achieved in the Kennedy Round. It will also be an important opportunity to address barriers to trade in agricultural and fishery products, although it is agreed that these products must be dealt with according to the more traditional negotiating method of requests and offers among the participants, rather than by any formula. In addition there will be the first systematic attempt to negotiate agreements and codes of conduct in areas of non-tariff measures which can limit or distort trade, including quantitative restrictions, subsidies and countervailing duties, standards and other technical barriers, customs procedures, and government purchasing. The importance of these non-tariff measures has increased, as the significance of tariffs has declined, and they have generally been avoided in previous negotiations, with the notable exception of the Anti-Dumping Code which was negotiated during the Kennedy Round. Of particular interest to those developing countries who are participating in the discussions are the negotiations on tropical products, which have been conducted in advance of the other matters, and the general undertaking that the results of the MTN should include, wherever feasible, provisions for some special and differential treatment of developing countries. It is recognized that the freer trade arrangements which could result from the current round will increase the risks of sudden disruptions in trading patterns, and attention is therefore being given to negotiating improvements in existing safeguard procedures.

The Canadian Government has supported the current round of negotiations from the time they were launched in Tokyo, in September 1973. It remains the policy of the Government that Canada should participate fully in the negotiations to ensure that the eventual results will provide overall reciprocity for Canada, and to ensure that our special interests and concerns are fully taken into account. In developing its position on these negotiations, the Government has had close consultations with the Provinces. In addition, it has had the benefit of hundreds of briefs submitted by individual Canadian firms, industry associations, and business and labour groups, which have been followed-up in many cases by direct consultations.

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Canada's pattern of trade and tariffs makes it difficult to achieve reciprocity in industrial products through the application of a set formula cut to Canadian and foreign tariffs, particularly when that formula includes an element of harmonization. Ninety per cent of our dutiable exports face rather low tariffs, which will receive only slight cuts, while many of the dutiable imports enter Canada at much higher rates, which would be reduced by a greater amount. Accordingly, Canada has had to set two special conditions to our participation in the industrial tariff negotiations, both of them designed to ensure that tariffs are reduced in areas of particular importance to Canada. One of these is that other participants be prepared to go beyond the reductions required in a wide range of numerically-low tariff rates, or eliminate such rates altogether. A second condition is that other countries be willing to move towards an even greater liberalization of trade in certain resource-based sectors; forest products and non-ferrous metals have been proposed for such "sector" negotiations. In the latter case, the Canadian objective is to promote further processing of our raw materials prior to export, an objective which is currently constrained by the tendency of most countries to impose higher rates of duty in line with higher degrees of processing on manufactures. Another consideration underlying Canada's participation, one shared by many other participants, is that the negotiated tariff reductions should be phased-in over a period of at least eight years.

Canada also attaches great importance to the negotiations of more liberal trade in agriculture, where non-tariff barriers are often more important than tariffs. For fishery products, we shall be seeking greater access to markets for the expanded production which is to be expected from better management of fish stocks within the 200 mile zone. In negotiations on non-tariff measures we shall, among other things, be seeking to ensure that the benefits of the greater access which may be negotiated for Canadian exports will not be eroded by such measures. Such interdependence is characteristic of the negotiations as a whole, and the results should be a very complex package of concessions and benefits.

While the negotiations at Geneva, by definition, imply an adversary procedure that precludes detailed analysis of all possible or eventual modifications to the Canadian position, it is necessary that policy makers and the public have at their disposal the results of at least the more general analysis indicating the stake Canada has in these negotiations. It is of concern of course whether the Tokyo Round, which has as its basic objective trade liberalization, can succeed in the face of rising protectionist pressures in the industrial world. It could be argued that the fact the negotiations currently are taking place has already had a restraining influence, especially in view of the generally unfavourable world economic climate.

It is commonly recognized that tariffs, as a method of industrial support, operate in a manner so as to create a number of distortions within the economy relative to both a freer trade situation and a regime of support which involves less distorting policy tools such as subsidies or exchange rate adjustment.[1] The tariff analysis must therefore focus on more than direct trade effects. The broader benefits to the economy from trade liberalization can include:

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1) For an interesting treatment see W.M. Corden, "Trade Policy and Economic Welfare" Clarendon Press, Oxford, 1974.

1. savings to consumers;

2. exploitation of comparative advantage, increased efficiency of production or productivity, and lowered intermediate input costs;

3. reduced domestic price levels.

For the purposes of this analysis a number of simplifying assumptions were required so as to be able to generalize the potential results of the tariff side of the negotiations. This led to the preparation of two basic simulations or impacts: the impact of multilateral tariff cuts and the opting out impact. It should be emphasized that the opting out simulation is developed as a purely analytical alternative to the tariff cut (opting in) simulation. If one assumes, as is reasonable, that the current negotiations will lead to an agreement on a broad formula cut, then the alternative, against which one should compare the effects of Canadian participation in such an agreement, is a world in which other GATT members participate in a new liberalized trading system but Canada opts out of these arrangements. The analysis of these basic impacts is then followed by a sensitivity section which attempts to highlight important assumptions and to quantify the potential effects of exceptions, non-tariff barriers, alternative trade-price relationships, productivity adjustments, the fiscal stimulus of foregone customs revenues, an exchange rate depreciation and a slower growth base.

The general assumptions behind all impacts include:

1) The year 1990 is a period far enough removed from the end of the MTN phase-in period for the economy to have absorbed fully this impact and to exhibit new trend characteristics;

2) Normal long run profit margins are maintained sectorally; thus all the effects of reduced tariffs feed through costs and prices, resulting in changes in international competitiveness;

3) Money wages are fixed at the base 1990 level;

4) World prices and income levels are assumed constant at base 1990 levels;

5) No specific alowance has been made for maintained rest of world (non-GATT) tariffs or the respending effects of potential increased exports by these "free riders" (or implicitly these two cancel out);

6) No significant changes in investment policies are assumed on the part of multinationals and the existing institutional arrangements such as the Auto Pact are taken as given;

7) Goverment takes a policy neutral position to the end result (not necessarily the adjustment problem);

8) Monetary policy, by not allowing changes in the long run rate of interest, is "appropriate" in the sense of not offsetting the impacts presented here.

The basic opting in simulation is a phased tariff reduction of 40% on industrial goods and 22.5% on agricultural goods applied as a straight average cut against CEM sectors. Included as well is a unilateral elimination by the United States of all tariffs at rates of 5% or less. This is a major part of the Canadian negotiating position, along with NTB and sectoral agreements, and within the authority of the U.S. Trade Act. An exogenous sector specific increase in productivity is included in the opting in impact, intended to incorporate the type of scale product line rationalization posited to occur in Canada following trade liberalization. In fact an Economic Council Staff Study in 1968[1] argued that adjustment to freer trade conditions would not be as difficult as is commonly expected since much of the adjustment can be accomplished with existing plants, through this type of mechanism. This improvement is introduced into the analysis by assuming domestic producers can make labour productivity improvements which would result in lower production prices, sufficient to offset 50% of any MTN induced increases in competition (as reflected in changes in the sectoral ratios of domestic production to import prices).

Crude oil and products are excluded from the tariff cuts and no negotiated exceptions are assumed in the basic impact. Non-tariff barriers are held constant and a conservative (lower bound) set of sector specific U.S. import price elasticities is used to represent the response of Canadian exports to declines in foreign tariffs. The above impact, since governments are assumed to not react to the MTN end results, does not allow for Federal Government recoupment of lost tariff revenues[2] and therefore by implication a fiscal stimulus is included in the opting in case. As well, no stabilization of the 1990 result in terms of exchange rate changes, shifts in levels of government spending etc., has been allowed for.

In the opting out simulation Canada does not reduce its tariffs when other parties to the General Agreement for Tariffs and Trade implement the above tariff cutting formula. The domestic prices of imports for Canada therefore remain unchanged and no MTN induced productivity improvements are realized. Foreign tariffs facing Canadian exports remain fixed. However, not only does Canada not gain from liberalized general trade creation effects but Candian goods become relatively more expensive than those of other countries in foreign markets, and therefore exports decline from the 1990 base case levels.

To estimate this decrease in Canadian exports from the base it is assumed that the sectoral elasticities of subsitution of Canadian exports in world markets can be represented by sectoral U.S. import price elasticities.

No retaliation in any form is allowed for in terms of such as an increase in existing non-tariff barriers or retaliation at a political level (re: Auto Pact, Defence Sharing Agreement, "Contractual Link" with EEC etc.).

