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Guide to the Income and Expenditure Accounts

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Symbols

The following standard symbols are used in Statistics Canada publications:

.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0^{s}	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p}	preliminary
^{r}	revised
^{x}	suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E}	use with caution
F	too unreliable to be published

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System of National Accounts

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Note of Appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

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Chapter 1 Introduction

The purpose of the guide

1.1 This guide is the fourth of its type in the 60-year history of the Income and Expenditure Accounts (IEA). It is also the latest addition to the methodological documents on the Canadian System of National Accounts. It aims at improving users' understanding of national accounting, in particular of the sources and methods of the IEA. It undertakes the detailed task of explaining the how's and the why's of gross domestic product and its components, as a means of strengthening macroeconomic analysis. This guide also gives analysts a sense of how the IEA fit into the national accounts as a whole, with reference to related accounts and data throughout the document. Further, the guide enables readers to bridge the gap between Canadian and international terminology, with references to international standards, terms and conceptual treatments.

1.2 This guide is structured logically around the concepts, sources and methods used in the sum of incomes and sum of expenditures approaches to deriving gross domestic product (GDP). Chapter 2 supplies an overview of GDP measurement, in both the production and income-expenditure frameworks, as well as a discussion of aspects of component accounts. Chapters 3 to 5 provide the basic elements of income arising from production—essentially, the returns to labour and capital; while Chapter 6 describes the income-side adjustment to get to GDP at market prices. The guide then switches to articulating the measurement of final spending on production. Chapters 7, 8 and 9, cover the main components of final domestic demand—personal expenditure, government current expenditure and capital formation. Chapter 10 presents investment in inventories. Chapter 11 discusses estimates of international trade as well as inter-provincial trade flows. The remaining reference chapters provide a glossary, a list of acronyms and initialisms used, a list of Statistics Canada surveys referenced throughout the chapters and a brief discussion of the elements of quality.

1.3 An important feature of this guide is that it is a living document that will be updated and extended as required, in order to best serve the user community. This feature is made more useful with international System of National Accounts (SNA) standards undergoing review, and with a subsequent historical revision on the horizon. New users, who may not be as familiar with the SNA as established IEA clients, now have background information to accompany the time series data available electronically.

Background

1.4 The Income and Expenditure Accounts (IEA) are a major component of the Canadian System of National Accounts. They are published on both an annual and a quarterly basis.[1] The annual series date from 1926 while the quarterly series date from 1947. The annual *Provincial Economic Accounts* have been published from the reference year 1961.

1.5 Understanding economy-wide activity emerged as a key interest following the Great Depression of the 1930s. This event is viewed as a catalyst for the development of macroeconomics in which a key principle, advanced by Keynes in his framework for analysis, was that economic downturns were generally characterized by insufficient aggregate demand. Subsequent research in this area, in turn, spawned a need for new information on the macro-economy—in particular, more data on aggregate measures of activity. The emergence of national accounting as a discipline, including the development of the Income and Expenditure Accounts in Canada, was in direct response to this need.

1.6 Since its first regular appearance in 1952,[2] the IEA—featuring gross national product (GNP) and, more recently, gross domestic product (GDP) as the central aggregates—has become indispensable for macroeconomic analysis in Canada. As the name suggests, the focus of the IEA is income arising from production and final

1. *National Income and Expenditure Accounts*, catalogue no. 13-001.
2. Annual IEA estimates were first published in the latter half of the 1940's, while the quarterly accounts were first published in the fall of 1953.

expenditure on that production. As the principal indicator of economic performance, GDP and its related detail (e.g., consumption, investment, saving and the detailed transactions of institutional sectors) are key to understanding macro-economic activity.

Perspective on the use of the Income and Expenditure Accounts

1.7 Two main uses of the Income and Expenditure Accounts (IEA) are for analysis of economic trends and of business cycles. These accounts are designed to help analysts understand the elements that drive the economy, the factors underlying its growth, as well as to make short-term and long-term forecasts of macroeconomic activity for various purposes. The supporting detail in the IEA gives users the capacity to analyse the distribution of national income and the composition of the final expenditures on production, as well as to examine the contribution and evolution of the main participant groups in the economy. They can then link economic performance with national events (changes in social programs, tax reforms, etc.), changes in key prices (interest rates, commodity prices, exchange rates, etc.) or with international developments (economic cycles in the United States, international energy prices, free trade agreements, international financial crises, etc.). The findings that emerge from studies have an impact on the monetary policy of the central bank, government fiscal and other policies, activities of financial institutions, businesses' investment decisions, as well as on the evolution of economic theory. The quarterly IEA estimates have a long history of being available approximately 60 days after the end of the reference period[3] in order to meet user needs for timely macroeconomic data.

1.8 While the focus is on aggregate activity for the economy as a whole, there is also a regional dimension to the IEA in the form of the annual *Provincial Economic Accounts*.These data are in high demand by government and other analysts in each of the Canadian provinces and territories. Preliminary estimates of the PEA are available approximately 120 days after the end of the reference year.

1.9 Analysis of the economy is further enhanced with extensions to the main sector accounts of the IEA—in particular, in the form of the Financial Flow Accounts (FFA) and the National Balance Sheet Accounts (NBSA). Together these integrated accounts present economic activity and its financing, as well as wealth generation in a stock-flow framework.

1.10 The conceptual framework of the national accounts is based on international conventions such that GDP and related variables can be used to make international comparisons of economic performance.

1.11 The national accounts in Canada are not static, and have an established history of adaptation and expansion to account for changes in the economy, emerging issues, as well as evolving international standards. These accounts will continue to evolve in order to meet new policy and/or analytic needs. This is particularly evident in the addition of a number of satellite accounts in recent years, including the Tourism Satellite Account and the associated National Tourism Indicators; the Satellite Account of Non-profit Institutions and Volunteering; and, the Pension Satellite Account (under development).

The Income and Expenditure Accounts within the Canadian System of National Accounts

Architecture of the system

1.12 The Canadian System of National Accounts (CSNA) publishes a full set of accounts which is a slightly modified version of the international standard—the *System of National Accounts 1993* (SNA 1993). Reduced to its simplest terms, the CSNA is a sequence of economic accounts. The system largely articulates the major transactions through the production and use of incomes as well as the accumulation of non-financial and financial assets. The integration of the data and accounts in the CSNA means that analysts can construct consistent histories linking wealth, production activity and income and expenditures, including those resulting from the

3. Actual release days for key statistical products, including the IEA, are set and publicized one year in advance. See www.statcan.ca/nea.

redistribution of wealth and the formation and financing of capital by economic agents. The information contained in the CSNA is presented in the form of economic accounts that parallel, to some extent, the statements used in business accounting. The economic series' estimates that appear in a number of accounts are identical and/or consistent, because common definitions, classifications and valuations are used across the entire CSNA.

1.13 GDP lies at the centre of the two main architectures of the CSNA—the industry-based and sector-based statistics. It is the most monitored measure in the national accounts. GDP is the unduplicated value of goods and services produced during a period that is available for final domestic consumption, investment or export. The income and expenditure account records the value of GDP, as income arising from production and as final expenditure on goods and services produced.[4] In real terms (that is, adjusted for price change), GDP is representative of the volume of economic activity in a given period.

Industry-based statistics

1.14 In the Input-Output Tables (IOT), production activity is articulated at a very detailed level. The supply and use tables focus on the productive structure of the economy. It traces production of commodities by domestic industries combined with imports through their use as intermediate inputs or as final use including exports. The system provides a measure of value added by industry—total output (or sales) less intermediate inputs. These tables can be used to calculate economy-wide GDP either directly, by summing value added over the industries, or indirectly, by either summing to the economy-wide cost of primary inputs (GDP income) or computing the grand total of the flow of commodities into final demand categories (GDP expenditure)—the link to the Income and Expenditure Accounts.

1.15 The annual IOT for Canada and the regions are released 2 1/2 years after the reference period. Nevertheless, they are central to the system in that they provide a set of reference data for the rest of the CSNA, and figure into the annual revision and benchmarking process. Current monthly GDP figures are produced, as a means of providing more up-to-date industry information to users for current analysis. The monthly measures use a set of indicators to project the GDP by industry benchmarks from the IOT. These estimates are linked to the Income and Expenditure Accounts on a quarterly basis.

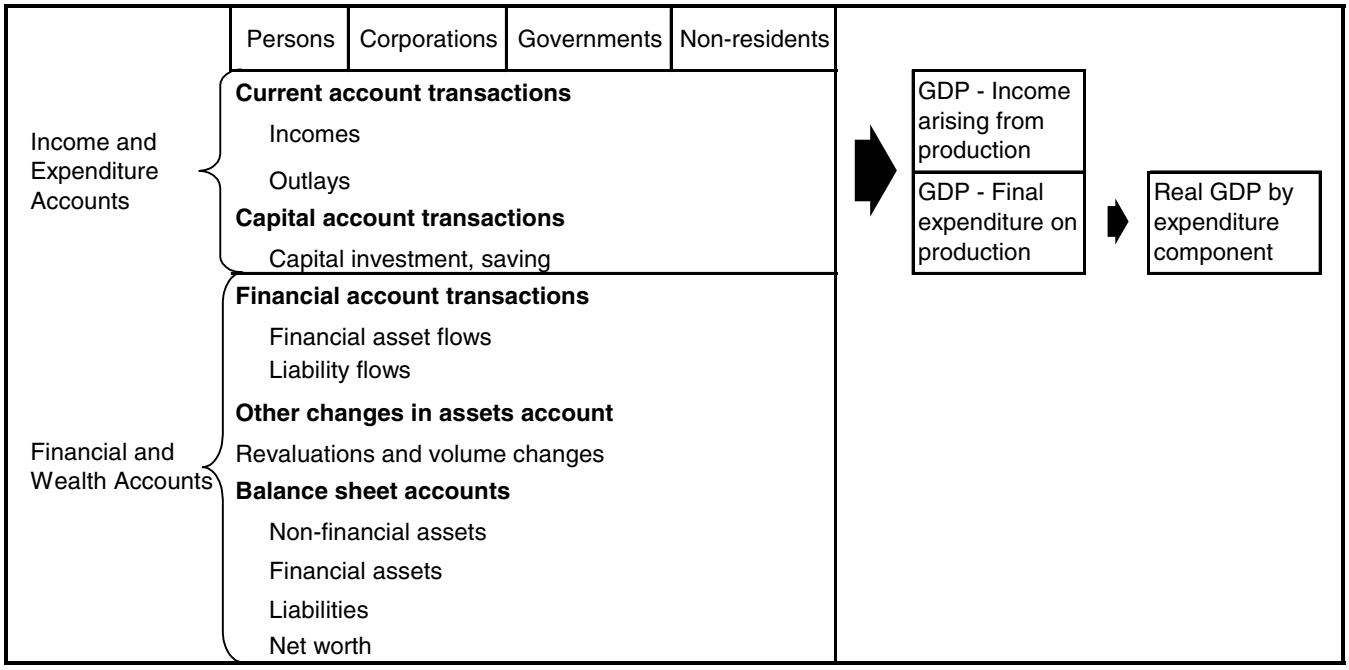
Sector-based statistics

Income and Expenditure Accounts

1.16 The Income and Expenditure Accounts (IEA) are the subject of this guide. These are comprised of the aggregate income-based GDP and expenditure-based GDP tables, as well as the sector accounts—Income and Outlay Account and Capital Account. GDP can be derived from the consolidation of income and expenditure flows of the four main institutional sectors—persons and unincorporated businesses (including non-profit institutions serving households),[5] corporations and government business enterprises; governments; and non-residents (see Table 1.1).

4. This is a combination of production account and generation of income accounts in SNA 1993.
5. This is broader than the household sector used in SNA 1993.

Table 1.1 The Income and Expenditure Accounts and the CSNA sector accounts



1.17 The allocation of income, for spending and other purposes, among economic agents is central to the sector accounts. The quarterly Income and Outlay Account (IOA)[6] shows the current transactions of the sectors. This account articulates revenues to the sector (including current transfers from other sectors, such as employment insurance received) and current expenditures of the sector (including transfers to other sectors, such as income taxes paid to government). The difference between income and outlay produces an estimate of each sector's saving. With the IOA, it is possible to determine whether or not a group of economic agents saves during a period, that is, whether the current income of a group exceeds its current expenditures.

1.18 The accumulation of capital is also central to the sector accounts. The quarterly Capital Account (CA)[7] shows investment spending as well as the financing of this spending as: saving, plus capital consumption allowances, plus net capital transfers and net lending or borrowing. The CA for institutional sectors focus on economic agents' decisions regarding investment in non-financial assets, largely investment spending. The balance of the capital account produces an estimate of each sector's net lending or borrowing balance (surplus or deficit).

Financial and Wealth Accounts

1.19 The Financial and Wealth Accounts comprise the other elements of the sector accounts (Table 1.1), and their role is to shed light on wealth accumulation. They consist of the Financial Flow Accounts (FFA) and the National Balance Sheet Accounts (NBSA). These data are fully integrated with the income and expenditure flows discussed above. The FFA are released concurrently with the Income and Expenditure Accounts, approximately 60 days after the end of the reference quarter; while the NBSA estimates are released approximately 75 days after the end of the reference quarter.

6. The Income and Outlay Account is an amalgam of three SNA 1993 accounts: the allocation of primary income account, the secondary distribution of income account and the use of disposable income account. The allocation of primary income account focuses on sectors, as recipients of primary incomes while the secondary distribution of income account records current transfers among the sectors. The use of income account shows current spending and saving.
7. This account is similar to the SNA 1993 capital account.

1.20 The quarterly Financial Flow Accounts (FFA) combine the Capital Account and the Financial Account.[8] The Capital and Financial Account, as the FFA is referred to in the aggregated sectors of the IEA release, makes for a complete accounting of sources and uses of funds by institutional sector as well as an articulation of transaction-driven changes to sector net worth positions and national wealth.[9] The financial account portion of the FFA focuses on the financial activity underlying, or incidental, to economic activity in the sectors of the economy. As such, this account shows net acquisition (purchases less sales) of financial assets and net incurrence of liabilities (borrowing less repayment). The balance in the financial account provides a second estimate of each sector's net lending or borrowing.

1.21 The quarterly National Balance Sheet Account[10] provides the wealth dimension to the system of accounts. The NBSA measures the stock of non-financial assets, financial assets, liabilities and resulting net worth of the institutional sectors. Net worth is the principal balancing item in this account. However, the difference between financial assets and liabilities provides a stock measure equivalent to net lending or borrowing estimates. For example, it provides a net debt position that relates to government surplus or deficit balances. The basic stock-flow framework for any sector, including the income and expenditure flows can be seen in Table 1.2.

Table 1.2 Sector income, expenditure and associated CSNA key variables detail in a stock-flow framework

Opening Balance Sheet Account	**Income and Outlay Account**	**Capital and Financial Account**	**Revaluation and Other Changes Account**	**Closing Balance Sheet Account**
Period t-1	Period t	Period t	Period t	Period t
	Income			
	Outlay			
Net worth	**Saving** ——→	**Saving**		**Net worth**
Non-financial assets		Investment	Non-financial assets	Non-financial assets
Financial assets		Transactions, financial assets	Financial assets	Financial assets
Liabilities		Transactions, liabilities	Liabilities	Liabilities
Net financial assets		Surplus / deficit	Net financial assets	Net financial assets

Sector detail

1.22 In addition to the four main sectors of the economy, there is substantial IOA and CA detail for the government sub-sectors. Also, the corporate sector CA is split into financial and non-financial sub-sectors. Due to the importance and complexity of the financial system in the modern economy the FFA sector detail is extensive (with about 30 distinct sub-sectors); however, the FFA sectors roll up to the same four sectors as the Income and Expenditure Accounts. In the case of the NBSA, estimates are provided for the four main institutional sectors, but also in the same extensive sector detail as with the FFA.

8. Equivalent to the Financial Account in SNA 1993.
9. The other aspect to changes in national wealth includes both revaluations of assets and liabilities and other types of changes (destruction of capital during natural disasters, accounting changes due to takeovers, etc.), however these changes are currently implicit in the CSNA. These will soon be articulated explicitly with the development of the SNA 1993 Other Changes in Assets Account.
10. Equivalent to the Balance Sheet Account in SNA 1993.

Links to the international accounts

1.23 In the IOA, the non-resident sector is a representation of the Canadian Balance of International Payments' Current Account. In the FFA, the non-resident sector represents the Canadian Balance of International Payments' Financial Account. The non-resident sector of the NBSA is a representation of Canada's International Investment Position.

Significant revisions to the Income and Expenditure Accounts

1.24 Since the publication of the last sources and methods document in 1990 (13-603E), there have been some notable changes to the Canadian national accounts, which are outlined directly below. The national accounts are not static, and the next historical revision is in the planning phase.

The historical revision of 1997

1.25 Every 10 years or so, an historical revision to the Canadian System of National Accounts (CSNA) is undertaken. The CSNA was updated and improved in a number of ways in the 1997 historical revision. The revisions provided the opportunity to implement new international standards, to the extent required, and to harmonize government sector concepts. In addition this revision also permitted the introduction of changes in the presentation of the accounts, incorporation of revised and new data into the estimates, the adoption of improved estimation methods, the elimination of statistical breaks and further increases in the degree of integration among the component parts of the CSNA. The revisions were only applied to the 1961 to 1997 period, both quarterly and annually. As such, the older annual (1926 to 1960) and quarterly (1947 to 1960) data are no longer compatible. For the *Provincial Economic Accounts*, revisions were applied to the 1981 to 1997 period.

1.26 The major changes included:

- The implementation of the *System of National Accounts 1993* (SNA 1993) and of the revised *Balance of Payments Manual* 5th edition, 1993 (BPM5)
- The harmonization of the standards used for compiling public sector statistics in two separate systems: The CSNA and the Canadian Financial Management System (FMS)
- The rebasing of the constant price series from the previous base of 1986 to the base of 1992
- The re-formatting of the sector accounts in the Income and Expenditure Accounts (IEA) including adding a condensed and seasonally-adjusted version of the financial account, so as to be able to identify all sources and uses of funds
- The introduction of a series of changes to the income and expenditure components of the IEA

1.27 Revisions are detailed in the publication: *Latest Developments in the Canadian Economic Accounts* (13-605). For more detail on the historical revision of 1997 the issue "Historical revision of the National Economic and Financial Accounts" should be consulted.

Mini-revision of 2000

1.28 In 2000, at the time of the annual revision, it was decided to open up the accounts historically (back to 1961) to incorporate a major change in the treatment of government unfunded pension plans. Essentially, this revision included these liabilities as part of government debt and as part of household assets. The main purpose of the revision was to align these with other employer-sponsored plans and to substantially improve measures of personal saving, assets and wealth as well as of government surplus/deficit and debt.

1.29 This change had been under study for some time, and amounted to an extension of the 1997 historical revisions' project on the harmonization of government statistics. In addition, given the importance of Canada-U.S. comparisons, this change brought the treatment in line with that of the U.S. Income and Product Accounts and Flow of Funds Statistics.

Mini-revision of 2001

1.30 Two further historical changes were introduced at the time of the annual revision in 2001: The adoption of the Chain Fisher index for real GDP in the Income and Expenditure Accounts (IEA); and, the broadening of investment spending to include the capitalization of software in the Canadian System of National Accounts (CSNA).

Adoption of a Fisher-type chain index

1.31 The quarterly IEA adopted the Fisher index formula, chained quarterly, as the official measure of real expenditure-based gross domestic product (GDP) in 2001. The measure of real GDP and related aggregates was replaced by estimates based on chain Fisher volume indexes referenced to 1997 dollars (chained (1997) dollar estimates).

1.32 The reason for the adoption of this particular formula was twofold: it produces the most accurate measure of quarter-to-quarter growth in GDP and its components; and, the change brought the Canadian measure in line with the U.S. quarterly Income and Product Accounts which also use the chain Fisher formula to measure real GDP.

1.33 Please refer to the “Chain Fisher volume index” issue of the *Latest Developments in the Canadian Economic Accounts* (13-605).

Capitalization of software

1.34 A new treatment for software as investment was implemented in the CSNA, and was reflected in the IEA in 2001. This revision brought Canada in line with a number of countries, including the U.S. and other G-7 nations, which had expanded their GDP concept to include software as capital. This change also brought Canada in line with the SNA 1993 recommendation that business and government acquisition of software be treated in the national accounts as investment spending as opposed to a current expense.

1.35 Software is now treated like any other capital input that is used repeatedly in the production process over a year or more. Software includes three types: pre-packaged, custom-designed and own-account.

1.36 Please refer to the “Capitalization of Software in the National Accounts” issue of the *Latest Developments in the Canadian Economic Accounts* (13-605).

Re-referencing of the Chain Fisher index

1.37 Re-referencing of the Chain Fisher took place at the time of the annual revision in 2007, during the first quarter production cycle. At this time, the reference year was updated to 2002.

Next historical revision

1.38 With the review and update process for the SNA 1993 international standard complete, the next historical revision to the CSNA is on the way. No date for this comprehensive revision has been set yet. However, a CSNA review and feasibility assessment of the agreed upon international SNA issues is currently underway.

1.39 Two important proposed changes to the international standard for national accounting are the capitalization of research and development and the inclusion of unfunded pension liabilities in government debt (and consequently in household assets). With respect to the former, the CSNA has initiated a project to develop initial estimates of the value of research and development capital. With respect to the latter, the CSNA has already implemented (in 2000) the major portions of the recommendation.

Chapter 2 Concepts and definitions

Production and aggregate economic activity

Production, output and product

Basic concepts

2.1 Gross domestic product (GDP) is the key measure in the Canadian System of National Accounts. GDP lies at the centre of the two architectures of the Canadian System of National Accounts (CSNA) — the industry-based Input-Output Tables that provide a value added measure, and the sector-based Income and Expenditure Accounts that provide both income-based and expenditure-based measures. GDP reflects the aggregate production of an economy. Production is an activity which uses inputs (labour, capital, goods and services) to produce outputs (goods and services). It excludes purely natural processes without any human involvement or direction, such as the unmanaged growth of fish stocks (whereas fish farming is production).

2.2 Output consists of those goods or services that are produced within an establishment[1] that become available for use outside that establishment.[2] The output includes work in progress whenever a process of production extends over two or more accounting periods as well as any goods or services produced for its own final use. The gross value added is defined as the value of total output less the value of all goods and services used in the production process (intermediate consumption). GDP (at basic prices) for the economy is equivalent to the sum of the value added by all resident producers. GDP at market prices is the aggregate GDP plus taxes, less subsidies, on products.

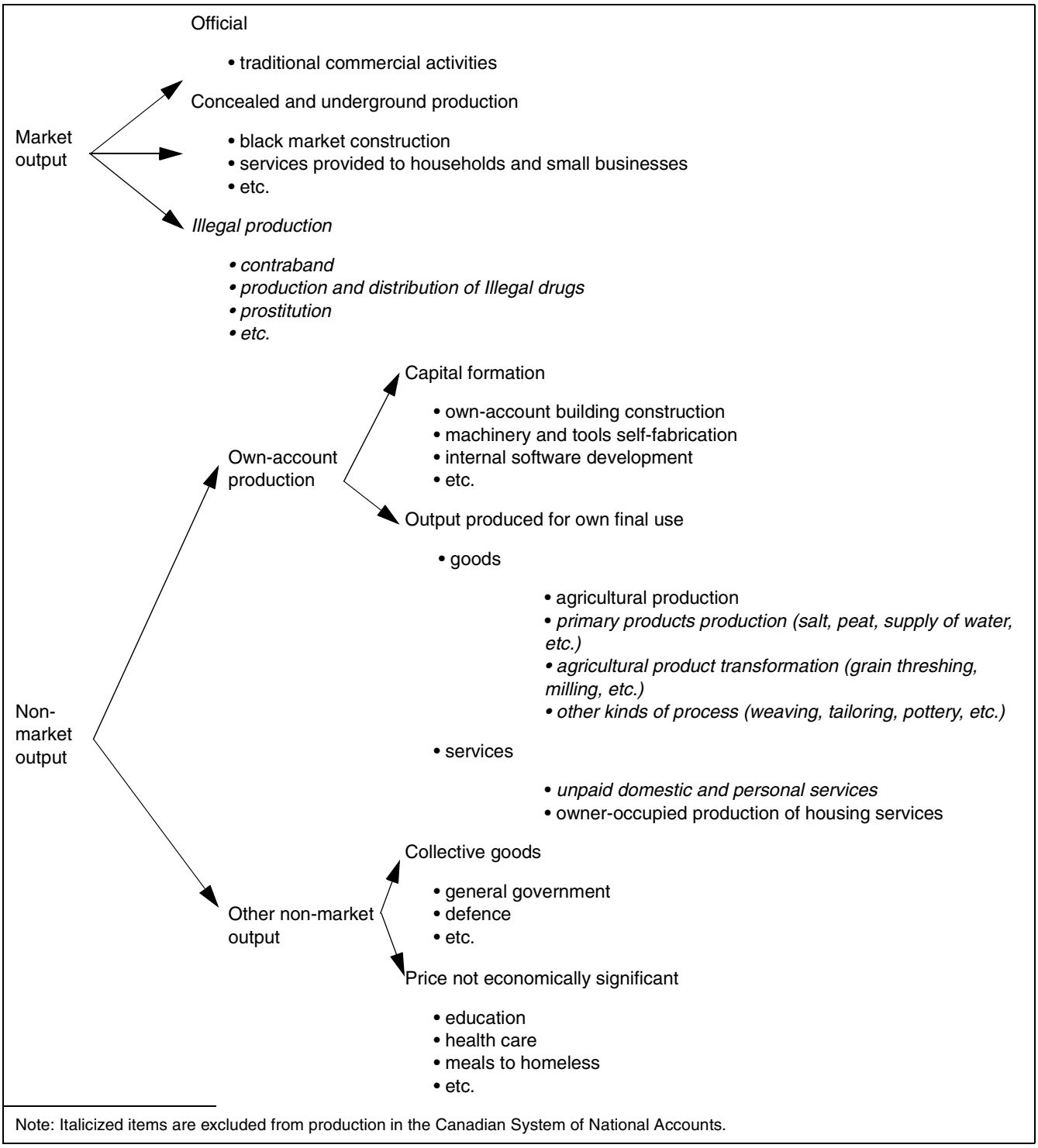
2.3 The relationship between output and value added gives an idea of the extent of transformations taking place in the economy. Product or GDP, regardless of how it is measured in the CSNA, is the end result of productive activities.

Classification of productive activities

2.4 Understanding the production boundary is central to measuring gross domestic product as the level of GDP is affected where the boundary is drawn. Table 2.1 presents a diagram demarcating production.

1. An establishment is an enterprise or part of an enterprise, that is situated in a single location and in which only a single (non-ancillary) productive activity is carried out or in which the principal productive activity accounts for most of the value added, according to paragraphs 5.21 and 6.80 of *System of National Accounts 1993*. Establishments are grouped into industries.
2. See paragraph 6.38 of *System of National Accounts 1993*.

