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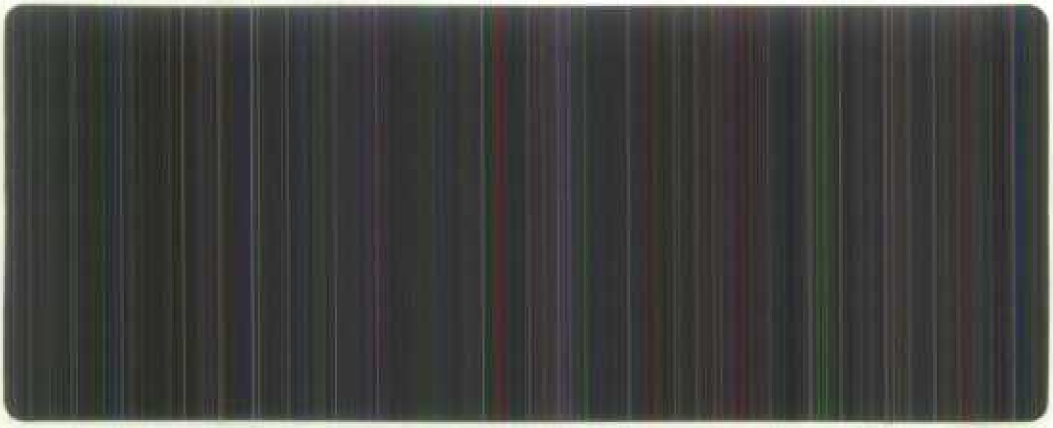

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(supplement

THE INPUT-OUTPUT STRUCTURE OF THE ECONOMIES OF THE YUKON AND NORTHWEST TERRITORIES, 1984

by

P. A. GÉNÉREUX

No. 36

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The analysis and comments in this paper are the responsibility of the author and does not necessarily represent the views or policies of Statistics Canada.

ABSTRACT

One of the difficulties facing policy makers and analysts in the Yukon and the Northwest Territories is the lack of detailed information about the economies of the North. For the first time, Statistics Canada has derived, for each of the territories separately, input-output (I/O) tables that lend themselves to a more comprehensive assessment of economic activity.

This initiative provides a perspective on the economies of the territories not available before and on a par with that of the other provinces.

The I/O territorial tables describe the structure and the functioning of the economies of the North. This paper uses the I/O tables to assess various aspects of the northern economies, such as commodity trade flows; industries active in the North; and, value added and employment by industry. Also, the impact of various economic scenarios on the economies of the North are presented.

Although I/O tables are invaluable in providing detailed information, more needs to be done to enhance the quality of information about the northern economies. For instance, the tables used in this paper are for 1984 only. Analysts need similar tables for other years to measure the evolution of the northern economies.

Several problems are presented. Of interest, the disparity in data measuring economic production as well as the economic production of arts and crafts and of the subsistence activities such as hunting products consumed in households need to be addressed.

A familiarity with the applications discussed here should help the users understand the economies of the North.

Key Words: input-output tables, territories, North, commodities, industries, trade flows, value added

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THE INPUT-OUTPUT STRUCTURE OF THE ECONOMIES OF THE YUKON AND NORTHWEST TERRITORIES, 1984

*P. A. GÉNÉREUX**

I. Introduction

Input-Output (I/O) tables provide the most detailed accounting available for production and consumption in any economy. The tables focus on the roles of producers and purchasers and their economic transactions, classified by commodities (goods and services).

In the past, although the Yukon and Northwest Territories (NWT) were included in the economic accounts for Canada, they were treated as one entity for statistical purposes. This lack of detailed economic information by territory made economic analysis and the development of sound policies difficult.

Under an agreement with the governments of the Yukon and the Northwest Territories, Statistics Canada (STC) agreed to develop economic accounts for each of the territories. This paper is one of the results. For the first time, STC has derived I/O tables for the Yukon and the NWT separately. This initiative provides a perspective on the economies of the territories not available before and on a par with that of the other provinces.

This paper illustrates how I/O tables can be used to provide a detailed picture of an economy. In so doing, the paper presents a picture of the industrial structure of the Yukon and the NWT for 1984[1]. It also reviews some analytical applications of the tables. Finally, this report describes some of the problems associated with the definitions and concepts underlying the I/O territorial tables and suggests some improvements.

**P. A. Génereux is an economist with Statistics Canada (STC). The actual derivation of the Input/Output (I/O) tables for the Yukon and the NWT was carried out under the direction of R. Rioux, then Chief of the Provincial I/O Tables and GDP by Industry Section, I/O Division, STC. This paper could not have been produced without the knowledge and expertise of the staff of the Yukon and NWT Bureau of Statistics. The staff of the Bureau collaborated closely with STC in deriving the I/O territorial tables, and the author wishes to thank them for their invaluable assistance.*

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[1] I/O Tables are available for the years 1974 and 1979, with the two territories combined; however, the 1974, 1979 and 1984 I/O tables are not comparable and consistent, because data sources and methodologies have evolved over time.

II. Economic Situation

Before addressing the many uses of the I/O tables, a brief review of the Canadian and territorial economies provides some background for a better analysis of the results in this paper.

The following table presents various data for Canada and the Territories for 1984.

TEXT TABLE 1. Provincial and Territorial Profiles, 1984

	GDP[2] ($000,000)	Population[3] at June 1 1984 ('000)	Area[4] (km^2)	Provincial/Territorial Distribution			Unemployment[4] Rate	Income per Capita[4] ($)	GDP per Capita ($)
				GDP %	Population %	Area %			
Newfoundland	5947	572.4	405,720	1.3	2.3	4.1	20.5	6,980	10,390
PEI	1297	125.1	5,660	0.3	0.5	0.1	12.8	7,704	10,368
Nova Scotia	10701	864.4	55,490	2.4	3.5	0.6	13.1	9,095	12,380
New Brunswick	8375	707.9	73,440	1.9	2.8	0.7	14.9	8,275	11,830
Quebec	100991	6492.0	1,540,680	22.8	26.0	15.5	12.8	9,890	15,556
Ontario	171499	8901.7	1,068,580	38.6	35.6	10.7	9.1	12,443	19,266
Manitoba	16520	1055.1	649,950	3.7	4.2	6.5	8.3	10,324	15,657
Saskatchewan	16390	1000.5	652,330	3.7	4.0	6.5	8.0	9,937	16,382
Alberta	58941	2338.5	661,190	13.3	9.4	6.6	11.2	11,965	25,204
B.C.	51119	2847.7	947,800	11.6	11.4	9.5	14.7	11,600	17,950
Yukon	447	23.1	483,450	0.1	0.1	4.8	13.0	11,738	19,350
N.W.T.	1427	50.1	3,426,320	0.3	0.2	34.4	17.0	10,559	28,483
Canada	443654	24978.2	9,970,320	100.0	100.0	100.0	11.6	11,090	17,762

The NWT accounts for over 34% of the total area of Canada while the Yukon accounts for nearly 5%. The population of the Yukon and NWT was approximately 23,100 and 50,100, respectively, representing 0.1% and 0.2% of the Canadian population. Their GDP level stood at $447 and $1427 million, respectively, or 0.1% and 0.3% of the Canadian GDP. The NWT GDP per capita was the highest in Canada in 1984.

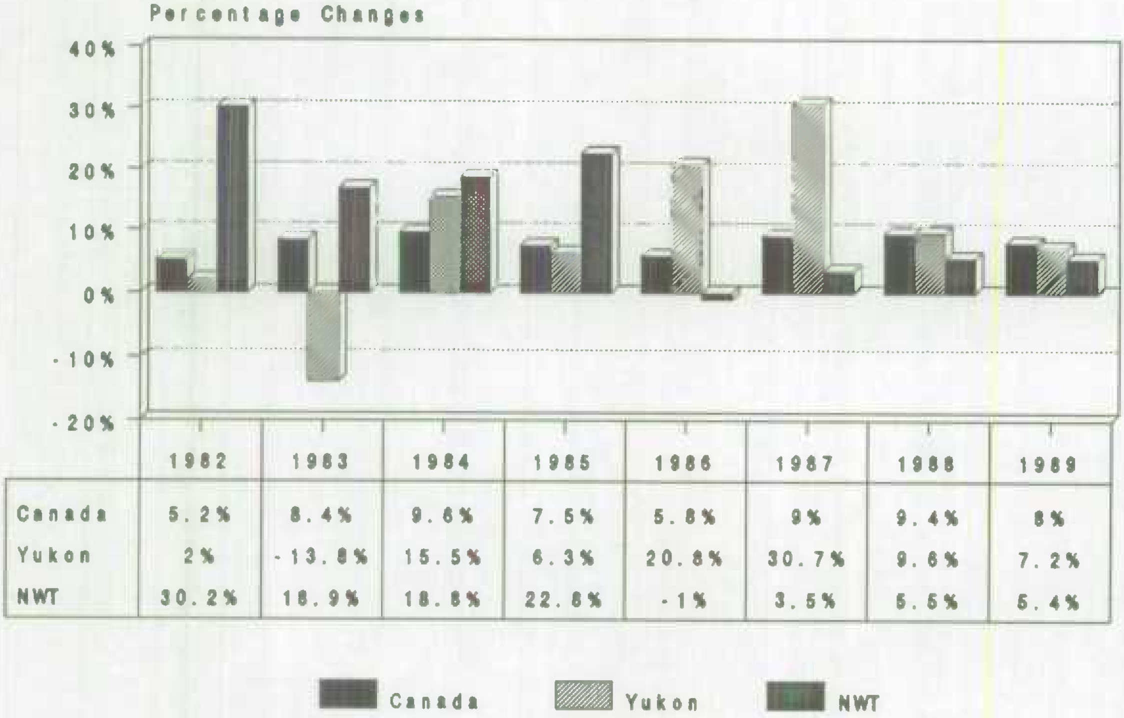
---

[2] Statistics Canada, **Provincial Economic Accounts, Annual Estimates**, Catalogue 13-213, Annual. The GDP data used originate from the Income and Expenditure Account as it is the only Account which currently shows total GDP over time.

[3] For population data, see Table 1, **Post Censal Annual Estimates Population by Marital Status, Age, Sex, and Components of Growth for Canada, Provinces and Territories**, June 1, 1989, Statistics Canada, Catalogue 91-210, Volume 7, Annual. For total area and unemployment rate (Canada unemployment rate does not include Yukon and NWT), see Table 1.1, **Canada Year Book 1990**, Statistics Canada, Ottawa, 1989, Annual. For income, see Table 1, **Taxation Statistics**, 1986 Edition, Revenue Canada Taxation, Catalogue Rv 44-1986, Annual.

The following table shows the year-over-year percentage changes since 1981 in the GDP for Canada, the Yukon and the NWT.

TEXT TABLE 2. Percentage Changes in GDP at Market Prices, Canada, Yukon and NWT, 1981 to Date[4]



	1982	1983	1984	1985	1986	1987	1988	1989
Canada	5.2%	8.4%	9.6%	7.5%	5.8%	9%	9.4%	8%
Yukon	2%	-13.8%	15.5%	6.3%	20.8%	30.7%	9.6%	7.2%
NWT	30.2%	16.9%	18.8%	22.8%	-1%	3.5%	5.5%	5.4%

The percentage change in the GDP for the Yukon and the NWT varied significantly between 1981 and 1989. Between 1983 and 1984, the Yukon and NWT economies grew by 15.5% and 18.8%, respectively, while the increase in the Canadian economy was 9.6%. In fact, over that time period, the economic growth of the territories was the highest in Canada[5].

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[4] **Ibid** (2).

[5] Ideally, for economic analysis, constant dollar estimates are preferred; at present, constant dollar estimates for total GDP by territories (or provinces) are not available from STC.

III. Overview of the Input-Output Tables

Input-output data for the territories are attached in six separate though inter-related tables (See Appendix A). The first two I/O tables, showing the Make (Output) matrix, present commodity outputs, that is, the goods and services produced by each domestic industry.

Tables Three and Four comprise the Use (Input) matrix. These tables show the commodities and the primary inputs (the earnings of the factors of production) purchased for use in the production process by each domestic industry. In fact, they describe the complete costs of production, including labour costs and operating surplus (which includes profits) for each domestic industry.

Tables Five and Six, the Final Demand matrix, present the value of commodities flowing to the various categories of final demand (whether consumer, business, government or non-resident).

This final demand matrix includes the trade flows of goods and services, that is, the movements of commodities with residents of other territories, provinces, or foreign countries.

The actual construction[6] of the I/O tables is done at the most detailed level of aggregation possible. However, it is not possible to release this detailed information because of space limitations and also because of the provisions for data confidentiality in the Statistics Act.

IV. Uses of the Input-Output Tables

The I/O tables have many uses in economic analysis. This paper uses data from the NWT and the Yukon from 1984 to demonstrate the kind of information these tables can reveal.

a) Supply and Disposition of Commodities

The supply and the disposition of commodities for the North are presented in the Text Table 3.

