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Input-Output Division

**Provincialization of the Government Sector
in the Provincial Input-Output Accounts of Canada, 1990**

By

P.S.K. Murty and Yusuf Siddiqi

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May , 1995

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P.S.K. Murty and Yusuf Siddiqi¹

I. Introduction

In Canada, the National Input-Output Accounts are produced and published annually from 1961 onwards. Although the Provincial Input-Output Accounts were produced occasionally on an experimental basis for 1973 and 1984, it is the first time that an effort was made to develop the Provincial Input-Output Accounts in an integrated mode, so that we could have a reconciled set of Gross Domestic Product (GDP) estimates produced by the Input-Output Division, National Accounts and Environment Division and Industry Measures and Analysis Division. To this end, a Working Group composed of professional staff from the above three Divisions of the National Accounts Branch was set up to examine the conceptual issues involved in

¹ The authors Yusuf Siddiqi and P.S.K. Murty thank Dave Leblanc, Louis David, Michel Bédard, Margot Greenberg and Dave VanLuven for their excellent work on the project. They also thank the technical and support staff Virginia Maloney, Debra Brown, Gordan Jelinic, Francilia Poirier, Danielle Éthier and Diane Smith for their valuable contribution.

provincializing the relevant data of industries and the government sector. The report² of that Working Group formed the basis for the work on the Provincial Input-Output Accounts. This paper discusses some issues involved in this provincial dimension project (PDP) and explains the concepts, sources and methods concerning the government sector's database.

It should be noted at the outset that the Provincial Input-Output Accounts for 1990 have the same industry and commodity classification as the National Input-Output Accounts and are fully integrated and balanced with the latter. These Accounts have been produced for ten provinces and two territories.

Before dealing with the conceptual issues involved in the allocation of defence and other federal government revenues and expenditures, a review of the concept of Gross Domestic Product (GDP) is in order.

II. Income-Based Gross Domestic Product (GDP)

The GDP of any country is a measure of the unduplicated total value of goods and services produced by the institutional units within the economic territory of that country. Therefore, the Canadian GDP measures the unduplicated production originating only within the economic territory of

² See the unpublished report of the Provincial Working Group dated June 1994 on "Integration of the Provincial Production Accounts" which is available on request.

Canada. According to the new 1993 U.N. System of National Accounts, the economic territory of a country "consists of the geographic territory administrated by a government within which persons, goods, and capital circulate freely"³. Thus, the economic territory includes the territorial enclaves (embassies, consulates, military bases) in the rest of the world. Similarly, the economic territory of a country does not include the territorial enclaves used by foreign governments or international organizations which are physically located within the geographical boundaries of that country. (See the UN System of National Accounts 1993, paragraphs 14.9; and 14.11 on Page 319). Since the geographical boundary of Canada consists of ten provinces and two territories, any production activity occurring within the economic territory of Canada should be allocated back to the ten provinces and two territories only.

III. Expenditure-Based Gross Domestic Product (GDP)

As we know, the expenditure-based GDP table of the National Income and Expenditure Accounts is disaggregated into the following seven categories at the national level:

- (1) Personal expenditure on consumer goods and services
- (2) Government current expenditure on goods and services
- (3) Government investment

³ United Nations, System of National Accounts 1993, New York, 1993, Page 319

- (4) Business investment
- (5) Inventories
- (6) Exports
- (7) Imports

The sum of the first four items shown at the national level, namely, (1) personal expenditure on consumer goods and services (2) government current expenditure on goods and services, (3) government investment, and (4) business investment, is referred to as the "Final Domestic Demand". The final expenditure categories of government, which are items (2) and (3) above, consist of all government net expenditures including the entire federal government expenditures whether they relate to operations "within Canada" or "out of Canada" (in its territorial enclaves outside the geographical boundary of Canada). Therefore, the concept of Final Domestic Demand also implicitly recognizes the fact that the "out of Canada" operations of the federal government which are mostly in the area of diplomatic services, trade services, NATO and peace keeping services, are simply extensions of the main responsibility centres stationed within the geographical territory of Canada. As such, those "out of Canada" transactions do not qualify to be called "exports". They are, indeed, included in the total expenditures on goods and services of the government sector.

IV. Treatment of Federal government (including defence) expenditures in the Provincial Input-Output Accounts

From the above, one would conclude that in the Provincial Input-Output Accounts, the income and expenditures in the Canadian territorial enclaves must be allocated back to the ten provinces and two territories. However, from the provincial perspective, the transactions in the territorial enclaves, although part of Canadian GDP, have no impact on a province where the main responsibility centre happens to be located. This raises the following issues:

- (1) Should we allocate the GDP only to the 10 provinces and 2 territories?
or
- (2) Should we create a 13th region in the main tables to accommodate the "out of Canada" expenditures.

Let us examine these issues in detail.

(I) Allocate the Canadian GDP to the ten provinces and two territories

This alternative involves allocating the Canadian GDP to the ten provinces and two territories. It analyses the demand and supply of all the resources utilized by the responsibility centres situated within the Canadian geographical territory. This method of allocation would require that the entire

federal government expenditures on goods and services including labour income and depreciation which form part of the GDP should be allocated only to the 10 provinces and 2 territories. Since provinces would also like to examine the precise impact of the federal government expenditures on their resources, they would like to have information on a split of the responsibility centres' expenditures into transactions within that province and "out of Canada". To that end, expenditures "out of Canada" should also be disaggregated by each province and territory which controls those "out of Canada" operations. This exercise would, however, become unwieldy in actual implementation and it is not considered feasible at the present time.

However, theoretically, one could see two main benefits of such an exercise.