Table 2.1 Demarcation of production in the Canadian System of National Accounts



Note: Italicized items are excluded from production in the Canadian System of National Accounts.

2.5 The output resulting from production is classified as either market or non-market. Market output is output that is sold, or intended for sale, at economically significant prices. Non-market output consists of other output whose characteristic is that it is not exchanged, disposed of or sold at an economically significant price.

2.6 Market output is generally sold at an economically significant price, that is, a price that has a significant influence on the amounts that producers are willing to supply and the amounts that purchasers wish to buy. Transactions are settled in cash or cash substitutes (that is trade payables or receivables) by barter or in kind. Market output includes:

- the total value of goods and services sold or marketed (at an economically significant price);
- the total value of goods and services bartered;
- the total value of goods and services used for payments in kind, including remuneration in kind;
- the total value of goods and services provided to another establishment within the same enterprise; and,
- the value of changes in inventories of finished goods and work in progress intended for one or another of the above uses.

2.7 The productive activity that results in market output is sometimes unreported or concealed.[3] Economic activity where the scale is small enough that traditional sources of information may not pick it up is referred to as the informal economy. Informal activity is relatively insignificant in Canada. Concealed production includes productive activities that are authorized by law but are not reported, for various reasons, such as to avoid paying income taxes or other taxes, or to avoid particular legal obligations, etc. Lastly, illegal production is also concealed activity. It consists of the production of goods and services whose sale, distribution or possession is forbidden by law but is carried out, by mutual agreement between the parties. Examples of such activities include the manufacture and distribution of narcotics, smuggling of goods and prostitution. The different aspects of market production are shown in the upper part of Table 2.1. It should be noted that even though no explicit adjustment is made to include illegal activity some illegal activity may enter the market economy through money laundering.

2.8 Non-market output consists of other types of output whose common characteristic is that they are not marketed, exchanged, disposed of or sold at an economically significant price. There are two types of non-market output: own account output and other non-market output.

2.9 The own-account output consists of goods retained by institutional units for their own final consumption or their own capital formation. For business and governments, own-account production takes the form of gross fixed capital formation. For example, the manufacture of specialized tools by an engineering firm when the tools will subsequently be used in the production process.

2.10 The other non-market output includes individual or collective goods and services to which the price mechanism cannot apply. It also includes goods and services that a producing institutional unit has decided to supply to other institutional units either for free or for prices that are not economically significant. General government administration and national defence are examples of output for which the price mechanism does not function freely. The different aspects of non-market production are shown in the lower part of Table 2.1.

2.11 In the case of households, own-account production corresponds to final consumption. For example, some crops produced by farmers may be used for final consumption by the farmer's household. Clothing or pottery may be produced by households for own-consumption.

2.12 Unpaid personal and domestic services are excluded from the production boundary, but occasional estimates are available.[4] Examples of these are:

- Cleaning, decorating and maintenance of the dwelling occupied by the household, including minor repairs usually done by renters or owners;
- Cleaning, maintenance and repair of durable consumer goods or other goods, including vehicles used for the needs of the household;

3. This is often referred to as the underground economy, but the more recent and broader term is the unmeasured economy. Two separate studies have been published on the underground economy: "Assessing the Size of the Underground Economy: The Statistics Canada Perspective", *Income and Expenditure Accounts Technical Series* no. 28, May 1994; and, "The Size of the Underground Economy in Canada", *Studies in National Accounting*, June 1994, catalogue no. 13-603, no 2.
4. "The Value of Household Work in Canada, 1992", *Income and Expenditure Accounts Technical Series* no. 27, March 1994.

- Meal preparation and table service;
- The care, education and training of children;
- The care of ill, disabled or elderly persons;
- Transportation of household members or their goods.

CSNA production boundary

2.13 As can be seen from Table 2.1 the production boundary in the CSNA is very close to the *System of National Accounts 1993* (SNA 1993). In the domain of market output, the CSNA currently excludes illegal production except smuggling activity, where significant. Smuggling of cigarettes is an example of where the CSNA includes an estimate.

2.14 Among the own-account production, the excluded items are: the production and processing of agricultural and related products; other kinds of processing, such as production and alteration of clothes, semi-durable or durable goods such as furniture. The production of these goods can easily be sold on the market. The rationale for exclusion of household and personal services produced by households for their own consumption follows that provided in paragraphs 6.19 to 6.21 of the *System of National Accounts 1993*:

- These are "self-contained activity with limited repercussions on the rest of the economy";
- As "there are typically no suitable market prices that can be used to value such services";
- "Imputed values have a different economic significance from monetary values... if the incomes were to be available in cash, the resulting expenditures might be quite different";

2.15 However, it is worth noting that paid household and personal services (performed by domestic staff) are included in production, since this is a form of market output.

2.16 The own-account housing services produced and consumed by owner-occupants is included. The housing services of owner-occupants are similar to rental housing services, which are included in market output. For the housing services produced and consumed by owner-occupants, the *System of National Accounts 1993* provides this explanation to justify inclusion:

> "The ratio of owner-occupied to rented dwellings can vary significantly between countries and even over short periods of time within a single country, so that both international and inter-temporal comparisons of the production and consumption of housing services could be distorted if no imputation were made for the value of own-account housing services. The imputed value of the income generated by such production is taxed in some countries."[5]

Analytical definitions applied to GDP

Net or gross GDP

2.17 Economic production involves the using up of productive capital assets–the "consumption" of capital. Because capital assets are highly durable, this using up is a gradual process, typically occurring over many years. Fixed capital consumption, often called depreciation, represents the reduction in the value of fixed assets used in production during the accounting period, resulting from physical deterioration or normal obsolescence. This convention parallels financial accounting, as businesses customarily allocate to each period's operating expenses a depreciation charge designed to cover the wearing out of capital assets during the period in question. Depreciation is therefore both an economic and a business cost, which is included in the market price of goods and services sold to final users.

5. *System of National Accounts 1993*, paragraph 6.29.

2.18 GDP therefore includes capital consumption allowances. The term gross is used to indicate that the consumption of fixed capital,[6] is part of the measure. The term net signifies that the consumption of fixed capital is excluded from the definition of production, yielding net domestic product (NDP). Some analysts contend that the gross measure is more useful for some analyses, because in the short term the replacement of capital can be postponed. Consequently, it is gross product that is used for final consumption. However, the continuous consumption of gross product, without replacement of the assets used, would gradually reduce the country's wealth. Other analysts are focused on net net national product (NNP), arguing that it provides a better picture of the nation's economic progress since it measures the amount of output that is left after providing for maintenance of the stock of productive capital.

National or domestic product

2.19 In national accounting, an economy is defined by the entire set of resident institutional units. An institutional unit is resident in a country when it has a centre of economic interest in that country's economic territory. A centre of economic interest is a location—a dwelling, place of production or office—from which it engages, and intends to continue to engage, in economic activities and transactions on a significant scale either indefinitely or over a finite but long period of time.[7] It includes production within diplomatic enclaves.

2.20 Gross domestic product (GDP) is the sum of gross value added across all resident units— industries or institutions regardless of the ownership (Canadian or foreign) of the factors of production. The GDP measure, as the key macroeconomic aggregate, allows for better correspondence to domestic employment and domestic prices.

2.21 Gross national product (GNP) or gross national income (GNI) is a measure of the total unduplicated value of production of goods and services of Canadian residents at market prices (it excludes the activity related to non-resident factors of production). The concept of national refers to the economic activities of the resident economic units, in their capacity as owners of the factors of production within a country or region. Otherwise stated, GNP (GNI) represents the income received by resident economic units due to their ownership of the factors of production, regardless of where the production takes place. GNP (GNI) is more closely associated with the IEA sector-based accounts of the CSNA. It is equivalent to GDP plus compensation of employees and investment income received from non-residents minus compensation of employees and investment income paid to non-residents.

2.22 Until 1986, the central concept of the Canadian System of National Accounts was gross national product. Since then, gross domestic product has supplanted it. This change was introduced in order to facilitate analysis of the economic situation and statistical integration of the components of the national accounts. The advantages of the domestic measure over the national measure are as follows: GDP is more closely related to employment and domestic prices than is GNI; it is easier to reconcile the components of the Canadian System of National Accounts; regional and national measures are better integrated; and, most countries emphasize GDP as the primary measure of product. That being said, GNI is making a comeback as a main indicator in recent times, where globalization and other current events are causing analysts to look more closely at the ownership of factors of production.

GDP at market price or at basic price

2.23 GDP is valued at both basic price[8] and at market price. Aggregates expressed at market prices are valued at the prices actually paid by purchasers, meaning that they include all taxes less subsidies on products, such as:

6. Fixed capital consumption represents the reduction in the value of the fixed assets used in production during the accounting period, resulting from physical deterioration, normal obsolescence or normal accidental damage. See paragraph 10.27 of SNA 1993. Fixed capital consumption is the term recognized in international accounting. In Canada, the term capital consumption allowance or depreciation is also used.
7. The concept of residence in national accounting is identical to the concept described in the *Balance of Payments Manual* of the International Monetary Fund (IMF). It is explained in that manual and also in paragraphs 4.15 and 4.16 and Chapter XIV of *System of National Accounts 1993*.

- the Goods and Services Tax (GST) and the Harmonized Sales Tax (HST);
- sales taxes;
- fuel taxes;
- import duties and taxes;
- excise taxes on tobacco and alcoholic beverages;
- subsidies paid on agricultural products;
- subsidies paid on transportation services and energy.

2.24 They also include taxes less subsidies on factors of production, such as:

- property taxes;
- capital taxes;
- payroll taxes;
- subsidies for job creation and training.

2.25 Estimates at basic prices are obtained by leaving out taxes less subsidies on products.

2.26 The two concepts meet different analytical needs. Valuation at market prices is better suited to analysing final demand, where the focus is more on the price that purchasers actually pay. Valuation at basic prices is better suited to analysing the content of the resources incorporated into different goods or services or resource allocation. It represents the sum of the incomes from the factors of production as measured by the cost of the labour and capital factors, including net taxes on the factors of production, used in the production process. In economic terms, the concept of basic prices is considered the most useful concept for analysing the production and relative distribution of primary resources between industries.

Alternative approaches to calculating aggregate GDP

2.27 Gross domestic product can be measured in three ways. The first and most intuitive method is called the production or value added approach. It consists of summing the gross value added of all industries (resident sectors).[9] For each industry, this involves subtracting intermediate consumption from the industry output. The GDP at market price is obtained by adding taxes less subsidies[10] on products to the sum total of value added. In our simplified hypothetical example that follows, we assume that there is no government and therefore taxes do not exist.

2.28 The second method, the income approach, consists in summing all the factor incomes generated in the production process plus net taxes on products and on production. In our simplified example that follows, workers are compensated by wages and the owners of capital are compensated by profits.

2.29 The third approach, the final expenditure approach, consists of summing the expenditures of those purchasing final goods and services. In the example, this includes final consumption expenditures, and exports minus imports, assuming no capital formation. Table 2.3 shows that the three approaches yield the same value for final output in the economy.

8. Canadian basic prices in the Input-Output Tables do not correspond exactly to international basic prices. In the Canadian System of National Accounts, the concept of modified basic prices is used. It refers to the price at the factory gate of the producing establishment, excluding sales and excise taxes collected after the final processing stage. The modified basic price of a product is equal to the price receivable from the purchaser minus any transport margins and trade margins at the time of delivery of the product to the purchaser and any taxes on products. In Canada, the modified basic price is the subsidized price on products, while in the *System of National Accounts 1993,* it is the real price plus subsidies.
9. Resident units are grouped in homogenous sectors.
10. The net taxes are added because they are not included in the values of the outputs and value added of resident producers.

A hypothetical economy with no government and no capital

2.30 Imagine an economy with just three businesses, one producing wheat, another flour and the last one bread. The wheat-producing company (Firm 1) operates farms that grow wheat. It imports seed and fertilizer and pays wages and salaries to its workers. Some of its wheat output is sold to a milling company (Firm 2) and the rest is exported. The wheat company realizes a profit after deducting expenses from its sales revenue.

2.31 The milling firm, in turn, uses the wheat that it purchases from Firm 1 to produce flour. It sells some of the flour to a bakery (Firm 3) and the rest directly to final consumers. Like Firm 1, it pays wages and salaries to its employees and realizes a profit after deducting expenses from revenues.

2.32 Finally, the bakery purchases flour from the second firm and uses it to make bread for sale to final consumers. Table 2.2 depicts this hypothetical economy.

Table 2.2 Information on a hypothetical three-firm economy

Cost of production	$	Value of production	$
Firm 1 (Wheat farm)			
Imports of seed and fertilizer	15	Sales to firm 2	100
Labour income	115	Exports	50
Profits	20		
Total	150	Total	150
Firm 2 (Milling)			
Purchase of wheat from Firm 1	100	Sales to Firm 3	130
Labour income	45	Sales to consumers	35
Profits	20		
Total	165	Total	165
Firm 3 (Baker)			
Purchase of flour from Firm 2	130	Sales to consumers	200
Labour income	60		
Profits	10		
Total	200	Total	200

2.33 Data on the hypothetical economy can be used to calculate output. It consists of the sales of each of the firms. In the example, the output of the economy is $515 ($150 + $165 + $200; see Table 2.2).

2.34 However, in this way of measuring value added, there is duplication. The seed and fertilizer used by Firm 1 to grow the wheat are counted in the output of Firm 1, the wheat used by Firm 2 to make flour is counted in the output of Firm 1.The same goes for flour used by Firm 3, which is included in the output of Firm 2. The seed, fertilizer, wheat and flour in the example all have a common characteristic: they are intermediate inputs,[11] that is, they are goods and services that were consumed as inputs in the production of other goods and services. When the output of the different industries is added up to obtain the output of the economy as a whole, intermediate inputs are counted both in their industry of origin and in each of the industries that use them, and this is what is known as duplication.

11. The term intermediate inputs is used here to mean intermediate consumption, which *System of National Accounts 1993* defines as follows: "Intermediate consumption consists of the value of goods and services consumed as inputs by a process of production, excluding fixed assets whose consumption is recorded as consumption of fixed capital. The goods or services may be either transformed or used up by the production process."

2.35 Another feature of output is that it includes not only domestic output (that which is produced in Canada) but also a portion of foreign output. In the example, seed and fertilizer are imported, and hence are produced abroad, but they are included as output and must be deducted to obtain domestic GDP.

2.36 Using the data on the hypothetical economy, we can calculate the value added of each firm. They are:

- Firm 1: $150 - $15 = $135
- Firm 2: $165 - $100 = $65
- Firm 3: $200 - $130 = $70

2.37 Table 2.3 illustrates the three approaches to calculating GDP.

Table 2.3 Gross domestic product (GDP): three methods of calculation – example in a hypothetical economy

	Value of total output	Purchases from other enterprises and imports	Net value added of production
Value added approach			
	dollars		dollars
Firm 1	(50 + 100) = 150	15	(150 - 15) = 135
Firm 2	(130 + 35) = 165	100	(165 - 100) = 65
Firm 3	200	130	(200 - 130) = 70
Total	515	245	(515 - 245) = 270

Income approach		
		dollars
Firm 1	Labour income and profits	(115 + 20) = 135
Firm 2	Labour income and profits	(45 + 20) = 65
Firm 3	Labour income and profits	(60 + 10) = 70
Total income earned in current production		270

Final expenditure approach		
		dollars
Firm 1	Exports	50
Firm 2	Sales to consumers	35
Firm 3	Sales to consumers	200
Sub-total		285
Less: Imports		15
Total final sales from current production		270

2.38 This simple example illustrates how Canada's GDP is calculated. The sum of incomes (135 + 65 + 70 = 270) and sum of final expenditure (50 + 35 + 200 - 15 = 270) methods are both used in the IEA and they yield two essentially independent estimates of GDP. The sum of value added (135 + 65 + 70 = 270) used in the Input-Output Tables provides a third estimate of GDP.

Institutional sectors dimension of the CSNA – The Income and Expenditure Accounts

2.39 Economists use the circular flow of income diagram as a tool to illustrate the interactions among the different economic agents in the economy. One of the fundamental characteristics of such a representation of the economy is that it condenses information on markets and economic agents into an ordered framework.

2.40 The underlying idea of this representation is to group together economic agents (institutional units) that have similar behaviour and motivation. Households consume and supply the labour input. Companies sell the goods that they produce in order to make a profit. Governments provide public goods and attend to the redistribution of income within society. Non-residents sell goods and services to residents of the country and purchase goods and services from them in order to benefit from the comparative advantages related to trade.

2.41 National accounting uses a similar approach. In the SNA, groups of economic agents are called institutional sectors. The creation of institutional sectors in the compilation of national accounting statistics provides analysts with "ordered and usable" statistics for analysing the functioning of the economy and identifying relationships among its various components.

2.42 The *System of National Accounts 1993* (SNA 1993) defines an institutional unit as "an economic entity that is capable, in its own right, of owning assets, incurring liabilities and engaging in economic activities and in transactions with other entities". Institutional units may either be physical persons (or groups of persons) or legal or social entities. Households belong to the first class, while non-profit institutions (NPIs), governments and corporations (businesses) belong to the second. The two classes are mutually exclusive, and institutional sectors are mutually exclusive.

2.43 The Canadian System of National Accounts identifies three resident institutional sectors and a non-resident sector. The different accounts in the system are articulated for each of these four sectors. Each sector has sub-sectors.

The institutional sectors

2.44 The Income and Expenditure Accounts (IEA) presents a full sequence of accounts for the sectors shown in Table 2.4. As may be seen, there are minor difference in sectoring between the CSNA and the SNA 1993. In Canada, the household sector is more precisely called the persons and unincorporated business sector as it includes non-profit institutions serving households (NPISHs).The financial corporation and non-financial corporation sectors are called the corporate and government business enterprise sector. Lastly, the rest of the world sector is called the non-resident sector.

2.45 In the CSNA, non-profit institutions serving households (NPISH) are included in the persons and unincorporated business sector. However, since 2004, Canadian statisticians in the Income and Expenditure Accounts Division have set up a satellite account[12] covering all non-profit institutions, whether they serve households or they are classified in the government sector or in the corporate sector. This more comprehensive approach to the treatment of non-profit institutions is more desirable from an analytical standpoint, and indeed it is an approach that is being examined by international statistical organizations.

12. *Satellite Account of Nonprofit Institutions and Volunteering*, catalogue no. 13-015.

Table 2.4 Sectors and sub-sectors in the Income and Expenditure Accounts

Sector	Sub-sector
Persons and unincorporated businesses	
Corporations and government business enterprises	
	Corporations and government business enterprises: non-financial
	Corporations and government business enterprises: financial
Government	
	Federal government[1]
	Provincial governments[1]
	Local governments[1]
	Canada and Quebec pension plans[2]
Non-residents	

1. For these sub-sectors the Income and Expenditure Accounts do not produce a Financial Account.
2. For this sub-sector, the Income and Expenditure Accounts do not produce either a Capital Account or a Financial Account.

The persons and unincorporated business sector

2.46 This sector includes all persons or households as well as associations of individuals and certain collective investment schemes. Associations of individuals include not only non-profit institutions serving households, but also selected components of fraternal organizations, credit unions and mutual life insurance companies. The same treatment is accorded certain collective investment schemes, including non-mutual life insurance companies, trusteed pension plans and mutual funds. The sector also includes institutional units in the business sector that are not legally incorporated. This group includes: independent business operators; unincorporated farmers; self-employed fishermen; self-employed professionals (consultants, notaries, etc.); and, unincorporated landlords, including owner-occupants as providers of housing services.

The corporate and government business enterprise sector

2.47 The corporate and government business enterprise sector covers institutional units that are legally incorporated businesses or special funds, and includes government business enterprises. These corporations cover all institutional units producing goods and services sold at an economically significant price that are legally incorporated, including: legally incorporated businesses selling non-financial goods and services (non-financial corporations); and, legally incorporated businesses providing financial goods and services (financial institutions). The saving of certain types of financial institutions are partially accounted for in the personal sector (as indicated in paragraph 2.46), but their capital and financial accounts are included in the corporate sector.

2.48 Government business enterprises include non-financial and financial government business enterprises and agencies operating on a for-profit or cost-recovery basis whose motivation is similar to that of private businesses. Among the best known are the Bank of Canada, the Canada Post Corporation, the Canada Mortgage and Housing Corporation, the Export Development Corporation, the Canadian Wheat Board, the various port authorities, Hydro-Québec, the Caisse de dépôts et placements du Québec, and metropolitan transportation agencies.

The government sector

2.49 The government sector includes all departments, agencies and funds (budgetary and non-budgetary) of the federal, provincial, territorial and local levels of government, as well as crown corporations that receive more than 50% of their revenues in grants from their parent government. This sector is divided into the following sub-sectors:

- Federal government
  - Government administration
    - Departments and agencies
    - Independent agencies, councils, commissions and funds
    - Non-autonomous employer-sponsored pension plans
- Provincial and territorial governments
  - Government administration
    - Departments and agencies
    - Independent agencies, councils, commissions and funds
    - Non-autonomous employer-sponsored pension plans
    - Universities and colleges
    - Universities
    - Colleges, vocational training institutes and trade schools
  - Health services and social services institutions
    - Public hospitals
    - Other health and social services institutions
- Local governments
  - Government administration
    - Municipalities
    - Independent agencies, councils, commissions and funds
  - School boards
- Canada and Quebec pension plans

2.50 The publication *Financial Management System* (FMS), provides a complete description of the government sector in Canada.

The non-resident sector

2.51 Unlike the other sectors, the non-resident sector is not made up of homogeneous institutional units, since it includes all non-resident institutional units that carry out transactions with resident units. In practice, the non-resident sector includes all institutional units that have no centre of economic interest (dwelling or place of business) within Canada's economic territory. By definition, non-residents engage in financial investment only. Any agent engaging in non-financial investment is considered resident.

2.52 This sector also includes some institutional units that are physically located within a country's geographic territory. The following are considered non-resident: embassies, consulates, military bases and international organizations.

The sequence of the institutional sector accounts

2.53 *The System of National Accounts 1993* recommends that the following sector accounts be produced:

(a) The production account – Records the value of production and the intermediate expenses by industry yielding gross value added, or GDP for the economy.

(b) The primary distribution of income account – Records the generation of income into its various income components: wages and salaries, supplementary labour income, net taxes on production, mixed income and operating surplus.

(c) The secondary distribution of income account – Records, in addition to the income from the allocation of primary income accounts, the transfers between the sectors.

(d) The use of income account – Focuses on how resident institutional sectors allocate their disposable income between current expenditure and saving.

(e) The capital account – Comprises the second accumulation account that focuses on non-financial assets.

(f) The financial account – Comprises the second accumulation account that focuses on financial transactions.

(g) Other changes in assets account – Comprises the third accumulation account that articulates capital gains and losses and other volume changes e.g., resource discoveries, destruction of assets due to catastrophic events.

(h) The balance sheet account – Is the wealth statement, detailing assets, liabilities and net worth.

2.54 The CSNA-IEA provides a slightly modified version of the international standard, as follows:

(a) The gross domestic product account. The Income and Expenditure Accounts does not produce a production account by sector or by industry (GDP by industry is available from the Input-Output Tables). At an aggregate level for the economy (without sectoring), the Income and Expenditure Accounts presents GDP by types of income and by types of expenditure. The income details correspond to the primary distribution of income account (see Table 2.5).

(b) The income and outlay account of each of the sectors traces current incomes and outlays related to the production process and current transfers between sectors. The difference between incomes and outlays constitutes the saving of the sector. This item balances the account. This account combines allocation of income account and secondary distribution of income account, as well as use of income account. It is produced for the four main institutional sectors described in Table 2.4.

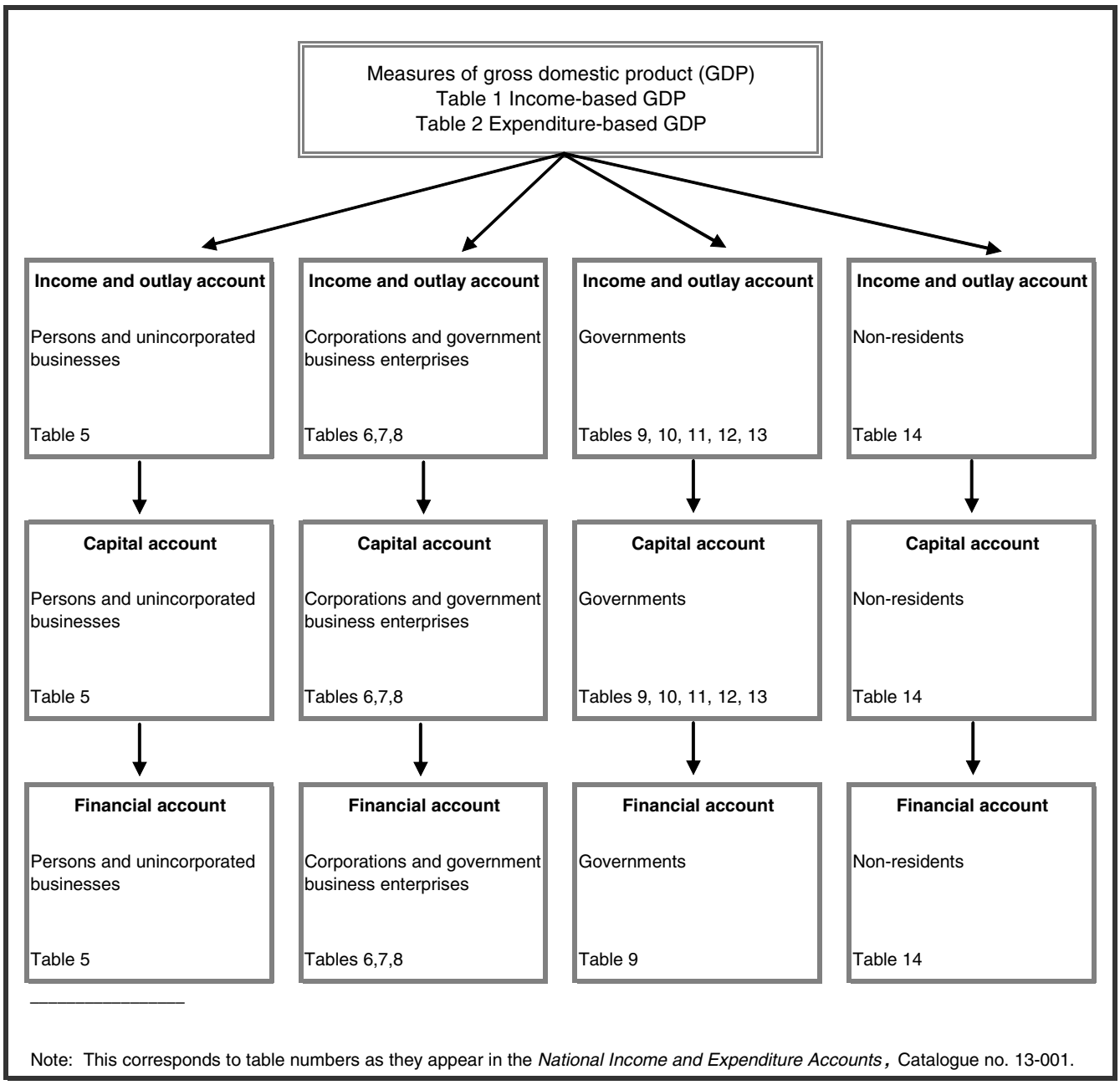
(c) The capital account of each sector traces, on the one hand, the resources available for acquiring non-financial capital (saving, capital consumption allowance and net transfers of capital) and on the other hand, the acquisition of non-financial capital. This account is produced for five sectors where corporations are disaggregated into financial and non-financial corporations. The gap between resources and acquisitions is called the net lending of the sector. This item balances the account.