If we want to track commodity supply, we should look at the outputs of domestic industries found in the Make matrices in Appendix A,

---

[6] For more information on the definitions and the conceptual framework of the I/O Tables, see **The input-output structure of the Canadian economy, 1961-1981 (Revised data)**, Catalogue 15-510.

TEXT TABLE 3. Supply and Disposition of Commodities , Yukon and NWT, 1984

	Supply				Disposition						
					Intermediate use	Final Use					
Commodities[7]	Business Sector[8]	Imports[9] (Inter-Prov. & Foreign)	Gov't sales of goods & services	Total		Persn. expend.	Fixed capital expend.	Inventories	Gross Gov't expend.	Exports (Inter-Prov. & Foreign)	Total
	Millions of dollars										
YUKON											
Agricultural, fishing, forestry & manuf. products	12.7	250.6	0.5	263.8	121.3	90.1	29.2	0.2	18.7	4.3	263.8
Minerals	47.5	3.2	0.0	50.6	6.3	0.1	0.0	-3.4	0.1	47.5	50.6
Construction output	158.8	0.0	0.0	158.8	18.3	0.1	108.4	0.0	32.0	0.0	158.8
Utilities	21.6	0.0	5.6	27.2	9.7	7.3	0.0	0.0	10.2	0.0	27.2
Other goods	0.0	0.7	0.0	0.7	0.2	0.5	0.0	0.0	0.0	0.0	0.7
Sub-total goods	240.5	254.5	6.1	501.0	155.8	98.1	137.5	-3.2	61.0	51.9	501.0
Transportation and trade	205.3	72.3	7.6	285.2	60.4	58.3	5.2	0.0	10.6	150.6	285.2
Other services	196.7	88.4	18.7	303.8	93.3	98.9	2.1	0.0	64.8	44.7	303.8
Sub-total services	402.0	160.7	26.2	589.0	153.8	157.2	7.3	0.0	75.4	195.3	589.0
Total	642.5	415.2	32.3	1090.0	309.6	255.3	144.8	-3.2	136.4	247.2	1090.0
	Millions of dollars										
NWT											
Agricultural, fishing, forestry & manuf. products	73.2	871.6	34.6	979.5	571.9	151.0	142.4	-0.4	89.1	25.5	979.5
Minerals	925.2	390.0	0.0	1315.2	843.5	0.1	0.0	7.6	0.7	463.3	1315.2
Construction output	1454.7	0.0	0.0	1454.7	23.0	0.1	1409.7	0.0	21.9	0.0	1454.7
Utilities	70.8	0.2	14.8	85.8	37.0	21.7	0.0	0.0	27.2	0.0	85.8
Other goods	0.0	1.3	0.0	1.3	0.3	1.0	0.0	0.0	0.1	0.0	1.3
Sub-total goods	2523.9	1263.2	49.5	3836.5	1475.7	173.8	1552.1	7.2	138.9	488.7	3836.5
Transportation and trade	250.0	263.2	10.9	524.0	181.6	100.4	36.7	0.0	38.7	166.6	524.0
Other services	367.9	420.1	48.1	836.1	387.8	166.2	4.7	0.0	205.2	72.0	836.1
Sub-total services	617.8	683.3	58.9	1360.1	569.4	266.6	41.5	0.0	244.0	238.6	1360.1
Total	3141.7	1946.5	108.4	5196.6	2045.1	440.5	1593.6	7.2	382.8	727.4	5196.6

*Detail may not add properly due to rounding.

---

[7] The broad commodity groups are defined in terms of I/O small level commodities as follows:

Broad commodity groups	Small level commodities
a) Agricultural, fishing, forestry, manufactured products	1-4,9-28
b) Minerals	5-8
c) Construction output	29-31
d) Utilities	34
e) Other goods	44
f) Transportation and Trade	32,35,36
g) Other services	33,37-40,45

[8] The total value of the business sector output excludes output of fictive industries namely transportation margins, operating supplies, office supplies, laboratory supplies, cafeteria supplies, travel and entertainment and finally, advertising and promotion. These industries serve to route commodities and inclusion of their output would overstate business sector output. Inputs of fictive commodities have been allocated back to the relevant commodities.

[9] Column values include duties such that the total value of imports differs by this amount from the total value of imports in the final demand matrix.

and at government production and imports from non-residents in the Final Demand matrices.

To track the use of commodities, we turn to the Use matrices for intermediate consumption by domestic industries, and to the Final Demand matrices for final commodity use in households, business and government, and for exports to non-residents.

In 1984, the supply of goods and services from domestic industries, government production and imports was $1.1 billion in the Yukon and $5.2 billion in the NWT. The proportion of goods within this total supply was 46% for the Yukon and nearly 74% for the NWT.

The role of the business sector in both economies is an interesting one. In both territories this sector supplied the most commodities. In addition, the proportion (60%) of total supply originating in the business sector was approximately the same for both territories.

Similarly, the contribution of imports to the total supply of goods and services was approximately the same for both territories, about 38%. However, by commodity groupings, the proportions are different. Imports of services are much more important in the NWT, where they are just over 50%, than in the Yukon, at just over 27%.

When we look at the disposition of commodities, there is one category particularly worth noting: NWT Fixed Capital Expenditures. For the NWT, the unprecedented high level for Fixed Capital Expenditures reflected the substantial activity in oil and gas exploration occurring in 1984.

The pattern of consumer spending is similar in both territories[10]. The population of the NWT is about double that of the Yukon and the level of consumer spending is also roughly twice that of the Yukon.

For exports, the patterns are different. For the NWT, the largest share of total exports was for minerals, while for the Yukon, it was for transportation and trade. It should be noted, however, that in 1984, a number of Yukon metal mines were shut down.

From the data in the I/O matrices, we can discern a number of indicators by commodities to shed light on the functioning of the northern economies. For instance, we can determine the extent of its dependency for its own consumption on imports from other provinces and countries.

---

[10] To a large extent, the only expenditures quantified in the I/O tables are those occurring in a market economy.

There are three sources of supply possible for domestic consumption: domestic industries, imports, and production by the government sector; domestic industries and imports are the most important sources and will be discussed in this paper.

In determining the North's dependency on imports, we must review the concept of domestic availability. Briefly, domestic availability is defined as the total domestic production, plus imports, minus exports. When we know domestic availability, we can define the self-supply and import ratios by commodities.

The self-supply ratio is the proportion of domestic production available for domestic use. The import share is the proportion of the consumption that comes from imports. A high self-supply ratio indicates dependency on domestic industries for its consumption, whereas a high import ratio indicates dependency on outside economies. Text Tables 4 and 5 show the self-supply and import ratios for 1984 using data as presented in Text Table 3.

In general, both the NWT and the Yukon have a number of fairly high import shares. This confirms the perception that the economies of the North rely on imports for its intermediate and final consumption.

TEXT TABLE 4. 1984 Self-Supply and Import Ratios, Yukon

	Self-Supply Ratios %	Import Ratios %
Agricultural, fishing, forestry & manufactured products	3.2	96.8
Minerals	0.0	100.0
Construction output	100.0	0.0
Utilities	100.0	0.0
Other goods	0.0	100.0
Sub-total	42.6	57.4
Transportation and trade	43.1	56.9
Other services	63.2	36.8
Sub-total services	56.3	43.7
Total	48.8	51.2

TEXT TABLE 5. 1984 Self-Supply and Import Ratios, NWT

	Self-Supply Ratios %	Import Ratios %
Agricultural, fishing, forestry & manufactured products	5.2	94.8
Minerals	54.2	45.8
Construction output	100.0	0.0
Utilities	99.7	0.3
Other goods	0.0	100.0
Sub-total	61.7	38.3
Transportation and trade	24.1	75.9
Other services	41.3	58.7
Sub-total services	35.7	64.3
Total	55.4	44.6

b) Commodity Trade Flows

From the I/O tables for the territories, specifically from the Final Demand matrix (see Appendix A), we can measure the inter-provincial/territorial trade flows, that is, the movement of goods and services within Canada, and assess the importance for the North of its trade with other provincial economies. For example, production in one territory may require commodities from other provinces. In turn, the industry producing the commodities in another province may require commodities from one of the territories.

These data on inter-provincial flows can be combined with information about foreign trade flows to evaluate the total impact on the territories of all external flows; for example, the NWT exports outside Canada minerals worth $334 million, respectively.

The role that Ontario plays in the North's economies provides an interesting example of this impact of external trade flows. To support its economic activities, NWT imports from Ontario $412 million, out of which business services are worth $25.6 million; it exports goods and services worth $34.9 million. The Yukon imports from Ontario commodities worth nearly $101 million, including $71 million of manufactured products, but it exports to that province commodities worth a total of only $14.5 million.

The following questions can be put forward:

- How important is the foreign trade?
- To which provinces are the exports made?
- From which provinces are the imports received?

- Which commodities are exported?
- Which commodities are imported?

The following text tables provide some of the answers.

TEXT TABLE 6. Trade Flows for the Yukon, 1984, All Commodities

	Exports	Imports (Thousands of $)	Balances
Foreign Trade	45468	54976	-9508
Inter-Prov. Trade	201709	360225	-158516
Nfld	6	17	-11
PEI	0	21	-21
NS	98	59	39
NB	10	122	-112
Québec	1843	37830	-35987
Ontario	14471	100874	-86403
Manitoba	5995	7809	-1814
Sask	6042	1287	4755
Alberta	14229	54544	-40315
BC	153051	151913	1138
NWT	5964	5749	215
Total Trade	247177	415201	-168024

TEXT TABLE 7. Trade Flows for the NWT, 1984, All Commodities

	Exports	Imports (Thousands of $)	Balances
Foreign Trade	413652	192800	220852
Inter-Prov. Trade	313710	1753657	-1439947
Nfld	12	85	-73
PEI	22	46	-24
NS	509	1004	-495
NB	1376	862	514
Québec	39607	274767	-235160
Ontario	34921	412092	-377171
Manitoba	1244	26750	-25506
Sask	2812	27868	-25056
Alberta	59188	715173	-655985
BC	168270	289046	-120776
Yukon	5749	5964	-215
Total Trade	727362	1946457	-1219095

Note: A negative (-) balance means that imports are larger than exports.

In 1984, both territories were net importers; in total, they imported more than they exported. Furthermore, with a few exceptions, the Yukon and NWT are largely net importers in their trade with the provinces of Canada.

However, an examination of Text Table 7 shows that for foreign trade, the NWT is a net exporter. This situation is a result mainly of its exports of metallic ores and concentrates to foreign countries. The Yukon was not so fortunate, because, as noted earlier, a number of the Yukon metal mines were shut down in 1984.

The following two text tables summarize the trade balances by commodity; exports and imports include both inter-provincial and foreign flows.

TEXT TABLE 8. Trade Flows for the Yukon, 1984, By Commodities

Relevant Commodities	Exports	Imports (Millions of $)	Balances
Agricultural, fishing, forestry & manuf. products	4.3	250.6	-246.3
Minerals	47.5	3.2	44.3
Construction output	0.0	0.0	0.0
Utilities	0.0	0.0	0.0
Other goods	0.0	0.7	-0.7
Transportation & trade	150.6	72.3	78.3
Other services	44.7	88.4	-43.7
Total	247.2	415.2	-168.0

TEXT TABLE 9. Trade Flows for the NWT, 1984, By Commodities

Relevant Commodities	Exports	Imports (Millions of $)	Balances
Agricultural, fishing, forestry & manuf. products	25.5	871.6	-846.1
Minerals	463.3	390.0	73.3
Construction output	0.0	0.0	0.0
Utilities	0.0	0.2	-0.2
Other goods	0.0	1.3	-1.3
Transportation & trade	166.6	263.2	-96.6
Other services	72.0	420.1	-348.1
Total	727.4	1946.5	-1219.1

Both territories exported mainly minerals (metallic ores and concentrates) as well as transportation services, mainly trucking, which is especially important for the Yukon. For the NWT, minerals also include the export of natural gas from the Pointed Mountain (NWT) gas fields to British Columbia.

Imports for both territories are substantial for most commodities, goods and services alike. Since the territories rely heavily on imports for the functioning of their economies, the balance is negative for most commodities.

c) Industries in the North and Their Outputs

From the I/O tables, specifically from the Make matrix (see Appendix A), we can determine which industries are active in the North, and what they are producing.

The following text table details the industries in the North during 1984 and the value of their gross outputs.

TEXT TABLE 10. Industries and Their Gross Outputs for the North, 1984

	Yukon	NWT
	(Millions of $)	
Industries: Business Sector		
Agriculture	0.4	1.1
Fishing & Trapping	2.2	4.2
Logging & Forestry	2.4	1.0
Mining, Quarrying and Oil Wells	47.7	941.3
Manufacturing	4.4	48.8
Construction	159.7	1455.4
Transportation & Storage	156.3	160.6
Communication	29.3	47.4
Other Utilities	22.0	78.4
Wholesale Trade	14.1	31.6
Retail Trade	46.3	73.8
Finance, Insurance, Real Estate	66.9	102.4
Community, Business, Personal Serv.	90.5	195.7
Accommodation Services	33.5	37.1
Other	57.0	158.6

Mining has historically been thought of as the mainstay of economic activity in the territories. For 1984, however, this was not the case for gross output[11]. For both territories, the largest output was produced by the construction industry.