MACROECONOMIC RESULTS

Participation in a regime of reduced tariffs on a multilateral basis as shown in Table 8, results by 1990 in reduced domestic price levels and increased trade. The fiscal stimulus obtained from the foregone custom revenues, coupled with the assumed extra productivity gains results in increases in consumption, investment, GNE and production (.36%). The increase in overall productivity (.54%) more than offsets increases in total economy production and results in a .17% decline in employment. Combining all sectors with negative employment effects, we observe a gross loss of 57,000 jobs, predominantly in manufacturing. This is offset by job gains of 37,000 in other sectors of the Canadian economy, mostly service categories, for a net loss of 20,000. The cheaper imported intermediate goods coupled with productivity gains reduce Canadian production costs by .89%.

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1) Daly D., Keys B., Spence E., "Scale and Specialization in Canada".
2) Consistent with Canadian taxation policy following the Kennedy Round.

TABLE 8

BASIC TARIFF IMPACTS

MAJOR ECONOMIC INDICATORS

(MILLIONS OF $1970)

	1990 BASE CASE		IMPACT OF OPTING IN		IMPACT OF OPTING OUT	
	LEVEL	DIST.[1]	CHANGE	DIST.	CHANGE	DIST.
		%	%	%	%	%
Consumer Expenditures	129,507	64.01	0.61	64.11	-0.42	64.05
Investment (Public & Private)	39,764	19.66	0.27	19.62	-0.31	19.69
Residential Construction	6,377	3.15	0.00	3.14	0.00	3.18
Government Current Expenditures	34,683	17.14	0.00	17.07	0.00	17.22
Exports of Goods & Services	50,489	24.96	1.93	25.32	-1.01	24.82
Imports of Goods & Services	58,510	-28.92	1.63	-29.26	-0.35	-28.96
Gross National Expenditure	202,309	100.00	0.45	100.00	-0.48	100.00
Total Production	369,141		0.36		-0.43	
Employment[2]	11,727		-0.17		-0.37	
(thousands) net			(-20.32)		(-43.45)	
gross			(-56.86)		(-43.45)	
Productivity (prod. per employee)	31.48		0.54		-0.06	
Production Prices (1970=1.00)	3.18		-0.89		0.05	
Domestic Price of Imports (1970=1.00)	3.40		-2.49		0.00	
GNE Price Deflator (1970=1.00)	3.18		-1.24		0.09	

In the opting out simulation the effect of reduced exports (-1.01%) following the substitution of imports from Canada by those from other sources in world markets, is reduced general economic activity as indicated by GNE (-48%) and production (-.43%). Since the export sectors tend to be more competitive, the relative decline in their activity reduces overall productivity in the Canadian economy by .06% and consequently the per cent change in employment at .37% is less than that for production. Note however, that in contrast to the opting in situation there are no individual sector employment gains since the gross and net job loss (Table 8) are identical.

With government expenditures and residential construction demographically determined, the basic tariff impact effects are confined to the other components of GNE. Relative to the changes in the distribution of GNE through the 1980's, discussed in relation to the targets (Table 4), the opting in impact represents a relatively large increase in terms of its effects on trade and consumption. It must be realized however, that the target trends in the distribution of GNE represent a significant slowing from historical trends and this would be the case even with the tariff impact.

1) Distribution of Gross National Expenditure.
2) Throughout this section the Census equivalents to the Labour Force Survey employment targets of Table 2 are used.

SECTORAL RESULTS

Major Subsectors

Table 9 shows the changes in the distribution of production by five major groups for the base case and the two basic MTN simulations.

TABLE 9

BASIC TARIFF IMPACTS

DISTRIBUTION OF PRODUCTION BY MAJOR SUBSECTOR

(MILLIONS OF $1970)

	1970 DIST.	BASE CASE 1980 DIST.	1990 DIST.	OPTING IN 1990 DIST.	OPTING OUT 1990 DIST.
	%	%	%	%	%
Resources	7.80	6.40	5.39	5.39	5.40
Construction	8.92	9.09	9.15	9.13	9.17
Manufacturing	33.33	32.07	30.98	31.02	30.86
Utilities	1.43	1.72	2.05	2.05	2.05
Services	48.51	50.72	52.43	52.41	52.52
Total Economy	100.00	100.00	100.00	100.00	100.00

It can be seen that opting in not only increases total production in the economy, but increases the manufacturing share as well. This is almost totally at the expense of service producing sectors. This is the reverse of the opting out case where total production declines and the manufacturing share suffers relative to service sectors.

Table 10 portrays the potential changes in the distribution of employment among five major sectors of activity for the Canadian economy between the 1990 base case and the two MTN simulations.

TABLE 10

BASIC TARIFF IMPACTS

DISTRIBUTION OF EMPLOYMENT BY MAJOR SUBSECTOR

	1970 DIST.	BASE CASE 1980 DIST.	1990 DIST.	OPTING IN 1990 DIST.	OPTING OUT 1990 DIST.
	%	%	%	%	%
Resources	9.78	7.35	6.47	6.47	6.47
Construction	5.54	5.54	6.19	6.21	6.20
Manufacturing	20.75	18.07	16.76	16.37	16.68
Utilities	1.15	1.08	1.06	1.07	1.06
Services	62.78	67.96	69.52	69.87	69.57
Total Economy	100.00	100.00	100.00	100.00	100.00

        In terms of the changes in employment distribution most sectors,
notably services, gain at the expense of manufacturing irrespective of whether
Canada opts in or out. The only difference is one of degree, with the effect
being more pronounced in the case of Canada's participation (opting in). Thus
the cost of a more competitive manufacturing sector in Canada would appear
to be a somewhat smaller sector in terms of employment creation, even with
the increases in manufacturing output and shares illustrated in Table 9.

Components of Manufacturing

        Table 11 on the following page indicates that manufacturing production
could increase by .49% with the decline in tariffs under the opting in scenario
and decrease by .79% in the opting out situation. The increase in total
manufacturing production for the opting in case masks a relatively large decline
for textiles and electrical products. This is made up for by relatively large
gains in transportation equipment, forest products and iron and steel products.

TABLE 11

BASIC TARIFF IMPACTS

PRODUCTION BY MANUFACTURING SUBSECTOR

(MILLIONS OF $1970)

SUBSECTOR	BASE CASE 1980-1990 ANNUAL GROWTH	OPTING IN CHANGE FROM BASE 1990 LEVEL	OPTING OUT CHANGE FROM BASE 1990 LEVEL
	%	%	%
Food Processing	2.47	0.30	-0.34
Petroleum Products	3.84	0.19	-0.22
Textiles	0.96	-1.49	-0.41
Forest Products	3.37	0.94	-0.44
Chemicals	4.82	0.62	-1.49
Metals	2.48	0.59	-0.87
Misc. Hardware	4.39	-0.09	-0.88
Iron & Steel	3.89	0.95	-1.19
Electrical Products	4.72	-1.07	-1.42
Transportation Equipment	4.34	2.00	-0.64
Machinery	3.94	0.14	-0.82
Misc. Manufacturing	4.22	0.11	-0.52
Total Manufacturing	3.60	0.49	-0.79

The employment losses in manufacturing (Table 12) are significantly larger in the opting in case than for opting out. These employment losses under the tariff cutting impact result from the influence of two factors. Firstly, there are the job losses for those sectors experiencing production declines as a result of increased imports (given base case labour productivity levels). Secondly, lower levels of employment are required for a given output level because of the sector specific productivity increases added to the impact to represent the within-sector restructuring expected as a result of increased competition.

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TABLE 12

BASIC TARIFF IMPACTS

EMPLOYMENT BY MANUFACTURING SUBSECTOR

SUBSECTOR	BASE CASE 1980-1990 ANNUAL GROWTH	OPTING IN CHANGE FROM BASE 1990 LEVEL	OPTING OUT CHANGE FROM BASE 1990 LEVEL
	%	(Thousands of Manyears)	
Food Processing	-0.24	-3.68	-0.76
Petroleum Products	1.07	0.22	-0.40
Textiles	-2.32	-12.79	-1.59
Forest Products	1.02	-3.83	-1.86
Chemicals	2.06	-7.04	-2.88
Metals	-0.26	-0.79	-0.35
Misc. Hardware	2.15	-6.68	-1.72
Iron & Steel	2.17	-2.73	-1.01
Electrical Products	0.82	-5.51	-2.22
Transportation Equipment	1.12	2.24	-1.59
Machinery	0.36	-1.24	-1.06
Misc. Manufacturing	2.52	-6.62	-1.19
Total Manufacturing	0.88	-48.45	-16.63

Aggregate manufacturing productivity increases by 3% over the base 1990 level through the sector specific adjustment described previously. If such specialization and rationalization adjustments were not to occur, employment losses for manufacturing would be about half of that shown in Table 12. However this would be at the cost of turning the .49% increase in production in manufacturing (Table 11) into a loss of 1.07%.