(d) The financial account of each of the sectors traces both the transactions on financial assets and the transactions on financial liabilities taking place during a given period. This account is recorded for the five sectors of the economy in the *National Income and Expenditure Accounts*.[13] In addition, financial accounts are published for 35 detailed sub-sectors in the *Financial Flow Accounts*. The balance between financial asset and liability flows consists of the net financial investment of the sector. In theory, net financial investment from this account and net lending from the capital account are equal, with each measuring a different side of the same coin. In practice, statistical imperfections generate a gap between the two measures.

2.55 The balance sheet reflects the result of accumulation of wealth in the economy, by recording the assets, liabilities and net worth of the sectors. As such, it is inclusive of the other changes in assets. It is published as the *National Balance Sheet Accounts*, at both the 5 sector and 35 sector level.

13. In fact, the *National Income and Expenditure Accounts* presents a combined Capital and Financial Account.

Table 2.5 Structure of the Income and Expenditure Accounts



Note: This corresponds to table numbers as they appear in the *National Income and Expenditure Accounts*, Catalogue no. 13-001.

Gross domestic product measured by income and expenditure

2.56 The first two tables in the Income and Expenditure Accounts present GDP calculated using the income and the expenditure approaches. The balancing item between the two measures of GDP is the statistical discrepancy.

Statistical discrepancy

2.57 In principle, when GDP is calculated using the income approach, and again using the expenditure approach, the two totals should be the same. In practice, this is never so because of the different sources of information underlying both approaches. This, in turn, gives rise to measurement errors. The difference between the two

methods of measuring GDP is divided in two, with one half subtracted from the highest estimate and one half added to the lowest estimate. This amount is shown in tables 1 and 2 of the publication *National Income and Expenditure Accounts* under the name of statistical discrepancy.

2.58 A small statistical discrepancy is a desired result, since it implies that the two estimates of GDP derived independently, have turned out almost the same.

Income-based GDP aggregates

2.59 GDP measured by the income approach is shown in Table 1 of *National Income and Expenditure Accounts.* The methods of estimating income categories are described in detail in the following chapters. The paragraphs below provide a brief description of these aggregates.

2.60 The first category is wages, salaries and supplementary labour income. Wages and salaries are the total compensation, in cash or in kind, paid to workers for work performed. This item is entered before any deduction for income tax, pensions, employment insurance or other social insurance plans. Wages and salaries also include commissions, tips, performance premiums, directors' fees, and vacation and sick leave allowances, as well as military pay and allowances. Supplementary labour income includes employers' social contributions. The following are examples of supplementary labour income: retiring allowances, employment insurance contributions, and contributions to the Canada and Quebec pension plans, contributions to other pension plans, occupational health and safety funds, health insurance, dental care plans, etc. Wages, salaries and supplementary labour income is presented in tables 1 and 5 of *National Income and Expenditure Accounts*. Monthly estimates, by province and by industry, are also available in *Estimates of Labour Income*.

2.61 Corporation profits before taxes and government business enterprise profits before taxes represent net earnings resulting from the economic activity of private and select[14] public corporations, respectively. Net earnings are measured after deduction of capital consumption allowances. Corporation profits before taxes and government business enterprise profits before taxes are analyzed in tables 1 and 6 of *National Income and Expenditure Accounts*. Table 32 of the same publication reconciles corporation profits before taxes with undistributed corporation profits.

2.62 Interest and miscellaneous investment income comprise the interest paid by businesses to households[15], governments and non-residents to compensate them for the loan or rental of financial or non-financial assets[16] for use in production. Information on interest and miscellaneous investment income is presented in Table 1 and in more sector detail in tables 5, 6, 9, 10, 11, 12, 13 and 14 of *National Income and Expenditure Accounts*. Appendix 2B explains the link between the aggregate and its distribution in the incomes and outlays of the institutional sectors.

2.63 Accrued net income received by farm operators from farm production refers to the net farm proceeds that go to unincorporated farm operators. The estimate is obtained by deducting expenditures from receipts. Receipts include gross sales of farm products, the imputed value of farm output consumed by farming households, investment in farm inventories and the distributed and undistributed portions of earnings arising out of the operations of the Canadian Wheat Board. Expenditures include farm operating expenditures and capital consumption allowances. Accrued net income received by farm operators from farm production is presented in tables 1 and 5 of *National Income and Expenditure Accounts*.

2.64 Net income of non-farm unincorporated business, including rent, consists of the earnings of unincorporated proprietors, except farm operators, from their own business. It also includes the net income of independent members of professions, such as physicians, dentists, lawyers and engineers. Lastly, it includes the net rental income of persons (but not corporations). This includes rents paid or imputed, after deduction of expenses, on

14. This covers public corporations not consolidated within the government sector, which are referred to as government business enterprises.
15. This includes collective investment schemes.
16. Land is included in non-financial assets.

residential properties and net rents paid on non-residential properties. Imputation for rents is explained by the fact that in national accounting, owner-occupants are considered as producers of housing services who rent a dwelling to themselves (more fully discussed in Chapter 5). Net income of non-farm unincorporated business, including rent, is presented in tables 1 and 5 of *National Income and Expenditure Accounts*.

2.65 The inventory valuation adjustment represents the net holding gain or loss incurred by businesses as a result of price changes. This is an adjustment to profits, since gains or losses on inventories are included in the corporation profits before taxes. This gain (or loss) must be removed in order to measure current output. The inventory valuation adjustment is available in tables 1 and 6 of *National Income and Expenditure Accounts*.

2.66 Taxes less subsidies, on factors of production refer to taxes received and subsidies paid by government. These taxes and subsidies are payable or paid regardless of the quantity or value of the goods and services produced or sold. Capital taxes, licences and permits, property taxes and payroll taxes are examples of taxes included in this aggregate. Information on taxes less subsidies, on factors of production is presented in tables 1 and 9 to 12 of *National Income and Expenditure Accounts*.

2.67 Taxes less subsidies on products, refer to taxes received and subsidies paid by government. These taxes and subsidies are payable or paid, based on the quantity or value of goods and services produced or sold. This aggregate includes sales taxes, fuel taxes, import duties and taxes, and excise taxes on tobacco and alcoholic products. Taxes less subsidies, on products, is presented in tables 1 and 9 to 12 of *National Income and Expenditure Accounts*.

2.68 Capital consumption allowances are allowances for the using up of buildings, machinery and equipment and other assets in the productive process. This item also includes miscellaneous valuation adjustments bringing business accounting records into conformity with national accounting definitions. Capital consumption allowances is presented in tables 1 and 5 to 12 of *National Income and Expenditure Accounts*.

Expenditure-based GDP aggregates

2.69 GDP measured on the basis of final expenditures in current dollars is shown in Table 2 of *National Income and Expenditure Accounts*. Volume-based estimates for the same components appear in Table 3. The methods of estimating expenditure aggregates are described in later chapters. The following paragraphs provide a brief description of these aggregates.

2.70 Personal expenditure on consumer goods and services measure household expenditures on durable, semi-durable and non-durable goods as well as services. The aggregate also includes the operating expenses of non-profit organizations serving households. Personal expenditure on consumer goods and services is presented at a highly aggregated level in tables 2, 3, 4 and 5 of *National Income and Expenditure Accounts*. Tables 16, 17 and 18 show the aggregate in more detail.

2.71 Government current expenditure on goods and services includes current expenditure on goods and services (including military spending for strictly military purposes), compensation paid to government employees, and other purchases of goods and services, except capital goods. The aggregate also includes an imputation for capital consumption allowances. This aggregate is presented net of sales to avoid duplication. Government current expenditure on goods and services is presented at a highly aggregated level in tables 2, 3 and 4 of *National Income and Expenditure Accounts*. Detailed data also appears on a gross basis in tables 9, 10, 11 and 12, the institutional sector accounts.

2.72 Government and business gross fixed capital formation includes the expenditures of the business and government sectors on goods with an expected economic life of one year or more, and on buildings and engineering construction of any kind. This item also includes residential construction, alterations and improvements made to the building stock and transfer costs associated with the sale of existing assets. Government and business gross fixed capital formation is presented at a highly aggregated level in tables 2, 3 and 4 of *National Income and Expenditure Accounts*. Tables 19 to 24 of the same publication provide more detail on these aggregates. The data also appears in tables 5 to 13 of the institutional sector accounts.

2.73 Business and government investment in inventories refers to the change in the volume of the inventories of the business sector and the government sector, valued at average market prices for the period. This item represents the difference between demand and supply. A decrease in this aggregate indicates that part of the current demand has been met by supply from a previous period. Conversely, an increase in this item indicates that the current supply was greater than the current demand. Business and government investment in inventories is presented at a highly aggregated level in tables 2, 3 and 4 of the publication *National Income and Expenditure Accounts*. Tables 28 and 29 present more detail on business investment in inventories. The data also appears in tables 5 to 10, the institutional sector accounts.

2.74 Exports of goods and services include current receipts arising from exports of goods and services. The travel expenditures of non-residents in Canada are included in exports of services. In turn, imports of goods and services include current payments arising out of imports of goods and services. Canadians' travel expenditures abroad are included in imports of services. Imports are subtracted in computing GDP, because the goal is to measure domestic output. Imports and exports are available at a highly aggregated level in tables 2, 3 and 4 of the publication *National Income and Expenditure Accounts*. Tables 25 to 27 present more detail on exports and imports of goods and services. The data also appears in Table 14 of the institutional sector accounts.

2.75 For provincial and territorial estimates, international exports are distinguished from interprovincial exports. As with exports, the provincial and territorial estimates distinguish between international imports and interprovincial imports. Estimates of interprovincial trade appear only in the publication *Provincial Economic Accounts*.

The income and outlay account

2.76 These accounts are a statistical summary of the current income and outlays of each sector. The incomes and outlays of each institutional sector are of two types: they arise either from productive activity or from current transfers. Income from productive activity can in turn be classified into factor incomes and property incomes. Incomes and outlays arising from productive activity are tied to the expenditure and income-based measures of GDP. The other type of incomes and outlays consists of inter-sector transfers. These are unrequited transactions, that is, transactions involving a unilateral transfer with no compensation. In this category, for example, are income tax paid by individuals to government or employment insurance benefits paid by government to unemployed workers. The structure of the income and outlay account is the same for each of the four institutional sectors (illustrated in Table 2.6).

Table 2.6 Logical structure of the income and outlay accounts of the institutional sectors

Income	***Xr = Yr + Zr***	***Xd = Yd + Zd***	**Outlay**
Revenues	***Yr***	***Yd***	**Expenditures**
Element(s) from income-based GDP			Elements(s) from expenditure-based GDP
Current transfers	***Zr***	***Zd***	**Current transfers**
Income from other institutional sectors not requiring compensation			Payments to other institutional sectors without compensation
Saving (income - outlay)		***E = Xr - Xd***	

2.77 The difference between current incomes and outlays represents the saving of each of the institutional sectors. This balance is carried down to the capital account of each of the sectors as a source of funding for gross fixed capital formation.

The income and outlay account for persons and unincorporated businesses

2.78 Table 2.7 shows the income and outlay account of the persons and unincorporated business sector. Production-related aggregates link to the income-based and expenditure-based GDP tables. Interest, dividends and miscellaneous investment income is not found directly in the GDP measure. Thus, to reconcile this item with the interest and miscellaneous investment income aggregate of income-based GDP, information must be drawn from all sectors (see Appendix 2B).

2.79 Transfer income is described in the paragraphs below. Descriptions of transfer payments are provided in the sections dealing with the other institutional sectors.

Table 2.7 Income and outlay account – Persons and unincorporated businesses, 2000

	millions of dollars		
Income	**840,382**	**810,463**	**Outlay**
Revenues	**726,067**	**596,009**	**Expenditures**
Wages, salaries and supplementary labour income	545,204	596,009	Personal expenditure on consumer goods and services
Unincorporated business net income	66,187		
Farm production	1,243		
Other unincorporated businesses, including rent	64,944		
Interest, dividends and miscellaneous investment receipts	114,676		
Current transfers	**114,315**	**214,454**	**Current transfers**
From government	110,487	200,815	To government
Employment insurance benefits	9,615	143,951	Income taxes
Social security and other benefits	100,872	49,748	Contributions to social insurance
From corporations	1,467	7,116	Other current transfers
From non-residents	2,361	11,732	To corporations
		1,907	To non-residents
Saving (income - outlay)		**29,919**	

Source: *National Income and Expenditure Acccounts,* Catalogue no. 13-001, tables 1 and 5.

2.80 Income from government includes income redistributed by the federal government, the provincial and territorial governments, local governments and the Canada and Quebec pension plans.

2.81 Transfers from the federal government to persons and unincorporated businesses include the following:

- family and youth allowances;
- child tax benefit;
- child tax credit;
- employment insurance benefits;
- payments from the Old Age Security Fund;
- grants to aboriginal people and their organizations;
- goods and services tax credit;
- pensions, World Wars I and II;
- veterans' allowances;
- national associations;
- Canada Council for the Arts;
- adult vocational training;
- scholarships and research grants; and
- miscellaneous other transfer payments to persons, such as athletes and athletic associations, community organizations and arts and culture organizations.

2.82 Transfers from provincial and territorial governments to persons and unincorporated businesses include the following:

- social assistance–income maintenance;
- social assistance–other;
- workers' compensation benefits;
- payments to non-profit organizations; and
- other transfers to persons.

2.83 Transfers from local governments to persons and unincorporated businesses include the following:

- social assistance;
- payments to non-profit organizations; and
- other current transfers to persons.

2.84 Transfers from corporations and government business enterprises include the following:

- charitable gifts;
- miscellaneous other contributions; and
- write-off of bad debts.

2.85 Lastly, transfers from non-residents include:

- retirement benefits paid by foreign governments to residents of Canada;
- institutional payments for assistance, research or other (wartime compensation payments, other transfers from non-residents to residents of Canada, etc.); and
- other transfers from non-residents to Canadian residents, such as personal gifts.

2.86 Transfers to other sectors are dominated by income tax and social contributions and appear in the sections that follow (refer to 2.94, 2.96 to 2.98).

The income and outlay account for corporations and government business enterprises

2.87 Table 2.8 shows the income and outlay account for the corporations and government business enterprise sector. Production-related aggregates link to the income-based and expenditure-based GDP tables. Interest, dividends and direct receipts and interest on public debt are not found directly in the GDP measure. Thus, to reconcile these items with the interest and miscellaneous investment income aggregate of GDP by income approach, information must be drawn from all sectors (see Appendix 2B).

2.88 In income from current transfers, there is only one item: interest on consumer debt. This is the non-productive portion of interest paid by persons on account of liabilities incurred to finance personal expenditure on consumer goods and services. It is considered that part of the interest on the consumer debt is the cost of rendering service to borrowers, while the other part (the non-productive portion) is merely a transfer between sectors. The transfer portion is income for the corporate and government business enterprise sector and expenditure for the persons and unincorporated businesses sector. The productive portion is found in personal expenditure on consumer services.[17]

2.89 The descriptions of transfer expenditures appear in the sections dealing with the other institutional sectors (refer to paragraphs 2.84, 2.92 and 2.98).

Table 2.8 Income and outlay account – Corporations and government business enterprises, 2000

	millions of dollars		
Income	**292,675**	**240,459**	**Outlay**
Revenues	**280,943**	**190,502**	**Expenditures**
Corporation profits before taxes	135,978	190,502	Interest, dividends and miscellaneous payments
Government business enterprises profits before taxes	11,329		
Inventory valuation adjustment	-2,439		
Interest, dividends and miscellaneous receipts	73,581		
Interest on public debt	62,494		
Current transfers	**11,732**	**49,957**	**Current transfers**
Interest on consumer debt	11,732	48,175	Direct taxes
		1,782	Other current transfers
		1,467	To persons
		315	To non-residents
Saving (income - outlay)		**52,216**	
Undistributed corporation profits		49,996	
Unremitted profits of government business enterprises		4,659	
Inventory valuation adjustment		-2,439	

Source: *National Income and Expenditure Acccounts,* Catalogue no. 13-001, tables 1 and 6.

17. The productive portion is found in the personal expenditure series: financial intermediaries, implicit loan charges and credit unions, implicit loan charges.

The income and outlay account for governments

2.90 Table 2.9 shows the income and outlay account of the government sector. The production-related aggregates link to the income-based and expenditure-based GDP tables. In this category, interest, dividends and direct receipts and interest on public debt are not found directly in the GDP measure. Thus, to reconcile them with the income-based GDP aggregate interest and miscellaneous investment income, information must be drawn from all sectors (see Appendix 2B). Current government expenditure on goods and services is obtained by calculating the difference between current expenditure on goods and services (gross) and the proceeds of sales of goods and services by governments. Similarly, the sum of the aggregates taxes less subsidies, on factors of production and on products, is obtained by differentiating taxes on production and products from current transfers to business (subsidies).

2.91 Because of the role played by government in income distribution, transfers occupy an important place in government income and outlay accounts. Transfers that appear on the outlay side are dealt with in the section on persons and unincorporated businesses (refer to 2.81, 2.82, 2.83,) and the section on non-residents (refer to 2.95).

2.92 Taxes on income from persons include income taxes and wealth transfer taxes that are paid to the federal and provincial governments. Taxes on incomes from corporations include direct taxes from corporations and government business enterprises paid to the federal government and provincial governments. Added to this are provincial taxes on mining and forestry. Lastly, taxes on incomes from non-residents are entirely allocated to the federal government.

Table 2.9 Income and outlay account – Government, 2000

	millions of dollars		
Income	**468,669**	**433,904**	**Outlay**
Revenues	**215,924**	**320,647**	**Expenditures**
Sales of goods and services	33,414	233,498	Gross current expenditures on goods and services
Taxes on production and imports	138,998	10,658	Current transfers to business (subsidies)
Investment income	43,512	76,491	Interest on public debt
Current transfers	**252,745**	**113,257**	**Current transfers**
Taxes on income	195,881	110,487	To persons
From persons	143,951	2,770	To non-residents
From corporations and government business enterprises	48,175		
From non-residents	3,755		
Contributions to social insurance plans	49,748		
Other current transfers from persons	7,116		
Saving (income - outlay)		**34,765**	

Source: *National Income and Expenditure Acccounts,* Catalogue no. 13-001, Table 9.

2.93 Contributions to social insurance plans include:

- contributions of employers and employees to employment insurance (federal government);
- contributions of employers to workers' compensation funds (provincial governments);

- employer and employee contributions to industrial employees' vacations (provincial governments); and
- contributions of employers and employees to the Canada and Quebec pension plans.

2.94 Other current transfers from persons include various transfers to the federal government and local governments. These transfers are larger for provincial governments. They include motor vehicle licences and driver's licences as well as health insurance premiums and other miscellaneous transfers.

The income and outlay account for non-residents

2.95 Table 2.10 shows the income and outlay account for the non-resident sector. Production-related aggregates link to the income-based and expenditure-based GDP tables. In this category, interest, dividends and direct receipts is not found directly in the GDP measure. Thus, to reconcile these items with the interest and miscellaneous investment income aggregate of income-based GDP, information must be drawn from all sectors (see Appendix 2B).

2.96 Current transfers from persons include payments by Canadian residents (in particular by religious or charitable organizations) to non-residents and withholding tax paid abroad.

2.97 Current transfers from government include official contributions from Canada to non-residents and pensions paid abroad.

Table 2.10 Income and outlay account – Non-residents, 2000

	millions of dollars		
Income	**490,921**	**525,947**	**Outlay**
Revenues	**485,929**	**519,831**	**Expenditures**
Sales of goods (imports)	362,337	429,375	Purchases of goods (exports)
Sales of services (imports)	66,417	61,313	Purchases of services (exports)
Interest, dividends and miscellaneous receipts	57,175	29,143	Interest, dividends and miscellaneous payments
Current transfers	**4,992**	**6,116**	**Current transfers**
From persons	1,907	2,361	To persons
From corporations	315	3,755	To governments
From governments	2,770		
Saving (income - outlay)		**-35,026**	

Source: *National Income and Expenditure Acccounts,* Catalogue no. 13-001, tables 5, 9, 14 and 32.

2.98 Current transfers from businesses include pensions paid by businesses abroad.

Saving: the balancing item in the current accounts

2.99 In the income and outlay account of the institutional sectors, saving is the share of income generated during the current period which is not spent in the current period, but which becomes available in subsequent periods' consumption. Saving is a source of funds for investment in the current period. As such, saving is carried down as a resource to the capital account of the institutional sectors.

The capital account

2.100 There is a capital account for each institutional sector and sub-sector. This account presents resources and the uses to which they are put. The resources are gross saving and capital transfers. The uses consist of acquisitions of non-financial capital. Net lending (or borrowing) is the balancing item for this account. It records the difference between sources of funds internal to a sector and expenditures on non-financial capital. A positive difference is lent to other institutional sectors via financial transactions. Conversely, a negative difference indicates that the sector must borrow funds from other sectors through financial transactions.

2.101 For the economy as a whole (the sum of all institutional sectors), gross saving and capital transfers is equal to acquisitions of non-financial capital. Net lending for the economy as a whole is therefore zero.

Gross saving and capital transfers

2.102 The gross saving and capital transfers aggregate includes all resources available for the acquisition of non-financial assets. It includes, firstly, the saving made available by each sector—that is, the share of income generated during the current period which is not spent in the current period. Saving is derived from the preceding IEA account, namely the income and outlay accounts of each of the different institutional sectors. Added to this item are capital consumption allowances (CCA). The latter are a cost reflecting the reduction in the value of fixed assets used up in production during the period (i.e., depreciation). Even so, they constitute available resources, since in practice, CCA is merely an accounting entry. CCA also includes miscellaneous valuation adjustments, of which the most significant is the claim portion of business and residential insurance. And lastly, net capital transfers are also considered to be available resources.

2.103 Capital transfers consist of either a transfer of funds from one unit to another (cash transfer for the purposes of acquiring an asset); or, a transfer of ownership of a good or non-cash asset, the cancellation of a liability by mutual agreement, or the provision of a service without a counter part transaction. In all cases, this amounts to a transfer of wealth from one sector to another. Net capital transfers between the non-resident sector and the persons and unincorporated business sector consist mainly of net amounts paid or received abroad on migrants' estates and capital. Other capital transfers could be a gift of land to developers as an incentive to create a business or undertake construction, or debt forgiveness of parent governments towards their government business enterprises.

Non-financial capital acquisition

2.104 Acquisitions of non-financial capital may take three forms: acquisition of fixed capital; investment in inventory; and, acquisition of existing assets. Acquisition of fixed capital corresponds to new gross fixed capital formation in the GDP by expenditure tables and are included in final domestic demand. Investment in inventory also appears in the tables on expenditure-based GDP. These two components were defined in the section on measuring GDP (refer to 2.72, 2.73).

2.105 In order to fully reflect the acquisition of fixed capital by any institutional sector, expenditures on both new and existing capital as well as on both produced and non-produced assets in a period must be taken into account. Net acquisition of existing assets corresponds to purchases and sales among institutional sectors of existing residential and non-residential structures, machinery and equipment and/or land. Expenditures on existing capital assets or land are not included in that period's macro-economic activity, or GDP.

2.106 The acquisition of non-financial capital applies only to domestic institutional sectors. By definition, the non-resident sector makes only financial investments, since non-residents do not have a centre of economic interest within the country's economic territory.

The financial account (the financing of economic activity)

2.107 The sector accounts of the *National Income and Expenditure Accounts* extend the capital account with a picture of financial activity, thus producing a capital and financial account for each sector–a sources and uses of funds statement. These two accounts, sometimes referred to as accumulation accounts, comprise the transaction-driven changes to sector net worth. This section describes the financial account.

2.108 The two measures of GDP, as well as the underlying detail in both the income and outlay account and the capital account of the institutional sectors, describe economic activity in terms of transactions on goods and services. It is also possible to track the economy by observing the financial transactions associated with economic activity. The financial account of the institutional sectors provides this perspective.

2.109 From a financial standpoint, the difference between transactions in financial assets and liabilities for any sector is the amount that sector puts at the disposal of other institutional sectors (lending) or the amount that it requires from other institutional sectors (borrowing). This is the same concept as the net lending-borrowing described with respect to the capital account, but in this case it is applied to the financial aspect of the economy. To distinguish it from net lending, this balancing item in the financial account is referred to as net financial investment.

2.110 The financial account of the different institutional sectors are a condensed version of the Financial Flow Accounts, which record the financial transactions of the economy (in conjunction with capital transactions) in great asset-liability and sector detail. The information on this account and on the resulting wealth positions can be found in the publication *Guide to the Financial Flow and Balance Sheet Accounts*. The paragraphs that follow provide a brief description of asset and liability categories in the financial account.

Types of transactions on financial assets and liabilities

2.111 The financial accounts of the institutional sectors, presented in tables 5, 6, 7, 8, 9 and 14 and Supplementary Table 1 of the publication *National Income and Expenditure Accounts* include several categories of financial assets and liabilities. These items are briefly described in the following paragraphs.[18]

2.112 Official reserves cover a number of different components. Official holdings of gold and foreign exchange, includes gold, U.S. dollar, sterling and other foreign convertible currency denominated deposits and securities held as assets by the monetary authorities. The International Monetary Fund (IMF) general account, encompasses loans by Canada to the IMF. Special drawing rights (SDRs) include both the allocation of new SDRs and the movement of existing rights between Canada and the rest of the world.

2.113 Currency and deposits includes three main sub-components: Canadian currency and deposits in chartered banks, deposits in other institutions and foreign currency and deposits. Checking and saving accounts of different types and terms are included in deposits.

2.114 Consumer credit includes personal loans, for the purposes of acquiring consumer goods and services, made by chartered banks and near-banks. Also included are policy loans advanced by life insurance companies, as well as loans to persons advanced by sales finance and consumer loan companies. Loans for other purposes cover bank and other loans and include negotiated loans, advances and overdrafts booked in Canada by Canadian chartered banks and other lending institutions. Mortgage loans include loans and agreements of sale secured by real property, mostly residential buildings.