This raises questions about the role of the mining, quarrying and oil wells industry in the economies of the North. A closer look at the details of the mining, quarrying and oil well and construction industries provides an explanation of this unusual situation.

In the Yukon, for 1984, mining output originated mainly in the placer gold operations, a form of production in which many small operators produce gold and alloys in primary form. In the early 1980's, several major metal mines, which had been operating for a number of years, were shut down. As a result, in 1984, the Yukon mining industry registered little gross output and consequently, the construction industry produced the largest output.

In the NWT, the situation is rather different. The NWT has a higher level of production in the mining, quarrying and oil wells industry, with its activities equally divided between metal mines, most of which were in operation in 1984, and the establishments primarily engaged in providing incidental services, especially for oil and gas exploration.

The high production in NWT construction industry was the result of an unprecedented level of oil and gas exploration. The building of the oil pipeline from Norman Wells in the NWT to Zama, Alberta was also a contributing factor. As a result, the NWT construction industry registered higher output than the mining, quarrying and oil wells industry.

The transportation industry in the North is consistent with the geo-economic nature of the two territories. In the Yukon, since the road system is relatively developed, the I/O transportation industry refers mainly to transportation by truck. In the NWT, the industry includes truck transportation, but air transport is also important.

The community, business and personal service industries in the North have the third largest output for both the Yukon and the NWT. In the I/O matrices, tourism is not considered separately: tourist expenditures on such items as accommodations are part of the I/O Accommodation Service category. When the accommodation service category is identified separately, we can see that tourism makes an important contribution to the Yukon economy and that it is

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[11] There are indicators other than gross output data to measure the importance of an industry: gross domestic product, employment, labour income, investment in fixed capital.

relatively more significant to the Yukon than to the NWT[12].

Proportionately, the production of the manufacturing industries in the North is very small. Excluding refined petroleum products in the NWT, the largest output of the manufacturing industry of both territories is for printing and publishing products (newspapers and other printed matter).

The other utilities industry refers mainly to the production of electrical power for domestic use[13].

d) Commodities for Intermediate and Final Use

Commodities have an intermediate use as inputs into the industrial production process, or flow to the final demand categories for final consumption.

The Use matrices of the I/O tables (see Appendix A) allow us to identify the commodities purchased by northern industries and to trace their origin. For example, we can determine if commodities purchased for intermediate use are imported or not. Or we can see that Yukon and NWT manufacturing establishments need substantial service inputs to produce a mix of commodity outputs.

Commodities purchased for final use can be identified from the Final Demand matrices (see Appendix A). For example, in 1984, consumers in the Yukon spent $6.5 million on utilities, mainly electricity, while those in the NWT spent $18.4 million.

e) Measuring the GDP by Final Expenditures

There are three ways to measure economic production: by income, by value added by industry, and by final expenditure. Each of these approaches yields an identical total. In this section we will consider the third option, Final Expenditures on the Gross Domestic Product. It consists of all sales to final users (consumers, governments, businesses, and non-residents) and provides an unduplicated measure of the total value of production in the economy, known as the Gross Domestic Product. From the Final Demand matrix of the I/O territorial tables (see Appendix), the

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[12] Sport fishing lodges, which attract many residents and non-residents in the North, are part of the accommodation services industry. They are not part of the I/O fishing industry.

[13] More background on the economies of the North can be obtained from the **Yukon Data Book, 1986-1987** and from **NWT Data Book 1986-1987**, both are published by the Outcrop Ltd.

final expenditures can be derived as follows:

TEXT TABLE 11. Gross Domestic Product at Market Prices by Final Users[14] for the Yukon and the NWT, for 1984.

	Yukon	NWT
	(Millions of $)	
Personal Expenditures on Consumer Goods and Services	277.9	475.6
Investment: Machinery and Equipment		
Business	21.3	159.0
Government	15.0	19.4
Investment: Construction		
Business	44.8	1316.2
Government	65.8	103.7
Inventories	-3.2	7.2
Net Government Current Expenditures	249.6	627.4
Net Exports (Trade Balance)	-167.6	-1218.4
Total GDP at Market Prices	503.4	1490.3

The Yukon GDP is $503.4 million while that of the NWT is $1490.3 million.

The substantial NWT business investment, purchased mainly by the mining, quarrying and oil wells industry, was offset by a large negative trade balance, with the NWT importing more goods and services than it exported.

f) GDP (Value Added) by Industry

We can also measure the total unduplicated value of economic production by estimating the value added by industry. Summing the value added from all industries yields the same result as the sum of the expenditures approach discussed in IV(e) above.

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[14] The expenditure totals by users in this table are different from those of Text Table 3 since Table 9 includes the primary inputs (earnings of the factors of production) as well as net indirect taxes within the Final Demand matrices (See relevant tables in Appendix A).

It is important to note that the sum of the gross outputs of all industries does not equal the total unduplicated value produced in the economy because production in one industry includes inputs from another. For example, to produce gasoline, the refined petroleum products industry needs inputs of the crude mineral oils and petrochemicals that are produced by other industries.

Thus, the economic contribution of an industry consists of the value of the commodities (goods and services) produced by that industry minus the value of the commodities purchased from others. Such difference between the value of commodities produced and commodities purchased from others as input into the production process is known as value added, or GDP.

By adding up the value added from all industries, we can calculate the GDP, or the total value added, for the whole economy. The GDP for a particular industry refers to the contribution of that industry to the total unduplicated value of production in an economy or to the total GDP. In effect, the sum of labour income, the net income of unincorporated business and the operating surpluses (which includes profits), constitutes the GDP; these are the earnings of the factors of production.

When we are using I/O matrices to calculate the total GDP for an economy, we must be sure that we take all earnings of the factors of production into account. The Make and Use matrices cover only establishments classified as belonging to the business sector, that is, establishments that produce commodities for sale at a price calculated to cover costs and yield a profit. Transactors who produce goods or render services, but not with the same profit motive, are part of the non-business sector, which appears in the Final Demand matrix. Since there are elements of the GDP like labour income associated with the non-business sector, this sector must be taken into consideration for deriving the GDP for the total economy.

Text Table 12 presents the total GDP and its breakdown by industry for the North; equivalent data for Canada are presented for comparison. Text Table 13 shows how GDP at factor cost is distributed by industry.

TEXT TABLE 12. Canada and Territorial GDP, 1984

	Canada	Yukon (Millions of $)	NWT
Business Sector			
Agriculture	10378.0	-0.1	0.2
Fishing & Trapping	598.6	1.1	3.0
Logging & Forestry	2627.2	0.5	0.3
Mining, Quarrying and Oil Wells	25565.4	29.8	485.4
Manufacturing	75503.1	2.0	17.9
Construction	24480.9	65.9	175.0
Transportation & Storage	18006.2	47.8	59.9
Communication	12158.5	20.4	42.5
Other Utilities	13035.4	19.8	51.1
Wholesale Trade	18998.9	9.6	11.3
Retail Trade	24053.0	26.7	47.0
Finance, Insurance, Real Estate	59577.4	38.7	53.1
Community, Bus., Personal Serv.	41834.6	58.3	134.3
Sub-total: Business Sector	326817.2	320.5	1081.0
Non-Business Sector			
Personal Sector[15]	10240.7	5.8	8.0
Government Sector[16]	64962.8	143.1	345.0
Sub-total: Non-Business Sector	75203.5	148.9	353.0
Total GDP at Factor Cost	402020.6	469.3	1434.2
Net Indirect Taxes[17]	42714.5	34.1	56.1
Total GDP at Market Prices	444735.1	503.4	1490.3

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[15] Private non-profit institutions such as private religious and welfare organizations, private clubs, universities and labour unions.

[16] Federal, territorial and municipal government departments as well as their special funds.

[17] GDP by industry is measured at factor cost (rather than at market prices); hence, indirect taxes and subsidies which represent a part of the market price of goods and services are excluded. Indirect taxes must be added to domestic income at factor cost to arrive at a market price valuation while subsidies must be deducted.

TEXT TABLE 13. Canada and Territorial GDP at Factor Cost, 1984

	Canada	Yukon	NWT
	(Percentages)		
Business Sector			
Agriculture	2.6	0.0	0.0
Fishing & Trapping	0.1	0.2	0.2
Logging & Forestry	0.7	0.1	0.0
Mining, Quarrying and Oil Wells	6.4	6.3	33.8
Manufacturing	18.8	0.4	1.2
Construction	6.1	14.0	12.2
Transportation & Storage	4.5	10.2	4.2
Communication	3.0	4.3	3.0
Other Utilities	3.2	4.2	3.6
Wholesale Trade	4.7	2.0	1.0
Retail Trade	6.0	5.7	3.3
Finance, Insurance, Real Estate	14.8	8.3	3.7
Community, Bus., Personal Serv.	10.4	12.4	9.4
Sub-total: Business Sector	81.3	68.1	75.6
Non-Business Sector			
Personal Sector	2.5	1.2	0.6
Government Sector	16.1	30.5	24.1
Sub-total: Non-Business Sector	18.6	31.8	24.7
Total GDP at Factor Cost	100.0	100.0	100.0

We have a different picture of the northern economies when we measure it by GDP data rather than by the Gross Outputs outlined previously in Text Table 10. In the GDP tables, the government is the most important contributor to the total GDP for the Yukon. For the NWT, the mining, quarrying and oil wells industry contributes the most, followed by the government (In Text Table 10, the industry with the largest gross output is construction, for both).

Based on the GDP by industry measures, the north's industrial structure is very different from that of Canada, where the largest contributor to the national GDP in 1984 was manufacturing.

GDP measures by industry are also useful in that they allow for comparisons between industries. Both territories have a Data Book[18] with much relevant information about their domestic economies. For example, users can find data about trappers' income, air carrier traffic, metres drilled for oil and gas mineral production in volume and employment. However, from these disparate statistics, the relative importance of each industry within the territories is not clear. The statistics are often not additive

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[18] **Ibid** (13).

and not directly comparable.

On the other hand, the GDP measures in a clear manner the contribution and the importance of the industries involved. Including in the data book a table showing the GDP by industry would enable analysts to assess the various industrial statistics pertaining to the northern economies.

g) Income Components of the GDP by Industry

There is still another way to measure the total unduplicated economic production: aggregating the various incomes from the factors of production.

These earnings from the factors of production are composed of labour income (wages, salaries and supplementary labour income), net income of unincorporated business (NIUB), and other operating surpluses. From the Use and Final Demand matrices, it is possible to derive these incomes for the total economy and by industry.

The following text tables present the income components for the total economy of the Yukon and the NWT in 1984. The data for Canada are presented for comparison.

TEXT TABLE 14. Total GDP and its Income Components, 1984

Income Components	Canada	Yukon	NWT
		(Millions of $)	
Labour Income	238848.7	304.2	826.2
Net Income of Unincorporated Bus.	27306.9	24.4	26.7
Other Operating Surplus	135865.0	140.7	581.3
Total GDP at Factor Cost	402020.6	469.3	1434.2

TEXT TABLE 15. Distribution of GDP and its Income Components, 1984

Income Components	Canada	Yukon	NWT
		(Percentages)	
Labour Income	59.4	64.8	57.6
Net Income of Unincorporated Bus.	6.8	5.2	1.9
Other Operating Surplus	33.8	30.0	40.5
Total GDP at Factor Cost	100.0	100.0	100.0

These tables suggest that in 1984, labour income was relatively more important to the economy of the Yukon than to that of the NWT. On the other hand, the Other Operating Surplus, which includes corporation profits and capital consumption allowances, is more important in the NWT. As we can see in the next two tables which present the industrial distribution of income components and of GDP, Other Operating Surplus in the NWT originates, to a large extent, in the mining, quarrying and oil wells industry.