- (i) First, the GDP would be shown in the ten provinces and two territories only and it would be additive to the total Canadian GDP at the national level based on the defined geographical boundary of Canada.
- (ii) Second, the GDP of a province or a territory will not fluctuate due to shifts that take place in the mix of the federal government expenditure within that province (territory) and "out of Canada" emanating from the local responsibility centres. For example, if NATO is abolished and if the personnel is brought back to its home province, it would raise the GDP of that province, other things being equal. That increase is

attributable solely to the way the activities are classified, namely, to the actual location of the responsibility centre or extended activities of the responsibility centre outside Canada, but not to any additional economic activities within the province.

- (2) Create a "13th region" in the main table to accommodate "out of Canada" expenditures.

Let us then examine the second alternative.

The second alternative approach would be to create a "13th region" in the main tables and allocate to it all activity taking place "out of Canada". This means, besides the ten provinces and two territories, there will be an additional column (13th column) to show the activity of "out of Canada". Since the calculation of the total expenditures for the 13th region would still require a breakdown of the data relating to each province and territory, such details would be preserved and retained at the worksheet level for analytical uses. This 13th region would be part of Canada just like the ten provinces and two territories and it would create additional analytical usefulness for the data. This is the approach which has been adopted for the 1990 Input-Output Accounts after considering the other alternative as discussed in this paper.

V. Procedures used to allocate Federal Revenues and Expenditures

For the Canadian Input-Output Accounts, the federal government revenues and expenditures are analyzed under the following two subsectors:

- (1) Defence; and
- (2) Non-defence

These two subsectors are again divided further into the following:

- (1) Defence
 - (i) Education
 - (ii) Other defence
- (2) Non-Defence
 - (i) Education
 - (ii) Hospitals
 - (iii) Other Federal

It should be noted that the Input-Output Accounts contain additional groupings as shown below.

- (i) Defence expenditures on goods and services excluding education and including capital expenditures (GCE 124).
- (ii) Defence sales revenues on goods and services excluding education

(GCE 133)

- (iii) Other federal government current expenditures on goods and services excluding education and hospitals (GCE 127)
- (iv) Federal government capital expenditures on goods and services including education and hospitals are combined with similar categories of provincial and local governments and shown as two separate categories:
 - (a) Machinery & Equipment (79M&E)
 - (b) Construction (CON119)
- (v) Sales revenues on goods and services excluding education and hospitals (GCE 136)
- (vi) Federal and defence revenues and expenditures on education and hospitals are combined with similar categories of provincial and local governments and shown as two separate sub-sectors, namely,

Education Expenditure (GCE 122³); and Revenues (GCE 132).

These includes Defence, Federal, Provincial, and Local Education.

Hospitals Expenditures (GCE 122); and Revenues (GCE131).

These include Federal, Provincial and General hospitals.

Defence Hospitals are not separated at the present time and are left in the Defence subsector.

(vii) The subsidies and indirect taxes pertaining to the federal government are combined with similar data of provincial and local governments and shown in the following commodities:

Commodity 596: Commodity indirect taxes

Commodity 597: Subsidies

Commodity 598: Other indirect taxes

The methods used to allocate the above items to provinces and territories are discussed here.

It must be noted that the prerequisite in this allocation exercise is the concept of province or territory. As is well known, the federal government is the resident of all the 10 provinces and 2 territories of Canada. The concept used in allocating the federal government expenditures, which include the defence and non-defence components, is the concept of "province" where the operation was carried out. In some cases, where the expenditures relate to operations not yet carried out, the province of intended use was ascertained and used. Thus, the province of residence for the operations involved is based on two factors: (i) first, where the goods and services purchased are used; (ii) second, where the goods and services are intended to be used. The intended use applies, in many cases, where goods are first delivered to warehouses to be reshipped later to some other destinations as and when required. This second type of allocation is based on the information provided by the respective federal departments. The

location of storage of goods is itself not considered as the location of usage. The term "Province" used here also includes abroad (outside Canada) for "territorial enclaves" such as Canadian embassies and DND bases outside Canada.

Sales revenues are allocated by province based on the province where they are earned or, in other words, where the operation that generated the revenue is located.

VI. Sources and Methods of allocation

1. Defence

Several data sources are used to allocate defence expenditures by province. It should be noted that the Department of National Defence maintains an accounting system similar to the Responsibility Centre/province code system discussed in the non-defence federal section which follows. However, due to the nature of the operation of this department, the data maintained in the departmental accounting system are not representative of province of residence of the operation since in most cases the area responsible for the budget and expenditures incurred is not the province of residence of the operation. Many items are procured centrally and later delivered to warehouses or bases, etc. It is very difficult, if not impossible, to use an accounting system to keep track of these categories of expenditure.

Therefore, the following data sources have been developed and used to allocate defence expenditures.

(i) DND Costing System

This DND costing system is maintained by the Department of National Defence (DND) and it provides information by type of good and service for each "line object" and "economic object" (ECON) by province. The system is based on "cost" as opposed to "expenditure" and is a summary of the numerous cost factors applicable to the various operations of the DND. The cost values, which are defined in percentages by province by ECON, are applied to the ECON expenditures, resulting in a distribution by province and commodity. Under the Federal-Provincial Reciprocal Taxation Agreements which were in place between 1977 and 1990, this system was considered to be the most appropriate basis for the allocation of the DND expenditures by province of use. The resulting provincial expenditure database was used by the federal government at that time to estimate and make payments in lieu of provincial consumption taxes such as the sales taxes to the provinces. That method of provincial allocation which was considered appropriate for such tax calculations is considered to be suitable for the present PDP exercise also.

(ii) DND Capital Project System

The Department of National Defence has numerous "capital" projects underway in a given year and each project has a manager and a project code. Each project manager provides information by project code as to the nature of expenditures for each "line object" showing the distribution by province of use or intended use of the goods purchased. Items such as spare parts are normally assigned by province based on the provincial distribution of the main equipment purchased. It should be noted that expenditures on Ships or Aircraft have been allocated to the province of home port or base.