2.115 Life insurance and pensions is a broad category that covers the liability of life insurance companies to its policy-holders as well as the liabilities of employer-sponsored pension schemes towards members of the plan.

18. The following definitions are a condensed version of those that appear in the *Guide to the Financial Flow and National Balance Sheet Accounts – Definitions, Concepts, Sources, Methods*, catalogue no. 13-585.

2.116 Debt instruments comprise short-term paper and bonds. Bonds cover federal, provincial and municipal bonds, as well as corporate bonds and debentures (including guaranteed bonds of government business enterprises), and other bonds (e.g., non-profit institutions) as well as asset-backed securities. Bonds are typically marketable, with an original term to maturity in excess of one year. Money market instruments include federal short-term paper and other marketable short-term notes issued by a variety of financial and non-financial corporations and sectors. Short-term paper can be described as negotiable bearer promissory notes with an original term to maturity of less than one year, issued at a discount without coupons.

2.117 Shares include marketable and non-marketable common and preferred shares, plus investment fund units. Foreign investments are defined as all marketable financial instruments that are liabilities of non-resident entities.

2.118 Trade accounts (payables/receivables) include short-term credit granted or received in the ordinary course of business by suppliers or purchasers of goods and services. Other financial assets/liabilities comprise a variety of items not included in the other components of financial flows.

The Balance Sheet Account (the result of economic activity and gains/losses)

2.119 The opening and closing positions in the CSNA sequence of accounts are articulated (by institutional sector and for the economy as a whole) in the *National Balance Sheet Account* (NBSA). The NBSA is the final component of the CSNA sequence of accounts. Unlike the accounts described previously, which measure the flow of activities over a given period, the balance sheet account measures the impact of those activities on the stock of assets and liabilities and net worth at the end of a given period. It provides a snapshot of the state of the nation's economic-financial position. The balance sheet account evolves as the result of capital and financial transactions on the one hand, and capital gains/losses on assets-liabilities on the other.

2.120 In the balance sheet account, sector estimates of net worth are calculated as the value of financial and non-financial assets minus liabilities. The NBSA also provides an important aggregate: the nation's wealth, or national net worth. National wealth is the sum of the nation's non-financial assets (both produced and non-produced). National net worth is equal to national wealth adjusted for the nation's net international investment position (if one exists), alternatively, national net worth can be derived as the sum of resident sector net worth.

2.121 The NBSA has the same overall structure and sector detail as the *Financial Flow Accounts.*

Other aspects of the Income and Expenditure Accounts data

Measures of volume and prices in the Income and Expenditure Accounts

2.122 Growth in the current dollar gross domestic product (GDP) or any other nominal value aggregate can be decomposed into two elements: a price element, or the part of the growth linked to inflation, and a volume element, which covers the change in quantities and quality of the aggregate. The volume element is presented in the System of National Accounts by what is referred to as the real economic activity series (such as the real GDP). Real GDP is the key economic indicator, on the trend-cycle growth pattern of the economy. Calculating real GDP and its expenditure components is, therefore, an important undertaking.

2.123 The volume element is measured to a very large extent by deflating the nominal value of a given series by an appropriate price index.[19] This is referred to as the deflation method.

2.124 Within the Canadian System of National Accounts the deflation of a series (such as exports of machinery and equipment) occurs at the lowest possible level for which a representative price index can be found. The deflated series can then be aggregated together to derive various totals. For example, 435 series are deflated and then aggregated together in order to calculate real quarterly GDP.

19. Exceptions to the deflation approach in the estimation of volume measures will be noted where relevant in the chapters dealing with expenditure side GDP components (refer also to 2.140).

2.125 There are several ways to aggregate deflated series in order to calculate the volume aggregate. Index number theory offers a wide range of tools to this end. Since the spring of 2001, the Canadian System of National Accounts (CSNA) has adopted the chain Fisher index. This measure is theoretically superior to the former fixed-base Laspeyres measure and also makes the Canadian data comparable with the U.S. official measure of real economic activity. Furthermore, it offers compliance with the recommendations of the *System of National Accounts 1993* (SNA 1993).

2.126 The following paragraphs provide a simplified explanation of the methods used by the CSNA to measure the country's real economic activity.

2.127 The level of detail—that is, the number of components used in each of the aggregates—is determined by the availability of data and by certain determinants of overall quality (such as the stability of seasonality). At the national level, 435 series in current dollars and the same number of corresponding price series, are used to calculate real GDP using the chain Fisher index. Table 2.11 shows how these series are distributed between the various aggregates presented in Table 3 of the publication *National Income and Expenditure Accounts*.

Table 2.11 Level of detail at the national level

	number of series
Personal expenditure on consumer goods and services	130
Durable goods	22
Semi-durable goods	15
Non-durable goods	14
Services	79
Government current expenditure on goods and services	24
Government gross fixed capital formation	14
Government investment in inventory	1
Business gross fixed capital formation	18
Residential structures	4
Non-residential structures and equipment	14
Non-residential structures	4
Machinery and equipment	10
Business investment in inventory	110
Non-farm	76
Farm	34
Exports of goods and services	69
Goods	64
Services	5
Imports of goods and services	68
Goods	63
Services	5
Statistical discrepancy	1
Gross domestic product at market prices	435
Final domestic demand	186

2.128 Real gross domestic product (GDP) is estimated from 435 series. The values in those series are derived from surveys and administrative sources (see the chapters on sources and methods). The price indexes associated with each of the 435 series are taken from various sources, primarily consumer price indexes, industry product price indexes, raw materials price indexes, farm price indexes, export price indexes, import price indexes, foreign price indexes, and wage rates.

2.129 Personal consumption expenditure on goods and services includes 130 categories of goods and services. In most cases, consumer price indexes are associated with those goods and services.

2.130 There are 24 series for government current expenditure on consumer goods and services (see Chapter 8 for information on the deflation of government data). Volume estimates for the 10 labour income series are derived from hours worked, and the price indexes for the series are implicit. The 10 series for government capital consumption allowances are deflated with indexes based on information from the Investment and Capital Stock Division, while a number of sources are used to construct the other 4 price indexes.

2.131 The 32 series that make up gross fixed capital formation are mainly based on industry product price indexes, raw materials price indexes, machinery and equipment price indexes and import price indexes.

2.132 Business investment in inventories includes 55 components,[20] whereas government investment in inventories is based on just one series. The price indexes are mainly industry price indexes and farm price indexes.

2.133 International imports consists of 68 import price indexes, while 69 different price indexes are used to deflate international exports.

2.134 The price index associated with the value of the statistical discrepancy is the aggregate implicit expenditure-side GDP price index (constructed by excluding the statistical discrepancy).

Chain Fisher volume indexes

2.135 The quarterly Income and Expenditure Accounts adopted the Fisher index formula, chained quarterly, as the official measure of expenditure based real gross domestic product in May 2001. This formula was also adopted for the *Provincial Economic Accounts*, chained annually, in October 2002.

2.136 There were two reasons for adopting this formula: to provide users with a more accurate measure of real growth for GDP and its components between two consecutive periods and to make the Canadian measure comparable with the National Income and Product Accounts (NIPA) of the United States, which has used the chain Fisher index formula to measure real GDP since 1996.

Building an index and chaining

2.137 A given nominal aggregate (GDP or other) represents a summation of quantities evaluated in the same monetary unit, at the prices of the current period. Note: When we refer to quantities we are implicitly including any quality change as well. To use GDP as an example, this summation can be expressed as GDP = Σ_{pq} which is the sum of all quantities of goods and services transacted in the economy, multiplied by their respective prices. The change or variation in nominal GDP, between a period *0* and a period *t*, can therefore be expressed in index[21] form by:

20. Each component is used twice in computing the aggregates, once as beginning-of-period inventory and a second time as end-of-period inventory.
21. That is, by establishing a ratio between the value of the current period and the value of a preceding period.

Equation 2.1

$$\Delta GDP_{t/o} = \frac{\sum p_t q_t}{\sum p_0 q_0}$$

where: $\Delta GDP_{t/o}$ is the GDP variation index

p_t is the price at time *t*

p_0 is the price at time *0*

q_t is the quantity at time *t*

q_0 is the quantity at time *0*

2.138 The change obtained by this formula may theoretically be divided into a change in prices and a change in volume. If there were an average GDP price then it would be quite simple to divide the change in GDP (given by Equation 2.1) by this average price to obtain the change in quantities. In the Canadian System of National Accounts, there is no such average price. Thus, the total change in quantities can only be calculated by adding the changes in quantities in the economy.

2.139 However, creating such a summation is problematic in that it is not possible to add quantities with physically different units, such as cars and telephones. This means that the quantities have to be re-evaluated using a common unit. In a currency-based economy, the simplest solution is to express quantities in monetary terms. Once evaluated, that is, multiplied by their prices, quantities can be easily aggregated.

2.140 An intuitive way to measure changes in quantity over time is to take the prices available for a given period and to multiply the quantities from the subsequent periods by these same prices. It amounts to re-evaluating current quantities at prices fixed in time, which essentially removes the price effect. In mathematical terms, this can be expressed by the formula for the fixed-base Laspeyres index:

Equation 2.2

$$LQ_{t/o} = \frac{\sum p_0 q_t}{\sum p_0 q_0}$$

where: $LQ_{t/0}$ is the Laspeyres quantity index

p_0 is the price at time *0*

q_t is the quantity at time *t*

q_0 is the quantity at *0*

2.141 The only difference from Equation 2.1 is in the numerator, where the quantities at time *t* are multiplied this time by the prices at time *0*.

2.142 It is clear with such a formula that the results are highly dependent on the structure of prices at time *0*. Should this structure change with time, for example, as a result of a drop in the price of one component compared with the others, then the index from Equation 2.2 will eventually be biased by the fact that it is dependent on an outdated price structure.

2.143 One way to overcome this type of problem is to periodically update the weighting base to bring it in line with the current period. This technique was used in the past by the Canadian System of National Accounts (CSNA) when the real series was rebased every five or ten years to reflect changes in the price structure.

2.144 It is possible, however, for the price structure to change more quickly. The weighting base then becomes outdated quickly, making it preferable to increase the frequency of the rebasing. Ultimately, the weighting base can be systematically moved from period to period so that it is defined as being the period preceding the current period:

Equation 2.3

$$LQ_{t/t-1} = \frac{\sum p_{t-1} q_t}{\sum p_{t-1} q_{t-1}}$$

where we find p_{t-1}, in place of P_0 from Equation 2.2. For the current period *t*, this mobile-base index gives the growth in volume weighted according to prices *t-1*. To some extent, it incorporates the frequency of the rebasing, thereby eliminating the arbitrariness of rebasing done only on an as required basis.

2.145 In the short term, this type of index can be adapted to cover several periods. Equation 2.3 can be chained by successive multiplications, that is, in each period, it can be multiplied by the results obtained from the preceding period. This is called chaining. The prices used for weighting in the resulting chain are very recent prices and never become obsolete. Using our example, a chain index would have the following form:

Equation 2.4

$$LQ_c = \frac{\sum p_0 q_1}{\sum p_0 q_0} \times \frac{\sum p_1 q_2}{\sum p_1 q_1} \times \ldots \times \frac{\sum p_{t-1} q_t}{\sum p_{t-1} q_{t-1}} \times \ldots \times \frac{\sum p_{n-1} q_n}{\sum p_{n-1} q_{n-1}}$$

where: *n* is the number of periods over which the chain index extends.

Equation 2.4 can also be written as:

Equation 2.5

$$LQ_{c/0} = Q_0 \times \frac{\sum p_0 q_1}{\sum p_0 q_0} \times \frac{\sum p_1 q_2}{\sum p_1 q_1} \times \ldots \times \frac{\sum p_{t-1} q_t}{\sum p_{t-1} q_{t-1}} \times \frac{\sum p_{n-1} q_n}{\sum p_{n-1} q_{n-1}} = Q_0 \times LQ_{1/0} \times LQ_{2/1} \times \ldots \times LQ_{t/t-1} \times LQ_{n/n-1}$$

where: $LQ_{c/0} = Q_0 \times p_{q1}$

Q_0 is an arbitrary constant, usually 1 or 100, used as a reference point.

$LQ_{c/0}$ is the chain Laspeyres quantity index for period *0* to period *n*.

2.146 The *System of National Accounts 1993* recommends using chain indexes. Systematic chaining allows for constant renewal of the weighting base, thus avoiding the problem of outdated data associated with a fixed-base index.

Choice of index – Towards the chain fisher index

2.147 The previous section refers to a Laspeyres-type index. However, index number theory provides numerous other indices that differ in the way the components are weighted. For example, while the quantities in the Laspeyres index are weighted with the prices of a previous period, in the Paasche index they are weighted with the prices of the current period:

Equation 2.6

$$PQ_{t/0} = \frac{\sum p_t q_t}{\sum p_t q_0}$$

where: PQ_{t0} is the Paasche quantity index.

2.148 This index is in fact the reciprocal of the Laspeyres index. Used in its fixed-base form, it presents the same problem as that described earlier, but the inverse. It does not adequately reflect changes in the structure of the economy for previous periods. However, the Paasche index can be chained in the same way as the Laspeyres index (as in Equation 2.4).

2.149 It can be shown that, in general, a Laspeyres quantity index will generate a larger increase over time than a Paasche quantity index. This occurs when prices and quantities are negatively correlated, that is, when goods or services that had become relatively more expensive are replaced by goods and services that have become relatively less expensive. This common substitution effect implies that the Laspeyres and Paasche indexes set upper and lower limits for a theoretically ideal, less biased, index.

2.150 This theoretical index can be approached by a Fisher-type index, representing the geometric mean of a Laspeyres and Paasche index:

Equation 2.7

$$FQ_{t/0} = \sqrt{LQ_{t/0} \times PQ_{t/0}} = \sqrt{\frac{\sum p_0 q_t}{\sum p_0 q_0} \times \frac{\sum p_t q_t}{\sum p_t q_0}}$$

where: FQ_{t0} is the Fisher quantity index.

2.151 This index is not only superior theoretically, but it also includes a number of desirable properties from the standpoint of the Canadian System of National Accounts. For example, it is reversible over time, that is, the index showing the change between period *0* and period *t* is the reciprocal of the index showing the change between period *t* and period *0*. Another interesting feature is the reversibility of factors by which the product of the price and quantity indexes is equal to the index of the change in current values:

Equation 2.8

$$FP_{t/0} \times FQ_{t/0} = \sqrt{\frac{\sum p_t q_0}{\sum p_0 q_0} \times \frac{\sum p_t q_t}{\sum p_0 q_t}} \times \sqrt{\frac{\sum p_0 q_t}{\sum p_0 q_0} \times \frac{\sum p_t q_t}{\sum p_t q_0}} = \frac{\sum p_t q_t}{\sum p_0 q_0}$$

2.152 This brings us back to our index of nominal change in Equation 2.1 and the decomposition of the price element and volume element discussed earlier. From there, it is quite easy to find the implicit Fisher price of GDP by dividing GDP in current dollars by real GDP using the Fisher formula. The Laspeyres and Paasche indexes do not have either of these two properties.

2.153 Statistics Canada uses the chain Fisher index as a measure of real GDP. Following the same sequence that we used with Equation 2.4, chaining Equation 2.7 gives us:

Equation 2.9

$$FQ_{c/0} = Q_0 \times FQ_{1/0} \times FQ_{2/1} \times \ldots \times FQ_{t/t-1} \times FQ_{n/n-1}$$

where: *n* is the number of periods covered by the chain index.

Q_0 is an arbitrary constant, usually 1 or 100.

$FQ_{c/0}$ is the chain Fisher quantity index for period *0* to period *n*.

2.154 This is the formula used as the basis of the calculations of real GDP for the national and provincial accounts.

Application to the Income and Expenditure Accounts

2.155 In practice, the formulas provided above cannot be used as is, given the absence of data on quantities and price levels. The accounts have only current value (*C*) series and price indexes (thus, relative prices). Formulas have to be transformed using the fact that the price multiplied by the quantity (p_tq_t) equals the series in current dollars (C_t). We then get formulas expressed in terms of nominal series (C_t) and relative prices (p_t/p_{t-1} or the reverse). This then gives us, for Laspeyres (using Equation 2.3):

Equation 2.10

$$LV_{t/t-1} = \frac{\sum\left(\frac{p_{t-1}}{p_t}\right)C_t}{\sum C_{t-1}}$$

… for Paasche (using Equation 2.6):

Equation 2.11

$$PV_{t/t-1} = \frac{\sum C_t}{\sum\left(\frac{p_t}{p_{t-1}}\right)C_{t-1}}$$

… and lastly, for Fisher (geometric mean of equations 2.10 and 2.11):

Equation 2.12

$$FV_{t/t-1} = \sqrt{\frac{\sum\left(\frac{p_{t-1}}{p_t}\right)C_t}{\sum C_{t-1}} \times \frac{\sum C_t}{\sum\left(\frac{p_t}{p_{t-1}}\right)C_{t-1}}}$$

2.156 It is this formula, chained, that is used in practice. Since the series are no longer expressed in terms of quantities, we refer to this as a volume index. The concept of volume is broader than that of quantity, because it includes variations in quality and ultimately, changes in the composition of the economy.

2.157 Table 2.12 provides an example of the calculation that the Income and Expenditure Accounts Division (IEAD) performs to produce the GDP volume estimates. The calculation is based on current-dollar data and price indexes for four commodities. In the second part of the table, the Paasche, Laspeyres and Fisher volume indexes, both chained and non-chained, are computed for the AB and CD aggregates and the total. The third part of the table deals with converting volume indexes into chained dollars.

Table 2.12 Sample calculation of a contributions to growth for period 3 – The case of volume estimates based on chain fisher formula

Aggregates	*t0*	*t1*	*t2*	*t3*	Contribution to growth formula and remarks
		current dollars			
A	80	90	72	48	
B	180	210	240	255	On the left side, the series A, B, C, D are the lowest level of aggregation, in current dollars. Series AB and CD are sub-aggregates while the Total series is the sum of series A, B, C, D.
C	250	450	455	504	
D	100	150	150	135	
AB	260	300	312	303	
CD	350	600	605	639	In current dollars, aggregates and sub-aggregates are perfectly additive for each period.
Total	**610**	**900**	**917**	**942**	
		price indexes			
A	100	75.0	50.0	25.0	On the left side are price indexes at the lowest level of aggregation. These prices take the value 100 in *t0*.
B	100	116.7	125.0	125.0	
C	100	150.0	130.0	140.0	
D	100	120.0	120.0	100.0	
		volume measures (unlinked indexes)			
AB (Paasche)	100	111.1	109.5	109.8	The indexes on the left side are unlinked. They represent growth between two adjacent periods.
CD (Paasche)	100	121.2	112.0	103.9	
Total (Paasche)	100	117.6	111.2	105.7	
AB (Laspeyres)	100	115.4	110.7	112.5	Paasche and Laspeyres indexes are the basic indexes used to construct the Fisher volume index. The Paasche index is weighted using the relative value (current dollars) of the final period while the Laspeyres index uses the relative value of the initial period.
CD (Laspeyres)	100	121.4	112.5	104.1	
Total (Laspeyres)	100	118.9	111.9	107.0	
AB (Fisher)	100	113.2	110.1	111.1	
CD (Fisher)	100	121.3	112.3	104.0	The Fisher index is the geometric mean of the Paasche and Laspeyres indices.
Total (Fisher)	**100**	**118.2**	**111.5**	**106.3**	
		volume measures (linked indexes)			
AB (Fisher)	100	113.2	124.6	138.5	Chained indexes represent the growth in volume between the current period and the reference period (*t0* in this case).
CD (Fisher)	100	121.3	136.2	141.7	
Total (Fisher)	**100**	**118.2**	**131.9**	**140.2**	

	volume measures (real dollars, reference period = t1)				**Growth rate**	**Calculation using the published formula[1]**	**Calculation illustrating the weighting[2]**			
Aggregates	***t0***	***t1***	***t2***	***t3***	***(t3 vs t2)***	**Results in *t3***	**$\%\Delta x_{i,t}$**	**W_1**	**W_2**	**Results in *t3***
A (C/P * 100)	60.0	90.0	108.0	144.0	33.33%	1.98%	33.33%	0.08	0.76	1.98%
B (C/P * 100)	210.0	210.0	224.0	238.0	6.25%	1.66%	6.25%	0.26	1.01	1.66%
C (C/P * 100)	375.0	450.0	525.0	540.0	2.86%	1.49%	2.86%	0.50	1.05	1.49%
D (C/P * 100)	120.0	150.0	150.0	162.0	8.00%	1.22%	8.00%	0.16	0.93	1.22%
AB (Fisher)	265.0	300.0	330.2	367.0	11.13%					
CD (Fisher)	494.6	600.0	673.6	700.7	4.02%					
TOTAL (Fisher)	**761.1**	**900.0**	**1003.7**	**1067.4**	**6.35%**					
Sum of aggregates (A+B+C+D)						6.35%		1.00	3.75	6.35%
Sum of sub-aggregates (A+B)						3.64%		0.34	1.77	3.64%
Sum of sub-aggregates (C+D)						2.71%		0.66	1.98	2.71%

Table 2.12 Sample calculation of a contributions to growth for period 3 – The case of volume estimates based on chain fisher formula (concluded)

Note 1: Published formula used to calculate the contribution of each aggregate to total growth

$$\%\Delta_{i,t-1\to t} = 100\times \frac{(\sum_j C_t^j / \sum_j C_{t-1}^j)\times(C_t^i \times (p_{t-1}^i / p_t^i) - C_{t-1}^i) + FV_t \times (C_t^i - C_{t-1}^i \times (p_t^i / p_{t-1}^i))}{\sum_j C_t^j + FV_t \times \sum_j (C_{t-1}^j \times (p_t^j / p_{t-1}^j))}$$

Note 2: The following formula illustrates that the contribution is the growth rate of the aggregate (ΔX) weighted by a factor W. In the case of volume estimates, this factor corresponds to the relative value between the aggregate and the total at period *t-1* in current dollars, as in the calculation in current dollars. An additional factor of correction (W) is then applied.

$$\%\Delta_{i,t-1\to t} = 100\times \%\Delta X_{i,t} \times W_1 \times W_2 \qquad \text{where:} \quad W_1 = \frac{C_{t-1}^i}{\sum_j C_{t-1}^j} \text{ and } \quad W_2 = \left[\frac{1 + FV_t \times \frac{P_t^i}{P_{t-1}^i} \times \frac{\sum_j C_{t-1}^j}{\sum_j C_t^j}}{1 + \frac{FV_t}{PV_t}}\right]$$

Inventories

2.158 For most of the items, the Fisher calculation does not present any real technical problems, however, this is not the case for the investment in inventory series, which are first-difference series. Since these series fluctuate around zero, it happens that the Laspeyres and Paasche indexes take opposite signs—since Fisher is the geometric mean of these two indexes, it becomes indeterminate.

2.159 As published by the IEAD, real investment in inventories is not the result of a direct chained Fisher calculation as shown above, but rather an approximation. The approach used by IEAD is based on the fact that an investment in inventories represents the variation of a total stock, which is always positive. In principle, a Fisher index can be calculated on a total stock series. One for the inventory level at the end of period *t* (e.g., March 31, 2005) and the other for the inventory level at the beginning of period *t* (e.g., January 1, 2005). The difference between the two real stock estimates (end-of-period inventories minus beginning-of-period inventories) represents the real investment in inventories. Chapter 10 (Investment in inventories) contains a section on how to calculate the Fisher index for investment in inventories.

Provincial and Territorial Economic Accounts

2.160 At the provincial level, real values are calculated the same way as they are at the national level, but on an annual basis. Investment in inventories is calculated according to the methodology described above, on an annual basis, with average prices for the year.

2.161 The level of detail of the provincial accounts differs from that of the quarterly national accounts. For each province, 502 series are used in calculating real GDP. Table 2.13 shows the distribution of these series through the items in Table 3 of the publication *Provincial Economic Accounts*. This distribution is slightly different than the national structure because of the different availability and quality of provincial data.

Table 2.13 Level of detail at the provincial and territorial level

	number of series
Personal expenditure on consumer goods and services	130
Durable goods	22
Semi-durable goods	15
Non-durable goods	14
Services	79
Government current expenditure on goods and services	24
Government gross fixed capital formation	3
Structures	2
Machinery and equipment	1
Government investment in inventory	1
Business gross fixed capital formation	5
Residential structures	3
Non-residential structures	1
Machinery and equipment	1
Business investment in inventory	110
Non-farm	76
Farm	34
Exports of goods and services	114
Exports to other countries	57
Exports to other provinces	57
Imports of goods and services	114
Imports to other countries	57
Imports to other provinces	57
Statistical discrepancy	1
Gross domestic product at market prices	502
Final domestic demand	162

Estimates in "millions of chained (2002) dollars"

2.162 The base period of a volume index is the period for which the relative prices are chosen for the purpose of evaluating the index. For example, when quantity changes are valued at 2002 prices, the index is a Laspeyres volume index with base year 2002. With chained indexes, the base period is changed periodically. The period in which the value of a series in real terms is equal to the value of the same series in current dollars is the reference period.

2.163 In the old measure of real GDP by the fixed-base Laspeyres method, the reference period and the base period were the same. In a chain volume measure, on the other hand, the two periods do not necessarily coincide. For example, the chain Fisher series in our publication currently has 2002 as their reference year (estimates in current dollars are equal to estimates in real terms for 2002), but the base period is a combination of the current period and the period immediately preceding the current period, since they are Fisher indexes, which are chained quarterly. Consequently, the reference period is used only to re-calibrate the indexes, and a change in the reference period has absolutely no effect on growth rates. The only change is in the levels, which are re-calibrated to a different scale.

2.164 It cannot be said that the currently published chain Fisher series are at 2002 prices, since the prices for the reference period are not included in the calculations for the quarters preceding or following the reference year. It is, however, safe to say that the Fisher series are expressed in real terms, that is, free of price effects, at a level such that the series are equal to the level of the nominal aggregate for 2002, which is why the title of Table 3 in the publication refers to millions of chained (2002) dollars.

Non-additivity

2.165 The chain Fisher series published by the Income and Expenditure Accounts Division are not additive, and this non-additivity increases with the distance from the reference period. Non-additivity of real series comes both from chaining and from the Fisher formula itself. Chaining destroys the additive consistency of accounting equations and the Fisher formula (as opposed to the Laspeyres formula) doesn't have the additivity property. Table 2.14 shows explicitly the non-additivity between the sum of components and the total in the following example:

Table 2.14 Illustration of non-additivity of real series estimates based on the chain Fisher formula

	t0	t1	t2	t3
AB (chain Fisher)	260.0	294.4	324.0	360.1
CD (chain Fisher)	350.0	424.6	476.7	495.9
Total (chain Fisher)	**610.0**	**721.3**	**804.4**	**855.5**
AB + CD	610.0	719.0	800.7	856.0
Difference	**0.0**	**2.3**	**3.7**	**-0.5**

2.166 The fact that the real aggregates are not additive makes them more difficult to manipulate than in the past, when the calculations were based on a fixed-base Laspeyres index. For example, it becomes difficult to measure the contribution of an individual aggregate or sector to the total, knowing that the sum of the aggregates does not add up to the total. It is also imprudent to create aggregates as summations of other aggregates.