TEXT TABLE 16. Breakdown of GDP by Industry Between Labour Income, Net Income of Unincorporated Business (NIUB) and Other Operating Surplus, Yukon, 1984

	Labour Income	NIUB	Operating Surplus	GDP at Factor Cost
		(Millions of $)		
Business Sector				
Agriculture	0.1	-0.2	0.0	-0.1
Fishing & Trapping	0.0	1.0	0.1	1.1
Logging & Forestry	0.4	0.0	0.0	0.5
Mining, Quarrying and Oil Wells	16.1	1.0	12.6	29.8
Manufacturing	1.5	0.0	0.6	2.0
Construction	50.9	2.9	12.0	65.9
Transportation & Storage	25.0	2.4	20.4	47.8
Communication	19.3	0.0	1.0	20.4
Other Utilities	3.6	0.3	15.8	19.7
Wholesale Trade	6.0	0.1	3.5	9.6
Retail Trade	19.0	2.4	5.2	26.7
Finance, Insurance, Real Estate	13.4	3.9	21.5	38.8
Community, Bus., Personal Serv.	30.3	10.4	17.6	58.3
Sub-total: Business Sector	185.6	24.3	110.3	320.5
Non-Business Sector				
Personal Sector	5.5	0.0	0.2	5.8
Government Sector	112.9	0.0	30.2	143.1
Sub-total: Non-Business Sector	118.5	0.0	30.4	148.9
Total	304.2	24.4	140.7	469.3

TEXT TABLE 17. Breakdown of GDP Between Labour Income, Net Income of Unincorporated Business (NIUB) and Other Operating Surplus, NWT, 1984

	Labour Income	NIUB	Operating Surplus	GDP at Factor Cost
	(Millions of $)			
Business Sector				
Agriculture	0.2	-0.1	0.1	0.2
Fishing & Trapping	0.2	2.6	0.2	3.0
Logging & Forestry	0.4	0.0	-0.1	0.3
Mining, Quarrying and Oil Wells	205.7	1.9	277.9	485.4
Manufacturing	6.6	-0.1	11.3	17.9
Construction	136.1	3.3	35.6	175.0
Transportation & Storage	21.7	1.3	37.0	59.9
Communication	25.4	0.0	17.1	42.5
Other Utilities	10.3	0.2	40.7	51.2
Wholesale Trade	9.9	0.2	1.4	11.4
Retail Trade	36.0	2.4	8.7	47.0
Finance, Insurance, Real Estate	21.9	2.3	28.8	53.1
Community, Bus., Personal Serv.	65.2	12.7	56.4	134.3
Sub-total: Business Sector	539.6	26.7	515.1	1081.2
Non-Business Sector				
Personal Sector	7.8	0.0	0.2	8.0
Government Sector	278.9	0.0	66.1	345.0
Sub-total: Non-Business Sector	286.7	0.0	66.3	353.0
Total	826.2	26.7	581.3	1434.2

h) Industrial Distribution of Employment Data

Employment data showing the number of persons employed in each industry in the North are available from Statistics Canada as a subset of the I/O tables. The industrial classification of these statistics is consistent with that of the I/O territorial tables. The data covers all persons engaged in the production process, including paid and own-account workers, working employers and unpaid family workers.

Text Table 18 presents employment by industry.

TEXT TABLE 18. Employment by Industry, Yukon and NWT, 1984

	Yukon	NWT
	(Number of Jobs)	
Business Sector		
Agriculture	21	56
Fishing & Trapping & Forestry	26	60
Mining, Quarrying and Oil Wells	461	4504
Manufacturing	66	222
Construction	518	1791
Transportation & Storage	1124	798
Communication	484	688
Other Utilities	106	315
Wholesale Trade	355	373
Retail Trade	1540	2922
Finance/Insurance/Real Estate	436	684
Community/Business/Pers. Serv.	1933	3750
Sub-total Business Sector	7070	16163
Non-Business Sector (including government)	4106	7685
Total	11176	23848

If we combine this information on employment with data on the GDP and labour income from the I/O territorial tables, we can derive two ratios: the GDP per person employed and compensation per person employed, both by industry. These ratios by industry allow a comparison between one territory and the other, or between the territories and the provinces. These ratios are not presented here, due to space limitations. I/O territorial tables in conjunction with the employment data by industry are necessary ingredients for the analysis of the impact of specific changes, the subject of the next topic.

i) Measuring the Impact of Specific Changes

Change is inevitable within any economy and the North is no exception. For example, a manufacturing plant may open or expand, or a pipeline be constructed. One level of government may increase expenditures or build a road, or a mining establishment may increase exports of a certain product.
How do we measure the impact of such changes on the economy?

Using the I/O tables and the industrial distribution of employment, we can derive an impact analysis, which provides an estimate of the total effect (or the impact) of specific changes on the economy, on employment and GDP. For example, with the construction of a new road in the Yukon, construction firms will purchase more from

industries producing asphalt and coal oils, sand, and parts for machinery.

But the effects of building a road do not end here. Such a project begins a long chain of production, since the purchase of each product in turn requires various inputs. For instance, to produce more asphalt and coal oils, the refined petroleum and coal products industry will increase its own purchases from firms supplying other commodities like crude mineral oils and electricity. These suppliers will make their own purchases from other industries and so on.

Impact analysis can also help us understand the inter-relationships that exist between the territories and provinces in the Canadian economy. The construction of a road in the Yukon may stimulate production of the British Columbia refineries. This production in turn generates a demand for crude petroleum and natural gas from industries located mainly in Alberta.

Impact analysis, then, tracks down the impact, or total effect, of this chain of demand throughout the economy. The following text table illustrates this process by showing the effect of spending ten million dollars on road construction in the Yukon, on the economy of the Yukon itself and on the rest of the country[19].

TEXT TABLE 19. Impact of Building a Ten Million Dollar Road in the Yukon on the Employment and GDP of the Yukon and Selected Provinces, 1984

Industries	Yukon	Ontario	Alberta	BC	Canada
Employment (No. of Jobs)	55	23	10	18	118
GDP (Thousands of $)	5534	796	1169	978	8960

From the building of this road, the Yukon, then Alberta, benefitted the most, in terms of GDP. In fact, the increase in GDP of the Yukon, Ontario, Alberta and BC accounted for more than 94% of the increase in the GDP in the whole country. Further, the building of

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[19] The impact analysis is based on the 'open' I/O model. STC recommends its use rather than the use of the 'closed' I/O model. For information on impact analysis, see the chapter on Applications of Input-Output Analysis in The Elements of Input-Output Analysis, by W.H. Miernyk, New York, Random House, 1965.

this road created, for example, 118 jobs in Canada, out of which less than half are in the Yukon itself. It created 23 jobs in Ontario.

The industrial distributions of the total effect of building a road in the Yukon in terms of employment and GDP are not presented here; however, it is interesting to note that 46% of the jobs created are in the services producing industries.

For another example of the effect of a change on the economy, we can look to the NWT, where one metal mine increased its production of ores by ten million dollars. Most of the 1984 production was exported outside the NWT.

The following text table presents the impact of this increase in production on the economy of the NWT itself and the rest of the country.

TEXT TABLE 20. Impact of an Increase of $10 Million in the NWT Production of Metal Ores on the Employment and GDP of the NWT and Selected Provinces, 1984

Industries	NWT	Ontario	Alberta	BC	Canada
Employment (No. of Jobs)	64	19	13	7	117
GDP (Thousands of $)	6421	741	1122	338	9169

This increase in metal ore production results in an increase in GDP for NWT, Ontario, Alberta and BC, which accounts for more than 94% of the increase in the total Canadian GDP. Specifically, the increase of $10 million in the NWT production of metal ores results in an increase in the Ontario GDP of $741,000, out of which half is in the manufacturing industries; also, 8 jobs are created in the Ontario manufacturing sector. Hence, an increase in the NWT production of metal ores affects not only the NWT economy but also the other provincial economies.

In the examples, two distinct changes have occurred in the economies of the North: the building of a road in the Yukon and an increase in ore production in the NWT. What is interesting to note is that the impact of these changes is relatively similar. Each change results in increased comparable employment and GDP within the home territory. But, although the impact was felt in every province, it was Alberta that benefitted most, in terms of increased GDP.

Based on these two examples, an increase in the demand for commodities in the North is partially met from outside.

j) Changes Causing the Most Impact

As we saw in the previous section, specific changes bring about a long chain of production and adjustments in the economy. But which changes are more beneficial to the economies of the North, to their employment and GDP?

Text Tables 21 to 24 show the total effects in terms of employment and GDP for the Yukon and for the NWT when each domestic industry expands its gross output by the same amount.

The impact analysis is carried out using data at the least detailed level of aggregation and assumes that each industry expands its gross output by $10 million.

Because any increase in gross production of the domestic industries (especially for the goods-producing industries) of the North yields GDP and employment increases in the rest of the country, we can conclude that the economic benefits of a change in the economy of the North are to some extent exported.

These impact analyses make available other statistics not presented here: the effect on gross production, on trade flows and on GDP income components.

These analyses provide estimates of the eventual consequences on employment and GDP of an increase in gross output. They can be a very useful tool in economic analysis. However, these estimates should be used with care as they do not take into consideration if the increase in gross output is feasible.

TEXT TABLE 21. Total Effects on the Economies of the Yukon and Selected Provinces in Terms of Employment

$10 Million Increase in Gross Output of:	Employment				
	Yukon	Ontario	Alberta	BC	Canada
	(No. of Jobs)				
Agriculture	519	28	24	217	832
Fishing & Trapping	66	14	9	15	115
Logging & Forestry	101	38	11	15	183
Mining	112	17	5	11	153
Manufacturing	168	34	6	19	24
Construction	52	32	11	22	136
Transportation & Storage	106	22	16	22	179
Communication	200	19	4	12	242
Other Utilities	54	4	4	4	70
Wholesale Trade	275	13	5	13	313
Retail Trade	363	15	5	23	415
Finance/Ins./Real Estate	99	16	4	18	145
Community/Bus./Pers. Serv.	238	15	9	17	288

TEXT TABLE 22. Total Effects on the Economies of the Yukon and Selected Provinces in Terms of GDP

$10 Millions Increase in Gross Output of:	GDP at Factor Cost[20]				
	Yukon	Ontario	Alberta	BC	Canada
	($ 000)				
Agriculture	-275	978	1958	3155	7274
Fishing & Trapping	5412	521	1468	1118	8916
Logging & Forestry	3018	1424	1338	1025	7404
Mining	7426	667	439	570	9387
Manufacturing	5394	1519	506	936	8936
Construction	4789	1176	829	930	8412
Transportation & Storage	4499	795	1528	1148	8454
Communication	8178	579	288	467	9763
Other Utilities	9333	139	702	445	10734
Wholesale Trade	7810	440	395	537	9448
Retail Trade	7245	494	394	756	9225
Finance/Ins./Real Estate	7746	516	297	656	9497
Community/Bus./Pers. Serv.	7477	512	456	555	9325

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[20] Data on GDP in this table are at factor cost; indirect taxes less subsidies must be added to obtain GDP at market prices.

TEXT TABLE 23. Total Effects on the Economies of the NWT and Selected Provinces in Terms of Employment

$10 Million Increase in Gross Output of:	NWT	Ontario	Alberta	BC	Canada
			Employment		
			(No. of Jobs)		
Agriculture	550	32	36	15	661
Fishing & Trapping	123	11	8	5	153
Logging & Forestry	162	36	13	10	240
Mining	68	22	15	8	129
Manufacturing	179	25	25	15	261
Construction	36	36	37	15	149
Transportation & Storage	79	23	22	10	151
Communication	167	18	5	8	206
Other Utilities	57	7	11	5	85
Wholesale Trade	158	31	20	13	245
Retail Trade	418	15	13	10	469
Finance/Ins./Real Estate	121	38	18	21	227
Community/Bus./Pers. Serv.	212	15	14	8	262

TEXT TABLE 24. Total Effects on the Economies of the NWT and Selected Provinces in Terms of GDP

$10 Million Increase in Gross Output of:	NWT	Ontario	Alberta	BC	Canada
			GDP at Factor Cost[21]		
			($ 000)		
Agriculture	3932	1146	2377	677	9144
Fishing & Trapping	7566	386	1191	258	9678
Logging & Forestry	4124	1377	1392	473	7984
Mining	6078	849	1155	387	9039
Manufacturing	4865	884	1594	654	8668
Construction	3235	1350	2275	726	8584
Transportation & Storage	5087	821	1754	520	8806
Communication	9974	559	351	284	11440
Other Utilities	7111	257	1817	329	9703
Wholesale Trade	5480	1120	1279	531	9278
Retail Trade	7515	521	705	411	9603
Finance/Ins./Real Estate	8072	1150	1092	779	11988
Community/Bus./Pers. Serg.	7745	509	674	315	9650

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[21] **Ibid** (20).

V. Cautions, Problems and Suggestions for Improvements

As we have seen, I/O tables for the territories can provide data in a useful and accessible way. However, users need to be aware of some of the problems associated with the definitions and concepts underlying the I/O territorial tables. This section provides cautionary notes for users and analysts and suggests new opportunities for further development.

Absence of Time Series

The first consideration must be that the I/O territorial tables are for a specific year, 1984, and reflect the economy only in that year. Conclusions about the territorial economies, based on the 1984 I/O tables, may not apply to other years, particularly since some economic circumstances in both territories in 1984 were unusual. For example, the Yukon Cyprus Anvil Mining Corporation's Faro Mine, as well as a number of other mines, was inactive in 1984. The Faro Mine ceased production in 1982 and re-started in 1986.

In the NWT, construction of a pipeline between Norman Wells, NWT, and Zama, Alberta, stimulated the economy in the early eighties. As a result, 1984 may not be called a representative year.

One way to deal with this problem would be to amend the I/O tables for the North for those industries that are not representative. However, in that case, the balance of the tables would be in question, since, for example, supply would not equal disposition by commodities. As a result, the impact of change could not be properly evaluated.

Again, we face a similar problem when we try to use I/O tables to measure GDP change from year to year. Data on the GDP by industry provides a measure of the relative contribution of each industry to overall economic production. But, unfortunately, since the I/O territorial tables are only available for 1984, we cannot assess the relative contributions that various industries make to the economy over several years.