(iii) Labour Income

This item consists of salaries and wages and supplementary labour income (SLI).

Salaries and wages are allocated by province based on province of work and the amount earned in each province. SLI is first allocated by province based on the provincial pattern of salaries and wages and then adjusted for the provincial weights of SLI to wages and salaries and constrained by the total SLI by province.

(iv) Other Allocation Sources and Methods

There are also other allocation methods besides those discussed under the non-defence component. They are:

- (a) distribution of departmental personnel by province of work
- (b) population of Canada
- (c) other allocation methods such as the Public Accounts, and special studies of the former Intergovernmental Taxation Centre of the Supply and Services Canada.

2. Non-defence federal

The basis to allocate federal departmental expenditures and revenues by province is the responsibility centre/ province code relationship that exists in many federal government departmental accounting systems. It should be recalled here that the federal government accounting system contains a Responsibility Centre which is an organizational entity "responsible" or accountable for the expenditure or revenue. According to this method of accounting, expenditure and revenue data are maintained for each Responsibility Centre (RC) in the departmental budget by "line object" code. Each Responsibility Centre (RC) is in turn identifiable by province of location. When such expenditures and revenues of each RC are aggregated by province by "economic object" code (ECON) and "line object" code (LOBJ) at year end, the resulting database shows the built-in provincial dimension

for each federal department. In general, the goods and services charged to the budget of a Responsibility Centre are used by that Responsibility Centre in the province in which the operation or RC is located. There are several instances where this is not the case. In such cases, discussions are held with departments and they assist us in identifying the appropriate areas. Based on the information obtained from the departments, adjustments are made to the RC/province statements by each "line object" to reflect the province for the operations concerned.

The data based on the Responsibility Centre (RC) and province code relationship contain expenditures and revenues for several departments by "line object" and "economic object" by province. They are obtained in either tape, diskette, or hardcopy form from the following sources:

- (i) Departmental Reporting System (DRS) maintained by the department of Public Works and Government Services Canada (formerly SSC)
- (ii) Various other departments from the individual departmental accounting systems for non-DRS clients

It should be noted that not all departments maintain dictionaries showing the linkages between the Responsibility Centres and provinces. For these departments, alternative allocation methods are used as outlined below.

- (i) In some cases, departments which do not have a RC/province code relationship specified in their accounting system provide additional information by province similar to that provided in the RC/province code database described here. This information is used in the PDP exercise.
- (ii) For expenditures which are not covered by the sources mentioned here, allocation patterns are based on the following:
 - (a) Distribution of personnel by province of work.

These data represent the number of employees by province by department and are mainly used to allocate expenditures such as general office operating expenditures, office supplies, telephone expenditures, rentals, etc. The number of employees by province is used rather than the salary levels by province since the nature of the expenditures is related more to the function of employees rather than the employees' salaries.

In this connection, the source of data is the Federal Government Employment System maintained by the Public Institutions Division of Statistics Canada. This system is based on data provided by the Personnel Applications Centre of the Department of Public Works and Government Services Canada. These data are classified by each department and agency.

(b) Population of Canada by province.

This indicator is used for some expenditures such as advertising. The source of population data is the CANSIM of Statistics Canada.

(c) Wages and Salaries and Supplementary Labour Income (SLI).

Data by Responsibility Centre and province code are not available for these expenditures. Therefore, the data by province of work provided by the Labour Division of Statistics Canada, based on the T4 databank from Revenue Canada Taxation, have been used to allocate the wages and salaries. Labour Division does not have a provincial allocation for SLI by industry. Therefore, estimates of SLI by province have been made by applying the provincial pattern of the wages and salaries and adjusted for provincial weights of SLI to wages.

(d) Other allocation methods

In some cases, other provincial patterns are used, such as the data from Volume 2, Part II of the Public Accounts, special studies of the former Intergovernmental Taxation Centre of SSC, and other studies of organizations such as the Treasury Board.

VII. Federal Subsidies

By definition, subsidies are government grants on current account to business establishments to compensate them for "losses resulting from the price policies of government."⁴ In the context of this present general definition, the industries receiving subsidies are obviously supposed to sell their commodities cheaper to consumers as some of the costs are borne by the government in the form of subsidies. In other words, the payment (subsidy) to industries is tantamount to sharing the production costs of the industries concerned, so that the commodity prices fixed by those industries would be lower to the extent of those subsidies. Hence, they are deducted from GDP at factor cost to derive GDP at market prices.

All levels of governments – federal, provincial and local – give subsidies to industries including government business enterprises.

In the Provincial Input-Output Accounts, subsidies are allocated to provinces based on the location of the recipient industries. For subsidies paid by provincial and local governments, it is assumed that the recipients of the subsidies reside within the boundaries of the province making the disbursement.

⁴ United Nations, National Income Statistics: Main Aggregate and Detailed Tables, 1984, New York, 1988, PXVI.

For federal subsidies, the underlying purpose of the program determines the provincial allocation of the amount. Difficulties, however, arose in the allocation of some transportation subsidies like the subsidies to railways. The subsidies are paid to the head office of the railway and a method to allocate these subsidies by province was developed. One example of these subsidies is the Western Grain Transportation subsidy. In this case, the objective was to allocate the subsidy based on the province(s) where the costs were incurred to transport the grain (province of production of the transportation services related to the grain). Data were obtained from the National Transportation Agency which provided a breakdown of the subsidy by the four provinces of origin and eight destination points of the grain transportation. A further disaggregation of the values was made based on the proportionate mileage travelled in each of the provinces in which the grain was transported. Some of the methods used to establish the provincial distribution of other subsidies are described below.