2.167 There are a variety of ways to overcome this additivity issue. For some summary analysis, current dollar data may be sufficient or even desirable, because they reflect the economic structure at current prices. This is especially true if the aggregates being studied do not exhibit large price variations or if these variations are relatively uniform.

2.168 For those who want to use real data and create aggregations, one solution is to calculate Fisher indexes using existing Fisher data. In 1978 Diewert demonstrated that a Fisher index was approximately consistent, and that therefore it was possible to calculate Fisher indexes from aggregates already in Fisher, what he called a "Fisher of Fishers".[22] This solution provides a valid approximation provided that the aggregates used in the calculation are relatively consistent in terms of prices (this solution should not be used, for example, if the calculation involves inventory series).

2.169 A more structural solution is to accelerate the benchmarking frequency. Since additivity decreases with distance from the reference year, re-benchmarking the series to bring the reference year closer may alleviate part of the problem without, however, making the whole strictly additive. It is important to note that, in the case of real data based on chain Fisher index calculations, changing the reference period does not have any impact on the growth rates of real series.

22. Diewert, W. E., "Superlative Index Numbers and Consistency in Aggregation," Econometrica 46(4), 1978, pp. 883-900.

2.170 Since it is not possible to make the levels additive, the IEAD, following the lead of the Bureau of Economic Analysis in the United States, suggests a strictly additive decomposition of the variations of the aggregates for tables published from real data. The formula re-weights the contributions to the series in such a way that they become strictly additive at the total variation of the aggregate:

Equation 2.13

$$\Delta\%_{it-1/t} = 100 \times \frac{(p^i_{t-1} + p^i_t/FP_t) \times (q^i_t - q^i_{t-1})}{\sum_i (p^i_{t-1} + p^i_t/FP_t) \times q^i_{t-1}}$$

or, in a form that applies to nominal series and to prices,

Equation 2.14

$$\Delta\%_{it-1/t} = 100 \times \frac{\left(\sum_i C_t / \sum_i C_{t-1}\right) \times (C^i_t(p^i_{t-1}/p^i_t) - C^i_{t-1}) + FV_t(C^i_t - C^i_{t-1}(p^i_t/p^i_{t-1}))}{\sum_i C_t + FV_t \sum_i C_{t-1}(p^i_t/p^i_{t-1})}$$

2.171 This formula is the basis of the contribution to change series published by the CSNA.

2.172 The contribution of an aggregate to the percentage change in GDP in real terms is presented in Table 4 of the quarterly publication.[23] Contribution-to-change tables are also calculated for various large aggregates (see Tables 18, 21, 24 and 27 of the same publication).

2.173 Each of these tables follows the layout of the corresponding real data table. Instead of real data, they show the contribution to the percentage change of the reference aggregate mentioned in the table's title. For example, Table 4 of our quarterly publication follows the layout of Table 3 and shows the contribution of the aggregates in Table 3 to the percentage change in real GDP. These contributions are not presented as proportions, but directly as percentage points. A contribution of the aggregate of personal consumption expenditure of 0.453 to real GDP growth of 1.473% for example means that 0.453 percentage points of the 1.473 are due to personal consumption expenditure.

2.174 The formula for contribution to percentage change (Equation 2.13) applies only to a single period. To use the same formula over a longer period of time, a Fisher non-chained value is required where the weighting bases correspond to the periods to be analysed. For example, to analyse the growth in durable consumer goods between the fourth quarter of 1996 and the fourth quarter of 2000, it is possible to calculate a Fisher index in which the weighting is explicitly a function of the prices in the fourth quarter of 1996 and of the fourth quarter of 2000. To some degree, it amounts to a fixed-base Fisher index. Once this index has been calculated, the percentage contribution to variation formula can be used directly.

23. *National Income and Expenditure Accounts*, catalogue no. 13-001.

The Provincial Economic Accounts

2.175 Statistics Canada produces an annual provincial and territorial counterpart to the *National Income and Expenditure Accounts*. The estimates appear in the publication *Provincial Economic Accounts*, which provides measures of income-based and expenditure-based GDP for the ten provinces and three territories. The *Provincial Economic Accounts* also provide a detailed revenue and expenditure account for the government sector. A personal sector table is also provided.

2.176 While the conceptual framework of the *Provincial Economic Accounts* is similar to that of the national accounts, there are conceptual and statistical issues of measurement and allocation that are specific to the provincial accounts, notably with respect to the federal government, corporation profits and inter-provincial trade.

2.177 Estimates are produced for the ten provinces and three territories. Provincial estimates go back to 1981, whereas territorial estimates go back to 1981 for Yukon and the combined Northwest Territories and Nunavut and to 1999 for the new Northwest Territories and Nunavut.

2.178 It is important to note that the sum of the output of the provinces and territories is somewhat less than the output for Canada. This is because the GDP of Canada includes, on the income side, the income of Canadians temporarily posted abroad (diplomatic and military personnel and employees in the private sector) and on the expenditure side, current public expenditure abroad. There is thus a portion of Canada's domestic output that is not produced within the borders of a province or territory. This portion is simply omitted from the provincial accounts rather than being allocated arbitrarily to one region or another. More specifically, the foreign portion of income and expenditures is omitted from the GDP tables, and in the case of wages, salaries and supplementary labour income, it is also omitted from the table on personal income. However, governments' receipts and expenditures abroad are shown separately under the region Outside Canada in the supplementary tables on government. There they serve as a balancing item, for the aggregates involved, between Canada and the sum of provinces and territories.

The satellite accounts

2.179 The satellite accounts exist because of the need to flexibly extend the analytical capabilities of the national accounts core components in particular areas. These accounts are related to the other accounts in the Canadian System of National Accounts and through them, to integrated economic statistics in general. Furthermore, they relate to a particular field (tourism) or theme (non-profit organizations) and are also linked to the information system specific to it. Since they are closely linked to the Canadian System of National Accounts, they facilitate the analysis of some subjects in the context of macroeconomic accounts and analyses. In short, the satellite accounts play a double role, as instruments of analysis and means of statistical co-ordination.

The tourism satellite account and tourism economic indicators

2.180 The Income and Expenditure Accounts Division produces a tourism satellite account both for Canada and for the provinces and territories. The satellite account explicitly defines the tourism industry within the statistical system of the national accounts and measures its contribution to the economy. Because it is based on the System of Canadian National Accounts framework, the satellite account makes it possible to compare tourism with other industries. It provides benchmark data used to estimate quarterly indicators of tourism activity in Canada. This quarterly product is called the National Tourism Indicators.

The satellite account of non-profit institutions and volunteering

2.181 This satellite account is primarily intended to account explicitly for the economic activities of the non-profit sector and shed more light on its interaction with other areas of the economy within a macroeconomic framework.

2.182 The satellite account includes a standard set of economic accounts for the non-profit sector, along with a non-market component used to determine the value of volunteer work. These accounts provide information on a number of economic characteristics of the non-profit sector, including income and outlays. They serve to establish the economic profile of Canada's non-profit sector and answer major questions such as: what percentage of GDP

does the non-profit sector represent in Canada? In what fields do non-profit organizations contribute to the well-being of Canadian society? How financially stable or vulnerable is the non-profit sector? How much does this sector depend on paid work rather than the contribution of volunteers?

Pension satellite account

2.183 The pension satellite account is currently under development. It will allow for enhanced analysis of the economic impact(s) of an aging population.

Appendix 2A The presentation of product and output in the Canadian System of National Accounts Input-Output Tables

2A.1 In the Canadian System of National Accounts, the estimates of GDP for Canada and the regions are shown in two sets of accounts: the Input-Output Tables (IOT) and the Income and Expenditure Accounts (IEA). These two accounts are inter-related. For the purposes of this guide, data from a hypothetical economy are used to illustrate the structure and logic of each of these accounts.

Output and product in the Input-Output Tables

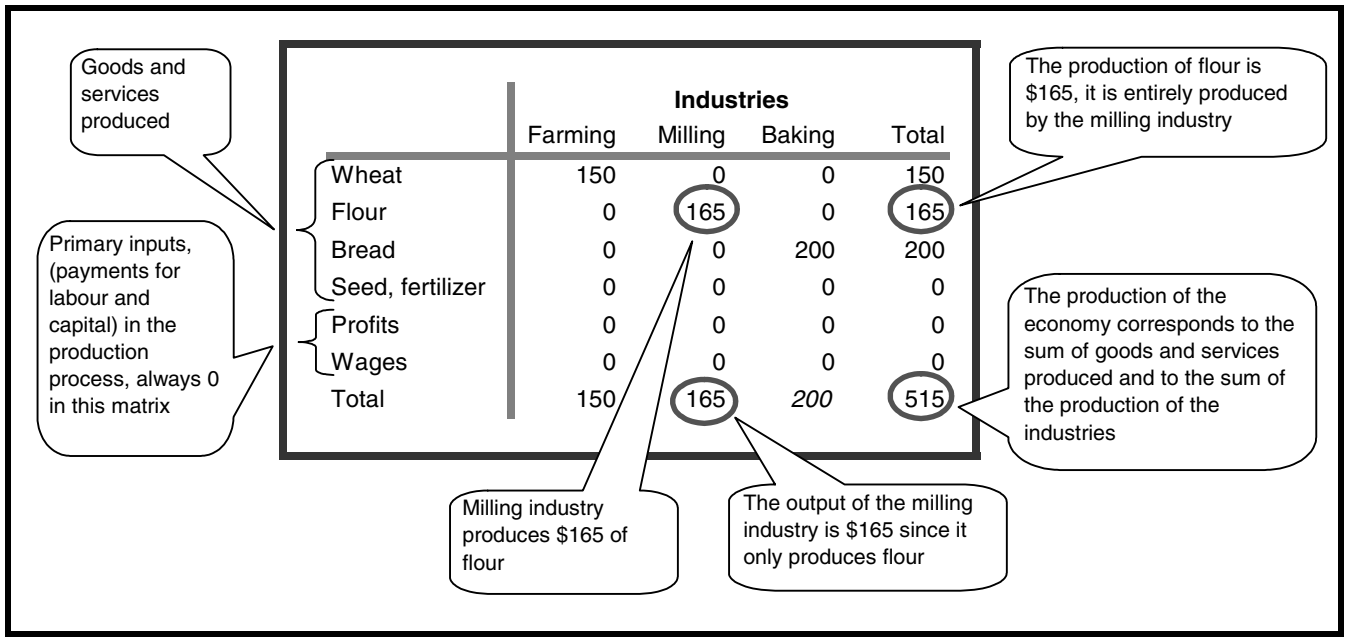
2A.2 The Canadian Input-Output Tables consist of three matrices that describe the output and the uses of goods and services by the different industries and final demand, during a given period.

Overview of the Input-Output Tables

2A.3 The data of the hypothetical economy are presented in three matrices: the output matrix, the use matrix and the final demand matrix.

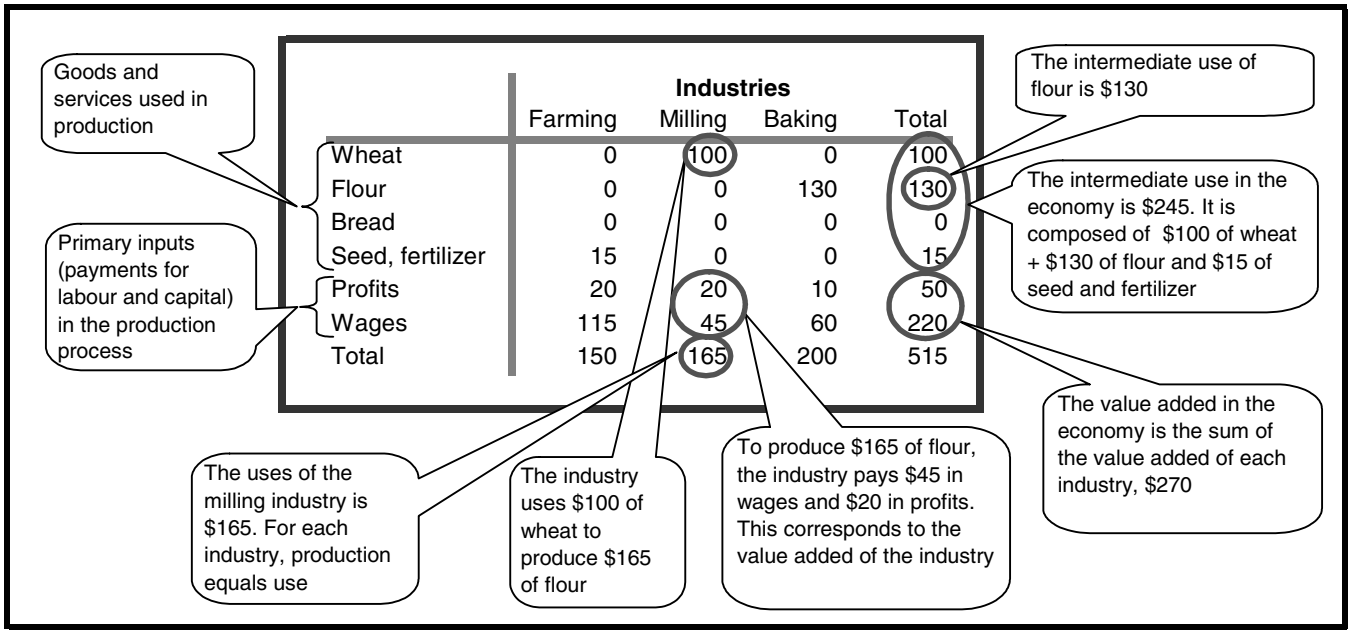
2A.4 The output matrix shows the goods and services produced by each industry (Table 2A.1). The column totals indicates the output of each industry. The row totals show the output of each good in the economy. The output of the economy as a whole is measured by the sum of the outputs of the industries or the sum of the output of goods and services.

Table 2A.1 Simplified representation of the output matrix in the Input-Output Tables–Fictive estimates



2A.5 The use matrix represents the technology used by an industry to produce the output. It details the cost structure of production. For each industry, the uses of intermediate inputs (goods and services) and primary inputs (which include not only factors of production such as wages, salaries and supplementary labour income and operating surpluses but also net indirect taxes on primary factors like property taxes and payroll taxes). The sum of primary inputs is equivalent to value added at basic values (Table 2A.2).

Table 2A.2 Simplified representation of the use matrix in the Input-Output Tables–Fictive estimates

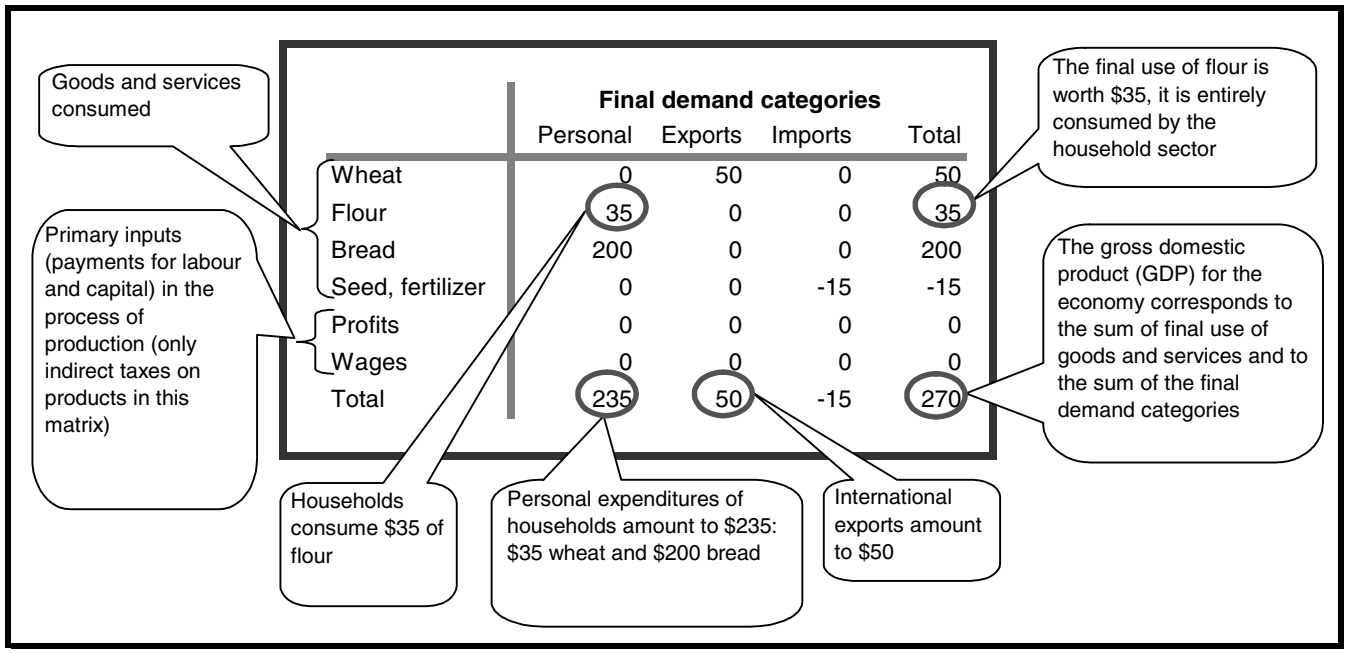


2A.6 The final demand matrix displays the final uses of the goods and services in the economy (Table 2A.3). In other words, goods and services may either enter into the production of other goods and services or be consumed by final users. In the former case, we have intermediate consumption of goods and services, found in the use matrix. In the latter case, we have final consumption of goods and services, including the following:

- personal expenditure on consumer goods and services;
- government current expenditure on goods and services;
- government and business gross fixed capital formation;
- government and business investment in inventories; and
- net international exports of goods and services (exports minus imports).

2A.7 This information is found in the final demand matrix (Table 2A.3).

Table 2A.3 Simplified representation of the final demand matrix in the Input-Output Tables–Fictive estimates



The three ways of measuring GDP in Input-Output Tables

2A.8 In the Input-Output Tables, GDP can be presented in the three ways. GDP by the income approach obtained by summing the profits and wages in the use matrix and the final demand matrix (Table 2A.4). It therefore constitutes the total primary inputs used in the production process.

Table 2A.4 Measurement of GDP by the income approach in the Input-Output Tables – Fictive estimates

Output matrix

	Industries			
Goods and services	Farming	Milling	Baking	Total
Wheat	150	0	0	150
Flour	0	165	0	165
Bread	0	0	200	200
Seed and fertilizer	0	0	0	0
Profits	0	0	0	0
Wages	0	0	0	0
Total	150	165	200	515

The income-based GDP is the sum of primary inputs in the final demand matrix ($0 + $0 = $0) and those in the use (input) matrix ($50 + $220 = $270). Thus, GDP is $0 + $270 = $270

Use matrix (input) and final demand matrix

	Industries			Total intermediate	Final demand categories				Uses and final
Goods and services	Farming	Milling	Baking	inputs	Personal	Exports	Imports	Total	demand
Wheat	0	100	0	100	0	50	0	50	150
Flour	0	0	130	130	35	0	0	35	165
Bread	0	0	0	0	200	0	0	200	200
Seed and fertilizer	15	0	0	15	0	0	-15	-15	0
Profits	20	20	10	50	0	0	0	0	50
Wages	115	45	60	220	0	0	0	0	220
Total	150	165	200	515	235	50	-15	270	

2A.9 GDP by the final expenditure approach is obtained by summation of the final demand matrix of Table 2A.5. The final demand categories are related to the final expenditure aggregates in the Income and Expenditure Accounts.

Table 2A.5 Measurement of GDP by expenditure approach in the Input-Output Tables–Fictive estimates

Output matrix

	Industries			
Goods and services	Farming	Milling	Baking	Total
Wheat	150	0	0	150
Flour	0	165	0	165
Bread	0	0	200	200
Seed and fertilizer	0	0	0	0
Profits	0	0	0	0
Wages	0	0	0	0
Total	150	165	200	515

The expenditure-based GDP is obtained by adding final spending on goods and services ($50 + $35 + $200 - $15 = $270) or by summing final demand categories ($235 + $50 - $15 = $270).

Use matrix (input) and final demand matrix

	Industries			Total intermediate	Final demand categories				Uses and final
Goods and services	Farming	Milling	Baking	inputs	Personal	Exports	Imports	Total	demand
Wheat	0	100	0	100	0	50	0	50	150
Flour	0	0	130	130	35	0	0	35	165
Bread	0	0	0	0	200	0	0	200	200
Seed and fertilizer	15	0	0	15	0	0	-15	-15	0
Profits	20	20	10	50	0	0	0	0	50
Wages	115	45	60	220	0	0	0	0	220
Total	150	165	200	515	235	50	-15	270	

2A.10 GDP by the value added approach is obtained by taking the difference between the intermediate expenses (in the use matrix) from production (in the output matrix) in Table 2A.6. Value added is calculated by industry as well as summed over the industries for the economy as a whole.

Table 2A.6 Measurement of GDP by the value added approach in the Input-Output Tables–Fictive estimates

Output matrix

	Industries			
Goods and services	Farming	Milling	Baking	Total
Wheat	150	0	0	150
Flour	0	165	0	165
Bread	0	0	200	200
Seed and fertilizer	0	0	0	0
Profits	0	0	0	0
Wages	0	0	0	0
Total	150	165	200	515

Value added GDP is obtained by deducting intermediate expenses ($100 + $130 + $15 = $245) from production ($150 + $165 + $200 = $515). The value added GDP is thus calculated as : $515 - $245 = $270

Use matrix (input) and final demand matrix

	Industries			Total intermediate	Final demand categories				Uses and final
Goods and services	Farming	Milling	Baking	inputs	Personal	Exports	Imports	Total	demand
Wheat	0	100	0	100	0	50	0	50	150
Flour	0	0	130	130	35	0	0	35	165
Bread	0	0	0	0	200	0	0	200	200
Seed and fertilizer	15	0	0	15	0	0	-15	-15	0
Profits	20	20	10	50	0	0	0	0	50
Wages	115	45	60	220	0	0	0	0	220
Total	150	165	200	515	235	50	-15	270	

GDP in the Income and Expenditure Accounts

2A.11 In the Income and Expenditure Accounts (IEA), GDP is measured using both the income approach and the expenditure approach. The data on the hypothetical economy are presented in Table 2A.7 as in the IEA. Readers familiar with the IEA will recognize this as a simplified version of Tables 1 and 2 of the publication *National Income and Expenditure Accounts.*

Table 2A.7 Income and expenditure-based GDP in the Income and Expenditure Accounts–Fictive estimates

Income-based GDP (similar to IEA Table 1)		Expenditure-based GDP (similar to IEA Table 2)	
	dollars		dollars
Wages	220	Personal expenditure	235
Profits	50	Exports	50
		Less: imports	-15
Income-based GDP	270	Expenditure-based GDP	270

Note: Refer to Table 1 and 2 of *National Income and Expenditure Accounts,* catalogue no. 13-001.

Appendix 2B Interest and miscellaneous investment income in the income and outlay accounts of the institutional sectors

2B.1 Most of the items that appear in the income-based and expenditure-based GDP tables are easily identifiable in the income and outlay accounts of the institutional sectors. Interest and miscellaneous investment income, one of the income aggregates used in calculating GDP, is an exception. The table below shows that reconciliation must be done by assembling information on interest income and outlays, dividends and other investments in all the institutional sectors.

Table 2B.1 Reconciliation of interest and miscellaneous investment income of the income-based GDP with investment income and receipts and payments in the income and outlay accounts, 2000

Income			Outlay
	Millions of dollars		
Persons and unincorporated business sector			
Interest, dividends and miscellaneous investment receipts	114,676		
Corporations and government business enterprise sector			
Interest, dividends and miscellaneous receipts	73,581	190,502	Interest, dividends and miscellaneous payments
Interest on public debt	62,494		
Government sector			
Investment income	43,512	76,491	Interest on public debt
Non-residents sector			
Interest, dividends and miscellaneous receipts	57,175	29,143	Interest, dividends and miscellaneous payments
All sectors	351,438	296,136	
Interest and miscellaneous investment income (GDP)		55,302	

Source: *National Income and Expenditure Accounts,* catalogue no. 13-001, tables 1, 5 to 14.

2B.2 Dividends are not explicitly identified as an income-based component appearing in the calculation of GDP. Dividends are treated as a redistribution of the income (corporation profits) to the shareholders of corporations. However, unlike loan capital, which generates interest, capital in the form of shares does not give rise to a liability that is fixed in monetary terms, and it does not entitle holders of shares of a corporation to a fixed or predetermined income.[1] This is why it is considered a current transfer. In the income and outlay accounts of the institutional sectors, dividends net out across sectors. Dividends are paid by corporations and government business enterprises and by non-residents to the other institutional sectors.

1. Based on paragraph 7.113 of *System of National Accounts 1993*.

2B.3 Interest on public debt appears twice. This item, which represents the commitments of the government sector, constitutes a government expenditure ($76,491 million in 2000). The same item appears as income of the corporations and government business enterprise sector but the amount is lower, corresponding to the domestically paid portion of interest on the public debt. The non-domestic portion is included in the income of non-residents as interest, dividends and miscellaneous receipts. The equality between the expenditures and income related to interest on public debt shows that the latter is considered a current transfer. This treatment differs from the treatment of other interest payments in the economy, which are considered productive. There are two reasons for the special treatment reserved for interest on public debt. First, government borrowings are mainly used to finance current spending rather than capital. Second, the shifting financing policies of governments should not affect GDP. If service of the public debt were considered productive (and were hence included in GDP), governments could then increase or reduce GDP at will by switching between financing through income taxes (which is a transfer) and financing through borrowing.[2]

2. On this subject, see the articles of Crozier, Robert B., *The treatment of Interest on the Public Debt in the National Accounts*, Canadian Journal of Economics and Political Science, Volume 25, November 1959, pp. 501-503 (1959) and Sunga, P. (1967, 1984) and Sunga, P., *An Alternative to the Current Treatment of Interest as a Transfer in the United Nations and Canadian System of National Accounts*, Review of Income and Wealth, Volume 30, December 1984, pp. 385-402, and *The Treatment of Interest and Net Rents in the National Accounts Framework*, Review of Income and Wealth, Volume 13, March 1967, pp. 26-35.

Chapter 3 Wages, salaries and supplementary labour income

Introduction

3.1 Labour income represents the income generated in the production of goods and services accruing to the labour factor of production. Labour income, often referred to as labour compensation, is comprised of two components— wages and salaries, and supplementary labour income.