Looking at individual transportation equipment sectors it appears that reduced production costs, generated by reduced tariffs on other sectors, are large enough to outweigh any loss in competitiveness resulting from reduced transportation equipment tariffs. Thus there is an insignificant requirement for offsetting productivity improvements. Given a few exceptions to the above, for example shipbuilding, transportation equipment experiences increased production and employment while all other sectors suffer losses or are relatively neutral in terms of employment.

Major Affected CEM Sectors

The results for individual sectors at the full level of CEM detail are less reliable than more aggregate interpretations. However, it would seem useful to attempt to identify and rank the individual CEM sectors which would be more sensitive to the impact of tariff reductions in terms of employment or production. This individual sector approach has the advantage of giving interpretable indicators of where the main pressure points are and where the main benefits could be. It has the further advantage that when these results are reduced to specifics rather than dealt with in broad generalities they can be vetted against other available evidence. For this purpose sectors have been listed in this section whose 1990 base production or employment levels are simulated to be affected by 1% or 1,000 manyears respectively, as a result of the basic tariff impacts.

Opting In

Table 13 indicates the individual CEM sectors most likely to be affected in terms of employment from the tariff reductions. The relatively large number of sectors experiencing significant changes from base when tariff reductions are simulated, compared to Table 15 for the opting out simulation, reflect the large amount of structural change occasioned by the decline in tariffs and resulting removal of their market distortions. It is interesting that 8 of 18 negatively affected sectors are already projected to have weak employment growth (less than one per cent average annual) from 1980-1990. These sectors however, are a mix of those with weak production forecasts, such as textiles and related categories, and those discussed in the base case to 1990 section, such as machinery, where stronger production growth is matched with high productivity forecasts.

The CEM sectors most strongly affected in terms of production by the tariff impact are presented in Table 14. Again, the textile sectors dominate the negative effect category while the negative effect on the consumer goods categories of appliances and electrical household equipment becomes more pronounced.

TABLE 13

OPTING IN

1990 MTN EMPLOYMENT EFFECT

MAJOR AFFECTED CEM SECTORS RANKED NEGATIVE TO POSITIVE

| | CEM SECTOR | 1980-1990 ANNUAL GROWTH | | IMPACT INDUCED CHANGE FROM |
| # | DESCRIPTION | BASE | IMPACT | BASE (MANYEARS) |
		%		
27	Clothing	-3.46	-4.34	-7,050
29	Paper Products[1]	2.21	1.26	-5,120
43	Consumer Goods	4.07	3.35	-3,620
57	Electrical Industrial Equipment	1.17	0.72	-2,940
26	Textile Products	-0.44	-1.18	-2,770
46	Iron & Steel Products	2.17	1.87	-2,730
58	Electric Household Equip.	-0.17	-1.40	-2,680
49	Boiler & Plate	2.10	1.71	-2,550
53	Misc. Metal Fab. Prod.	2.49	2.80	-2,180
42	Plastic Products	2.77	2.25	-2,000
37	Household Chemicals	4.02	3.59	-1,840
33	Non-Metallic Mineral Prod.	1.82	1.49	-1,620
25	Synthetic Fibres	0.84	0.08	-1,300
55	Machinery	0.36	0.26	-1,240
56	Appliances	-1.62	-2.38	-1,120
40	Plastics & Organic Chemicals	-0.29	-0.94	-1,070
24	Fabrics & Yarns	-4.63	-5.63	-1,010
32	Wood Products	0.55	0.62	-1,050
59	Precision Instruments	2.07	2.40	1,230
65	Transportation Services	2.49	2.51	1,370
35	Construction	2.80	2.83	1,440
62	Auto Parts	1.77	2.12	2,400
66	Communication Services	1.24	1.32	2,580
67	Trade Services	1.42	1.47	9,890
68	Fin., Recr., Gov't., & Other Ser.	2.00	2.03	14,150

1) There is some question as to the size of the results for the Paper Products sector due to the very large Canadian import price elasticity estimated, as well as the degree of rationalization implied by the productivity adjustment for this sector.

TABLE 14

OPTING IN

1990 MTN PRODUCTION EFFECT

MAJOR AFFECTED CEM SECTORS RANKED NEGATIVE TO POSITIVE

	CEM SECTOR	1980-1990 ANNUAL GROWTH		IMPACT INDUCED PER CENT CHANGE FROM BASE
#	DESCRIPTION	BASE	IMPACT %	(MILLIONS OF $1970)
58	Electrical Household Equipment	3.08	2.16	-8.60
23	Leather & Goods	1.11	0.80	-3.03
27	Clothing	-1.52	-1.80	-2.83
25	Synthetic Fibres	2.72	2.46	-2.46
24	Fabric Yarns	- .08	-0.31	-2.32
56	Appliances	2.60	2.41	-1.89
52	Tools	4.32	4.16	-1.48
29	Paper Products	2.90	2.79	-1.10
61	Auto & Truck	4.48	4.59	1.11
7	Tobacco	1.06	1.19	1.22
37	Household Chemicals	5.47	5.63	1.46
36	Rubber Products	4.17	4.42	2.47
32	Wood Products	4.19	4.51	3.08
60	Aircraft	2.04	2.36	3.12
63	Rail & Other Vehicles	3.65	3.97	3.16
62	Auto Parts	5.05	5.41	3.44
59	Precision Instruments	4.83	5.31	4.73

Opting Out

     As previously discussed, employment losses are more evenly distributed in the opting out impact. The service sectors experience the greatest absolute reduction in jobs, although this implies only a marginal reduction in the growth rate of service sector employment to 1990. As one would expect, the export-oriented manufacturing sectors lose proportionately more jobs than sectors primarily serving the domestic market (Table 15). The decreased levels of production from base simulated in the opting out impact (Table 16) are again widely distributed throughout manufacturing.

TABLE 15

OPTING OUT

1990 MTN EMPLOYMENT EFFECT

MAJOR AFFECTED CEM SECTORS RANKED NEGATIVE TO POSITIVE

	CEM SECTOR	1980-1990 ANNUAL GROWTH		IMPACT INDUCED CHANGE FROM BASE
#	DESCRIPTION	BASE %	IMPACT	(MANYEARS)
68	Fin., Recr., Gov't., & Oth. Ser.	2.00	1.97	-11,850
67	Trade Services	1.42	1.38	- 7,230
66	Communication Services	1.24	1.17	- 2,310
65	Transportation Services	2.49	2.47	- 1,680
35	Construction	2.77	2.75	- 1,510
32	Wood Products	0.55	0.46	- 1,420
36	Rubber Products	1.83	1.46	- 1,140
59	Precision Instruments	2.07	1.76	- 1,110
55	Machinery	.36	.28	- 1,060
46	Iron & Steel Products	2.17	2.06	- 1,010

TABLE 16

OPTING OUT

1990 MTN PRODUCTION EFFECT

MAJOR AFFECTED CEM SECTORS RANKED NEGATIVE TO POSITIVE

	CEM SECTOR	1980-1990 ANNUAL GROWTH		IMPACT INDUCED PER CENT CHANGE FROM BASE
#	DESCRIPTION	BASE	IMPACT	(MILLIONS OF $1970)
		%		
36	Rubber Products	4.17	3.80	-3.53
59	Precision Instruments	4.83	4.51	-2.99
40	Plastic & Organic Chemicals	3.27	3.00	-2.61
60	Aircraft	2.04	1.80	-2.40
24	Fabric & Yarn	-.08	-.29	-2.14
63	Rail & Other Veh.	3.65	3.45	-1.93
25	Synthetic Fibres	2.72	2.58	-1.32
53	Metal. Equipment	3.87	3.75	-1.19
57	Electrical Ind. Equipment	5.85	5.72	-1.19
46	Iron & Steel Products	3.89	3.77	-1.19
16	Alcoholic Beverages	3.55	3.44	-1.06
42	Plastic Products	8.76	8.65	-1.03

SENSITIVITY ANALYSIS

There follows a discussion, with impacts where appropriate, of the sensitivity of the basic opting in impact to various assumptions and methodological simplifications.