(1) Agricultural subsidies

In 1990, the Canadian agricultural industries received federal subsidies of \$1083 millions which represents 22% of the total federal subsidies in that year. The provincial distribution of these agricultural subsidies is based on detailed data received from the Agriculture Division of Statistics Canada. The Agriculture Division receives detailed information from Agriculture Canada by program and recipient in different provinces.

(2) Other subsidies

Data for the following subsidies are obtained either from the respective recipients or from the departments who made the payments:

- (i) Radio and Television Broadcasting Corporation (Industry 175)
- (ii) Other Finance and Real Estate (Industry 187)
- (iii) Postal Service (Industry 178)
- (iv) Rail Transportation (Industry 163);
- (v) Water Transportation (Industry 164); and
- (vi) Truck Transportation (Industry 165)

These 6 industries received total subsidies of \$3269 million or 68% of the total federal subsidies. Therefore, the subsidies relating to (1) and (2) above amounted to (\$4352 million) or 90% of the total federal subsidies of \$4841M for 1990.

Of the balance covering \$489 million federal subsidies (ie. \$4841 - 4352 million), some subsidies amounting to \$140 millions were aimed at encouraging employment. The provincial distribution of these subsidies is based on the provincial distribution of employment by industry for the respective industries.

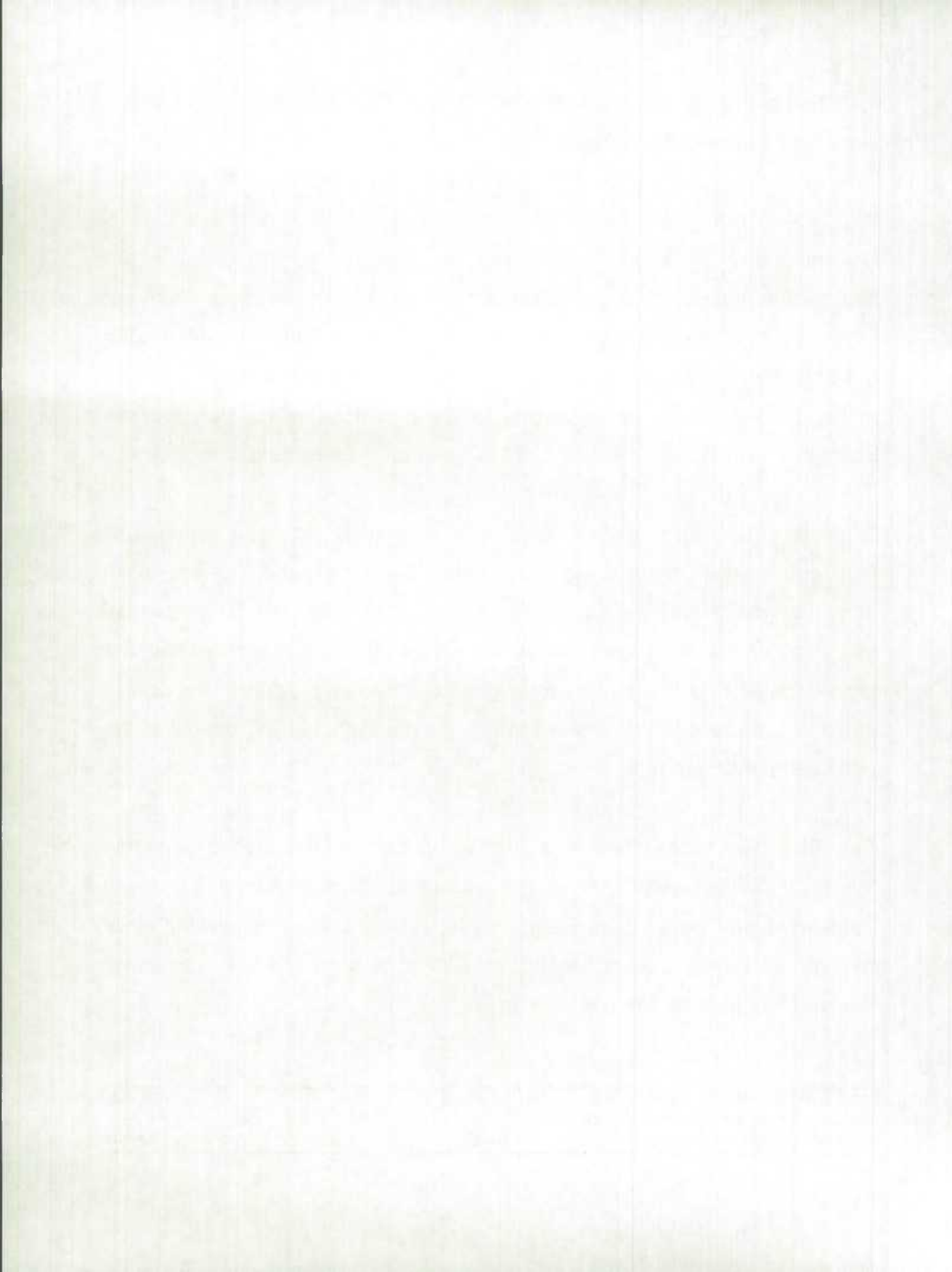
For the remaining subsidies of \$349 million, the provincial output of the industries concerned was used as a proxy to allocate them by province.

VIII. Federal Indirect Taxes

The federal indirect taxes are of two kinds: (1) commodity taxes which are applicable to specific commodities; and (2) non-commodity taxes which are not applicable to specific commodities, but paid by industries or sectors. The non-commodity taxes are allocated to the provinces where the payer is located. However, the allocation of the commodity taxes needs clarification.

Commodity indirect taxes are included in the market price of a commodity. In Canada, these taxes are levied mainly by the federal and provincial governments. As with the provincial government subsidies, the provincial allocation of provincial taxes does not present difficulties. However, the federal indirect taxes present problems to allocate by province. Let us see how these problems are resolved in this provincial dimension project of the Input-Output Accounts.