3.2 Defined as an economic return to the employee for the provision of labour services in the production of goods and services, wages and salaries include all types of regular earnings, special payments, stock options and bonus payments. Supplementary labour income comprises employers' contributions or payments to a variety of employee benefit plans for the health and financial well-being of employees and their families. These payments can be required by law, negotiated by unions, or organized by formal or informal agreements between employers and employees; or employers may wholly sponsor employee benefit plans.

3.3 Monthly, quarterly and annual estimates of labour income are available in current dollars by province and territory, by industry, and by sector back to 1961. Select series are available back to 1926. Monthly and annual labour income estimates are published quarterly in *Estimates of Labour Income*. Quarterly estimates of labour income are published in the *National Income and Expenditure Accounts*[1] and annual estimates in the *Provincial Economic Account*s.[2]

Table 3.1 Wages and salaries, supplementary labour income and labour income, by industry, 2000

Industry classification	Industry code NAICS[1]	Wages and salaries	Supplementary labour income	Labour income
		millions of dollars		
Agriculture, forestry, fishing and hunting	11	7,005	820	7,825
Mining and oil and gas extration	21	9,991	1,467	11,458
Utilities	22	6,680	1,141	7,820
Construction	23	28,610	3,445	32,054
Manufacturing	31-33	83,758	12,578	96,336
Trade	41, 44, 45	65,664	6,422	72,085
Transportation and warehousing	48,49	26,070	3,939	30,009
Information and cultural industries	51	16,235	2,227	18,462
Finance, insurance, real estate and rental leasing	52, 53, 55	45,830	4,681	50,511
Professional, scientific and technical services	54	29,256	2,182	31,438
Administrative and support, waste management and remediation services	56	14,084	1,114	15,198
Educational services	61	36,473	5,921	42,394
Health care and social assistance	62	38,898	5,564	44,462
Arts, entertainment and recreation	71	5,857	573	6,430
Accomodation and food services	72	16,560	1,308	17,868
Other services (including aboriginal and other government)	81	17,275	1,240	18,515
Public administration	91	35,616	6,721	42,337
Total economy		483,861	61,342	545,204

1. *North American Industry Classification System* (NAICS) 1997.

1. Catalogue no. 13-001, tables 1, 5, 34 and 36.
2. Catalogue no. 13-213, tables 1 and 17.

3.4 Labour income represents roughly 50% of gross domestic product (GDP), and comprises almost two thirds of personal income. Over 70% of labour income is paid by businesses operating in Canada, while approximately 20% is paid by various levels of government. The remainder is paid by personal sector organizations.[3]

3.5 Not included in labour income are incomes of self-employed individuals, such as sub-contractors, management consultants, lawyers, doctors, dentists, working owners of unincorporated businesses, sole proprietors involved in joint ventures or partnerships, and unincorporated farmers, all of whose incomes are included in the farm and non-farm unincorporated net income components of income-based gross domestic product.

Concepts and definitions

Wages and salaries

3.6 Broadly defined, wages and salaries[4] comprise the gross pay before tax that is paid to employees in cash or in kind, for work performed under the general direction of an employer. Fundamental to this definition is an inherent employer-employee relationship or contract of service, where the employer defines the time and place of work, the nature of the work, and the compensation provided for work done. Also implied in this employer-employee relationship is a certain level of direct or indirect control[5] where the employer is ultimately responsible for the hiring of employees and the termination of their employment. The compensation given to employees can be as varied as the jobs themselves. Wages and salaries represent the many types of payments given to all employees regardless of their occupation, method of payment, or duration of employment. Employees can be full-time, part-time, casual, or seasonal workers. In addition, employees can be paid on either an hourly, weekly, monthly or annual basis, as well as receive special or irregular payments. Included in the compensation package can be a variety of base salary plus commission arrangements, special payments,[6] and performance bonuses, as well as taxable allowances and benefits.[7]

3.7 The wages and salaries of all persons working for resident Canadian or foreign-owned companies are included in the estimate of total wages and salaries, whether they are Canadian citizens, landed immigrants, or non-permanent residents.[8] Military personnel and federal government employees working outside the country are also included in labour income, as military bases, external affairs embassies and consulates are deemed Canadian territory.[9] On the other hand, Canadian residents working for Canadian or foreign-owned companies located outside the country are not included in labour income.[10]

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3. Business, government and personal sector wages and salaries are each shown in the persons and unincorporated businesses sector account of the Income and Expenditure Accounts. The criteria used to select the organizations falling within each sector are identical to that used throughout the Canadian System of National Accounts to identify the corporations and government business enterprises sector and the government sector. The personal sector consists of organizations which are not operating for a profit, and are serving households.
4. See the international definition of wages and salaries, paragraph 7.32 in the *System of National Accounts 1993*.
5. Certain athletes and artists may be considered employees depending on the nature of their contract. Certain construction workers may also be considered employees rather than sub-contractors. *Employee or Self-employed?* (RC 4110), published by the Canada Revenue Agency, provides a checklist of questions to determine the existence of an employer-employee relationship.
6. Bonuses and retroactive pay increases, overtime pay, and directors' fees are examples of special payments. A full list can be found in the Special Payments Chart in chapter 7 of the Canada Revenue Agency's *Employers' Guide, Payroll Deductions and Remittances* (T4001). This chart lists special payments for which employers must withhold Canada Pension Plan, Employment Insurance, or income tax.
7. Automobile allowances, board and lodging, and gifts are examples of taxable allowances and benefits. See the Benefits Chart, at the end of the Canada Revenue Agency's *Employers' Guide, Taxable Benefits* (T4130). This chart lists the taxable allowances and benefits for which employers must withhold Canada Pension Plan, Employment Insurance, or income tax. The chart also indicates whether the taxable benefit is included as Goods and Services Tax (GST) or Harmonized Sales Tax (HST).
8. Any individual working in Canada requires a Social Insurance Number. Temporary social insurance numbers are given to non-permanent residents and these are referred to as TTNs (Temporary Taxation Numbers).
9. Residents of countries other than Canada or locally engaged residents working for Canadian military bases or Canadian consulates located in foreign countries are excluded from labour income.
10. These include cross-border workers, such as Canadian nurses working in hospitals located in the United States.

Supplementary labour income

3.8 Supplementary labour income[11] includes employers' contributions to private and public sector pension plans, Canada and Quebec pension plans, employment insurance, workers' compensation, health and life insurance plans, and retirement allowances.

3.9 Supplementary labour income is defined as payments or contributions made by employers, out of their own revenue funds, and are therefore considered to be an employers' labour cost. These payments or contributions can be placed into private or government managed funds for the future benefit of employees and their families. Payments, such as retirement allowances, may also be made directly to employees upon termination of work. Many of these payments or contributions are required by law, such as the employers' contributions to Canada and Quebec pension plans, the Employment Insurance Fund, and provincial and territorial workers compensation funds. Some employers' payments or contributions are unique to certain provinces, such as payments to specific provincial medical plans in Alberta and British Columbia, while others are determined by provincial and territorial labour legislation, such as retirement allowance payments. Employers' payments or contributions can also be made obligatory through union contracts or agreements between employers and employees, such as employers' contributions to private and public sector pension plans, and contributions to group health, life and dental insurance plans.

Annual estimation methods and data sources

3.10 The annual and monthly estimates of labour income are closely intertwined. The annual estimates set the level of wages and salaries and supplementary labour income by industry and by province and territory, while the monthly estimates project the last annual estimate of labour income up to the most recent month.

3.11 Labour income estimates follow the Canadian System of National Accounts four year revision cycle. The first two years of the revision cycle, known as benchmark years (t-4 and t-3), are reconciled with the Input-Output Tables. The third revision year (t-2) levels are built with the latest taxation statistics and survey information. Monthly patterns, already established from the monthly projection process, are then adjusted to annual levels using a statistical technique called quadratic minimization. Both benchmark and third year estimates are built from a top-down approach, where the province and territory totals are established first and industry detail is allocated within these totals. For the last revision year (t-1) and most current period (t), monthly estimates of labour income are derived using a bottom-up approach, where estimates are derived first by industry within each province and territory, and then aggregated to obtain totals by provinces and territories.

3.12 Similar data sources are used for wages and salaries and supplementary labour income in both the benchmark and third year annual revision estimates. However, data sources are more varied for industry estimates in the benchmark years as the Industry Accounts Division builds industry estimates of wages and salaries and supplementary labour income using a wide range of published and unpublished survey data at very detailed North American Industry Classification System (NAICS) levels.

3.13 The third non-benchmarked revision year, built solely by the Income and Expenditure Accounts Division, is based on a smaller group of data sources and industry groups with heavy reliance on tax data as described below.

Wages and salaries

3.14 Wages and salaries are available for all provinces and territories as well as for outside Canada. In addition, wages and salaries estimates are produced for most industries at the two-digit NAICS level. Estimates are broken down into three groups, wages and salaries paid by businesses, governments, and persons.

11. See the international definition of supplementary labour income, known as employers' social contributions, paragraphs 7.43 to 7.47 and 8.67 to 8.74 in the *System of National Accounts 1993*.

3.15 The principal data source for wages and salaries at the national level is the T4 Statement of Remuneration Paid, commonly known as the T4 slip. In Quebec, employers use the Relevé 1 to state employees' wages and salaries. These slips are submitted by employers to the Canada Revenue Agency at the end of each calendar year. All T4 slips for a given tax year are contained in a file known as the T4 Supplementary file which is provided to Statistics Canada.[12] The aggregation of the employment income field (Box 14) on all T4 slips issued to employees working in Canada provides the level for wages and salaries for the benchmark and third-year estimates. Specific conceptual adjustments are made to this aggregate, such as the exclusion of allowable expenses, which are paid to employees through the T4, but subsequently deducted from the employees' net taxable income.[13] In addition, the employers' share of premiums to Alberta and British Columbia provincial health plans, considered taxable income for the employee, are excluded as these are part of supplementary labour income. Further adjustments include the addition of wages paid to workers in private households,[14] tips received by workers,[15] and wages paid to First Nations people living on reserves.[16]

Supplementary labour income

3.16 Supplementary labour income is divided into six distinct categories which include employers' contributions to registered private and public sector pension plans, the Canada and Quebec pension plans, the Employment Insurance Fund, workers' compensation funds, health and life insurance plans (referred to as welfare in the table below), and retirement allowances. These components are all available by province and territory, by industry, and by sector.

Table 3.2 Supplementary labour income by component, by industry, 2000

Industry classification	Industry code NAICS[1]	Pensions	Employment insurance	Canada and Quebec Pension Plan	Welfare	Worker's compensation	Retiring allowances	Supplementary labour income
		millions of dollars						
Agriculture, forestry, fishing and hunting	11	68	159	193	158	227	15	820
Mining and oil and gas extraction	21	120	172	193	437	318	228	1,467
Utilities	22	277	136	146	321	114	147	1,141
Construction	23	474	647	794	463	1,022	46	3,445
Manufacturing	31-33	1,049	1,897	2,077	4,593	2,159	803	12,578
Trade	41, 44, 45	602	1,556	1,701	1,430	714	418	6,422
Transportation and warehousing	48, 49	1,108	619	679	900	330	303	3,939
Information and cultural industries	51	453	350	382	495	186	361	2,227
Finance, insurance, real estate and rental leasing	52, 53, 55	865	871	984	971	56	934	4,681
Professional, scientific and technical services	54	195	555	678	330	172	252	2,182

12. Under a memorandum of understanding between Statistics Canada and the Canada Revenue Agency, a preliminary file is provided in September and a final file is provided in January.
13. Allowable expenses include employment expenses that an employee has disbursed in the course of employment, such as lodging and travel expenses.
14. Wages paid to workers providing domestic services and child care within the home are estimated using data on expenditures from the *Survey of Household Spending*, survey no. 3508. Incomes from child care provided outside the home is not included here unless employees are receiving T4 slips. Incomes from child care provided outside the home by unincorporated businesses are not included here.
15. Tips received by workers are estimated from industry sales of alcoholic beverages, full service restaurant meals, and accommodation. Further imputations are made for tips received in barber and beauty salons and railway stations. Tips received by taxi drivers are not included.
16. Wages paid to First Nations people living on reserves are often reported as zero on T4 slips because of exemptions for personal income taxes. To estimate for under-coverage, a proxy of wages is taken from the insurable earnings (Box 24) reported on T4 slips.

Table 3.2 Supplementary labour income by component, by industry, 2000

Administrative and support, waste management and remediation services	56	65	358	387	166	87	52	1,114
Educational services	61	2,545	943	972	911	151	398	5,921
Health care and social assistance	62	1,729	1,084	1,119	1,096	363	174	5,564
Arts, entertainment and recreation	71	134	136	139	92	53	19	573
Accomodation and food services	72	53	455	435	228	118	19	1,308
Other services (including aboriginal and other government)	81	145	268	298	298	169	62	1,240
Public administration	91	3,357	771	820	971	263	539	6,721
Total economy		**13,240**	**10,978**	**11,994**	**13,858**	**6,501**	**4,771**	**61,342**

1. *North American Industry Classification System* (NAICS) 1997.

Registered pension plans

3.17 Employers' contributions to registered private and public sector pension plans are based on negotiated agreements between employers and employees to provide pension benefits to employees upon retirement. These agreements are registered with the Canada Revenue Agency and provincial and federal pension regulatory authorities. Regardless of the funding mechanism of pension plans through either government consolidated revenue funds or trust agreements, all employers' contributions to registered pension plans are included.[17] The *Pension Plans in Canada Survey,*[18] is an annual census of registered pension plans in Canada, and provides the Canada estimate.

Canada and Quebec pension plans

3.18 By law, employers must contribute to either the Canada Pension Plan or the Quebec Pension Plan on behalf of their employees.[19] Employees and their families are then eligible for benefits upon retirement, sickness, disability or death. Employers' contributions are captured on the T4 Summary filed with the Canada Revenue Agency along with T4 slips at the end of each calendar year. The Canada estimate is an aggregate of employers' contributions on the T4 Summary Statement.

Employment insurance

3.19 By law, employers must contribute to the Employment Insurance Fund on behalf of their employees.[20] Employers' contributions are captured on the T4 Summary Statement filed with the Canada Revenue Agency along with T4 slips at the end of each calendar year. The Canada estimate is an aggregate of employers' contributions on the T4 Summary Statement.

17. These include special payments made by employers into pension plans as a result of actuarial assessments, which evaluate the unfunded liability of the pension fund. If the future financial obligations of the pension fund cannot be met by the regular employer and employee pension contributions, the employer must make special payments into the pension fund to eliminate the unfunded liability. If the actuarial assessment evaluates a plan surplus, the employer can take a contribution holiday, that is, stop making regular contributions for a specified period of time.
18. Survey no. 2609. More information on this survey is also available in *Pension Plans in Canada*, catalogue no. 13F0026 and in *Pension Plans in Canada: Key Tables*, catalogue no. 74-508.
19. Employers match employee contributions. Employee contributions are based on a contribution rate applied to earnings up to a maximum contribution.
20. The employers' contribution is equivalent to 1.4 of the employees' contribution. Employees' contributions are based on a contribution rate applied to earnings up to a maximum contribution.

Workers' compensation

3.20 By law, employers must contribute to employee work injury insurance plans operated and administered by provincial and territorial workers' compensation boards. Employers must contribute to workers' compensation funds based on their industry's injury rate applied to their payrolls. In the event of an accident or injury, the employer is not held liable and the employee or their family is eligible for a range of services and benefits. Self-insurers, who pay administration fees for the application of the insurance program to their employees, and who pay the full amount of the benefits administered by the provincial and territorial boards, are also included.

Welfare

3.21 Employers' contributions to a variety of public[21] and non-profit health, dental, accident, sickness and life insurance benefit plans fall under this group. Five sub-groups are represented in the welfare component of supplementary labour income, which are:

- employers' contributions to accident and sickness insurance plans;
- group term life insurance plans;
- administrative service contracts;[22]
- premiums to provincial health plans in Alberta and British Columbia; and
- non-profit health plans.

3.22 These plans offer a wide variety of life and health insurance coverage—from basic physician, hospital and drug expenses to specialized health care services, such as eye and dental care, mental health services, and specialized physical treatment services, such as podiatric and chiropractic services. Employers' contributions to these plans may depend on formal or informal agreements between employers and their employees.

Retirement allowances

3.23 Upon retirement, layoff or termination, employees may be eligible for retirement allowances depending on the contractual obligations of employers, and jurisdictional labour legislation. Retirement allowances or severance pay is an amount paid by employers to an employee in recognition of long service or loss of employment.[23] The data source for retiring allowances is the T4A Supplementary file, which includes all statements of pension, retirement, annuity, and other income filed with the Canada Revenue Agency at the end of each calendar year. The aggregation of all T4A slips[24] issued by employers provides the annual estimate of retiring allowances.

The quarterly and monthly estimates of labour income

3.24 Monthly estimates of wages and salaries are produced by industry and by province and territory. Supplementary labour income is also produced on a monthly basis by province and territory. Estimates of labour income paid by the business, government and personal sectors are produced on a quarterly basis only at the Canada level.

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21. Only employers' contributions to both Alberta and British Columbia provincial health insurance plans are included in supplementary labour income. Employer payroll taxes are not included in supplementary labour income but are included as indirect taxes on production.
22. Administrative service contracts are arrangements between employers and insurance companies where employers pay for the health benefits of employees on a pay-as-required basis. Claims are approved and administered by an insurance company or third party for an administrative fee. Insurance companies administer these contracts under which employers pay for benefits to employees outside of group insurance plans. Short-term and long-term disability income protection, extended health care coverage, and dental care expenses can all be provided in this way.
23. This does not include unused sick leave credits or vacation leave credits which are part of wages and salaries. However, it does include golden handshakes, cash-outs, or wrongful dismissal payments.
24. Box 26 includes the amount eligible for transfer to Registered Retirement Savings Plans (RRSP), and Box 27 includes the amount not eligible for transfer.

Wages and salaries

3.25 The estimation of wages and salaries is derived through a complex series of steps, which involves not only the projection of monthly trends in wages and salaries by industry, and by province and territory, but also the revision of monthly patterns for both current and benchmark years. The monthly estimates of wages and salaries are produced by broad industry groups[25] for each province and territory, using monthly trend indicators of earnings, average weekly earnings, and employment. The data are then seasonally adjusted using Statistics Canada's X-11 ARIMA program.

3.26 The *Survey of Employment, Payroll and Hours*[26] (SEPH) provides the most detailed trend indicator of unadjusted earnings, hours and employment by industry,[27] and by province and territory.[28] These indicators characterize the composition of earnings by highlighting increases in average weekly earnings, employment, and hours worked.

3.27 The *Survey of Employment, Payroll and Hours* also provides the only comprehensive estimate of irregular or special payments. While these payments form only a small percentage of the total wages and salaries, they can have enormous impacts on some provinces and territories, as well as on industries. Therefore, it is important that these special payments be disaggregated from the overall estimates so that their impact can be analyzed.[29]

3.28 Data on special payments is supplemented with information on retroactive special payments gathered from collective bargaining bulletins[30] issued by Human Resources and Skills Development Canada on recent collective bargaining settlements by unions. This source identifies major wage developments in collective bargaining in Canada, reporting the number of employees affected, as well as the increases in rate of pay. All special payments including retroactive payments are treated on a cash-basis rather than an accrual-basis.

3.29 Data on work stoppages in effect during the month are also used to estimate trends in wages and salaries. Weekly reports are available from Human Resources and Skills Development Canada on major work stoppages that affect 500 or more workers. These reports identify the employer, location and union affected, the number of workers involved, and the start and end dates of work stoppages. Monthly work stoppages are calculated by industry for each province and territory using average weekly earnings multiplied by the number of employees affected. An estimate of "money lost" is used to adjust wages and salaries prior to seasonal adjustment.

3.30 Information gleaned from media articles is also an important source in identifying recent labour disputes, strikes, layoffs, and the impact of wage settlements.

3.31 Employment and earnings data from the *Labour Force Survey* also provide monthly indicators of trends in wages and salaries of paid workers by province and territory,[31] and by industry.[32] These data provide an additional trend perspective, since they are based on information supplied by workers living in the household, rather than data supplied by employers.

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25. Due to the complexity of preparing monthly projections, by industry and by province and territory, some industry estimates are combined. For example, the professional and personal services group includes: professional, scientific and technical services; administrative and support, waste management and remediation services; arts, entertainment and recreation; accommodation and food services; and other services.
26. Survey no. 2612. Monthly estimates derived from the payroll deductions administrative data received from Canada Revenue Agency are combined with the results of the *Business Payroll Survey* (no. 2614) to produce estimates for the full range of SEPH variables.
27. Employers in agriculture, fishing and trapping, private household services, religious organizations and military personnel are excluded.
28. The province of establishment derived from the Business Register is used by SEPH.
29. Special payments include items such as overtime payments, retroactive pay and bonus payments. As an example, overtime payments during the 1998 ice storm were significant.
30. See *Collective Bargaining*, Workplace Information Directorate, Labour Program, Human Resources and Skills Development Canada at www.labour.gc.ca.
31. The *Labour Force Survey* excludes the Yukon, Northwest Territories, Nunavut, persons living on Indian Reserves, and inmates.
32. The *Labour Force Survey* excludes defence services and aboriginal public administration.

3.32 The Public Institutions Division (PID) provides the sole timely source of employment and payroll data for the public administration industry. PID supplies monthly employment and gross payroll data for the federal government and the military, as well as provincial governments. PID also supplies a breakdown of gross payroll into regular pay and special payments[33] for both federal and provincial employees.

3.33 Other ad hoc information may be obtained from a variety of sources. Trends in employers' provincial payroll taxes, or assessed employers' payrolls compiled by workers compensation boards, may be provided by provincial and territorial contacts. Data on current remittances of personal income taxes may also provide ad hoc trend information. Status reports received from the Canada Revenue Agency on the processing of individual tax forms for the current tax year, although less timely, are also useful in confirming published trends in wages and salaries by province and territory. Lastly, the *Canadian Payroll Manual*[34] monthly bulletins on changes in tax legislation affecting employers' payrolls are consulted.

Supplementary labour income

3.34 Few data sources are available on a monthly basis to estimate supplementary labour income by province and territory. Employers' contributions to the Employment Insurance Fund and the Canada and Quebec pension plans are projected on the basis of trends in employment as well as rate increases, if any, throughout the year.

3.35 The remaining components of supplementary labour income are combined and estimated as a group using the trends in wages and salaries, due to the scarcity of indicators. Newspaper articles may provide some information on retiring allowances, if a large number of people are affected as a result of downsizing or business closures. National adjustments may be made for retiring allowances, workers compensation, or welfare, when large significant payments or changes in employers' contributions have been substantiated. In addition, quarterly estimates of employers' contributions to pensions obtained from the *Quarterly Survey of Trusteed Pension Funds* are monitored and adjustments may be made for upcoming unfunded liability payments, or for contribution holidays, if known.

3.36 The supplementary labour income estimates are seasonally adjusted for each province and territory using the X-11 ARIMA program.[35]

Labour income by sector

3.37 Labour income paid by the business, government, and personal sectors is estimated by quarter for Canada only. Labour income paid by the government sector is estimated using the trend in public administration wages and salaries. Labour income paid by the business and personal sectors is estimated by quarter using the trend in the total economy, as well as information gleaned from ad hoc sources.

3.38 Although great care is taken on a monthly basis to accurately estimate the current data, revisions are often made in the preparation of the quarterly Income and Expenditure Accounts, and must be reworked through the industry detail within each province and territory because of the monthly bottom-up approach used in estimating wages and salaries. Generally, revisions occur because of additional information received from other components of the accounts.

33. Data on special payments are provided for retroactive payment, overtime, extra duty, bonuses, and taxable allowances and benefits.
34. The *Canadian Payroll Manual* (Thomson-Carswell, Toronto, Ontario).
35. The X-11ARIMA program can seasonally adjust complete or partial time series stored in the FAME database. The major features of the X-11 ARIMA are detection of seasonal trends; adjustment of raw data; and calculation of seasonal factors.

Provincial, territorial, industrial and sectoral estimation methods and data sources

3.39 Two geographic measures of wages and salaries and supplementary labour income are published. The first is by province and territory of employment, or place of work, which is used in the calculation of provincial income-based gross domestic product. The second is by province and territory of residence, which is used in the calculation of personal disposable income and saving.

Wages and salaries

Province or territory of employment

3.40 Provincial and territorial estimates of wages and salaries are derived using the province of employment code (Box 29) on the T4 slip.[36] The province of employment code reflects the province or territory where the work actually takes place. Employers are required to issue T4 slips identifying the province or territory in which the employee is currently working when the employee reports to an establishment within that province or territory.[37] If an employee is transferred from one province or territory to another over the course of the year, multiple T4 slips will be issued to the employee.

Province or territory of residence

3.41 The distribution of labour income[38] on a province of residence basis is primarily estimated by applying the geographical shares of employment income obtained from the province of residence code of the T1 Personal Master File to the national total of labour income. The T1 Personal Master File[39] includes all individual income tax returns required by law to be completed by Canadian residents. Employment income as reported on the federal income tax return (line 101) is used to calculate the provincial and territorial shares of employment income on a province of residence basis.

Industries

3.42 The calculation of wages and salaries by industry involves a number of different steps. First, all T4 slips[40] issued by an employer are aggregated under the employer's business number.[41] This information is then linked to Statistics Canada's Business Register[42] which provides the industrial activities[43] of over two million businesses operating in Canada. The aggregated income of all T4 slips issued by individual businesses is then distributed among the specific industries under which the business operates using the number of employees in each unique industry. This initial matrix of wages and salaries by province and territory and by industry[44] is the starting point for the annual industry estimates. Throughout this chapter this process will be referred to as the T4 allocation process.

36. The use of the province of employment code (Box 29) on the T4 slip was first published with the 1981-1991 historical revision of the *Provincial Economic Accounts* in April 1993. Prior to 1981, there was only one regional distribution of wages and salaries that was constructed by industry using annual censuses and monthly sample surveys from Statistics Canada, data from the Public Accounts, as well as administrative data obtained from Revenue Canada (now the Canada Revenue Agency).
37. A typical example would be federal government employees living in Gatineau, Quebec but working in Ottawa, Ontario. These employees would have T4 slips showing Ontario as the province of employment.
38. Province of residence estimates are produced for labour income only.
39. A Canada Revenue Agency (CRA) file.
40. Information on all T4 slips is found on the Canada Revenue Agency T4 Supplementary file.
41. Business numbers are issued by Canada Revenue Agency to identify business payroll accounts under which businesses remit various payments.
42. The Business Register is a central repository of information on businesses in Canada, used as the principal frame for economic statistics programs.
43. The industrial activities of enterprises on the Business Register are classified according to the North American Industrial Classification System (NAICS).
44. Six-digit NAICS is the most detailed industrial classification used at Statistics Canada.