As part of its provincial (territorial) GDP by industry program[22], STC derives territorial estimates of GDP at factor cost by industry. They are mainly limited to Goods-producing industries and are released for both territories together; hence, there is no GDP for most of the Services-producing industries. STC has recently embarked on a project with the aim of deriving the GDP for

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[22] Statistics Canada, **Provincial gross domestic product by industry, 1984-1986**, Catalogue 15-203 Annual.

the full industrial coverage by industry and by territory (and province).

Disparities in Data and Methodology

Because of the historical importance of mining to the northern economy, it is important to note the disparity in production data between the I/O tables and the Census of Mines; as a result, users face a methodological problem when they try to reconcile information from the I/O territorial tables with that drawn from the Census of Mines.

For an example of the disparity in data measuring economic production between the I/O tables and the Census of Mines, we have only to look at the Yukon placer gold mining industry.

> "The Yukon placer gold mining industry involves the working of large quantities of silt, sand or gravel in, or adjacent to, streams and rivers to separate out the valuable heavy gold particles. In 1984 the industry consisted of about 200 operations which employed several hundred persons seasonally. Most of the operations are small family concerns with only a few employees, who are following the tradition of those independent entrepreneurs who made this industry symbolic of Yukon's culture, its way of life and its roots."[23]

The Yukon placer gold operators are a very important and integral part of the Yukon economy. The I/O data, attempting to measure all economic production, includes for the gold placer operators their outputs and their input cost structures. However, the Census of Mines measures the production of gold mining operations in a different way[24].

The Census of Mines is an annual census of establishments principally engaged in mining, together with their associated head offices, sales offices and what are called auxiliary units. Placer gold operators are considered auxiliary units. An establishment is the smallest operating unit capable of reporting basic industrial statistics. The Census of Mines gathers, for establishments only,

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[23] Indian and Northern Affairs Canada, **The Northern Mineral Sector: A Framework for Discussion**.

[24] Statistics Canada, **Metal Mines**, Catalogue 26-223 Annual.

principal statistics on wages, production and value added[25]. For auxiliary units on the other hand, only data for commodity sales are collected. Thus, the principal statistics for the gold mines do not include data for auxiliary units, in this case, for the placer gold mine operators so important to the economy of the Yukon. Information about economic production for placer gold mine operators in the Census of Mines is included only in commodity production data[26].

Conclusions about the economic activity of gold mines in the Yukon can thus be misleading, if the user refers only to data about gold mining establishments in the Census of Mines. Another example of the discrepancy in data between the I/O tables and the Census of Mines deals with the NWT lead/zinc mines.

The Census of Mines has standardized all mine production valuation by uniformly valuing all ores and concentrates at a gross level of valuation; that is, matching smelting and refining charges are included in the mine production data.

> "The I/O treatment of mine production involves placing a value on the production of the mine establishment at the ore and concentrate stage. This valuation is the net value of metals paid for, which is obtained by deducting the matching smelting and refining charges from the gross values of metals paid for. This level of valuation is consistent with Trade of Canada exports and imports which are to be valued at the ore and concentrate stage."[27]

The large smelting and refining operations associated with the NWT lead/zinc mines are often carried out outside NWT. Hence, in the I/O output for the NWT other metal mines, the smelting and refining operations are not reflected. The Census of Mines gross production data for those same NWT lead/zinc mines[28] which implicitly includes data for smelting and refining operations carried out outside the NWT, may result in misleading conclusions about the economic activity of other metal mines in the NWT.

However, we should note that the value added from the Census of

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[25] See Table 1 of **ibid** (24).

[26] See Tables 9 and 12 of **ibid** (24).

[27] **Ibid** (6), page 36.

[28] See Tables 1 and 9 of **ibid** (24).

mine property reflects the contribution of the [illegible] industry mines[5].

This report has discussed ways to measure GDP using the I/O tables. They are part of the System of National Accounts (SNA), whose main purpose is to present a set of conceptual statements about the economy, its structure and the behaviour of its economic agents.

Another account within the SNA is the Income and Expenditure Accounts (IEA) which [illegible] the unduplicated output of the economy [illegible] also derived in two ways, as the sum of final expenditures on goods and services (Gross Domestic Product - Expenditure Based) and as the sum of the incomes accruing to primary factors of production (Gross Domestic Product - Income Based).

Some of the difference between the I/O Accounts and the IEA centre on the timeliness and on the level of detail. The IEA are more current and are presented as a time series, whereas the I/O Accounts are more detailed and provide a "snapshot" of economic activity for the specified year.

A comparison of the [illegible] GDP and IEA GDP estimates by income components and by final expenditure based on the [illegible] IEA and I/O Accounts for the [illegible] is not included in this paper, due to space limitations. [illegible] that substantial data differences exist [illegible]. In order to ensure the full and integrated use of the IEA and I/O accounts for economic analysis, these differences should be minimized in future years.

[illegible] is at least another way [illegible] a time series of GDP by industry [illegible] be computed. It consists of estimating the industrial distribution for each of the GDP income components and summing to obtain a series of GDP by industry. This method uses the IEA [illegible] other data and is documented in [illegible] reference [illegible]. The method has been used [illegible] illustrated

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[5] [illegible] pointed out, the Census of Mines [illegible] all mine valuation [illegible] at a gross level of [illegible] charges are included in [illegible] and hence, the figures [illegible] distribution of the SNA [illegible].

[6] Statistics Canada. National Income and Expenditure Accounts, [illegible]. A Guide to The National Income and Expenditure Accounts: Definitions-Concepts-Sources-Methods, [illegible] (Occasional).

Mines properly reflects the contribution of the NWT lead/zinc mines[29].

This report has discussed ways to measure the GDP using I/O tables. They are part of the System of National Accounts (SNA), whose main purpose is to present a set of integrated statistics about the economy, its structure and the behaviour of its economic agents.

Another account within the SNA is composed of the Income and Expenditure Accounts (IEA), which also provide a total measure of the unduplicated output of the economy, or the GDP. IEA measures are derived in two ways, as the sum of the final expenditures on goods and services (Gross Domestic Product- Expenditure Based) and as the sum of the incomes accruing to primary factors of production (Gross Domestic Product- Income Based).

Some of the differences between the I/O Accounts and the IEA centre on the timeliness and on the level of detail: the IEA are more current and are presented as a time series, whereas the I/O Accounts are more detailed and provide a "snapshot" of economic activity for one specified time.

A comparison of the total GDP and the breakdown by income components and by final expenditures based on the IEA and I/O Accounts for the Yukon and for the NWT is not presented in this paper, due to space limitations. Suffice it to say that substantial data differences exist between the two Accounts. In order to ensure the full and integrated use of both the IEA and I/O Accounts for economic analysis, the differences between them should be minimized in future years.

There is at least another way that a time series of GDP by industry can be computed. It consists of estimating the industrial distribution for each of the GDP income components and summing to yield a series of GDP by industries. This method draws from IEA and other data and is documented in an older IEA reference document[30]. The method has been used by a number of interested

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[29] As pointed out, the Census of Mines production valuation has standardized all mine valuation by uniformly valuing all ores and concentrates at a gross level of valuation. Matching smelting and refining charges are included on the input and output sides of the mines and hence, the figures for value added reflect the true contribution of the NWT lead and zinc mines.

[30] Statistics Canada, **National Income and Expenditure Accounts, Volume 3. A guide to The National Income and Expenditure Accounts: Definitions-Concepts-Sources-Methods**, Catalogue 13-549E Occasional.

parties such as the Yukon Bureau of Statistics[31] to produce a time series of GDP by industry.

One should be caution in using estimates based on this approach. In the first place, the industrial distribution for a number of the IEA income components (e.g. corporation profits) are on a company basis whereas others (e.g. wages and salaries) are on an establishment basis. Summing income components based on different units of classification may produce inaccurate estimates of GDP for some industries.

Further, GDP by industry derived from the I/O tables are better measures for a number of reasons. The I/O tables draw more consistently on data by establishment, rather than by other units of classification, such as companies. Also, because the I/O accounts generate a quality dimension of their own, by subjecting the basic data to a system of logical relationships not available for data generated in a narrower context, such as IEA[32].

Undercoverage

As the I/O territorial tables were being derived, analysts encountered a number of problems, most of them due to the limited amount of data available for the North.

The I/O territorial tables are based on many data sources, the majority from Statistics Canada. In a number of cases, the usual regional STC data sources simply did not provide sufficient information for the North. For example, information about agricultural industries in the North relies mainly on the results of the 1986 Census of Agriculture, occurring every five years, instead of on the 1984 farm cash income and expenditure data.

The inclusion of firms in the STC universe is then important. If a particular firm is not part of the STC universe, it will not be reflected in STC data sources used for the I/O tables. Since firms in the North are relatively small and scattered over large areas, it is difficult to ensure that the STC universe reflect all firms in the North. Special efforts were undertaken in order to include the economic production of some of the known missed firms in the I/O tables.

After the I/O territorial tables were completed, a detailed

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[31] Yukon Bureau of Statistics, **Gross Domestic Product by Industry, 1977-1988.**

[32] For a documentation of these logical relationships, see **ibid** (6), Appendix A.

comparison was carried out between the NWT Business Directory[33] and the STC register of businesses, basis of the identification of firms for STC surveys. The results showed that a discrepancy existed between the two data bases. There are a number of reasons other than undercoverage that may explain such a discrepancy. Full coverage for small or remote areas is important.

Furthermore, the main purpose of STC surveys is often to provide a general appreciation of economic agents and events, and not necessarily the detailed information so important for the derivation of I/O territorial tables.

Other production activities, too, may not be covered fully in I/O tables. One of the significant activities in the North is the production of arts and crafts, of Inuit sculpture, for instance: "It is estimated that one person in every 14 of working age earns some cash income through artistic or craft activity[34]". Since this industry affects many people in the NWT, a special project could be initiated with the aim of ensuring that this economic activity is accurately reflected in STC data.

Finally, we should note that some important economic activities in the North are not included in the I/O territorial accounts. These are subsistence activities such as hunting and preparing related products for consumption in households. Subsistence activities generate economic value and contribute to the level of well-being in the North. Whether or not they should be included in the accounts is a matter of considerable and continuing debate.

From this summary, we can see that several problems of undercoverage remain unresolved.

Inconsistencies in the I/O Territorial Tables

A problem that confronts analysts has to do with the use of a set of margins to assess the characteristics of the northern economy. We need particularly to look at those margins for taxes and transportation.

The I/O territorial tables present data at **producers'** prices[35].

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[33] **NWT Business Directory 1989**, Orion Data and Communications, Yellowknife, NWT. A detailed comparison was not carried out for the Yukon though, a Yukon business directory exists; see **Yukon Business Directory**, Bureau of Statistics, Yukon Executive Council, Whitehorse, Yukon.

[34] **Ibid** (13), page 85.

[35] **Ibid** (6).

This measure provides a uniform basis of valuation and excludes such amounts as transportation charges, retail and wholesale mark-ups and indirect taxes on commodities. However, many of the data sources used as a basis for the I/O tables provide information at **purchasers'** prices; that is, they include such amounts as transportation charges, retail and wholesale mark-ups and indirect taxes on commodities. To arrive at I/O tables at producers' prices, we must remove these additional amounts from the purchasers' values.

These additional costs between the producers' and purchasers' prices are called margins and there are seven of them: retail, wholesale, tax, transport, gas, storage and pipeline.

Because of the unique character of the northern economies, two margins in particular, tax and transport, should differ from their corresponding national margin rates. When we derive I/O territorial tables, we have to take these differences into consideration. For instance, a special effort was made to base tax margins, not on national data, but on various commodity indirect taxes applicable to the North only.

As for the transportation margin, although it is generally believed that transportation costs are higher for the North than they are for the rest of Canada, the I/O territorial tables for 1984 do not attempt to assess this difference. Rather, national transportation rates were used instead. Hopefully, this will be remedied in the derivation of future I/O territorial tables.

Furthermore, it would benefit policy makers and analysts to have I/O territorial tables for purchasers' and producers' values and for individual margins in a consistent framework. At present, only I/O territorial tables for producers' values are released. Users carrying out impact analysis need to have this information in order to translate their requests from purchasers' to producers' values.

One more problem with the present I/O territorial tables centres on the absence of explicit information about trade flows for business and personal travel expenditures between the territories and the provinces. For example, the travel expenses of British Columbia residents in the Yukon, or NWT residents in Alberta, are not explicitly part of the Yukon and NWT trade flows. Hopefully, this absence will be remedied in the derivation of future I/O territorial tables.

VI. Conclusion

The I/O territorial tables for 1984 and the proposed program to increase information on the GDP by industry are welcome additions to the present set of territorial statistics.

The I/O territorial tables describe the structure and the functioning of the economies of the North. They provide a detailed and comprehensive presentation of the origins and uses of commodities. They review industrial cost structures and output.

Furthermore, the I/O tables serve as a basis for the development of a number of applications. Of particular interest is the ability of the I/O tables to test various economic scenarios; more precisely, this application centres on the measurement of the impact of specific changes on employment and GDP of the economies of the North.

One of the challenges facing analysts now is to produce separate I/O tables for each of the territories for years other than 1984. Such I/O tables would allow policy makers and planners to assess the evolution of the northern economy: to see if new industries have been created, if commodity imports have changed, or if new industrial technology has developed.