Tariffs

The nominal tariffs used in this analysis are given in Appendix A. These were calculated from GATT tariff line data for 1971 using trade weighting. Canadian imports were weighted by the U.S., EEC and Japan to represent the "world", while to estimate the tariffs faced by Canadian exports U.S., Japanese and EEC tariffs and imports from Canada were used.

Tariff Formula

The basic opting in impact presented in the preceding section is based
on a formula for a 40% average tariff cut on industrial goods and a 22.5% cut
on agricultural goods as well as elimination of U.S. tariffs of 5% or less.
Looking at the positive income and production gains accompanied by productivity
improvements, one can estimate the result of the application of an alternative
MTN tariff reduction formula of the same order of magnitude as the above. The
employment losses are likely to be relatively similar regardless of the extent
of the tariff cut because the productivity improvement occurs in direct relation
to the depth of the cut and its resultant effect on relative prices and
competition. The income gains in terms of increases in GNE and consumption, as
well as production increases, will however be more affected by any alternative
formula. This is also true in the case of exceptions to the general formula
where the income gains foregone in the economy as a whole are large relative
to the net employment protected in a particular sector. The fact that the
tariff cuts were introduced into the price system of the Canadian Explor Model
on an average cut or linear reduction basis rather than on a harmonization basis
affects the results shown for a number of sectors even within the confines of
an equivalent overall aggregate tariff cut.

Harmonization

The parties to the GATT negotiations have adopted a harmonization formula
for industrial products (the "Swiss Formula") as a working hypothesis, rather
than the across-the-board tariff cut formula used in this analysis. Under
harmonization, each individual tariff item is cut according to a variable formula,
with high tariffs reduced proportionally more than lower ones. For example,
with the formula as used by the U.S., a 15% tariff would be reduced to 9% under
a straight 40% cut, and to 7.25% using the "Swiss Formula". A 5% tariff, on the
other hand, would decrease to 3% under the straight cut and to 3.68% under the
harmonization formula. Furthermore, the formula is different for each country,
to ensure that overall tariff cuts are balanced among the participants. Because
of the composition of Canadian exports, application of this formula by our major
trading partners would result in below average tariff reduction benefits for
Canada.

A comparison of the sectoral effects of the harmonization formula
and an equivalent straight tariff cut shows that for both exports and imports
resulting tariffs on all textile categories would be significantly lower using
the "Swiss Formula". Under harmonization, Canadian exports would benefit from
a large tariff reduction on rubber products and more modest cuts, but still
exceeding the linear cut, on plastic products, organic chemicals, glass products,
electrical industrial equipment, aluminum, paints, and miscellaneous manufactured
goods.

In addition to textiles, harmonized tariff reductions applied to
Canadian imports would be lower than linear cuts for miscellaneous manufactured
goods, ships, rubber, paper and wood products including furniture. Unlike
exports, harmonized tariffs on imports would provide smaller than linear tariff
cuts for chemicals, primary metal products, wire, tools, machinery and electrical
industrial equipment.

As stated in the Analytical Overview, it is realized that the tariff schedules resulting from the MTN will be different from the linear cut formula used in this work. They are, however, also likely to depart from the harmonization formula described above once the various exceptions and other modifications are agreed upon. Thus this analysis uses the simplifying assumption that the linear cut represents a reasonable approximation of the more likely general form to be expected of the final agreement.

Effective Versus Nominal Tariffs

The tariff formula employed in the simulations relates to nominal rather than effective protection. To the extent that an across-the-board tariff reduction would decrease effective protection on more highly processed goods proportionately more than the nominal cut would suggest, Canadian exports of these commodities should benefit.[1] (The corresponding effect on Canadian imports is captured by the CEM model.) This is the essence the argument that freer trade would promote resource upgrading in Canada prior to export.

Estimates of the effects on the U.S. of the Kennedy Round nominal tariff reductions, which may be comparable in size to the expected results of the present negotiations, show that on average effective protection for the U.S. decreased proportionately more than nominal protection. This decline shown in Table 17 was especially marked for capital goods and some intermediate and consumer goods industries. On the other hand, important sectors of export interest to Canada such as certain wood products, primary iron, steel, and non-ferrous metal manufacturing, and scientific and controlling instruments, suffered a small loss of effective protection relative to nominal tariff cuts. Food, petroleum and fabricated structural metal products experienced modest or no reductions in nominal tariffs and like textiles maintained or increased their rates of effective protection.

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1) Suppose that under free trade an item priced at $1.00 contained 50¢ of intermediate goods and 50¢ of value added. Imposition of a 5% tariff on intermediate goods would now raise the cost of materials to 52.5¢ while a tariff of 10% on the manufactured item would raise its price to $1.10 and value added to 57.5¢ giving it an effective rate of protection of 15% rather than the nominal 10%. Conversely a general tariff reduction would cut effective protection more, in this instance by half as much again, than the nominal tariff.

TABLE 17

KENNEDY ROUND CUTS FOR THE U.S.

NOMINAL AND EFFECTIVE PROTECTION

1964 AND 1972[1]

| | NOMINAL RATE | | EFFECTIVE RATE | | DIFFERENCE 1972-1964 | |
	1964	1972	1964	1972	NOMINAL	EFFECTIVE
	%		%			
Average, All Commodities	10	6	20	15	-4	-5
Primary Products	8	7	18	17	-1	-1
Intermediate & Consumer Goods	10	7	22	18	-3	-4
Capital Goods	11	6	15	7	-5	-8

As nominal tariffs are reduced further, non-tariff barriers assume increased relative importance. If one calculated the Kennedy Round tariff cuts in the U.S. on the basis of both tariff and non-tariff measures, nominal protection decreased by only 25% as opposed to the average 40% cut in nominal tariffs only. With similarly sized nominal tariff cuts resulting from the current round of negotiations, the change in protection would be even smaller than the above if there were little or no decrease in non-tariff barriers.

There remain, however, a number of products with both relatively high nominal and effective levels of protection which experienced large drops in effective protection as a result of the Kennedy Round and may do so again. These products are, as often as not, fully rather than semi-manufactured goods such as: industrial machinery, machine shop products, electric industrial equipment, electric lighting and wiring equipment, and furniture. Semi-manufactures include paper board containers and boxes, plastics and synthetic materials, drugs, cleaning and toilet preparations, rubber and plastics products, metal containers and miscellaneous fabricated metal products.

Exceptions

Due to the large negative employment impact on the textile industry[2] that could be expected from trade liberalization for most, if not all GATT participants, pressure would exist to exempt textile products from tariff cuts in the current round of negotiations. The results of a multilateral exception on Canada are summarized in Table 18. Since textiles make up a significant part of trade gains in the MTN, exclusion of these gains decreases the positive welfare effects flowing from the tariff cuts as measured by increases in consumer expenditures and GNE. This negative effect on consumer gains follows from continuing higher domestic prices as this industry remains protected from the competition of cheaper imports. While imports are restrained, export gains also suffer as production prices drop less than under fuller trade liberalization. This net effect is a shift in the employment loss from the textile industry to other manufacturing and non-manufacturing sectors as the net employment picture remains unchanged.

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1) Source: R. Baldwin, "Non-Tariff Distortions of International Trade", Table 5, p. 165.
2) Defined in CEM as Fabricated Yarn, Synthetic Fibres, Textile Products and Clothing.

TABLE 18

OPTING IN WITH TEXTILES EXCEPTED

MAJOR ECONOMIC INDICATORS

PER CENT CHANGE FROM BASE 1990

(MILLIONS OF $1970)

	1990 BASE CASE	IMPACT OF OPTING IN	TEXTILES AND CLOTHING EXCEPTED
		%	%
Consumer Expenditures	129,507	0.61	0.40
Investment (Public & Private)	39,764	0.27	0.22
Residential Construction	6,377	0.00	0.00
Government Current Expenditures	34,683	0.00	0.00
Exports of Goods and Services	50,489	1.93	1.83
Imports of Goods and Services	58,510	1.63	1.39
Gross National Expenditure	202,309	0.45	0.35
Total Production	369,141	0.36	0.31
Employment	11,727	-0.17	-0.17
(thousands)		(-20.32)	(-20.22)
Productivity (prod. per employee)	31.48	0.54	0.49
Production Prices (1970=1.00)	3.18	-0.89	-0.80
Domestic Price of Imports (1970=1.00)	3.40	-2.49	-2.10
GNE Price Deflator (1970=1.00)	3.18	-1.24	-1.05
Manufacturing Production	114,351	0.49	0.51
Manufacturing Employment (,000)	1,965	-2.49	-2.00

Non-Tariff Barriers (NTB's)

Canada would experience significant net export gains from even a modest reduction in NTB's, most notably in agricultural products. Canada's NTB's are generally conceded to be less significant than those of our major trading partners such as Japan and the EEC.[1] Foremost among the barriers to agricultural trade are the variable levies that form part of the EEC's Common Agricultural Policy as well as Japanese and to a lesser extent U.S. quotas. Trade in non-agricultural goods is also impeded by government procurement policies favouring domestic producers, national product standards, government subsidies and countervailing duties, quantitative restrictions and customs valuation and clearing practices.