3.43 Industry estimates for public sector organizations, such as hospitals, elementary and secondary schools, colleges, universities, and residential care facilities are supplied by various Statistics Canada divisions. Federal, provincial and municipal government estimates are obtained from public accounts data and taxation statistics.

3.44 For the benchmarked years, reconciliation of wages and salaries by industry with the Industry Accounts Division (IAD)[45] is conducted for business, government and personal sectors. The result is a final matrix of wages and salaries by industry at the two-digit NAICS level, calculated using a combination of administrative and survey data sources.

Sectors

Business

3.45 Wages and salaries paid by business sector organizations comprise all privately controlled or owned enterprises together with government business enterprises, all of whose primary motivation is profit making. Using a wide range of survey and T4 data sources, the business sector estimates by industry are derived in conjunction with Industry Accounts Division for the benchmark years.[46] The third-year business sector estimates are derived using T4 levels and trend estimates applied to benchmark levels. For the benchmark and third-year estimates (t-4, t-3, and t-2), the top down approach requires that control totals are first established by province and territory, and then by sector. Estimates of the government and personal sector by industry are then removed leaving a control total for the business sector.

3.46 Due to the size of the business sector, and the various sources used, minor adjustments to industries are often necessary to balance the business sector to provincial and territorial control totals.

Government

3.47 Wages and salaries paid by the government sector include all wages and salaries paid by federal, provincial, and municipal governments, as well as public hospitals, municipal school boards, colleges, universities and residential care facilities. All government units are identified and classified by Public Institutions Division, using specific classification criteria. The government sector estimates are produced by industry from a number of sources, including public accounts, budgetary estimates, information obtained from detailed expenditure files received directly from provincial and territorial governments, T4 data, and data obtained from other Statistics Canada subject matter divisions.

Personal

3.48 Wages and salaries paid by personal sector organizations include organizations serving households that provide services free of charge or at less than economically significant prices. These organizations include child and family social services, charitable organizations, non-profit organizations serving households, labour unions, political organizations, social advocacy groups, civic and fraternal societies, and religious organizations. The universe of personal sector organizations is principally derived from charitable organizations reporting on the Registered Charity Information Return, and non-profit organizations reporting on the Non-Profit Organization (NPO) Information Return.[47] Considerable effort is made to remove entities classified to the government sector and the business sector, by using a selection of business numbers and industry classifications. The remaining organizations are then linked to the T4 file to obtain wages and salaries. Personal sector organizations which do not report on the charities or non-profit files but are providing similar services to households are added to the

45. Own-account construction derived by the Industry Accounts Division is added back to each industry to reconcile with the Income and Expenditure Accounts Division's labour income estimates. The Industry Accounts Division excludes own-account estimates from all industries and combines own-account and regular construction activity together to form the construction industry.
46. The Industry Accounts Division produces detailed industry estimates for about 300 industry groups (roughly corresponding to four-digit NAICS), whereas the Income and Expenditures Accounts Division produces industry estimates at aggregate industry levels (two-digit NAICS).
47. Canada Revenue Agency T3010A and T1044 forms, respectively.

personal sector by using select industry codes that represent homogeneous groups, such as religious organizations, and civic and fraternal organizations. Private elementary and secondary schools, which include private fee schools and religious-based schools, are also included in this sector.

Table 3.3 Labour income by industry and by sector, 2000

Industry classification	Industry code NAICS[1]	From government	From persons	From business	Total
		millions of dollars			
Agriculture, forestry, fishing and hunting	11	516	0	7,309	7,825
Mining and oil and gas extraction	21	0	0	11,458	11,458
Utilities	22	607	0	7,213	7,820
Construction	23	828	0	31,227	32,054
Manufacturing	31-33	0	11	96,325	96,336
Trade	41, 44, 45	0	49	72,036	72,085
Transportation and warehousing	48,49	1,687	10	28,313	30,009
Information and cultural industries	51	1,420	98	16,944	18,462
Finance, insurance, real estate and rental leasing	52, 53, 55	1,774	29	48,707	50,511
Professional, scientific and technical services	54	141	61	31,237	31,438
Administrative and support, waste management and remediation services	56	2	50	15,146	15,198
Educational services	61	39,702	1,468	1,224	42,394
Health care and social assistance	62	31,047	2,635	10,780	44,462
Arts, entertainment and recreation	71	1,163	491	4,776	6,430
Accommodation and food services	72	137	14	17,717	17,868
Other services (including aboriginal and other government)	81	23	6,625	11,867	18,515
Public administration	91	42,337	0	0	42,337
Total economy		**121,383**	**11,539**	**412,281**	**545,204**

1. *North American Industry Classification System* (NAICS) 1997.

Supplementary labour income

Registered pension plans

3.49 Provincial and territorial estimates of employers' contributions to registered pension plans are based on plan membership. Employers' contributions by industry are derived using employees' contributions to registered pension plans captured on T4 slips, and allocated by industry using the T4 allocation process as described in paragraph 3.42. Sector estimates are derived using both administrative and survey data.

Canada and Quebec pension plans

3.50 Provincial and territorial estimates of employers' contributions are derived using the employees' contributions to the Canada and Quebec pension plans using the province of employment found on the T4 slip. Similarly, employers' contributions by industry are derived using employees' contributions to the Canada and Quebec pension plans, captured on T4 slips and allocated by industry using the T4 allocation process as described in paragraph 3.42. Sector estimates are derived using both administrative and survey data.

Employment insurance

3.51 Provincial and territorial estimates of employers' contributions are derived using the employees' contributions to employment insurance using the province of employment found on the T4 slip. Similarly, employers' contributions by industry are derived using employees' contributions to employment insurance, captured on T4 slips and allocated by industry using the T4 allocation process described in paragraph 3.42. Sector estimates are derived using both administrative and survey data.

Workers' compensation

3.52 Provincial and territorial estimates are derived from premium revenues received by workers compensation boards. The amount that employers contribute to workers' compensation varies by province and territory, depending on assessment rates by industry, applied to gross payrolls. The industry estimates are derived from a historical set of industry by province and territory ratios.[48] Sector estimates are derived using both administrative and survey data.

Welfare

3.53 Provincial and territorial estimates of employers' contributions to welfare are derived from the Canadian Health and Life Insurance Association,[49] Alberta and British Columbia government health plan premiums, and premium revenue received by non-profit health insurance organizations. The industry estimates are derived from a historical set of industry by province and territory ratios. Sector estimates are derived using both administrative and survey data.

Retirement allowances

3.54 Provincial and territorial estimates are derived using the province of employment on the T4 slip to obtain the employees' last place of work. Retirement allowances are allocated by industry using Statistics Canada's Business Register, as well as the distribution of wages and salaries by industry from the T4 allocation process as described in paragraph 3.42. Sector estimates are derived using administrative and survey data.

48. These historical ratios by industry and by province and territory were based on Labour Costs in Canada, catalogue no. 72-618, which later became Employee Compensation in Canada, catalogue no. 72-619, which in turn was discontinued in the early 1980s.
49. Information obtained from Canadian Life and Health Insurance Association Inc., Toronto, Ontario.

Chapter 4 Entrepreneurial income: Operating surplus

Introduction

Basic concepts

4.1 Operating surplus represents the income of corporations and government business enterprises accruing to the capital factor of production from the production of goods and services. The international System of National Accounts (SNA 1993) labels operating surplus, often referred to as capital income, as a component of entrepreneurial income. In Canada, operating surplus is the largest component of entrepreneurial income, with the income generated from production by unincorporated businesses making up the balance. However, unincorporated business income is described as mixed income[1] because it contains remuneration for work done by the owner(s), which cannot be separated from the return to the owner as entrepreneur (see Chapter 5).

4.2 In the Canadian System of National Accounts (CSNA), estimates of operating surplus by industry are shown explicitly in the Input-Output Tables (IOT). However, the aggregate operating surplus generated in the Canadian economy is decomposed into the five components in the *National Income and Expenditure Accounts* (NIEA) and in the provincial and territorial economic accounts (PTEA). The income-based estimates of GDP[2] present the five components of gross operating surplus separately:

- Corporation profits before taxes
- Government business enterprises profits before taxes
- Interest and miscellaneous investment income
- Inventory valuation adjustment
- Capital consumption allowances

4.3 The integration of the IOT and the Income and Expenditure Accounts (IEA), accomplished through an annual reconciliation exercise referred to as benchmarking, results in a single unambiguous measure of operating surplus.[3] This measure is published in the IOT, but only its components are published in the IEA.

4.4 This chapter will be completed at a later date. It will first discuss operating surplus followed by a discussion of its components, as they are presented in the IEA.

Statistical details and presentation of operating surplus

4.5 The SNA 1993 generation of income account shows the sectors or industries in which the primary incomes originate, as distinct from the sectors destined to receive such income, hence reflecting earnings before transfers have a redistributive effect. The operating surplus or deficit is derived as the balancing item in the generation of income account as follows:

Value added at basic prices
-Compensation of employees payable
-Taxes on production payable
+Subsidies on production receivable

1. The income generated by owner-occupiers in their capacity as producers of housing services is included with the mixed income component in the Canadian SNA as it represents all income generated by unincorporated businesses. That income is included with operating surplus in the generation of income account presented in the SNA 1993.
2. For the provincial and territorial economic accounts, the government business enterprises profits before taxes are included with the interest and miscellaneous investment income component.
3. The statistical discrepancy shown in the derivation of income-based GDP has to be added to the sum of the five components to equal the operating surplus in the IOT.

4.6 In Canada, interest and miscellaneous investment income (the majority of SNA 1993 property income) is included in operating surplus. The link between the generation of income account (within the SNA 1993 structure) and the CSNA income-based GDP is presented in Table 4.1 for Canada. To arrive at GDP at market prices, taxes less subsidies on products must be added to the sum of value added at basic prices.

Table 4.1 The Income and Expenditure Accounts' income-based GDP and Generation of Income Account, 2000

Income and Expenditure Accounts[1]			System of National Accounts 1993		
Table 1, line number	Income-based GDP variable	millions of dollars		Generation of Income Account	Transaction and balancing code
Line 1	Wages, salaries and suplementary labour income	545,204	545,204	Compensation of employees	D.1
			483,861	Wages and salaries	D.11
			61,343	Employers' social contributions	D.12
Line 8	Taxes less subsidies, on factors of production	51,693	52,577	Other taxes on production	D.29
			-884	Other subsidies on production	D.39
Line 10	Taxes less subsidies, on products	76,647	86,421	Taxes on products	D.21
			-9,774	Subsidies on products	D.31
Line 5	Accrued net income of farm operators from farm production	1,243	66,187	Mixed income (net)	B.3
Line 6	Net income of non-farm unincorporated business, including rent	64,944			
Line 2	Corporation profits before taxes	135,978	336,846	Operating surplus (gross)	B.2
Line 3	Government business enterprises profits before taxes	11,329			
Line 4	Interest and miscellaneous investment income	55,302			
Line 7	Inventory valuation adjustment	-2,439			
Line 11	Capital consumption allowances	137,425			
Line 12	Statistical discrepancy	-749			
Line 13	**Gross domestic product**	**1,076,577**	**1,076,577**	**Gross domestic product**	**B.1**

1. The Canadian income and expenditure accounts estimates are published in the *National Income and Expenditure Accounts*, catalogue no. 13-001. Provincial and territorial estimates are available in the *Provincial Economic Accounts*, catalogue no. 13-213.

Chapter 5 Entrepreneurial income: Mixed income

Introduction

5.1 Mixed income represents the entrepreneurial income, generated in the production of goods and services, of unincorporated business. This income accrues to the capital factors of production, in the same way that operating surplus does for corporations and government business enterprises (see Chapter 4). However, unincorporated business income is described as mixed income[1] because it contains remuneration for work undertaken by the owner(s) that cannot be separated from the return to the owner(s) as entrepreneur(s).

5.2 Mixed income (proprietors' revenue) captures a class of income that is difficult to classify—essentially falling between labour income and business profits. It is the amount that independent owners who are in business for themselves, but who have not incorporated their businesses, earn. The amount that the owner of an unincorporated business earns in a year is typically considered by the owner to be profit, yet a significant amount ends up as remuneration to the owner for his labour services.

5.3 The SNA 1993 defines mixed income as follows:

> "Mixed income is the surplus or deficit accruing from production by unincorporated business owned by households; it implicitly contains an element of remuneration for work done by the owner, or other members of the household, that cannot be separately identified from the return to the owner as entrepreneur but it excludes the surplus coming from owner-occupied dwellings".[2] (*System of National Accounts 1993* paragraphs 7.4, 4.134 and 7.81)

5.4 In the Canadian System of National Accounts (CSNA), the net imputed rent generated by owner-occupied dwellings is added to mixed income. The income generated by owner-occupiers in their capacity as producers of housing services is included in mixed income, as it represents all income generated by unincorporated business.

5.5 Mixed income specifically refers to the net income of both farm and non-farm unincorporated business and represents approximately 6% of income-based gross domestic product (GDP). Within the Income and Expenditure Accounts (IEA), mixed income is broken into two main components: accrued net income of farm operators from farm production; and, net income of non-farm unincorporated business. The latter is broken down into two sub-components: net income excluding rental income and net rental income, both paid and imputed.

Statistical details of mixed income

5.6 This chapter presents sources and methods used to estimate these components of income-based GDP. One practical distinction between the Income and Expenditure Accounts (IEA) and the generation of income account (as presented in Table 4.1) relates to the treatment of capital consumption allowances (CCA) and the net property income payable from production activities for unincorporated businesses. In the IEA, the mixed income component is presented on a net basis, after deducting CCA and the net property income payable of unincorporated businesses while the operating surplus includes them along with the estimates for the other sectors of the economy. On the other hand, the generation of income account presents mixed income before allowances for those two components. For this reason, the mixed income shown under the generation income account in Table 4.1 is described as net while the operating surplus is on a gross basis. It would be preferable to include the CCA and the net property income payable of unincorporated businesses in the mixed income component as recommended by the SNA 1993, but statistical and methodological difficulties obviate this presentation in the IEA.

1. The income generated by owner-occupiers in their capacity as producers of housing services is included with the mixed income component in the Canadian SNA as it represents all income generated by unincorporated businesses. In the SNA 1993 it is included with operating surplus in the generation of income account.
2. The rationale for excluding imputed rent from mixed income in SNA 1993 is that there is no labour input into the production of these services.

5.7 In the Canadian System of National Accounts (CSNA), the two components of mixed income are presented explicitly as part of income-based GDP and as part of the income portion of the income and outlay account's persons and unincorporated business sector of the Income and Expenditure Accounts (IEA). In the input table — also known as the intermediate use table — of the Input-Output Tables (IOT), only the mixed income aggregate is provided. Table 5.1 shows mixed income as presented in the IEA and the IOT.

Table 5.1 Mixed income, 2000

Description of steps	Millions of dollars	Publication
Accrued net income of farm operators from farm production	1,243	*National Income and Expenditure Accounts,* catalogue no. 13-001, Table 1, line 5
+ Net income of non-farm unincorporated business, including rent:	64,944	*National Income and Expenditure Accounts,* catalogue no. 13-001, Table 1, line 6
Non-rent portion	37,830	Unpublished
Rent portion	27,114	Unpublished
= Mixed income	66,187	*Input-Output Tables,* catalogue no. 15-201, input matrix

5.8 Both the IEA and the IOT use the North American Industry Classification System (NAICS) as the statistical framework for producing mixed income estimates; only the level of industry aggregation differs. IEA's working level detail estimates for the year 2000 are shown in Table 5.2. A lower level of industry detail[3] is available within the IOT from Industry Accounts Division.

Table 5.2 Mixed income - industry details, 2000

Industry description	Industry classification code		Mixed income in IEA			Mixed income Input-Output S-level
	Input-Output	NAICS	From farm production	Excluding rent and farm production	From rent	
			millions of dollars			
Crop and animal production	1A	111, 112	1,243	1		1,244
Forestry and logging	1B	113		438		438
Fishing, hunting and trapping	1C	114		527		527
Support activities for agriculture and forestry	1D	115		108		108
Support activities for agriculture	115100, 115200	1151, 1152		73		…
Support activities for forestry	115300	1153		35		…
Mining and oil and gas extraction	21	21		167		167
Utilities	22	221		7		7
Construction	23	23		5,397		5,397
Manufacturing	3A	31-33		516		516
Wholesale trade	41	41		935		935
Retail trade	4A	44-45		3,381		3,381
Transportation and warehousing	4B	48-49		2,226		2,226
Information and culture	51	51		180		180
Finance, insurance, real estate and rental and leasing	5A	52, 53, 55		1,774	27,114	28,888
Finance and insurance	5A0620,5A0630	5231, 5232, 5239, 5241, 5242, 5269		1,241		
Real estate and rental and leasing	5A0300, 5A0400, 5A0510, 5A0520, 5A0640	5311, 5312, 5313, 5321, 5322-5324, 5331		533	27,114	
Professional, scientific and technical services	54	54		6,667		6,667

3. The Input-Output small (S) level of industry classification includes 25 categories. Table 5.2 shows the 20 S level industries for which mixed income is reconciled. The other industrial levels of aggregation in the Input-Output Tables are the medium (M), link (L), and worksheet (W) levels. The M level has 62 industries, the L level has 117 industries, and the W level has 283 industries for publication and 300 at the working level. These classification are available in *The Input-Output Structure of the Canadian Economy*, catalogue no. 15-201.

Table 5.2 Mixed income - industry details, 2000

Legal, accounting, tax preparation, bookkeeping and payroll services	541A0	5411,5412		4,519		
Legal services		5411		2,625		
Accounting, tax preparation, bookkeeping and payroll services		5412		1,894		
Architectural, engineering and related services	541300	5413		355		
Other professional, scientific and technical services	541500, 541800, 541B00	5414, 5415, 5416, 5417, 5418, 5419		1,793		
Administration and support, waste management and remediation services	56	56		1,673		1,673
Educational services	61	61		721		721
Health care and social assistance	62	62		10,324		10,324
Offices of physicians	621100	6211		6,162		
Offices of dentists	621200	6212		1,644		
Miscellaneous ambulatory health care services	621A00	6213-6216, 6219		1,280		
Nursing and residential care facilities	623000	623		23		
Social assistance	624000	624		1,215		
Arts, entertainment and recreation	71	71		489		489
Accommodation and food services	72	72		774		774
Accommodation services	721100, 721A00	7211 - 7213		260		
Food services and drinking places	722000	722		514		
Other services	81	81		1,525		1,525
Repair and maintenance	811	811		563		
Dry cleaning and laundry services	812300	8123		72		
Personal care services and other personal services	812A00, 812200	8121, 8122, 8129		890		
Other personal services and funeral services		8122, 8129		278		
Personal care services		8121		612		
Total			1,243	37,830	27,114	66,187

Accrued net income of farm operators from farm production

Concepts and definitions

5.9 Accrued net income of farm operators from farm production (ANIFO) comprises gross proceeds from the sale of agricultural products, including payments made to farmers under government programs, plus the imputed value of farm output consumed by farming households, plus the value of investment in farm-held inventories, less farm operating expenses and depreciation on buildings and farm machinery. It also includes an adjustment to transform earnings arising out of grain transactions of the Canadian Wheat Board from a cash to an accrual basis. Cash payments made to farmers under government programs are also adjusted to an accrual basis. Other sources of farm income, such as income from net rent and interest are included in other components of income-based gross domestic product. (see Table 5.4)

5.10 Estimates of accrued net income of farm operators from farm production can be subject to large fluctuations from one period to another. A variation in one of the key components can have a significant effect on both the level and the period-to-period movements of ANIFO. Cash receipts, which are closely tied to weather conditions and other unforeseeable factors, can experience large variations. In addition, investment in farm-held inventories, part of ANIFO, is affected by rapid changes in supply and demand of agricultural products at the national and international levels, making it a relatively unstable component. Changes in farm operating expenses are generally more stable.

Annual estimation methods and data sources

5.11 Annual estimates of accrued net income of farm operators from farm production (ANIFO) for Canada and the provinces[4] are derived from the sum of the quarterly estimates. Methods used to derive quarterly estimates are described in the quarterly estimation method and data sources section (see paragraphs 5.13 to 5.22).

5.12 Estimates follow the Canadian System of National Accounts four year revision cycle. The inputs to the benchmarking process for accrued net income of farm operators from farm production are produced by the Income and Expenditure Accounts Division (IEAD). They include all farm activity as described in the North American Industry Classification System (NAICS), meaning all industries related to crop production (111) and animal production (112), except animal aquaculture (1125), which is included in non-farm unincorporated business (mixed income for aquaculture is available from the Input-Output Tables). Table 5.3 shows the relationship between the two sets of accounts.

Table 5.3 Accrued net income of farm operators from farm production: reconciliation between Income and Expenditures Accounts and Input-Output Tables, 2000

	Industry classification			Millions of dollars
	Input-Output		NAICS	
	Working level[2]	Code		
Income and Expenditure Accounts				
Accrued net income of farm operators from farm production[1]	…	1A	111, 112	1,243
Input-Output Tables				
Use (input) matrix, mixed income, crop and animal production	S	1A	111, 112	1,244
Crop and animal production	M	11A	111, 112	1,244
Crop and animal production	L	11A0	111, 112	1,244
Greenhouse, nursery and floriculture production	W	111400	1114	426
Crop production (except greenhouse, nursery and floriculture production)	W	111A00	1111-1113, 1119	-679
Animal aquaculture	W	112500	1125	1
Animal production (except animal aquaculture)	W	112A00	1121-1124, 1129	1,496

1. Excludes animal aquaculture (112500).
2. These classification are available in *The Input-Output Structure of the Canadian Economy,* catalogue no. 15-201.

4. Since 1999, estimates for the Yukon and the Northwest Territories have been added to those for Canada using annual farm cash receipts and operating expenses data provided by the Agriculture Division. Throughout this section the estimation methods described refer to those used for the ten Canadian provinces (farm activities in the northern regions are very limited).

Quarterly estimation methods and data sources

5.13 Table 5.4 illustrates the calculation of accrued net income of farm operators from farm production. The following paragraphs examine each component.

Table 5.4 General approach to estimation of accrued net income of farm operators from farm production, 2000

Description of steps	Millions of dollars
Farm cash receipts (including CWB[1] and government program payments)	32,728
+ Farm income in kind	149
+ Business investment in farm-held inventories	79
= Gross income of farm operators	32,956
- Farm operating expenses and depreciation charges	30,945
= Net income of farm operators	2,011
- Farm corporate profits before taxes	664
= Net income of unincorporated farm operators from farm production	1,347
- Adjustment of CWB[1] profits and government program payments	-104
= Accrued net income of unincorporated[2] farm operators from farm production	**1,243**

1. Canadian Wheat Board.
2. The term unincorporated is omitted from the heading in Table 1, line 5 of *National Income and Expenditure Accounts,* catalogue no. 13-00

Farm cash receipts

5.14 *Farm Cash Receipts* include income received from the sale of agricultural products, Canadian Wheat Board payments and government payments made under farm support programs. Farm cash receipts are estimated from both administrative and survey data. Data sources vary by province and by product. The main sources are Statistics Canada survey data as well as administrative data from Agriculture and Agri-Food Canada, the Canadian Wheat Board, marketing and regulatory boards, and government and private agencies.

5.15 As Table 5.5 shows, farm cash receipts cover all crops, livestock, livestock products, and direct payments made to producers from various programs, such as crop insurance, income stabilization payments and other one-time payments made by federal and provincial governments to compensate producers for losses due to extreme weather, disease or other factors.[5] Some payments, such as property tax credits and fuel tax rebates, are deducted directly from expenses rather than being included on a gross basis in farm cash receipts.

Table 5.5 Farm cash receipts, 2000

	millions of dollars
Farm cash receipts[1]	**32,728**
Crops	**12,981**
Wheat, excluding durum	1,898
Durum wheat	452
Wheat, Canada and Ontario Wheat Board payments	681
Oats	196
Barley	478
Barley, Canadian Wheat Board payments	91
Rye	15
Flaxseed	149
Canola	1,560
Soybeans	678

5. *Direct Payments to Agriculture Producers*, catalogue no. 21-015.

Table 5.5 Farm cash receipts, 2000

	millions of dollars
Corn	676
Sugar beets	33
Potatoes	680
Vegetables	1,301
Apples	192
Other tree fruits	68
Strawberries	54
Other berries and grapes	233
Floriculture and nursery	1,589
Tobacco	348
Ginseng	47
Mustard seed	64
Sunflower seed	31
Lentils	245
Canary seed	34
Dry beans	123
Dry peas	270
Chick peas	63
Forage and grass seed	83
Hay and clover	203
Maple products	181
Forest products	117
Christmas trees	70
Miscellaneous crops	77
Livestock and livestock products	**17,097**
Cattle	6,048
Calves	827
Hogs	3,355
Sheep	5
Lambs	82
Dairy products	4,030
Hens and chickens	1,368
Turkeys	263
Hatcheries (chicks and poults)	33
Eggs	511
Pregnant mare's urine	x
Wool	1
Honey	69
Furs	46
Embryos	x
Horses	x
Miscellaneous livestock	321
Government programs payments	**2,650**
Net Income Stabilization Account payments	456
Crop insurance payments	451
Provincial stabilization payments	411
Dairy subsidies	73
Other payments	1,259

1. These differ from Agriculture Division data for Canadian Wheat Board payments which are reallocated based on the crop year; exclude adjustment of deferred grain receipts and private insurance programs; and include, Yukon and the Northwest Territories estimates.

Farm income in kind

5.16 Farm income in kind consists of the estimated value of food and forestry products produced and consumed on farms for personal use. Home-consumed products are valued at prevailing market prices at the farm level. It excludes net rent imputed for dwellings on farms, already measured as part of the net income of non-farm unincorporated business including net rental income component. The composition and value of the farm income-in kind is shown in Table 5.6. It consists mainly of forestry and livestock products. The data are compiled from surveys, the *Census of Agriculture* and administrative data.[6] The monthly data are distributed using ratios derived from a variety of data sources.

Table 5.6 Farm income in kind, 2000

	millions of dollars
Farm income in kind	**149.1**
Dairy products	4.4
Cattle	20.1
Calves	2.2
Hogs	2.3
Sheep and lambs	3.0
Hens, chickens and turkeys	1.6
Eggs	2.8
Potatoes	0.2
Vegetables	0.3
Fruits	0.5
Maple products	2.8
Honey	0.0
Wool	0.0
Forest products	108.9

Investment in farm-held inventories

5.17 For crops, investment in farm inventories is estimated for each grain type, using quantities valued at the market prices prevailing in the reference period. Withdrawals from inventories (which consist of sales, food for livestock, seed and waste) are deducted from production that has been placed into inventories, to arrive at an estimate of the value of inventory changes.[7] The same approach is applied to potato and tobacco crops. For livestock, the value of inventory change is calculated directly from physical quantity changes and market prices obtained from Agriculture Division surveys.[8] The investment in inventories chapter explains the sources and methods used to estimate investment in farm inventories, a component of expenditure-based GDP (see Chapter 10).