It should be noted, however, that just as many resources, perhaps even more, are required to derive I/O tables for areas with small populations than for those with large ones. To ensure data quality for small areas where values are small, additional resources are often necessary. STC clients who are interested in special and more narrow data sets may wish to contribute financially to STC efforts in order to secure better data quality.

The analytical applications derived from the I/O territorial tables are not limited to those described in this paper[36]. However, a familiarity with the applications discussed here should help the users understand the economies of the North and the role of the Input-Output database in defining them.

The use of the Yukon and NWT I/O data as examples in this paper can be replaced by I/O data pertaining to other provinces; the same analytical applications could then be derived.

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[36] For instance, analysts might like to use the I/O territorial tables to answer the question of who pays commodity indirect taxes. The breakdown of data on these taxes by industry and type is available from an additional database consistent with the I/O territorial tables for 1984.

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Appendix A. Tables

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Table 1. Make(Output) Matrix, Yukon, 1984 ($000)

Industries

Commodities		1AGRICUL -TURAL & RELATED SERVICES	2 FISHING TRAP-PING IND.	3 LOGGING & FORES-TRY IND.	4 MINING, QUARRYING & OIL WELLS	5 MANU-FACTURING IND.	6 CON-STRUCTION IND.	7 TRANS-PORTATION STORAGE IND.	8 COMMU-NICATION IND.	9 OTHER UTILITY IND.
1	AGRIC,FISH,FOREST,MANUF. PRODU	443	2237	2400	11	4341	0	559	1180	9
2	MINERALS	0	0	0	47411	0	0	0	0	0
3	RESIDENTIAL CONSTRUCTION	0	0	0	0	0	11447	0	0	0
4	NON-RESIDENTIAL CONSTRUCTION	0	0	0	0	0	96930	0	0	0
5	REPAIR CONSTRUCTION	0	0	0	0	0	50379	0	0	0
6	TRANSPORTATION & STORAGE	0	0	0	0	0	0	153593	0	0
7	COMMUNICATION SERVICES	0	0	0	0	0	0	0	25823	0
8	OTHER UTILITIES	0	0	0	0	0	0	0	0	21627
9	WHOLESALE MARGINS	0	0	0	120	0	0	4	0	0
10	RETAIL MARGINS	0	0	0	0	0	0	202	0	98
12	OTHER FINANCE,INS.,REAL ESTATE	0	0	0	27	6	473	372	10	28
13	BUSINESS SERVICES	0	0	0	0	0	0	121	2254	71
14	PERSONAL & OTHER MISC. SERVICE	0	0	0	160	12	432	1497	59	131
TOTAL		443	2237	2400	47729	4359	159661	156348	29326	21964

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Table 1. Make(Output) Matrix, Yukon, 1984 ($000)

Industries

Commodities		10 WHOLE- SALE TRADE IND.	11 RETAIL TRADE IND.	12FINANCE INSURANCE & REAL ESTATE	13 COMMU- NITY,BUS. PERSONAL SERVICES	14 OPERA- TING,LAB. OFFICE SUPPLIES	15 TRAVEL ADVERTISE PROMO- TION	16 TRANS- PORTATION MARGINS	TOTAL
1	AGRIC,FISH,FOREST,MANUF. PRODU	519	989	0	1	0	0	0	12689
2	MINERALS	5	0	0	0	0	0	0	47416
3	RESIDENTIAL CONSTRUCTION	0	0	0	0	0	0	0	11447
4	NON-RESIDENTIAL CONSTRUCTION	0	0	0	0	0	0	0	96930
5	REPAIR CONSTRUCTION	0	0	0	0	0	0	0	50379
6	TRANSPORTATION & STORAGE	0	28	0	100	0	0	0	153721
7	COMMUNICATION SERVICES	0	0	0	0	0	0	0	25823
8	OTHER UTILITIES	0	0	0	0	0	0	0	21627
9	WHOLESALE MARGINS	12350	0	0	109	0	0	0	12583
10	RETAIL MARGINS	0	37968	0	606	0	0	0	38874
11	IMPUTED RENT OWNER OCPD. DWEL.	0	0	21618	0	0	0	0	21618
12	OTHER FINANCE,INS.,REAL ESTATE	82	308	43564	703	0	0	0	45573
13	BUSINESS SERVICES	28	3	56	19923	0	0	0	22456
14	PERSONAL & OTHER MISC. SERVICE	1130	7014	1701	69089	0	0	0	81225
15	TRANSPORTATION MARGINS	0	0	0	0	0	0	14423	14423
16	OPERATING,OFFICE,LAB & FOOD	0	0	0	0	22978	0	0	22978
17	TRAVEL, ADVERTISING, PROMOTION	0	0	0	0	0	30426	0	30426
TOTAL		14114	46310	66939	90531	22978	30426	14423	710188

Table 2. Make(Output) Matrix, NWT, 1984 ($000)

Industries

Commodities		1 AGRICUL-TURAL & RELATED SERVICES	2 FISHING TRAP-PING IND.	3 LOGGING & FORES-TRY IND.	4 MINING, QUARRYING & OIL WELLS	5 MANU-FACTURING IND.	6 CON-STRUCTION IND.	7 TRANS-PORTATION STORAGE IND.	8 COMMU-NICATION IND.	9 OTHER UTILITY IND.
1	AGRIC,FISH,FOREST,MANUF. PRODU	1078	4168	1000	11931	47981	0	2059	2057	224
2	MINERALS	0	0	0	925162	0	0	0	0	0
3	RESIDENTIAL CONSTRUCTION	0	0	0	0	0	24594	0	0	0
4	NON-RESIDENTIAL CONSTRUCTION	0	0	0	0	0	1385126	0	0	0
5	REPAIR CONSTRUCTION	0	0	0	0	0	44953	0	0	0
6	TRANSPORTATION & STORAGE	0	0	0	0	0	0	157124	0	0
7	COMMUNICATION SERVICES	0	0	0	0	0	0	0	41956	0
8	OTHER UTILITIES	0	0	0	257	0	0	0	0	70553
9	WHOLESALE MARGINS	0	0	0	117	769	0	19	0	0
10	RETAIL MARGINS	0	0	0	0	0	0	93	0	2436
12	OTHER FINANCE,INS.,REAL ESTATE	0	0	0	1396	0	393	172	13	299
13	BUSINESS SERVICES	0	0	0	2	0	0	204	3338	1605
14	PERSONAL & OTHER MISC. SERVICE	0	29	0	2388	35	358	904	37	3310
TOTAL		1078	4197	1000	941253	48785	1455424	160575	47401	78427

Table 2. Make(Output) Matrix, NWT, 1984 ($000)

Commodities		Industries							
		10 WHOLE-SALE TRADE IND.	11 RETAIL TRADE IND.	12FINANCE INSURANCE & REAL ESTATE	13 COMMU-NITY,BUS. PERSONAL SERVICES	14 OPERA-TING,LAB. OFFICE SUPPLIES	15 TRAVEL ADVERTISE PROMO-TION	16 TRANS-PORTATION MARGINS	TOTAL
1	AGRIC,FISH,FOREST,MANUF. PRODU	1164	1575	0	0	0	0	0	73237
2	MINERALS	12	0	0	0	0	0	0	925174
3	RESIDENTIAL CONSTRUCTION	0	0	0	0	0	0	0	24594
4	NON-RESIDENTIAL CONSTRUCTION	0	0	0	0	0	0	0	1385126
5	REPAIR CONSTRUCTION	0	0	0	0	0	0	0	44953
6	TRANSPORTATION & STORAGE	0	46	0	211	0	0	0	157381
7	COMMUNICATION SERVICES	0	0	0	0	0	0	0	41956
8	OTHER UTILITIES	0	0	0	0	0	0	0	70810
9	WHOLESALE MARGINS	27648	0	0	334	0	0	0	28887
10	RETAIL MARGINS	0	60450	0	714	0	0	0	63693
11	IMPUTED RENT OWNER OCPD. DWEL.	0	0	22601	0	0	0	0	22601
12	OTHER FINANCE,INS.,REAL ESTATE	184	491	76374	827	0	0	0	80149
13	BUSINESS SERVICES	63	5	73	79412	0	0	0	84702
14	PERSONAL & OTHER MISC. SERVICE	2532	11228	3396	114191	0	0	0	138408
15	TRANSPORTATION MARGINS	0	0	0	0	0	0	72284	72284
16	OPERATING,OFFICE,LAB & FOOD	0	0	0	0	172171	0	0	172171
17	TRAVEL, ADVERTISING, PROMOTION	0	0	0	0	0	83175	0	83175
TOTAL		31603	73795	102444	195689	172171	83175	72284	3469301

TABLE 3. Use(Inputs) Matrix, Yukon, 1984 ($000)

Industries

Commodities		1AGRICUL -TURAL & RELATED SERVICES	2 FISHING TRAP-PING IND.	3 LOGGING & FORES-TRY IND.	4 MINING, QUARRYING & OIL WELLS	5 MANU-FACTURING IND.	6 CON-STRUCTION IND.	7 TRANS-PORTATION STORAGE IND.	8 COMMU-NICATION IND.	9 OTHER UTILITY IND.
1	AGRIC,FISH,FOREST,MANUF. PRODU	360	823	568	5494	1612	49275	31397	1515	2798
2	MINERALS	0	3	0	3091	28	3171	33	0	0
5	REPAIR CONSTRUCTION	8	25	0	1075	13	148	4435	1075	565
6	TRANSPORTATION & STORAGE	1	14	0	235	7	1299	30987	363	24
7	COMMUNICATION SERVICES	3	3	0	62	51	494	4181	936	59
8	OTHER UTILITIES	10	3	0	3012	26	172	1597	238	71
9	WHOLESALE MARGINS	22	75	0	2108	66	6967	4926	130	184
10	RETAIL MARGINS	3	33	0	8	0	1395	132	42	5
12	OTHER FINANCE,INS.,REAL ESTATE	37	29	0	1200	194	2956	4378	508	312
13	BUSINESS SERVICES	1	4	0	326	85	8933	2172	1003	103
14	PERSONAL & OTHER MISC. SERVICE	6	32	254	318	39	8760	9844	1697	67
15	TRANSPORTATION MARGINS	8	26	0	140	44	2625	617	21	43
16	OPERATING,OFFICE,LAB & FOOD	21	11	865	696	71	2308	3110	894	122
17	TRAVEL, ADVERTISING, PROMOTION	0	0	0	52	206	1120	2568	1687	80
20	NET INDIRECT TAXES	34	35	235	137	6	4149	8208	-1152	-2216
21	LABOUR INCOME	69	26	393	16143	1459	50938	25044	19346	3606
22	NET INCOME UNINC. BUSINESS	-151	1000	49	1017	-14	2917	2357	0	337
23	OTHER OPERATING SURPLUS	11	95	36	12615	503	12034	20362	1023	15804
TOTAL		443	2237	2400	47729	4476	159661	156348	29326	21964

TABLE 3. Use(Inputs) Matrix, Yukon, 1984 ($000)

Industries

Commodities

		10 WHOLE-SALE TRADE IND.	11 RETAIL TRADE IND.	12FINANCE INSURANCE & REAL ESTATE	13 COMMU-NITY,BUS. PERSONAL SERVICES	14 OPERA-TING,LAB. OFFICE SUPPLIES	15 TRAVEL ADVERTISE PROMO-TION	16 TRANS-PORTATION MARGINS	TOTAL
1	AGRIC,FISH,FOREST,MANUF. PRODU	875	3413	724	9882	17585	5557	0	131878
2	MINERALS	1	1	0	18	1	0	0	6347
5	REPAIR CONSTRUCTION	30	382	9903	621	0	0	0	18280
6	TRANSPORTATION & STORAGE	317	540	18	409	0	5386	14423	54023
7	COMMUNICATION SERVICES	400	1370	1547	2088	0	1770	0	12964
8	OTHER UTILITIES	121	1252	1450	1729	0	0	0	9681
9	WHOLESALE MARGINS	188	182	49	976	2832	293	0	18998
10	RETAIL MARGINS	6	16	11	323	849	231	0	3054
12	OTHER FINANCE,INS.,REAL ESTATE	831	5465	7045	4631	0	0	0	27586
13	BUSINESS SERVICES	367	1295	4062	2829	0	1745	0	22925
14	PERSONAL & OTHER MISC. SERVICE	156	407	780	2582	769	13366	0	39077
15	TRANSPORTATION MARGINS	18	64	15	201	505	74	0	4401
16	OPERATING,OFFICE,LAB & FOOD	187	988	850	1987	0	0	0	12110
17	TRAVEL, ADVERTISING, PROMOTION	799	2665	1606	2374	0	0	0	13157
18	NON-COMPETING IMPORTS	0	115	0	67	27	0	0	209
19	UNALLOCATED IMPORTS & EXPORTS	0	0	0	0	410	2004	0	2414
20	NET INDIRECT TAXES	207	1498	112	1516	0	0	0	12769
21	LABOUR INCOME	6026	18983	13411	30294	0	0	0	185738
22	NET INCOME UNINC. BUSINESS	104	2432	3899	10446	0	0	0	24393
23	OTHER OPERATING SURPLUS	3481	5242	21457	17558	0	0	0	110301
TOTAL		14114	46310	66939	90531	22978	30426	14423	710305