This list is not exhaustive and it is difficult to derive quantitative estimates for the effects of liberalizing non-tariff barriers. One set of estimates with respect to agricultural and government procurement NTB's has been provided by Cline.[2] According to this study, a reduction of these two classes of NTB's in the same proportion as a tariff cut would further increase total Canadian export gains by 58% for agricultural products and 17% for other goods.

Given the reluctance of most countries to loosen non-tariff restrictions, a 20% reduction in agricultural NTB's, consistent with the similar reduction in agricultural tariffs, was used as a working hypothesis for the impacts presented below. The Brookings estimates have been modified with Industry, Trade and Commerce Sector Branch estimates including the effect of reductions of Canadian agricultural NTB's on imports. Additional exports would be largely wheat and feed grains and be directed towards the EEC and Japan. These NTB-related agricultural export gains were estimated at $100-250 million in 1970 dollars. Perhaps one fifth of these gains would be offset by imports induced by a 20% reduction in Canadian NTB's, especially in the poultry and dairy area. The result of changes in government procurement practices[3] and other non-tariff barriers were not estimated.

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1) For example, spokesmen at the Economic Council of Canada's Conference on Industrial Adaptation stated that Canada should "measure its tariff concessions against a package of tariff and non-tariff concessions from other countries", p. 20, Proceedings, ECC, Ottawa, June 1977.

2) "Trade Negotiations in the Tokyo Round: A Quantitative Assessment", The Brookings Institution, Washington, D.C. 1978

3) Sectors that would benefit from a liberalization of foreign government procurement practices include inter alia industrial machinery, telecommunications equipment, civilian aircraft and wire and cable.

Two impacts were run, using the lower and upper bounds of the above export estimates, and are shown in Table 19. The lower export gain estimates induce a neutralizing inflow of imports, giving small gains in GNE and consumer expenditures but providing a net increase of 8,000 jobs, chiefly in agriculture. The higher export gain estimates exceed the addition to imports and produce significant income and consumption gains along with a creation of a further 20,000 jobs. Since job creation in both impacts is concentrated in agriculture, a sector with below average productivity in terms of output per worker, the productivity gain for the whole economy decreases on average.

TABLE 19

OPTING IN WITH AGRICULTURAL NTB'S

PER CENT CHANGE FROM BASE 1990

(MILLIONS OF $1970)

	1990 BASE CASE	IMPACT OF OPTING IN	20% CUT IN AGRICULTURAL NTB'S (LOW)	(HIGH)
Consumer Expenditures	129,507	0.61	0.64	0.77
Investment (Public & Private)	39,764	0.27	0.32	0.46
Residential Construction	6,377	0.00	0.00	0.00
Government Current Expenditures	34,683	0.00	0.00	0.00
Exports of Goods and Services	50,489	1.93	2.13	2.41
Imports of Goods and Services	58,510	1.63	1.80	1.81
Gross National Expenditure	202,309	0.45	0.48	0.66
Total Production	369,141	0.36	-0.39	0.54
Employment Change	11,727	-0.17	-0.10	0.07
(thousands)		(-20.32)	(-12.22)	(7.68)
Productivity (prod. per employee)	31.48	0.54	0.49	0.48
Production Prices (1970=1.00)	3.18	-0.89	-0.89	-0.89
Domestic Price of Imports (1970=1.00)	3.40	-2.49	-2.49	-2.46
GNE Price Deflator (1970=1.00)	3.18	-1.24	-1.23	-1.26
Manufacturing Production	114,351	0.49	0.45	0.68
Manufacturing Employment (,000)	1,965	-2.49	-2.53	-2.32

In summary terms, the reduction of non-tariff barriers is one of the stated requirements for Canada to gain reciprocity from the current MTN negotiations. While the benefits are difficult to quantify, those accruing to Canada, if significant progress is made at Geneva, may be especially significant and obviously much more likely to be achieved within the framework of an opting in scenario.

Elasticities

The most important assumption embodied in the MTN impacts relates to the reliability of the estimated trade elasticity data. The CEM import demand equations provided most of the Canadian import price elasticities used in this analysis. These equations were estimated under various functional forms, including different lagged price responses used to ensure long run effects were captured. In some cases the CEM import demand schedules failed to reveal any significant price effects. This was often caused by the time period considered, where non-price factors such as strikes, capacity constraints, and non-price rationing methods appeared to distort market responses. For those sectors estimates from other studies were substituted; namely Officer and Hurtubise, Chand and Yadav.[1]

On the export side, the CEM elasticity estimates proved to be unreliable because of the lack of consistent disaggregated foreign price and activity data. As a second best, bur more likely preferable approach, U.S. import price elasticities were assumed as proxies for Canadian export price elasticities. The U.S. represents Canada's major market and U.S. import price elasticity estimates were available at a level of disaggregation required by the CEM. In view of the conservative bias in this study, the lowest reasonable estimates from Baldwin Kreinin, and Stern, Francis and Schumacher were selected.[2]

The U.S. import price elasticity estimates for the opting in case appeared to be too downward biased to be used as world (U.S.) substitution elasticities for the opting out case. Thus a more reasonable set of U.S. import price elasticities was selected. This higher set of elasticities may still represent an optimistic case for opting out since the aggregate estimate of -1.60 is relatively understated compared to other studies, notably Kreinin, who calculated aggregate elasticities of substitution to lie between the range of -2.00 and -3.40 These substitution elasticities are given in Appendix B as well.

As can be seen from Table 20, the aggregate CEM-MTN trade price elasticities used for this analysis compare favourably with the average results of other studies, for both exports and imports.

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1) See Elasticity Bibliography.

2) All sectoral elasticties are provided in Appendix B.

TABLE 20

ELASTICITIES

AGGREGATE ESTIMATES AND WEIGHTED AVERAGES

SOURCE	CAN. EXPORTS	CAN. IMPORTS
Officer Hurtubise	-1.26	-1.17
Houthakker and MaGee	-0.59	-1.46
Brookings		-1.94
Taplin		-1.59
S.F.S. best estimates	-0.79	-1.30
Yadav		-1.60
Hickman and Lau	-0.85	
OECD	-0.94	-1.49
Hooper Wilson	-1.21	
Simple average of above	-0.94	-1.51
CEM-MTN	-0.878*	-1.653

It is true that a number of studies have estimated a low aggregate export elasticity for Canada, of below unity. However, both other studies and import price elasticity estimates for important trading partners such as the United States suggest a higher possible aggregate. Because of this issue a sensitivity test was run using the same U.S. import price elasticities as those used in the opting out impact. These higher U.S. import price elasticities provide a less conservative alternative to the basic opting in impact shown earlier.

* or alternatively U.S. import elasticities weighted by Canadian exports.

Table 21 indicates just how sensitive these results are to the elasticity estimates. The more competitive export response to the tariff cuts represented by these elasticities could, at the aggregate level, double the increase in income and turn employment losses into equivalent gains with no other change in assumptions. Manufacturing, however, would continue to experience employment losses from base levels but with a more significant increase in production than that shown for the opting in case. Thus the basic opting in impact should be taken as a conservative estimate of the likely outcome of tariff cuts on Canada.