Two alternative approaches have been suggested and used in the Canadian System of National Accounts. One approach involves allocating the federal sales taxes provincially according to the location of production and the other involves allocating it according to the location of consumption. Let us go over the rationale for the first approach.



1. Allocation of federal sales tax provincially according to location of production.

It is argued that the separation of taxes according to actual incidence – according to who bears the ultimate burden, the producer or the purchaser is not used as a principle of organization in these accounts. (See Statistics Canada, System of National Accounts, National Income and Expenditure Accounts, Vol. 3, P.77). Based on this reasoning, Income & Expenditure Accounts use a production approach, which may be revised in the upcoming Historical Revision.

2. Allocation of federal sales tax provincially according to the location of consumption.

The Input-Output Accounts uses this approach. Before discussing this approach, let us look at the types of federal commodity indirect taxes.

The federal commodity taxes contain the following:

- (i) Excise duty
- (ii) Excise tax
- (iii) Gasoline tax
- (iv) Sales tax
- (v) Air transportation tax

(vi) Import duty

All these are consumption taxes and as such the consumers of the commodities on which they are levied pay them. Therefore, they are allocated in the Input-Output Accounts to the commodities concerned in the provinces where the consumption took place. For the air transportation tax, the allocation to users by province is based on the purchase price values for each province. For other types of taxes mentioned above, the basis of allocation is the producer price values for each province since this is the basic value for taxation.

In order to clarify the conceptual position of these taxes in general and federal sales tax in particular, we give in the next section a full account of the federal sales tax as an example for a better understanding of the methodology used for the Provincial Input-Output Accounts.

IX. Federal Sales Tax

In Canada, federal sales tax (FST) is levied under the Excise Tax Act since 1924⁵. As mentioned in the Federal 1989 Budget document on The Goods and Services Tax (P.7), "the federal sales tax is charged on sales by manufacturers, (underlining added) for the most part to wholesalers and

⁵ See Budget 1989, The Goods and Services Tax, Department of Finance, Canada, Ottawa, p.3.

retailers" who in turn "will pass the tax on through the production chain until the consumer pays the tax in the form of higher prices". A Revenue Canada pamphlet on Federal Sales Tax published under the Small Business Advisors Program 1989, explains the basic conditions of the tax and emphasizes the key point of "sale" which are summarized below:

"When is the tax payable?"

The tax is payable on goods manufactured or produced in Canada. It is payable by the manufacturer when the goods are delivered to the purchaser or when the property in the goods passes. For a licensed wholesaler, tax is payable at the time of delivery. For importers, tax is payable when the goods are imported or taken from the warehouse."

Thus, it is clear that Federal Sales Tax (FST) is applicable only when goods are sold by the manufacturer or a licensed wholesaler. This conclusion is based on section 27 of the Excise Tax Act which states that there shall be imposed, levied and collected a consumption or sales tax on the sale price of all goods produced or manufactured in Canada. According to the legislation, manufacturers and wholesalers are licensed by Revenue Canada and the federal sales tax (FST) is a tax at the point of consumption, but not production.

The licensed manufacturers do not pay tax on production; they charge the

tax on sales to unlicensed customers, such as retailers or consumers. Licensed wholesalers may buy from manufacturers or import from abroad free of federal sales tax if the goods are meant for resale. They charge the tax on their sales to unlicensed customers⁶. This basic principle of federal sales tax is also discussed in the literature of the Canadian Tax Foundation⁷.

Although the FST is generally called "manufacturers' sales tax", manufacturers are merely agents to collect the tax. They are made responsible under the Act to apply (or charge) the federal sales tax and remit it to the federal government only if their production is sold to unlicensed wholesalers, retailers, or consumers. According to Revenue Canada and the legislation, the relevant question to determine whether it is a production tax or consumption tax is "when is the tax payable?" rather than, "who charges and transfers the tax to the federal government?".

Thus, the licensed manufacturers and wholesalers are fully responsible for the collection and remittance of the federal sales tax to the federal government. This is similar to a retailer's responsibility for collecting provincial retail sales tax. It is worth repeating that these licensees do not pay federal sales tax when sales are between themselves, unless the goods

⁶ See Canadian Sales and Excise Tax Guide, 13th edition, 1962-63, CCH Canadian Ltd. September 1962, pp. 11-13.

⁷ John F. Due, The General Manufacturers Sales Tax in Canada, Canadian Tax Paper No. 3, Canadian Tax Foundation, Toronto, October 15, 1951, p. 41 and p. 73

are purchased for own - use⁸. Also exports⁹ and inventories of licensees are non-taxable.

In essence, then, the key points pertinent to the articulation of FST in the National Input-Output Accounts are the following:

- (i) The federal sales tax is levied on the manufacturers' sale price of all goods manufactured or produced in Canada and on the duty-paid value of all imported goods;
- (ii) The tax base for domestic goods is the selling price of the manufacturers¹⁰;
- (iii) There is no liability for tax until and unless there is a sale to the unlicensed wholesalers or retailers by the licensed manufacturers (or wholesalers).

The tax base is the actual selling price received by the manufacturer. If the manufacturer lowers his selling price, his profits will be lower and the FST which will be based on that lowered selling price will also be lower.

⁸ Canadian Sales and excise Tax Guide, 1962. op. cit. p. 11

⁹ See John F. Due, The General Manufacturers Sales Tax in Canada, op. cit., p. 71, for exports.

¹⁰ The National Finances, 1986-87, Canadian Tax Foundation, Toronto, p. 7:46.