TABLE 4. Use(Inputs) Matrix, NWT, 1984 ($000)

		Industries								
Commodities		1AGRICUL -TURAL & RELATED SERVICES	2 FISHING TRAP- PING IND.	3 LOGGING & FORES- TRY IND.	4 MINING, QUARRYING & OIL WELLS	5 MANU- FACTURING IND.	6 CON- STRUCTION IND.	7 TRANS- PORTATION STORAGE IND.	8 COMMU- NICATION IND.	9 OTHER UTILITY IND.
1	AGRIC,FISH,FOREST,MANUF. PRODU	313	891	174	129914	5832	253877	30595	2480	20453
2	MINERALS	0	3	0	53017	18643	771537	217	0	0
5	REPAIR CONSTRUCTION	65	22	0	6830	254	370	942	1359	1541
6	TRANSPORTATION & STORAGE	8	15	0	15288	22	8530	28999	289	67
7	COMMUNICATION SERVICES	25	3	0	2356	165	2139	3367	1498	159
8	OTHER UTILITIES	90	3	0	20822	258	678	1636	372	138
9	WHOLESALE MARGINS	111	78	0	23726	363	26956	4402	219	1281
10	RETAIL MARGINS	1	35	0	838	1	2388	127	45	11
12	OTHER FINANCE,INS.,REAL ESTATE	86	30	0	25375	742	15566	4692	795	924
13	BUSINESS SERVICES	6	4	0	29385	311	71306	2222	1228	309
14	PERSONAL & OTHER MISC. SERVICE	23	33	78	22890	267	77260	8585	2154	285
15	TRANSPORTATION MARGINS	38	27	0	7142	272	11411	624	34	314
16	OPERATING,OFFICE,LAB & FOOD	67	13	339	90235	965	16590	4146	1460	453
17	TRAVEL, ADVERTISING, PROMOTION	0	0	0	9305	628	6049	2649	1360	232
20	NET INDIRECT TAXES	10	7	73	18737	2274	15802	7432	-8381	1097
21	LABOUR INCOME	183	231	359	205676	6642	136110	21687	25357	10285
22	NET INCOME UNINC. BUSINESS	-51	2628	40	1855	-81	3292	1259	0	168
23	OTHER OPERATING SURPLUS	103	174	-63	277862	11297	35563	36994	17132	40710
TOTAL		1078	4197	1000	941253	48855	1455424	160575	47401	78427

TABLE 4. Use(Inputs) Matrix, NWT, 1984 ($000)

Industries

		10 WHOLE-SALE TRADE IND.	11 RETAIL TRADE IND.	12FINANCE INSURANCE & REAL ESTATE	13 COMMU-NITY,BUS. PERSONAL SERVICES	14 OPERA-TING,LAB. OFFICE SUPPLIES	15 TRAVEL ADVERTISE PROMO-TION	16 TRANS-PORTATION MARGINS	TOTAL
Commodities									
1	AGRIC,FISH,FOREST,MANUF. PRODU	4380	4595	3504	15750	124433	16717	0	613908
2	MINERALS	12	1	0	36	6	0	0	843472
5	REPAIR CONSTRUCTION	167	393	10421	662	0	0	0	23026
6	TRANSPORTATION & STORAGE	2350	729	85	711	0	21766	72284	151143
7	COMMUNICATION SERVICES	1457	1851	6474	4196	0	4972	0	28662
8	OTHER UTILITIES	891	1758	7725	2639	0	0	0	37010
9	WHOLESALE MARGINS	452	252	222	1531	25667	984	0	86244
10	RETAIL MARGINS	46	21	57	517	8238	801	0	13126
12	OTHER FINANCE,INS.,REAL ESTATE	1155	7380	18468	9842	0	0	0	85055
13	BUSINESS SERVICES	826	1750	13265	8112	0	5084	0	133808
14	PERSONAL & OTHER MISC. SERVICE	751	539	3336	4636	4826	25597	0	151260
15	TRANSPORTATION MARGINS	171	88	74	314	3613	233	0	24355
16	OPERATING,OFFICE,LAB & FOOD	1547	1375	3402	6005	0	0	0	126597
17	TRAVEL, ADVERTISING, PROMOTION	5742	3411	6771	5108	0	0	0	41255
18	NON-COMPETING IMPORTS	0	154	0	107	99	0	0	360
19	UNALLOCATED IMPORTS & EXPORTS	0	0	0	0	5289	7021	0	12310
20	NET INDIRECT TAXES	282	2480	-24440	1236	0	0	0	16609
21	LABOUR INCOME	9855	35980	21860	65180	0	0	0	539405
22	NET INCOME UNINC. BUSINESS	163	2384	2393	12687	0	0	0	26737
23	OTHER OPERATING SURPLUS	1356	8654	28827	56420	0	0	0	515029
TOTAL		31603	73795	102444	195689	172171	83175	72284	3469371

TABLE 5. Final Demand Matrix, Yukon, 1984 ($000)

Final Demand Categories

Commodities		1 PE CONSUMER EXPS DURABLE	2 PE CONSUMER EXPS SEMI DURABLE	3 PE CONSUMER EXPS NON DURABLE	4 PE CONSUMER EXPS SERVICES	5 CON CONSTR, BUSINESS	6 CON CONSTR, GOVT	7 M&E MACHINE & EQUPT. BUSINESS	8 M&E MACHINE & EQUPT. GOVT	9 GOVT GROSS CURRENT EXPS
1	AGRIC,FISH,FOREST,MANUF. PRODU	18667	13934	56414	688	62	0	17879	11211	9050
2	MINERALS	0	5	68	0	0	0	0	0	54
3	RESIDENTIAL CONSTRUCTION	0	0	0	0	10947	500	0	0	0
4	NON-RESIDENTIAL CONSTRUCTION	0	0	0	0	31638	65292	0	0	0
5	REPAIR CONSTRUCTION	0	0	0	97	0	0	0	0	32004
6	TRANSPORTATION & STORAGE	0	0	111	14004	0	0	0	0	5602
7	COMMUNICATION SERVICES	0	0	0	5269	0	0	0	0	3409
8	OTHER UTILITIES	0	0	6489	790	0	0	0	0	10239
9	WHOLESALE MARGINS	2743	1443	7117	37	8	0	1812	2563	1090
10	RETAIL MARGINS	7835	8039	14576	50	3	0	234	138	78
11	IMPUTED RENT OWNER OCPD. DWEL.	0	0	0	21618	0	0	0	0	0
12	OTHER FINANCE,INS.,REAL ESTATE	0	0	0	23687	2097	0	0	0	7720
13	BUSINESS SERVICES	0	0	0	718	0	0	0	0	12756
14	PERSONAL & OTHER MISC. SERVICE	4029	130	0	47875	0	0	0	0	34357
15	TRANSPORTATION MARGINS	344	410	1486	8	2	0	232	218	229
16	OPERATING,OFFICE,LAB & FOOD	0	0	0	545	0	0	0	0	10326
17	TRAVEL, ADVERTISING, PROMOTION	0	0	0	261	0	0	0	0	9710
18	NON-COMPETING IMPORTS	0	0	478	0	0	0	0	0	0
19	UNALLOCATED IMPORTS & EXPORTS	0	0	0	-4641	0	0	0	0	0
20	NET INDIRECT TAXES	1647	405	13774	1031	5	0	1109	846	2164
21	LABOUR INCOME	0	0	0	5547	0	0	0	0	112936
23	OTHER OPERATING SURPLUS	0	0	0	209	0	0	0	0	30159
TOTAL		35265	24366	100513	117793	44762	65792	21266	14976	281883

TABLE 5. Final Demand Matrix, Yukon, 1984 ($000)

		Final Demand Categories								
Commodities		10 GOVT SALES OF GOODS & SERVICES	11 DOMESTIC DEMAND	12 INVENTORIES	13 EXPORT FOREIGN	14 RE-EXPORTS	15 IMPORT FOREIGN	16FOREIGN TRADE BALANCE	17 EXP NFLD	19 EXP NS
1	AGRIC,FISH,FOREST,MANUF. PRODU	-488	127417	191	561	598	-39494	-38335	0	0
2	MINERALS	-1	126	-3418	26541	0	-5	26536	0	0
3	RESIDENTIAL CONSTRUCTION	0	11447	0	0	0	0	0	0	0
4	NON-RESIDENTIAL CONSTRUCTION	0	96930	0	0	0	0	0	0	0
5	REPAIR CONSTRUCTION	0	32101	0	0	0	0	0	0	0
6	TRANSPORTATION & STORAGE	-7420	12297	0	771	0	-478	293	6	96
7	COMMUNICATION SERVICES	-199	8479	0	0	0	0	0	0	0
8	OTHER UTILITIES	-5610	11908	0	0	0	0	0	0	0
9	WHOLESALE MARGINS	-134	14679	0	667	0	-104	563	0	0
10	RETAIL MARGINS	0	30953	0	0	0	0	0	0	0
11	IMPUTED RENT OWNER OCPD. DWEL.	0	21618	0	0	0	0	0	0	0
12	OTHER FINANCE,INS.,REAL ESTATE	-2746	30758	0	0	0	0	0	0	0
13	BUSINESS SERVICES	-2107	11367	0	3731	0	-1646	2085	0	0
14	PERSONAL & OTHER MISC. SERVICE	-13624	72767	0	200	0	-2703	-2503	0	0
15	TRANSPORTATION MARGINS	0	2929	0	313	0	0	313	0	2
16	OPERATING,OFFICE,LAB & FOOD	0	10871	0	0	0	0	0	0	0
17	TRAVEL, ADVERTISING, PROMOTION	0	9971	0	0	0	0	0	0	0
18	NON-COMPETING IMPORTS	0	478	0	0	0	-687	-687	0	0
19	UNALLOCATED IMPORTS & EXPORTS	0	-4641	0	12080	6	-9859	2227	0	0
20	NET INDIRECT TAXES	0	20981	0	0	0	413	413	0	0
21	LABOUR INCOME	0	118483	0	0	0	0	0	0	0
23	OTHER OPERATING SURPLUS	0	30368	0	0	0	0	0	0	0
TOTAL		-32329	674287	-3227	44864	604	-54563	-9095	6	98

TABLE 5. Final Demand Matrix, Yukon, 1984 ($000)

Commodities			Final Demand Categories								
			20 EXP NB	21 EXP QUE	22 EXP ONT	23 EXP MAN	24 EXP SASK	25 EXP ALTA	26 EXP BC	28 EXP NWT	29 EXPORT INTERPROV
	1	AGRIC,FISH,FOREST,MANUF. PRODU	0	0	14	113	199	103	1973	228	2630
	2	MINERALS	0	0	3579	0	0	124	17301	0	21004
	6	TRANSPORTATION & STORAGE	10	1041	4181	5169	5071	11258	97488	3876	128196
	7	COMMUNICATION SERVICES	0	621	624	608	610	621	622	1159	4865
	8	OTHER UTILITIES	0	0	0	0	0	0	19	18	37
	9	WHOLESALE MARGINS	0	0	0	0	0	0	249	0	249
	10	RETAIL MARGINS	0	0	0	0	0	0	4901	0	4901
	12	OTHER FINANCE,INS.,REAL ESTATE	0	0	3352	16	27	16	1600	17	5028
	13	BUSINESS SERVICES	0	0	2487	13	116	108	8249	539	11512
	14	PERSONAL & OTHER MISC. SERVICE	0	0	208	8	15	11	1999	109	2350
	15	TRANSPORTATION MARGINS	0	181	26	68	4	1988	11353	18	13640
	17	TRAVEL, ADVERTISING, PROMOTION	0	0	0	0	0	0	7297	0	7297
TOTAL			10	1843	14471	5995	6042	14229	153051	5964	201709

TABLE 5. Final Demand Matrix, Yukon, 1984 ($000)

Final Demand Categories

Commodities		30 IMP NFLD	31 IMP PEI	32 IMP NS	33 IMP NB	34 IMP QUE	35 IMP ONT	36 IMP MAN	37 IMP SASK	38 IMP ALTA
1	AGRIC,FISH,FOREST,MANUF. PRODU	-8	-19	0	-61	-24054	-70971	-4738	-142	-21774
2	MINERALS	0	0	0	0	0	-10	0	-643	-1150
6	TRANSPORTATION & STORAGE	-8	0	-15	-6	-2122	-1665	-243	-121	-17525
9	WHOLESALE MARGINS	0	0	-42	-50	-2877	-7710	-1032	-198	-6065
12	OTHER FINANCE,INS.,REAL ESTATE	0	0	0	0	-2559	-2964	-18	-7	-2097
13	BUSINESS SERVICES	0	-1	0	-2	-1824	-7686	-498	-64	-1288
14	PERSONAL & OTHER MISC. SERVICE	0	-1	0	-2	-4377	-9590	-1217	-91	-2166
15	TRANSPORTATION MARGINS	-1	0	-2	-1	-17	-278	-63	-21	-2479
TOTAL		-17	-21	-59	-122	-37030	-100874	-7809	-1287	-54544