TABLE 21

OPTING IN WITH HIGHER EXPORT ELASTICITIES

PER CENT CHANGE FROM BASE 1990

(MILLIONS OF $1970)

	1990 BASE CASE	IMPACT OF OPTING IN	HIGHER EXPORT ELASTICITIES
Consumer Expenditures	129,507	0.61	1.04
Investment (Public & Private)	39,764	0.27	0.60
Residential Construction	6,377	0.00	0.00
Government Current Expenditures	34,683	0.00	0.00
Exports of Goods and Services	50,489	1.93	3.27
Imports of Goods and Services	58,510	1.63	2.22
Gross National Expenditure	202,309	0.45	0.96
Total Production	369,141	0.36	0.85
Employment	11,727	-0.17	0.20
(thousands)		(-20.32)	(23.27)
Productivity (prod. per employee)	31.48	0.54	0.65
Production Prices (1970=1.00)	3.18	-0.89	-0.89
Domestic Price of Imports (1970=1.00)	3.40	-2.49	-2.46
GNE Price Deflator (1970=1.00)	3.18	-1.24	-1.33
Manufacturing Production	114,351	0.49	1.44
Manufacturing Employment (,000)	1,965	-2.49	-1.70

Fiscal Effects

　　　　　While the following section discusses some of the more detailed
assumptions explicit in the preceding analysis, the equilibrium effects on two
markets remain to be discussed. Firstly there is the government sector which,
with fixed demographically determined real expenditures, experiences a decline
in cash requirements from the base due to a reduction in prices. At the same
time a fiscal multiplier approach indicates a small decline in revenues from base
over and above that from the customs source. This is again due to the size of
the drop in prices relative to increased real growth in the tax base. The net
fiscal stimulus to be accommodated by monetary policy is estimated at 50% of the
loss in the customs revenue from base. To be able to separate the pure trade and
price effects from the implied fiscal stimulus effects of the opting in impact,
the stimulus was converted into an income tax equivalent. The effect of recoupment
on the opting in impact is shown in Table 22.

TABLE 22

OPTING IN LESS FISCAL STIMULUS

MAJOR ECONOMIC INDICATORS

PER CENT CHANGE FROM BASE 1990

(MILLIONS OF $1970)

	1990 BASE CASE	IMPACT OF OPTING IN	REMOVAL OF FISCAL STIMULUS
Consumer Expenditures	129,507	0.61	0.14
Investment (Public & Private)	39,764	0.27	0.11
Residential Construction	6.377	0.00	0.00
Government Current Expenditures	34,683	0.00	0.00
Exports of Goods and Services	50,489	1.93	1.93
Imports of Goods and Services	58,510	1.63	1.49
Gross National Expenditure	202,309	0.45	0.16
Total Production	369,141	0.36	0.18
Employment	11,727	-0.17	-0.38
(thousands)		(-20.32)	(-44.85)
Productivity (prod. per employee)	31.48	0.54	0.56
Production Prices (1970=1.00)	3.18	-0.89	-0.88
Domestic Price of Imports (1970=1.00)	3.40	-2.49	-2.51
GNE Price Deflator (1970=1.00)	3.18	-1.24	-1.15
Manufacturing Production	114,351	0.49	0.34
Manufacturing Employment (,000)	1,965	-2.49	-2.64

It would appear that given the conservative trade gains of the opting in impact, fully two thirds of the income gains, as measured by GNE, are due to the implied stimulus. As well, the potential job losses from the pure trade effect alone appear to be twice as large as those for the complete opting in run i.e. with no recoupment of customs revenue losses. The employment created by the fiscal stimulus is concentrated in sectors other than manufacturing, which gains only 3,000 of the 25,000 jobs involved.

Current Account Balance

The final market clearing mechanism to be examined is that of the exchange rate. If one assumes fixed interest rates, and capital and service flows, the opting in impact creates a deterioration in the current account balance of some 1.38 billion dollars in 1990. This represents a 19% increase in the base 1990 deficit with the fixed base 93¢ dollar and a 2% depreciation would be required in equilibrium to neutralize the above change in deficit. Given the potential real trade gains documented in this section which would accrue to Canada with increases in world incomes, a better export response to the reduction in foreign tariffs or successes in negotiating NTB's, it was felt preferable to not include exchange rate adjustments in the basic opting in simulation.

TABLE 23

OPTING IN WITH EXCHANGE RATE CHANGE

MAJOR ECONOMIC INDICATORS

PER CENT CHANGE FROM BASE 1990

(MILLIONS OF $1970)

	1990 BASE CASE	IMPACT OF OPTING IN	2% DEVALUATION
Consumer Expenditures	129,507	0.61	0.62
Investment (Public & Private)	39,764	0.27	0.65
Residential Construction	6,377	0.00	0.00
Government Current Expenditures	34,683	0.00	0.00
Exports of Goods and Services	50,489	1.93	2.86
Imports of Goods and Services	58,510	1.63	0.71
Gross National Expenditure	202,309	0.45	1.03
Total Production	369,141	.36	1.00
Employment	11,727	-0.17	0.23
(thousands)		(-20.32)	(26.89)
Productivity (prod. per employee)	31.48	0.54	0.77
Production Prices (1970=1.00)	3.18	-0.89	-0.46
Domestic Price of Imports (1970=1.00)	3.40	-2.49	-0.46
GNE Price Deflator (1970=1.00)	3.18	-1.24	-0.56
Manufacturing Production	114,351	.49	2.23
Manufacturing Employment (,000)	1,965	-2.49	-0.71

The full productivity adjustment of the opting in impact is held constant for the exchange rate simulation of Table 23, even though it could be argued that such a depreciation would reduce the competitive pressures to rationalize Canadian production. This was done for two reasons: firstly, exchange rate changes result in significant offsetting pressures through subsequent alterations in relative price levels as indicated in Table 23, and secondly, unlike exchange rate changes tariff changes are permanent institutional adjustments which, if significant, should result in a more definite reaction by those affected.

The effect of the devaluation is to turn the aggregate employment losses of the opting in simulation into equivalent gains, while doubling income gains and removing 50% of the tariff induced decline in prices. The job gains are concentrated in manufacturing, which in this case would lose only 13,000 jobs from base 1990 target levels, compared to 49,000 jobs in the basic opting in impact.

The Base Case

It was felt necessary to assess the sensitivity of the MTN "opting in" conclusions of income gains and potential job losses, to a 1990 base operating at a different level of economic activity. Since the Department of Finance targets relate to a strong recovery and sustained level of full employment growth to 1990, this section addresses the question of to what extent the basic findings of this report would be changed by a slower growth base case.

The target analysis includes such critical macro assumptions as the wage and price targets whose attainment will require "successful post controls policies as well as responsive attitudes in the private sector".[1] As well there is the projected high ratio of consumer expenditure to real personal income growth which "implies that consumer demand will not grow at projected rates unless adjustments to savings rates or taxes compensate somewhat for this shortfall".[2]

A "slow growth base" was therefore constructed which simply assumes a contribution of consumption to GNE consistent with a persistence of present high savings rates, holding other scenario inputs constant. This results in a 3% lower level of real Gross National Expenditure in 1990 and an unemployment rate of 8.70% rather than the targetted 5.70%. Table 24 indicates the 1990 levels for the major economic indicators for the two bases and a repeat of the basic opting in run on the "slow growth base.

1) "Canada's Economy, Medium Term Projections and Targets" February 1978, Department of Finance, Ottawa, p.3.

2) ibid. p.64.

TABLE 24

OPTING IN WITH SLOWER GROWTH BASE

MAJOR ECONOMIC INDICATORS

PER CENT CHANGE FROM BASE 1990

(MILLIONS OF $1970)

	TARGET BASE		SLOW GROWTH BASE	
	1990 LEVEL	OPTING IN CHANGE	1990 LEVEL	OPTING IN CHANGE
Consumer Expenditures	129,507	0.61	128,801	0.54
Investment (Public & Private)	39,764	0.27	38,824	0.17
Residential Construction	6,377	0.00	6,377	0.00
Government Current Expenditures	34,683	0.00	34,683	0.00
Exports of Goods and Services	50,489	1.93	49,874	1.88
Imports of Goods and Services	58,510	1.63	57,584	1.57
Gross National Expenditure	202,309	0.45	195,975	0.39
Total Production	369,141	0.36	358,608	0.32
Employment	11,727	-0.17	11,366	-0.24
(thousands)		(-20.32)		(-27.11)
Productivity (prod. per employee)	31.48	0.54	31.55	0.56
Production Prices (1970=1.00)	3.18	-0.89	3.18	-0.83
Domestic Price of Imports (1970=1.00)	3.40	-2.49	3.40	-2.50
GNE Price Deflator (1970=1.00)	3.18	-1.24	3.19	-1.22
Manufacturing Production	114,351	0.49	111,851	0.46
Manufacturing Employment (,000)	1,965	-2.49	1,923	-2.55

With higher savings rate in 1990 the real income multiplier on consumption is reduced and the effect of the basic opting in simulation on a slower growth base is to increase employment losses (by some 7,000) and reduced income gains as measured by the increase in GNE (from .45% to .39%). The basic price, productivity, income and employment structure of the impact, however, does not change from that run on the target base.