Since the wholesalers and retailers are intermediaries between the producer and the consumer of commodities, the federal sales tax is treated as a commodity tax at the point of consumption in the National Input-Output Accounts. Implicit in this allocation is the assumption that tax-paid goods are sold to the consumers in the same year of their purchases from manufacturers. It is recognized, however, that there could be some inventories of tax-paid goods with the unlicensed wholesalers and retailers, but the tax is not allocated, at present, to inventories due to lack of adequate data.

1. Federal Sales Tax and its Allocation in the Provincial Input-Output Accounts

The federal sales tax is one of the commodity taxes for the Input-Output Accounts and the procedures used to allocate all commodity taxes to commodities and users (industries and final demand categories) are described in a separate paper called Commodity Indirect Taxes in the Canadian Input-Output Accounts, 1984-86¹¹. The section that follows gives an elaborate discussion on the methodology used in the allocation of this tax in the Provincial Input-Output Accounts.

¹¹ Siddiqi, Y. and Murty, P.S.K., Commodity Indirect Taxes in the Canadian Input-Output Accounts, 1984-1986, Input-Output Division, Statistics Canada, Technical Series No. 25, February 1990.

The Provincial Input-Output Accounts are a disaggregation of National Input-Output Accounts and therefore follow the same classification of commodities, industries and final demand categories. In this sense, the provincial totals for commodity inputs and outputs of all industries add up to the national totals. Also, the commodity totals of provincial final demand categories add up to the national totals. However, the provincial dimension raises the issue of how to allocate federal commodity taxes by province/territory.

The provincial and local commodity taxes do not pose a problem because the tax liability in any province, by definition, is equal to tax collections in that province for both provincial and local governments. Unless otherwise specified, federal commodity taxes are applicable to all provinces regardless of provincial boundaries. Thus, it is immaterial who collects and remits the tax to the federal government. Furthermore, in the provincial context, the head offices of large corporations might remit taxes (collected in any province in which their sales occurred) to the federal government in Ontario. One should not construe such transactions as taxes originating in the provinces where those head offices are located as the sales which generated the taxes might have taken place in other provinces. The point to be remembered in the allocation of federal commodity taxes is "when the tax is payable" rather than "who collects or charges the tax and pays to the federal government in Ontario".

As mentioned, the National Input-Output Accounts show data for Canada only, while the Provincial Input-Output Accounts show the same data disaggregated into 10 provinces and 2 territories which together equal the National totals. Taking this into consideration what, then, is the rationale for the allocation of federal sales tax to provinces/territories?

Since federal sales tax is levied on the selling price of licensed manufacturers and wholesalers to retailers and consumers at the point of consumption, it has to be allocated in the province/territory of consumption. It should also be noted that before the Reciprocal Taxation Program was introduced in 1977, provinces used to submit refund claims for the FST paid on their purchases and Revenue Canada reimbursed the provinces for the FST paid by them. These refunds would not have been paid by Revenue Canada to the provinces if the FST was a tax on production. Because it was a consumption tax, the provinces which consumed the taxable commodities received the refunds from Revenue Canada. Of course, the tax does not apply to the place of production or distribution, because licensed manufacturers and wholesalers do not have to pay tax until they sell the products to unlicensed establishments, retailers or consumers. Also, inter-provincial trade between licensees does not attract the tax, and hence, production or distribution among licensees does not attract the federal sales tax as those transactions are tax-free. It follows, then, that both the income-based GDP and the expenditure-based GDP of a province would include the federal sales tax attributable to goods and services sold in that

province either as a final use or taxable intermediate use. These and other transactions are further illustrated in simple models presented later.

For the Input-Output Accounts, the federal government is considered as another level of government resident in each province and territory collecting the taxes by the application of the same legislation across the country. Therefore, the tax is reflected in the province where it originated on taxable transactions or where the consumption occurred. This procedure is consistent with the legislation¹².

As explained in the paper referred to earlier, all other federal commodity taxes, such as excise taxes, excise duties, gasoline taxes, etc., were first allocated to the relevant taxable commodities. Then the taxable transactions of industries and final demand categories were determined based on legislation. If these taxes are levied at the point of consumption, their provincial allocation is based on the consumption in the province or territory concerned. This procedure, which is also consistent with legislation, is elaborated in that paper.

To recapitulate:

- (a) The federal government is just another level of government located in each province and territory, and in this sense, it is considered to be a resident of all provinces and territories. It collects taxes under federal

¹² See John F. Due, The General Manufacturers Sales Tax in Canada, op. cit., p. 75

legislation, which applies equally in all provinces/territories. If Ontario produces a commodity and exports it to Quebec, and if Quebec then exports to the United States, there would be no federal sales tax liability because exports are non-taxable for federal sales tax.

- (b) However, if Quebec uses that commodity, consumers in Quebec will have to pay the tax. The allocation of taxes in each province is based on the same principle used in the National Input-Output Accounts which is consistent with the legislation.

These points are illustrated in the following simple models in the context of GDP concept of both approaches - Expenditure-based and Income-based.

2. Model I

- (i) Federal sales tax (FST): 12%.

Let us assume that the federal sales tax rate is 12% for this model.

- (ii) This tax is applicable across the country, as there is no place-related exemption.

- (iii) An Ontario manufacturer produced automobiles worth \$100 million, with wages and salaries of \$80 million and other inputs

of \$20 million. He is licensed and therefore did not pay FST when the automobiles were produced. He sold the automobiles for \$150 million to a licensed wholesaler in Ontario. In that period (Period I) the GDP of Ontario will be as shown below. The licensed wholesaler does not pay federal sales tax according to the legislation. Therefore, this is a non-taxable transaction between the manufacturer and the wholesaler.