TABLE 5. Final Demand Matrix, Yukon, 1984 ($000)

Final Demand Categories

Commodities		39 IMP BC	41 IMP NWT	42 IMPORT INTERPROV	43 TOTAL TRADE BALANCE	FINAL DEMAND
1	AGRIC,FISH,FOREST,MANUF. PRODU	-85730	-3595	-211092	-246797	-119189
2	MINERALS	-1375	0	-3178	44362	41070
3	RESIDENTIAL CONSTRUCTION	0	0	0	0	11447
4	NON-RESIDENTIAL CONSTRUCTION	0	0	0	0	96930
5	REPAIR CONSTRUCTION	0	0	0	0	32101
6	TRANSPORTATION & STORAGE	-17668	-1710	-41083	87406	99703
7	COMMUNICATION SERVICES	-488	0	-488	4377	12856
8	OTHER UTILITIES	0	0	0	37	11945
9	WHOLESALE MARGINS	-5815	0	-23789	-22977	-6298
10	RETAIL MARGINS	-34	0	-34	4867	35820
11	IMPUTED RENT OWNER OCPD. DWEL.	0	0	0	0	21618
12	OTHER FINANCE,INS.,REAL ESTATE	-10137	-18	-17800	-12772	17986
13	BUSINESS SERVICES	-13823	-246	-25432	-11835	-468
14	PERSONAL & OTHER MISC. SERVICE	-13004	-21	-30469	-30622	42145
15	TRANSPORTATION MARGINS	-3839	-159	-6860	7093	10022
16	OPERATING,OFFICE,LAB & FOOD	0	0	0	0	10871
17	TRAVEL, ADVERTISING, PROMOTION	0	0	0	7297	17268
18	NON-COMPETING IMPORTS	0	0	0	-687	-209
19	UNALLOCATED IMPORTS & EXPORTS	0	0	0	2227	-2414
20	NET INDIRECT TAXES	0	0	0	413	21394
21	LABOUR INCOME	0	0	0	0	118483
23	OTHER OPERATING SURPLUS	0	0	0	0	30368
TOTAL		-151913	-5749	-360225	-167611	503449

TABLE 6. Final Demand Matrix, NWT, 1984 ($000)

Final Demand Categories

Commodities		1 PE CONSUMER EXPS DURABLE	2 PE CONSUMER EXPS SEMI DURABLE	3 PE CONSUMER EXPS NON DURABLE	4 PE CONSUMER EXPS SERVICES	5 CON CONSTR, BUSINESS	6 CON CONSTR, GOVT	7 M&E MACHINE & EQUPT. BUSINESS	8 M&E MACHINE & EQUPT. GOVT	9 GOVT GROSS CURRENT EXPS
1	AGRIC,FISH,FOREST,MANUF. PRODU	28136	29075	92572	639	4201	0	123694	14496	48142
2	MINERALS	0	11	126	0	0	0	0	0	713
3	RESIDENTIAL CONSTRUCTION	0	0	0	0	24594	0	0	0	0
4	NON-RESIDENTIAL CONSTRUCTION	0	0	0	0	1281466	103660	0	0	0
5	REPAIR CONSTRUCTION	0	0	0	77	0	0	0	0	21853
6	TRANSPORTATION & STORAGE	0	0	150	21940	0	0	0	0	12350
7	COMMUNICATION SERVICES	0	0	0	8805	0	0	0	0	10826
8	OTHER UTILITIES	0	0	18390	3263	0	0	0	0	27165
9	WHOLESALE MARGINS	4121	2990	11557	40	526	0	27335	3380	5670
10	RETAIL MARGINS	11710	18213	25504	49	216	0	2475	140	253
11	IMPUTED RENT OWNER OCPD. DWEL.	0	0	0	22601	0	0	0	0	0
12	OTHER FINANCE,INS.,REAL ESTATE	0	0	0	73630	4747	0	0	0	24520
13	BUSINESS SERVICES	0	0	0	1022	0	0	0	0	34724
14	PERSONAL & OTHER MISC. SERVICE	5198	364	0	63059	0	0	0	0	114607
15	TRANSPORTATION MARGINS	542	888	2477	7	103	0	2242	298	1557
16	OPERATING,OFFICE,LAB & FOOD	0	0	0	720	0	0	0	0	44858
17	TRAVEL, ADVERTISING, PROMOTION	0	0	0	294	0	0	0	0	36718
18	NON-COMPETING IMPORTS	0	0	959	0	0	0	0	0	0
19	UNALLOCATED IMPORTS & EXPORTS	0	0	0	-8618	0	0	0	0	0
20	NET INDIRECT TAXES	2464	776	22103	1757	368	0	3302	1111	6908
21	LABOUR INCOME	0	0	0	7786	0	0	0	0	278877
23	OTHER OPERATING SURPLUS	0	0	0	235	0	0	0	0	66085
TOTAL		52171	52317	173838	197306	1316221	103660	159048	19425	735826

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TABLE 6. Final Demand Matrix, NWT, 1984 ($000)

Final Demand Categories

	Commodities	10 GOVT SALES OF GOODS & SERVICES	11 DOMESTIC DEMAND	12 INVENTORIES	13 EXPORT FOREIGN	14 RE-EXPORTS	15 IMPORT FOREIGN	16FOREIGN TRADE BALANCE	17 EXP NFLD	18 EXP PEI
1	AGRIC,FISH,FOREST,MANUF. PRODU	-34633	306322	-357	16354	1111	-120604	-103139	0	0
2	MINERALS	-25	825	7583	333957	0	-8145	325812	0	0
3	RESIDENTIAL CONSTRUCTION	0	24594	0	0	0	0	0	0	0
4	NON-RESIDENTIAL CONSTRUCTION	0	1385126	0	0	0	0	0	0	0
5	REPAIR CONSTRUCTION	0	21930	0	0	0	0	0	0	0
6	TRANSPORTATION & STORAGE	-10626	23814	0	7483	0	-469	7014	2	0
7	COMMUNICATION SERVICES	-383	19248	0	0	0	-20	-20	0	0
8	OTHER UTILITIES	-14792	34026	0	0	0	0	0	0	0
9	WHOLESALE MARGINS	-258	55361	0	2226	0	-505	1721	0	0
10	RETAIL MARGINS	0	58560	0	0	0	0	0	0	0
11	IMPUTED RENT OWNER OCPD. DWEL.	0	22601	0	0	0	0	0	0	0
12	OTHER FINANCE,INS.,REAL ESTATE	-18744	84153	0	0	0	-5	-5	0	0
13	BUSINESS SERVICES	-4074	31672	0	7586	0	-4565	3021	0	0
14	PERSONAL & OTHER MISC. SERVICE	-24862	158366	0	97	0	-8955	-8858	0	0
15	TRANSPORTATION MARGINS	0	8114	0	316	1	0	317	10	22
16	OPERATING,OFFICE,LAB & FOOD	0	45578	0	0	0	0	0	0	0
17	TRAVEL, ADVERTISING, PROMOTION	0	37012	0	0	0	0	0	0	0
18	NON-COMPETING IMPORTS	0	959	0	0	0	-1319	-1319	0	0
19	UNALLOCATED IMPORTS & EXPORTS	0	-8618	0	44510	11	-48213	-3692	0	0
20	NET INDIRECT TAXES	0	38789	0	0	0	744	744	0	0
21	LABOUR INCOME	0	286663	0	0	0	0	0	0	0
23	OTHER OPERATING SURPLUS	0	66320	0	0	0	0	0	0	0
TOTAL		-108397	2701415	7226	412529	1123	-192056	221596	12	22

TABLE 6. Final Demand Matrix, NWT, 1984 ($000)

Commodities		19 EXP NS	20 EXP NB	21 EXP QUE	22 EXP ONT	23 EXP MAN	24 EXP SASK	25 EXP ALTA	26 EXP BC	27 EXP YUK
1	AGRIC,FISH,FOREST,MANUF. PRODU	47	40	90	165	233	407	456	2499	3595
2	MINERALS	0	0	0	338	110	111	111	128668	0
6	TRANSPORTATION & STORAGE	29	259	16027	6454	127	149	45850	12847	1710
7	COMMUNICATION SERVICES	0	0	56	56	55	55	56	56	0
9	WHOLESALE MARGINS	0	0	0	0	0	0	0	807	0
12	OTHER FINANCE,INS.,REAL ESTATE	0	0	1	1631	3	5	6	6786	18
13	BUSINESS SERVICES	12	9	25	61	27	48	52	7394	246
14	PERSONAL & OTHER MISC. SERVICE	1	0	1	1	1	2	2	575	21
15	TRANSPORTATION MARGINS	420	1068	23407	26215	688	2035	12655	3727	159
17	TRAVEL, ADVERTISING, PROMOTION	0	0	0	0	0	0	0	4911	0
TOTAL		509	1376	39607	34921	1244	2812	59188	168270	5749

TABLE 6. Final Demand Matrix, NWT, 1984 ($000)

Commodities		Final Demand Categories								
		29 EXPORT INTERPROV	30 IMP NFLD	31 IMP PEI	32 IMP NS	33 IMP NB	34 IMP QUE	35 IMP ONT	36 IMP MAN	37 IMP SASK
1	AGRIC,FISH,FOREST,MANUF. PRODU	7532	0	-35	-91	-127	-91476	-269025	-14621	-14703
2	MINERALS	129338	0	0	0	0	-64103	-158	0	-259
6	TRANSPORTATION & STORAGE	83454	-30	-7	-180	-83	-29801	-7637	-827	-2914
7	COMMUNICATION SERVICES	334	0	0	0	0	0	0	0	0
8	OTHER UTILITIES	0	0	0	0	0	-126	0	0	0
9	WHOLESALE MARGINS	807	0	0	-201	-235	-13933	-37366	-4999	-960
12	OTHER FINANCE,INS.,REAL ESTATE	8450	0	0	-1	0	-21545	-16407	-28	-65
13	BUSINESS SERVICES	7874	0	-2	-4	-3	-13905	-25646	-1123	-976
14	PERSONAL & OTHER MISC. SERVICE	604	0	-2	-4	-6	-34492	-48843	-4758	-1638
15	TRANSPORTATION MARGINS	70406	-55	0	-523	-408	-5386	-7010	-394	-6273
17	TRAVEL, ADVERTISING, PROMOTION	4911	0	0	0	0	0	0	0	0
TOTAL		313710	-85	-46	-1004	-862	-274767	-412092	-26750	-27868

TABLE 6. Final Demand Matrix, NWT, 1984 ($000)

Commodities		Final Demand Categories					
		38 IMP ALTA	39 IMP BC	40 IMP YUK	42 IMPORT INTERPROV	43 TOTAL TRADE BALANCE	FINAL DEMAND
1	AGRIC,FISH,FOREST,MANUF. PRODU	-264244	-96392	-228	-751022	-846629	-540664
2	MINERALS	-260359	-56982	0	-381861	73289	81697
3	RESIDENTIAL CONSTRUCTION	0	0	0	0	0	24594
4	NON-RESIDENTIAL CONSTRUCTION	0	0	0	0	0	1385126
5	REPAIR CONSTRUCTION	0	0	0	0	0	21930
6	TRANSPORTATION & STORAGE	-45887	-16801	-3876	-108043	-17575	6239
7	COMMUNICATION SERVICES	0	-5118	-1159	-6277	-5963	13285
8	OTHER UTILITIES	-83	0	-18	-227	-227	33799
9	WHOLESALE MARGINS	-29377	-28174	0	-115245	-112717	-57356
10	RETAIL MARGINS	-4901	-3092	0	-7993	-7993	50567
11	IMPUTED RENT OWNER OCPD. DWEL.	0	0	0	0	0	22601
12	OTHER FINANCE,INS.,REAL ESTATE	-23055	-36316	-17	-97434	-88989	-4836
13	BUSINESS SERVICES	-25356	-24131	-539	-91685	-80790	-49118
14	PERSONAL & OTHER MISC. SERVICE	-56515	-16596	-109	-162963	-171217	-12851
15	TRANSPORTATION MARGINS	-5396	-5444	-18	-30907	39816	47930
16	OPERATING,OFFICE,LAB & FOOD	0	0	0	0	0	45578
17	TRAVEL, ADVERTISING, PROMOTION	0	0	0	0	4911	41923
18	NON-COMPETING IMPORTS	0	0	0	0	-1319	-360
19	UNALLOCATED IMPORTS & EXPORTS	0	0	0	0	-3692	-12310
20	NET INDIRECT TAXES	0	0	0	0	744	39533
21	LABOUR INCOME	0	0	0	0	0	286663
23	OTHER OPERATING SURPLUS	0	0	0	0	0	66320
TOTAL		-715173	-289046	-5964	-1753657	-1218351	1490290

TECHNICAL SERIES/CAHIERS TECHNIQUES

INPUT-OUTPUT DIVISION/DIVISION DES ENTRÉES-SORTIES

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(1)
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