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Productivity Adjustment

An exogenous, sector specific productivity improvement was introduced consistent with the view that potential productivity gains could accrue to Canada with trade liberalization. These gains would be occasioned by a stepped up rationalization of production in terms of a greater degree of product line specialization and longer production runs.

If there are no productivity adjustments of the type posited in the opting in impact (whereby sectors recoup 50% of any tariff induced drop in competitiveness), the income gains as measured by GNE would not occur and employment losses could be almost 3,000 greater, without offsetting exchange rate or NTB changes. There would however remain consumer welfare gains as measured by the positive change in consumption in Table 25.

TABLE 25

OPTING IN LESS PRODUCTIVITY ADJUSTMENT

MAJOR ECONOMIC INDICATORS

PER CENT CHANGE FROM BASE 1990

(MILLIONS OF $1970)

	1990 BASE CASE	OPTING IN	NO PRODUCTIVITY CHANGE
Consumer Expenditures	129,507	0.61	0.33
Investment (Public & Private)	39,764	0.27	-0.16
Residential Construction	6,377	0.00	0.00
Government Current Expenditures	34,683	0.00	0.00
Exports of Goods and Services	50,489	1.93	1.34
Imports of Goods and Services	58,510	1.63	2.46
Gross National Expenditure	202,309	0.45	-0.20
Total Production	369,141	0.36	-0.32
Employment	11,727	-0.17	-0.20
(thousands)		(-20.32)	(-23.07)
Productivity (prod. per employee)	31.48	0.54	-0.12
Production Prices (1970=1.00)	3.18	-0.89	-0.40
Domestic Price of Imports (1970=1.00)	3.40	-2.49	-2.85
GNE Price Deflator (1970=1.00)	3.18	-1.24	-0.61
Manufacturing Production	114,351	0.49	-1.07
Manufacturing Employment (,000)	1,965	-2.49	-1.39

A lack of rationalization and ensuing productivity adjustment introduces two offsetting mechanisms. The given level of production in the opting in impact would require more labour input; but lower productivity increases prices, lowers competitiveness and results in a net real trade drain rather than stimulus from the tariff cuts. As can be seen from Table 25 the productivity adjustment contributes to roughly 50% of the opting in price reductions, and turns manufacturing production declines into gains, at the expense of further manufacturing employment losses.

Domestic Wages, Profits and Monetary Policy

The assumption that sectoral wage rates do not change as a result of the tariff impacts could produce biased results, given the fact that productivity improvements and labour shifts have been allowed for in most sectors. However, in aggregate terms the average real wage rate has increased so that the aggregate productivity gains have been compensated for, e.g. GNE per employee for opting in increased by 0.64% while the price deflator for consumer spending decreased by 0.78%. On the one hand, one may argue that the aggregate productivity, real wage principle does not hold on a sector specific basis since all the MTN induced productivity has occurred in the goods producing industries. On the other hand, one may also argue that the shift of employment from the goods producing sectors to the service sectors would entail some adjustment in the labour market whereby increasing (decreasing) prices of labour in the service (goods producing) sectors would have to occur. Thus with these counteracting forces at play both in aggregate and sectorally it may be concluded that no serious consistent bias should result because of this particular assumption.

The profit rates per unit of output in the CEM are also maintained at the 1990 base level in the impacts. These represent "normal" long run profit margins and as such could not be assumed to vary without having sector specific information on possible restructuring. It should be noted that interest rates (the cost of capital) and wage rates (the cost of labour) are held constant as well.

Another assumption made was that the impacts being analyzed would not change investment behaviour other than as a reaction to other market changes. In this connection it is interesting to note the preliminary results from the April 1978 Industry, Trade and Commerce Survey of Business Capital Investment Intentions of some 300 of the largest firms in Canada. This survey shows that 28% of manufacturing firms reporting have considered the ongoing GATT negotiations in their investment planning. Of this limited number of firms which had considered the possible impact of freer trade, 78% reported that these considerations had no effect on their plans, while the remainder was split as to those increasing and those decreasing investment intentions for this reason. From the same survey, nearly 8% of respondents indicated foreign trade barriers were factors constraining investment outlays versus about 13% who mentioned Canadian trade barriers. Of those who felt Canadian tariffs were investment constraints, 30% specified it was because they were too high and therefore, as indicated in the CEM analysis, a significant factor in the cost of production.

The Canadian Explor Model includes no monetary block and as such cannot measure the potential effects or restraints in terms of the money market. The analysis has however explicitly assumed, especially with regard to the financing of any change in the fiscal position of government, that monetary policy is "accommodative". Thus the base case rate of interest does not change to offset the increased level of economic activity nor to induce a change in net foreign capital flows. The various simulations done for this report however, are all as much deflationary as they are stimulative and "accommodative monetary policy" could even imply a drop in the trend growth in the money supply, depending on the relative partial effects on the demand for, and supply of, real money balances.

World Prices and Incomes

For the purpose of the simulations it has been assumed that prices of Canadian imports, before duty, will not change significantly due to the MTN. Imports constitute a much smaller share of GNP for the U.S., Japan and the European Economic Community[1] than for smaller countries like Canada. The initial impact of tariff reductions on the domestic price level and resulting competitive and economy of scale effects on export prices for larger markets are considered to be low. Cline estimates the MTN impacts on the U.S. consumer price index at only 0.16%.[2] Similar small reductions have been calculated by the Wharton and CEM U.S. models. If, however, this general reduction in world prices were taken into account, the MTN would induce additional imports into Canada of perhaps 0.17%.

Consistent with the assumption of a constant level of world prices is the assumption that MTN induced gains in world incomes would be small. While the assumption has been used in a number of other studies, a tariff simulation using the Wharton Model [3] estimated only a 0.1% increase in GNP for the U.S. Using Kreinin's [4] aggregate U.S. income elasticity of imports of 1.69 this would increase Canadian exports by a further 0.17%, assuming constant market shares. Both this increase in exports and the world price estimates represent a very small change from present results. In fact, R. Preston's findings of a total 1.5% increase in U.S. imports using the Wharton Model is very close to the MTN-induced Canadian export gain when productivity changes are excluded. However, Cline's discussion

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1) i.e. imports from outside the EEC.

2) W. Cline "The Trade Negotiations in the Tokyo Round", op. cit.

3) R. Preston and Y.Y. O'Brien "Trade Impact Studies Using the Wharton Annual and Industry Forecasting Model" prepared for the U.S. Department of Labour.

4) M.F. Kreinin, "Trade Relations of the EEC: An Empirical Investigation" New York, Praeger, 1974.

of dynamic welfare effects[1] and evidence based on the integration effects of the European Economic Community could permit an assumption of larger MTN-induced income gains for Canada's major trading partners. This would result in an impact of the same order of magnitude as that shown previously in this paper for higher Canadian export price elasticities. Empirical evidence on these dynamic effects is still more qualitative than quantitative. Balassa[2] reports that during integration of the EEC, increased economies of scale contributed 0.5%, and additional investment 0.2%, to GNP accelerated growth. Krause[3] calculated a compound annual growth rate gain during the adjustment period of 0.19% for the EEC and an annual gain of 0.16% for the European Free Trade Association, a much looser free trade arrangement. Cline, however, cautions that the dynamic effects of the MTN may well be less than the EEC experience since the major MTN participants now possess large internal markets which would tend to weaken the MTN stimulus with respect to further gains from economies of scale and the competitive effect of imports (consistent with the analysis included here).

1) ibid, Section of Welfare Effects.

2) Balasse, B. ed., "European Economic Integration and the United States" Amsterdam: North Holland Publishing Co., 1975.

3) Krause, L.B. "European Integration and the United States" Washington: The Brookings Institution.