Income-Based
GDP of Ontario
(at the production stage)

Expenditure-Based
GDP of Ontario

\$ Millions			
Wages & Salaries	80		
Factor incomes	20		
in other inputs (assumed domestic production)		Inventories	150
		of wholesalers (value paid to manufacturer)	
Operating surplus	<u>50</u>		
Total GDP	<u>150</u>	Total GDP	<u>150</u>

- (iv) The automobiles were then shipped to Quebec in Period II by the licensed wholesaler, assuming zero cost and profit for the wholesaler. He did not sell to retailers or consumers.

GDP in the wholesale industry of Ontario

Income-based GDP of Ontario

	\$ Millions
Operating surplus	0
Total GDP	<u>0</u>

Expenditure-based GDP of Ontario

Inventories	-150
Exports to other provinces	<u>150</u>
Total GDP	0

Exports are not taxable for federal (FST) and provincial sales taxes (PST) under the present legislation. Therefore, there are no indirect taxes.

- (v) The automobiles were sold to retailers in Quebec for \$150 million + 12% FST + 8% provincial sales tax and retailers sold to consumers for \$181.44 million (assuming zero cost to retailers). In this case, 12% FST = \$18 million; 8% PST on \$168 millions = \$13.44 millions; total indirect tax = \$31.44 millions.

<u>Income-based GDP of Quebec</u>			<u>Expenditure-based GDP of Québec</u>
		\$ Millions	
Operating surplus		0	Personal Expenditure 181.44
Indirect taxes	FST	18.00	Imports from Ontario -150.00
	PST	<u>13.44</u>	
Total GDP		31.44	Total GDP <u>31.44</u>

- (vi) Therefore, the GDP at market prices of Quebec comprises only indirect taxes. The factor cost GDP was "0". This is how the provincial Input-Output Accounts would show the data. This position is consistent with what is happening in the economy as far as the federal and provincial sales taxes are concerned.

If, however, federal sales tax is applied at the place of production, the levels of GDP between provinces would be different. However, the national GDP will not be affected.

The next model shows the levels of GDP in Ontario and Quebec if we were to allocate federal sales tax at the point of production.

3. Model II

- (i) Federal sales tax (FST): 12%.
- (ii) This tax is applicable across the country, as there is no place-related exemption.
- (iii) An Ontario manufacturer produced automobiles worth \$100 million, with wages and salaries of \$80 million and other inputs of \$20 million.
It was assumed in this model that, since the FST is commonly called the "manufacturers sales tax", the manufacturer was liable for the FST in the province of production. The sale price was still \$150 million as in Model 1.

(The manufacturer did not sell automobiles during Period I).

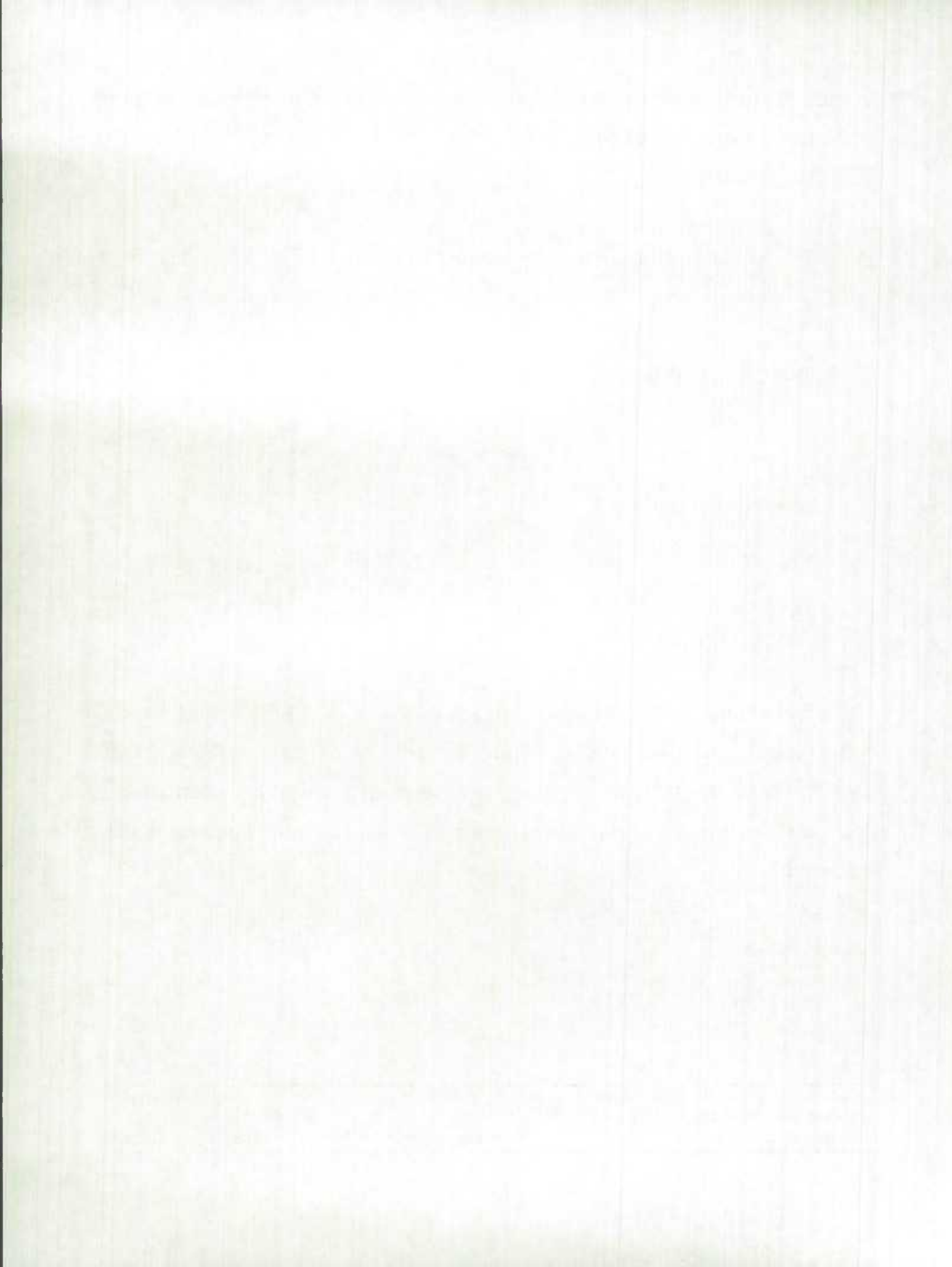
<u>Income-based GDP of Ontario</u>		<u>Expenditure-based GDP of Ontario</u>	
	\$ Million		
Wages & Salaries	80	Inventories	168
		(150 + 18 FST)	
Factor incomes in other inputs (assumed domestic production)	20		
Operating surplus	50		
Indirect taxes (150 x 12%)	18		
Total GDP	<u>168</u>	Total GDP	<u>168</u>