APPENDIX A

TRADE ELASTICITIES

CEM SECTOR		CANADIAN IMPORT PRICE ELASTICITIES	WORLD IMPORT PRICE ELASTICITIES FROM CANADA	CANADIAN EXPORT PRICE ELASTICITIES OF SUBSTITUTIONS
NO.	DESCRIPTION			
1.	GRAIN	1.20	0.40	0.40
2.	FISH FUR	1.21	0.70	0.70
3.	LIVE ANIMALS	1.23	0.40	0.40
4.	MILK & EGGS	0.4	0.40	0.40
5.	FEEDS	0.9	1.13	3.41
6.	AG. NES	0.4	0.41	0.41
7.	TOBACCO	0.87	1.13	1.13
8.	MEAT & BY PROD.	2.88	0.44	1.13
9.	POUL. & DAIRY	2.08	0.44	1.13
10.	OIL FATS	1.94	0.44	1.13
11.	FISH PROD.	2.95	0.44	1.13
12.	FRT & VEG. PROD.	0.63	0.44	1.13
13.	CEREAL PROD.	2.62	0.44	1.13
14.	CONF. & SUG. ETC.	1.10	0.44	1.13
15.	NON-ALC. BEV.	0.87	1.14	1.64
16.	ALC. BEV.	1.36	1.14	1.64
17.	FOOD NES	0.96	0.44	1.13
18.	COAL	N/A	N/A	N/A
19.	CRUDE & NAT. GAS.	N/A	N/A	N/A
20.	PETROL. PROD.	N/A	N/A	N/A
21.	ELEC. POW.	N/A	N/A	N/A
22.	GAS & UTIL.	N/A	N/A	N/A
23.	LEATH.	2.06	0.74	1.58
24.	FAB. YARN	1.61	0.99	1.14
25.	SYNTH. FIB.	1.64	0.99	1.14
26.	TEXT. PROD.	1.44	0.86	1.14
27.	CLOTHING	1.61	3.68	3.92
28.	PULP & PAPER	0.695	0.30	0.55
29.	PAPER PROD.	5.49	0.30	0.55
30.	PRINT & PUBL.	1.27	1.41	3.00
31.	CRUDE WOOD	1.65	0.10	0.69
32.	WOOD PROD.	1.26	2.76	3.00
33.	NON-MET. PROD.	3.42	1.58	2.00
34.	GLASS PROD.	1.47	1.60	1.60

CEM SECTOR		CANADIAN IMPORT PRICE ELASTICITIES	WORLD IMPORT PRICE ELASTICITIES FROM CANADA	CANADIAN EXPORT PRICE ELASTICITIES OF SUBSTITUTIONS
NO.	DESCRIPTION			
35.	CONSTR.	N/A	N/A	N/A
36.	RUBBER PROD.	1.93	3.13	5.26
37.	HOUS. CHEM.	1.386	0.76	0.76
38.	PAINT & OTH.	3.92	1.56	1.56
39.	FRT & IND. CHEM.	2.36	0.60	2.53
40.	PLAST. & ORG.	2.09	0.55	2.53
41.	EXPL. & INORG.	3.16	0.60	0.60
42.	PLAST. PROD.	1.34	2.53	2.53
43.	MANUF. NES	1.17	0.09	2.06
44.	IRON ORE	1.21	1.24	1.24
45.	OTH. MET. OR.	0.98	1.29	1.29
46.	IRON & STEEL PROD.	0.79	0.85	1.42
47.	ALUMINUM	3.47	1.14	1.14
48.	COP & OTH. NF.	0.38	0.45	1.38
49.	BOILER PLATE	1.11	0.67	3.59
50.	MISC. MET. PROD.	2.20	0.67	3.59
51.	WIRE PROD.	0.94	0.85	1.42
52.	TOOLS	2.99	2.77	2.77
53.	MET. EQUIP.	3.19	2.16	2.16
54.	MISC. MET.	1.64	1.34	2.00
55.	NON-ELEC. MACH.	1.13	0.66	1.02
56.	APPLIANCES	1.83	0.81	0.81
57.	ELEC. IND. EQUIP.	2.43	0.71	1.00
58.	ELEC. HH. EQUIP.	3.52	0.71	0.71
59.	PREC. INST.	1.18	3.75	3.75
60.	AIRCRAFT	2.47	2.17	3.28
61.	AUTO & TRUCK	0.94	0.82	3.28
62.	AUTO PARTS	3.235	2.34	3.28
63.	RAIL & OTH. VEH.	0.94	2.34	3.28
64.	SHIPS	0.94	2.34	3.28
65.	TRANSP.	N/A	N/A	N/A
66.	COMMUNIC.	N/A	N/A	N/A
67.	TRADE SER.	N/A	N/A	N/A
68.	SERV. NES	N/A	N/A	N/A
	AGGREGATE	1.653	0.878	1.596

APPENDIX B

SECTORAL TARIFF RATES FOR CANADA AND WORLD

CEM SECTOR

NO.	DESCRIPTION	CANADA	WORLD
1.	GRAIN	0.03849	0.05969
2.	FISH FUR	0.00054	0.02255
3.	LIVE ANIMALS	0.03774	0.03080
4.	MILK & EGGS	0.04371	0.11094
5.	FEEDS	0.09369	0.01700
6.	AG. NES	0.03010	0.04244
7.	TOBACCO	0.25754	0.22164
8.	MEAT & BY PROD.	0.05563	0.04391
9.	POUL. & DAIRY	0.09546	0.05429
10.	OIL FATS	0.06069	0.03782
11.	FISH PROD.	0.05382	0.04088
12.	FRT. & VEG. PROD.	0.07864	0.09115
13.	CEREAL PROD.	0.13426	0.09342
14.	CONF. & SUG. ETC.	0.11307	0.04866
15.	NON-ALC. BEV.	0.11855	0.06438
16.	ALC. BEV.	0.13288	0.11950
17.	FOOD NES	0.06960	0.06804
18.	COAL	0.0	0.00129
19.	CRUDE & NAT. GAS	0.01088	0.02873
20.	PETROL. PROD.	0.07907	0.01725
21.	ELEC. POW.	0.0	0.0
22.	GAS & UTIL.	0.00100	0.00804
23.	LEATH.	0.16421	0.05303
24.	FAB. YARN	0.20419	0.13508
25.	SYNTH. FIB.	0.15889	0.10851
26.	TEXT. PROD.	0.22771	0.12365
27.	CLOTHING	0.25259	0.19169
28.	PULP & PAPER	0.09043	0.01190
29.	PAPER PROD.	0.14472	0.02476
30.	PRINT. & PUBL.	0.04647	0.01066
31.	CRUDE WOOD	0.00003	0.0
32.	WOOD PROD.	0.10169	0.01343
33.	NON-MET. PROD.	0.07520	0.01662
34.	GLASS PROD.	0.10132	0.09344

CEM SECTOR

NO.	DESCRIPTION	CANADA	WORLD
35.	CONSTR.	N/A	N/A
36.	RUBBER PROD.	0.13153	0.17766
37.	HOUS. CHEM.	0.10519	0.06638
38.	PAINT & OTHER	0.06753	0.07026
39.	FERT. & IND. CHEM.	0.05040	0.00705
40.	PLAST. & ORG.	0.09511	0.12303
41.	EXPL. & INORG.	0.08695	0.02450
42.	PLAST. PROD.	0.13164	0.10441
43.	MANUF. NES	0.17299	0.07950
44.	IRON ORE	0.00032	0.00535
45.	OTH. MET. OR.	0.00032	0.00535
46.	IRON & STEEL PROD.	0.08555	0.06460
47.	ALUMINUM	0.04025	0.08085
48.	COP & OTH. NF.	0.02656	0.01708
49.	BOILER PLATE	0.12643	0.04867
50.	MISC. MET. PROD.	0.09884	0.05344
51.	WIRE PROD.	0.08152	0.03908
52.	TOOLS	0.10513	0.04910
53.	MET. EQUIP.	0.12231	0.07019
54.	MISC. MET.	0.07924	0.00448
55.	NON-ELEC. MACH.	0.06091	0.04090
56.	APPLIANCES	0.13514	0.05859
57.	ELEC. IND. EQUIP.	0.10625	0.08286
58.	ELEC. HH. EQUIP.	0.12230	0.07513
59.	PREC. INST.	0.06663	0.04968
60.	AIRCRAFT	0.03707	0.04372
61.	AUTO & TRUCK	0.03630	0.00058
62.	AUTO PARTS	0.02221	0.00725
63.	RAIL & OTH. VEH.	0.10600	0.05574
64.	SHIPS	0.17311	0.04380
65.	TRANSP.	N/A	N/A
66.	COMMUNIC.	N/A	N/A
67.	TRADE SER.	N/A	N/A
68.	SERV. NES	0.00235	0.01185

APPENDIX C

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