In fact, the federal government would not receive the indirect tax revenue of \$18 million since it is not payable by the manufacturer until the goods are sold to consumers.

- (iv) The automobiles were then shipped in Period II to Quebec by the wholesaler. He did not sell them to retailers or consumers.

<u>Income-based GDP of Ontario</u>		<u>Expenditure-based GDP of Ontario</u>	
	\$ Millions		
Operating		Inventories	- 168
surplus	0	Exports to	+ 168
		other provinces	
Total GDP	<u>0</u>	Total GDP	<u>0</u>

The inventories and exports were overvalued by \$18 million each. Nevertheless, the GDP is still "O" for that period. If Balance of Payments data for inter-provincial transactions are generated based on international concepts, the exports shown above in the GDP would not be consistent with those data.



- (v) The automobiles were sold to retailers in Quebec for \$168 million + 8% provincial sales tax. The sale price was therefore $168 + 13.44 = \$181.44$ million.

<u>Income-Based GDP of Québec</u>		<u>Expenditure-based GDP of Québec</u>	
Operating surplus	0	Personal expenditure	181.44
Indirect taxes (PST on \$168 @ 8%)	13.44	Imports from Ontario	-168.00
Total GDP	<u>13.44</u>	Total GDP	<u>13.44</u>

- (vi) Here again, the GDP at market prices of Québec consists of indirect taxes only. But instead of showing indirect taxes at both the federal and provincial levels, only the provincial portion is reflected because the FST was wrongly attributed to the province of production, namely, Ontario.

In fact, the GDP at market prices in Québec should include both federal and provincial indirect taxes to reflect the reality. But the erroneous assumption built into the model yielded a false GDP for both Ontario and Québec.

The legislation and its interpretation does not support Model II; they support Model I which is reflected in the Provincial Input-Output Accounts. We would

like to emphasize that the GDP of a particular province should not be influenced by the administrative procedures of making manufacturers responsible to remit the tax to the federal government. The question which should be answered is "when is the tax payable" rather than "who charges or collects the tax and transfers" to the federal government as clearly explained by Revenue Canada in its literature.

Suppose that the responsibility for collecting FST is shifted to the retailer from the manufacturer for administrative convenience. Then Model II reduces the GDP in Ontario and increases the GDP in Québec. In fact, other things being equal, there should be no change in the GDP even after such a shift in tax administration is implemented. Model I would do just that and it is the logical approach for the Provincial Input-Output Accounts. Therefore, the method of Model 1 has been used to allocate FST in the 1990 provincial Input-Output Accounts.

X. Provincial and Local Government Data

So far, we have explained the concepts, sources and methods of the federal government data as far as the provincial dimension project is concerned. This section deals with the data of other levels of government, namely, provincial and local governments.

The basic data of the provincial and local governments are received and put

together by each of the 10 provinces and 2 territories. Therefore, there is no problem for allocation of most of the data.

In cases where items are added to the basic data to derive the control totals, adjustments are made at the Canada level for the National Input-Output Accounts. These items are then allocated to the 10 provinces and 2 territories using the relevant information. The items that are involved are:

- (a) Commission on Bond Sales
- (b) Imputed banking services
- (c) Capital consumption allowances

The commodity taxes of Provincial and Local governments are the following:

1. Provincial

- (i) Gasoline tax
- (ii) Amusement tax
- (iii) Sales tax
- (iv) Liquor gallonage tax
- (v) Liquor profits of the Liquor Control Boards

2. Local

- (i) Sales tax
- (ii) Accommodation tax (Alberta)

(iii) Amusement tax

There is no problem in allocating Provincial and Local commodity taxes to the provinces. The control totals are based on the basic data which are assembled and developed by each province. As they are all commodity consumption taxes, they have been allocated to the commodities and users concerned in the provinces where the consumption took place.

The purchaser price values are used as the basis of allocation for all the Provincial and Local governments commodity taxes mentioned above.

XI. Summary and Conclusions

This paper explained the concepts, sources and methods for the allocation of government sector data to the provinces and territories for the year 1990. The database generated in this project is used to develop the Provincial Input-Output Accounts on the same basis as that of the National Input-Output Accounts for Canada. The following are the main conclusions:

1. The federal government operations outside Canada have been separated and shown in a "13th Region" within Canada as the external operations are mere extensions of the main responsibility centres stationed in Canada.

2. The federal government data, which cover defence and non-defence subsectors, are allocated to the province of use or intended use.
3. The federal sales tax is treated as a consumption commodity tax in the Input-Output Accounts and it is shown in the provinces where the taxable commodities concerned were consumed.

Similarly, other federal commodity taxes such as excise duties, excise taxes, and import duties are assigned to the commodities concerned and reflected in the provinces where the consumption took place.

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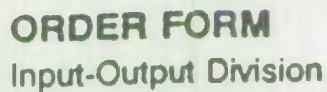
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