Farm operating expenses and depreciation

5.18 Operating expenses and depreciation represent the costs incurred by farm operators for goods and services used in the production of agriculture commodities. There is a wide range of expenses related to farm production, as itemized in Table 5.7. To arrive at net operating expenses, direct payments (rebates), made to producers to reduce the costs of inputs, are deducted. They are estimated annually by the Agriculture Division,[9] using a number of sources. Total annual expenses are distributed quarterly using ratios established from a study conducted by the Income and Expenditure Accounts Division.

5.19 Estimates of depreciation are produced by the Agriculture Division. They reflect economic depreciation, or the loss in fair market value of the capital assets. Estimates cover farm buildings (including the farm business share of houses) and farm machinery (including the farm business share of automobiles or trucks).

6. *Net Farm Income*, catalogue no. 21-010.
7. Seasonal adjustment of the quarterly grain inventory series creates particular problems. For further details, see the technical paper *Treatment of Grain Production* in the *Quarterly Income and Expenditure Accounts*, catalogue no. 13-604, no. 2.
8. Survey no. 3460, published in *Cattle Statistics*, catalogue no. 23-012; *Hog Statistics*, catalogue no. 23-010; *Livestock Statistics*, catalogue no. 23-603; and *Sheep Statistics*, catalogue no. 23-011.
9. *Farm Operating Expenses and Depreciation Charges*, catalogue no. 21-012.

Table 5.7 Farm operating expenses and depreciation charges, 2000

Components	Millions of dollars
Total operating[1] expenses and depreciation charges	**30,945**
Operating expenses	**26,613**
Property taxes	518
Cash rent	805
Share rent	377
Cash wages including room and board	3,285
Interest	2,536
Repairs to buildings and fences	658
Electricity	610
Telephone	239
Heating fuel	356
Machinery fuel	1,547
Machinery repairs and other expenses	1,922
Business insurance	518
Custom work	546
Stabilization premiums	160
Crop and hail insurance	299
Fertilizer and lime	2,067
Pesticides	1,550
Commercial seed	918
Irrigation	21
Twine, wire and containers	358
Commercial feed	3,789
Livestock and poultry purchases	1,688
Artificial insemination and veterinary fees	573
Legal and accounting fees	688
Other operating expenses	585
Depreciation charges	**4,332**
Depreciation on buildings	930
Depreciation on machinery	3,401
Rebates paid directly to producers	**131**
Property taxes	64
Cash wages	2
Interest	22
Machinery fuel	39
Other[2]	3

1. Operating expenses are net of rebates paid to farmers. Yukon and Northwest Territories estimates are included.

2. This item includes rebates for electricity, heating fuel, fertilizer, pesticides, commercial seed, commercial feed, inspection costs, veterinary fees and purchase of livestock.

Farm corporate profits before taxes

5.20 Farm corporate profits before taxes represents profits from incorporated farm operations. Estimates are derived from Canada Revenue Agency tax data files. This component is not included in farm income since it is measured as part of corporation profits before taxes.

Adjustment of Canadian Wheat Board profits and government program payments

5.21 This adjustment is necessary because gross domestic product measures income arising from current production and not current receipts. Consequently, profits arising out of the operations of the Canadian Wheat Board[10] (CWB) are allocated to farm operators when they are earned regardless of when they are actually paid to farmers. As well, an inventory valuation adjustment is calculated to eliminate any holding gains or losses from the initial CWB earnings reported.

5.22 Similarly, government program payments to farmers are adjusted from a cash basis to an accrual basis to reflect current agricultural production.

Provincial and territorial estimation methods and data sources

5.23 Provincial estimates are established from the quarterly estimates, which are estimated by province.

Relationship with other parts of the Income and Expenditure Accounts

5.24 A number of the components of accrued net income of farm operators from farm production are also included in other variables of gross domestic product. Investment in farm-held inventories appears directly on the expenditure side of the Income and Expenditure Accounts. Income-in kind for food is included as part of farm-consumption and other imputed food expenses, appearing under personal expenditure on consumer goods and services. All taxes and subsidies, whether part of income or expenses of farm operators, are included in either taxes less subsidies on factors of production or taxes less subsidies on products. Finally, depreciation, which is part of farm operating expenses, is included in capital consumption allowance, an income-based GDP component.

5.25 Accrued net income of farm operators from farm production is part of the unincorporated business net income in the persons and unincorporated businesses sector.

5.26 Investment in farm-held inventories is divided between the unincorporated sector and the incorporated sector, using a ratio derived from the *Census of Agriculture* data on farm cash receipts.

Reconciliation of estimates with the Agriculture Division

5.27 Agriculture Division produces a number of economic statistics on farming.[11] Most of them are included in the estimation of accrued net income of farm operators from farm production. Table 5.8 shows the reconciliation between the two estimates.

10. The CWB buys wheat and barley from farm operators and sells the grain on various markets, notably the export market, on their behalf.
11. Agriculture Division's series Agriculture Economic Statistics includes*: Net Farm Income*, catalogue no. 21-010, *Farm Cash Receipts*, catalogue no. 21-011, *Farm Operating Expenses and Depreciation Charges*, catalogue no. 21-012, *Value of Farm Capital*, catalogue no. 21-013*,* Farm Debt Outstanding, catalogue no. 21-014, *Direct Payments to Agriculture Producers*, catalogue no. 21-015, *Balance Sheet of the Agricultural Sector*, catalogue no. 21-016, *Agriculture Value Added Account*, catalogue no. 21-017, and *Farm Business Cash Flows*, catalogue no. 21-018. Agriculture Division also offers additional statistics on various agricultural outputs.

Table 5.8 Accrued net income of farm operators from farm production: Reconciliation statement with Agriculture Division net farm income, 2000

	millions of dollars
Net farm income[1]	2,461
- Agricultural corporation profits before taxes[2]	664
+ Adjustment related to farm inventories[3]	-251
+ Other adjustments related to farm income[4]	-303
= Accrued net income of farm operators from farm production[5]	1,243

1. *Net Farm Income*, catalogue no. 21-010.
2. This adjustment involves deducting profits of farm businesses before taxes, as those profits are already included in the corporate profits before taxes component of GDP.
3. In the Income and Expenditure Accounts the value of inventory change is calculated on a quarterly basis (based on average quarterly prices) while Agriculture Division determines this value on an annual basis (based on average annual prices).
4. Gross Domestic Product measures income based on current output rather than on cash receipts. Adjustments are made to convert government program payments made to farmers and profits from the Canadian Wheat Board to an accrual basis. Estimates for the Yukon and the Northwest Territories are also included.
5. *National Income and Expenditure Accounts*, catalogue no. 13-001.

Net income of non-farm unincorporated business, excluding net rental income

Concepts and definitions

5.28 Net income of non-farm unincorporated business, excluding net rental income, measures the net earnings of proprietors from their own businesses in all industries except agriculture. It includes the net income of private consultants, accountants, lawyers, doctors and other independent professionals.

Annual estimation methods and data sources

5.29 Estimates follow the Canadian System of National Accounts four year revision cycle. Annual benchmarks for the years t-4 and t-3 are provided by Industry Accounts Division (IAD) as part of the annual benchmarking program. These estimates are produced at the industry level. Reconciliation between the Input-Output Tables (IOT) and the Income and Expenditure Accounts (IEA) is done for the industries and aggregates shown in Table 5.9. The level of detail corresponds roughly to the highest level of aggregation in the IOT.

5.30 As evident from Table 5.9, Canada Revenue Agency's (CRA) T1 individual income tax returns are the main source of information used to derive estimates of net income of unincorporated business, excluding net rental income by industry. In some cases, CRA information is adjusted for the understatement of income on tax returns using other sources of information, so as to adjust for unreported activity.

5.31 Canada Revenue Agency's T1 individual income tax returns are used in combination with survey information to estimate net income of unincorporated business, excluding net rental income for a number of industries. In addition to CRA data, estimates for the retail trade industry use data collected through the annual *Retail Store Survey*. Estimates for the architectural, engineering and related services industry are supplemented with information from the *Annual Survey of Engineering Services* and the *Annual Survey of Architectural Services*. The estimate for other professional, scientific and technical services incorporates information obtained from two surveys: the *Annual Survey of Advertising and Related Services* and the *Annual Survey of Software Development and Computer Services*. The accommodation services estimate makes use of survey data from the *Annual Survey*

of Traveller Accommodation and the *Annual Survey of Travel Arrangement Services*. Finally, the food services and drinking places industry estimate uses data from the *Annual Survey of Service Industries: Food Services and Drinking Places*.

5.32 For a small number of industries, survey information is the single source of information used to establish the annual benchmark. This is the case for the following industries:

- accounting, tax preparation, bookkeeping and payroll services;
- dry cleaning and laundry services;
- other personal services and funeral services; and
- personal care services.

5.33 Finally, certain industries require a variety of data sources and methods to produce annual estimates. For the transportation and warehousing industry, Canada Revenue Agency (CRA) information is adjusted for the understatement of income for small operators in the urban transit industry. In addition, survey information taken from the annual *Survey of the Taxi and Limousine Services Industry* is adjusted for undeclared tips. In the real estate and rental and leasing industry, estimates of mixed income for real estate agents and brokers are based on CRA information on gross income, and a historical ratio of net income to gross income. For the remainder of the industry, CRA information is supplemented with *Labour Force Survey* data on self-employment. A similar approach is taken to derive annual estimates for the repair and maintenance industry. The automobile portion is based on CRA information adjusted for the understatement of income on tax returns. The remaining portion of the industry mixed income is derived from gross income reported on CRA's T1 individual income tax returns and a historical net income to gross income ratio.

5.34 Benchmark estimates for the private educational services industry are a projection of a historical benchmark using growth rates for that industry.

Table 5.9 Sources and methods of net income of non-farm unincorporated business, excluding rent for benchmark years, 2000

Industry description	Input-Output[1] industry code	Millions of dollars	Summary of methods for benchmark years
Forestry and logging	1B	438	Net income from CRA T1 individual income tax returns, adjusted for understatement of income on tax returns.
Fishing, hunting and trapping	1C	527	Net income from CRA T1 individual income tax returns.
Support activities for agriculture and forestry	1D	109	
Support activities for agriculture	115100, 115200	74	Net income from CRA T1 individual income tax returns.
Support activities for forestry	115300	35	Net income from CRA T1 individual income tax returns, adjusted for understatement of income on tax returns.
Mining and oil and gas extraction	21	167	Net income from CRA T1 individual income tax returns, adjusted for understatement of income on tax returns.
Utilities	22	7	Net income from CRA T1 individual income tax returns.
Construction	23	5,397	Net income from CRA T1 individual income tax returns, adjusted for understatement of income on tax returns.
Manufacturing	3A	516	Net income from CRA T1 individual income tax returns.
Wholesale trade	41	935	Net income from CRA T1 individual income tax returns, adjusted for understatement of income on tax returns.
Retail trade	4A	3,381	Net income from the annual *Retail Store Survey* and CRA T1 individual income tax returns, adjusted for understatement of income on tax returns.
Transportation and warehousing	4B	2,226	Net income from CRA T1 individual tax returns, adjusted for small (less than $200,000 gross business income) operators in the urban transit industry. Combined with data on net income for taxi and limousine service taken from the annual *Survey of Taxi and Limousine Services*, with an imputation for undeclared tips.
Information and culture	51	180	Net income from CRA T1 individual income tax returns.
Finance, insurance, real estate and rental and leasing	5A	1,774	
Finance and insurance	5A0620, 5A0630	1,241	Net income from CRA T1 individual income tax returns, adjusted for understatement of income on tax returns.
Real estate and rental and leasing	5A0300, 5A0400, 5A0510, 5A0520, 5A0640	533	Real estate agents and brokers: gross income from CRA T1 individual tax returns multiplied by a historical tax data derived net/gross ratio. Other services related to real estate: CRA T1 individual tax returns combined with *Labour Force Survey* data on self-employed.
Professional, scientific and technical services	54	6,667	
Legal, accounting, tax preparation, bookkeeping and payroll services	541A00	4,519	
Legal services		2,625	Net income from CRA T1 individual tax returns, adjusted for understatement of income on tax returns.
Accounting, tax preparation, bookkeeping and payroll services		1,894	Net income from the *Annual Survey of Accounting and Bookkeeping*.
Architectural, engineering and related services	541300	355	Net income from the *Annual Survey of Engineering Services*, combined with data on net income from CRA T1 individual income tax returns.
Other professional, scientific and technical services	541500, 541800, 541B00	1,793	Net income from the *Annual Survey of Advertising and Related Services*, and the *Annual Survey of Software Development and Computer Services*, combined with data on net income from CRA T1 individual income tax returns.
Administration and support, waste management and remediation services	56	1,673	Net income from CRA T1 individual tax returns, adjusted for understatement of income on tax returns.
Educational services	61	721	Growth in gross output of the industry applied to old estimates
Health care and social assistance	62	10,324	
Offices of physicians	621100	6,162	Net income from CRA T1 individual income tax returns.

Table 5.9 Sources and methods of net income of non-farm unincorporated business, excluding rent for benchmark years, 2000

Industry description	Input-Output[1] industry code	Millions of dollars	Summary of methods for benchmark years
Offices of dentists	621200	1,644	Net income from CRA T1 individual income tax returns.
Miscellaneous ambulatory health care services	621A00	1,280	Net income from CRA T1 individual income tax returns.
Nursing and residential care facilities	623000	23	Net income from CRA T1 individual income tax returns.
Social assistance	624000	1,215	Net income from CRA T1 individual tax returns, adjusted for understatement of income on tax returns.
Arts, entertainment and recreation	71	489	Net income from CRA T1 individual income tax returns.
Accommodation and food services	72	774	
Accommodation services	721100, 721A00	260	Net income from CRA T1 individual income tax returns, combined with net income data from *Annual Survey of Traveller Accommodation* and *Annual Survey of Travel Arrangement Services*.
Food services and drinking places	722000	514	Net income from *Annual Survey of Food Services and Drinking Places*, adjusted for understatement of net income.
Other services	81	1,525	
Repair and maintenance	811	563	Auto repair and maintenance: net income from CRA T1 individual income tax returns, adjusted for understatement of income on tax returns. Other repair and maintenance industries: based on current production and historical data available from Input-Output Tables.
Dry cleaning and laundry services	812300	72	Net income from *Annual Survey of Personal Services*.
Personal care services and other personal services	812A00, 812200	890	
Other personal services and funeral services		278	Net income from *Annual Survey of Personal Services* for combined industries 8121 and 8129. Split between 8121 and 8129 using personal expenditures information.
Personal care services		612	Net income from *Annual Survey of Personal Services* for combined industries 8121 and 8129. Split between 8121 and 8129 using personal expenditures information.
Total		**37,830**	

1. Input-Output industry classification and its relationship to the NAICS classification is presented in the publication *The Input-Output Structure of the Canadian Economy,* catalogue no. 15-201.

5.35 Data sources and methods used for the non-benchmark years are dependent on the availability of benchmark data. Canada Revenue Agency's (CRA) T1, along with some survey information, is used in for estimating t-2. Sources of data that are used for the first three years of the revision cycle are not usually available to assist in preparing estimates for the year t-1. In this case, annual estimates are obtained by using the sum of the quarterly estimates (t-1) as a projector.

5.36 Table 5.10 presents the method of estimation used for the non-benchmark years, by industry. The t-2 estimates are an extension of the benchmark period. Most of the estimates are derived using net income from Canada Revenue Agency's (CRA) T1. For retail and wholesale trade industries, survey information is the sole source of information used to produce the t-2 estimates.

5.37 With the exception of the physicians, dentists and the other health industry, t-1 estimates by industry are obtained by using the corresponding industry's sum of its quarterly estimates as a projector. For offices of physicians and dentists, provincial government expenditures on medicare and personal expenditures on medical and dental services are used respectively as the projectors. Finally, net income of the other health industry is projected using earnings information from the *Survey of Employment, Payrolls and Hours* on health care and social assistance.

Table 5.10 Sources and methods of net income of non-farm unincorporated business, excluding rent for projection years

Industry description	Summary of methods[1] for projection years	
	t-2	t-1
Forestry and logging	Net income from CRA T1 individual tax returns, adjusted for understatement of income on tax returns.	Sum of quarters used as projector
Fishing, hunting and trapping	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Support activities for agriculture and forestry	Sum of components	Sum of components
Support activities for agriculture	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Support activities for forestry	Net income from CRA T1 individual tax returns, adjusted for understatement of income on tax returns.	Sum of quarters used as projector
Mining and oil and gas extraction	Net income from CRA T1 individual tax returns, adjusted for understatement of income on tax returns.	Sum of quarters used as projector
Utilities	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Construction	Net income from CRA T1 individual tax returns, adjusted for understatement of income on tax returns.	Sum of quarters used as projector
Manufacturing	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Wholesale trade	Value of total annual wholesale sales (*Wholesale Trade Survey (Monthly)*) used as projector.	Sum of quarters used as projector
Retail trade	Value of total annual retail sales (*Monthly Retail Trade Survey*) used as projector.	Sum of quarters used as projector
Transportation and warehousing	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Information and culture	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Finance, insurance, real estate and rental and leasing	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Finance and insurance	Not projected, see aggregate	Not projected, see aggregate
Real estate and rental and leasing	Not projected, see aggregate	Not projected, see aggregate
Professional, scientific and technical services	Sum of components	Sum of components
Legal, accounting, tax preparation, bookkeeping and payroll services		
Legal services	Net income from CRA T1 individual tax returns, adjusted for understatement of income on tax returns.	Sum of quarters used as projector
Accounting, tax preparation, bookkeeping and payroll services	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Architectural, engineering and related services	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Other professional, scientific and technical services	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Administration and support, waste management and remediation services	Net income from CRA T1 individual tax returns, adjusted for understatement of income on tax returns.	Sum of quarters used as projector
Educational services	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Health care and social assistance	Sum of components	Sum of components
Offices of physicians	Net income from CRA T1 individual income tax returns.	Provincial government expenditures on medicare used as projector
Offices of dentists	Net income from CRA T1 individual income tax returns.	Personal expenditures on dental and child care services used as projector
Other health	Net income from CRA T1 individual income tax returns.	Personal expenditures on medical and child care services used as projector
Miscellaneous ambulatory health care services	Not projected, see aggregate	Not projected, see aggregate
Nursing and residential care facilities	Not projected, see aggregate	Not projected, see aggregate
Social assistance	Not projected, see aggregate	Not projected, see aggregate

Table 5.10 Sources and methods of net income of non-farm unincorporated business, excluding rent for projection years

Industry description	Summary of methods[1] for projection years	
	t-2	t-1
Arts, entertainment and recreation	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Accommodation and food services	Sum of components	Sum of components
Accommodation services	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Food services and drinking places	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Other services	Sum of Components	Sum of components
Repair and maintenance	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Personal and laundry services	Sum of Components	Sum of components
Dry cleaning and laundry services	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Personal care services and other personal services	Sum of Components	Sum of components
Other personal services	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector
Personal care services	Net income from CRA T1 individual income tax returns.	Sum of quarters used as projector

1. Canada Revenue Agency (CRA).

Quarterly estimation methods and data sources

5.38 There is no direct quarterly information on the net income of non-farm unincorporated business excluding net rental income. As a result, related indicators are used to extrapolate the annual estimates. These indicators are based on a combination of survey and administrative data. The sub-annual indicator is also used to derive the quarterly pattern of the time series in question, including the benchmark years. This is done using the Denton-Cholette quadratic minimization method.[12] This method adjusts sub-annual estimates to the annual benchmark in such a way as to preserve, as much as possible, the movement of the sub-annual estimates. Table 5.11 provides a summary of the quarterly methodology.

5.39 Current quarterly estimates of nine industries are obtained using industry related personal expenditure data as a projector. These industries are:

- support activities for agriculture;
- educational services;
- arts, entertainment and recreation;
- accommodation services;
- food services and drinking places;
- repair and maintenance;
- dry cleaning and laundry services;
- other personal services and funeral services; and
- personal care services.

5.40 In six other cases, quarterly projectors are derived using a combination of real industry estimates (gross domestic product, and gross output by industry) produced by the Industry Accounts Division and an industry related personal expenditure on consumer goods and services price index. These industries are:

- utilities;
- legal services;
- accounting, tax preparation, bookkeeping and payroll services;

12. This procedure is sometimes called the Denton-Cholette Method. For more detail about the method, see Cholette, P.A. (1984): Adjusting sub-annual series to yearly benchmarks. *Survey Methodology*, 10, 35-49.

- architectural, engineering and related services;
- other professional, scientific and technical services; and
- administration and support, waste management and remediation services.

5.41 For a third group of industries quarterly estimates are derived using labour related projectors. They consist of labour income estimates prepared as part of the Income and Expenditure Accounts (IEA), payroll information from the *Survey of Employment, Payrolls and Hours* (SEPH) and data from the *Labour Force Survey* (LFS) on self-employment. For finance, insurance, real estate and rental and leasing, labour data is combined with real estate commissions to produce a projector. The industries using labour related projectors are:

- forestry, logging and support activities for forestry;
- fishing, hunting and trapping;
- mining and oil and gas extraction;
- transportation and warehousing;
- information and culture; and
- finance, insurance, real estate and rental and leasing.

Table 5.11 Sources and methods of net income of non-farm unincorporated business, excluding rent for quarterly estimates

Industry description	Summary of methods[1]
Forestry and logging	Labour income used as projector
Fishing, hunting and trapping	Labour income used as projector
Support activities for agriculture and forestry	Sum of components
Support activities for agriculture	Personal expenditure on pet care used as projector
Support activities for forestry	Labour income used as projector
Mining and oil and gas extraction	Labour income used as projector
Utilities	Constant dollar GDP at basic prices for utilities industry combined with price index used as projector
Construction	Combined capital expenditure data on work put-in-place, highway construction and alterations used as projector
Manufacturing	Value of total manufacturing shipments from *Monthly Survey of Manufacturing* used as projector
Wholesale trade	Value of total wholesale sales from *Wholesale Trade Survey (Monthly)* used as projector
Retail trade	Value of total retail sales from *Monthly Retail Trade Survey* used as projector
Transportation and warehousing	*Survey of Employment, Payrolls and Hours* weekly payroll used as projector
Information and culture	*Survey of Employment, Payrolls and Hours* average weekly earnings combined with *Labour Force Survey* data on the self-employed used as projector
Finance, insurance, real estate and rental and leasing	*Survey of Employment, Payrolls and Hours* weekly payroll combined with transfer costs (real estate commissions) used as projector
Finance and insurance	Not projected, see aggregate
Real estate and rental and leasing	Not projected, see aggregate
Professional, scientific and technical services	Sum of components
Legal, accounting, tax preparation, bookkeeping and payroll services	Constant dollar gross output combined with price index used as projector
Legal services	Constant dollar gross output combined with price index used as projector
Accounting, tax preparation, bookkeeping and payroll services	Real GDP at basic prices combined with price index used as projector
Architectural, engineering and related services	Real GDP at basic prices combined with price index used as projector
Other professional, scientific and technical services	Real GDP at basic prices combined with price index used as projector
Administration and support, waste management and remediation services	Real GDP at basic prices combined with price index used as projector
Educational services	Personal expenditures on education used as projector
Health care and social assistance	Provincial government expenditures on medicare combined with personal expenditures on medical, dental and child care used as projector
Offices of physicians	Not projected, see aggregate

Table 5.11 Sources and methods of net income of non-farm unincorporated business, excluding rent for quarterly estimates

Industry description	Summary of methods[1]
Offices of dentists	Not projected, see aggregate
Miscellaneous ambulatory health care services	Not projected, see aggregate
Nursing and residential care facilities	Not projected, see aggregate
Social assistance	Not projected, see aggregate
Arts, entertainment and recreation	Personal expenditures on recreational services used as projector
Accommodation and food services	Sum of components
Accommodation services	Personal expenditures on board, lodging and hotels used as projector
Food services and drinking places	Personal expenditures on meals outside the home used as projector
Other services	Sum of components
Repair and maintenance	Personal expenditures on various types of repairs used as projector
Dry cleaning and laundry services	Personal expenditures on laundry and dry-cleaning used as projector
Personal care services and other personal services	Sum of components
Other personal services and funeral services	Personal expenditures on funerals, photography and miscellaneous household services used as projector
Personal care services	Personal expenditures on hairstyling for men and women used as projector

1. Quarterly estimates are adjusted to annual benchmarks using the Denton-Cholette quadratic minimization method. This method adjust sub-annual estimates to the annual benchmark in such a way as to preserve as much as possible the movement of the sub-annual estimates.

5.42 The remaining industries use a variety of sources to establish quarterly estimates. The construction industry estimate employs data on gross capital formation excluding machinery and equipment as its projector. Manufacturing, wholesale and retail trade industries use their respective monthly survey information as projectors. For the health care and social assistance industry, no sub-industry detail is estimated on a quarterly basis. It is projected using the movement of provincial government expenditures on medicare, combined with personal expenditures on medical, dental and child care.

Provincial and territorial estimation methods and data sources

5.43 Generally, provincial and territorial estimates are prepared in the same method as the Canada annual estimates, using provincial and territorial versions of the source data. There are, however, a few exceptions. For the most current year, the fishing, hunting and trapping industry is projected using the Department of Fisheries and Oceans' data on value of commercial landings. In addition, estimates of net income for legal services and the accounting, tax preparation, bookkeeping and payroll services industries are derived using labour related information as opposed to real industry estimates (gross domestic product, and gross output by industry).

Net rental income of non-farm unincorporated business

Concepts and definitions

5.44 The rental portion of net income of non-farm unincorporated business includes all net rental income of individuals in their capacity as owners, including the implicit income that they generate by inhabiting a dwelling that they own. The latter component is included because, in national accounting, persons who own the dwellings in which they live are treated as owning unincorporated enterprises that produce housing services that are consumed by the households to which the owner belongs.[13] This imputation is made to ensure that the measure of production will not vary when shifts occur between owner-occupancy and the renting of residential dwellings.

13. See paragraph 9.58 of *System of National Accounts 1993*.

Annual estimation methods and data sources

5.45 For net residential rental income of non-farm unincorporated business, the data for the benchmarking process are estimated by the Income and Expenditure Accounts Division.

5.46 The overall approach is to first estimate the residential rent that is paid to landlords, or imputed to owner-occupants.[14] Rent, paid and imputed, is published in personal expenditure. Next, the rent paid to corporations and governments is subtracted. Then, the expenses incurred by owners (repair costs, property and school taxes, insurance, mortgage interest, depreciation and miscellaneous expenses) are deducted to obtain the net income of non-farm unincorporated business from paid and imputed residential rent, to which Industry Accounts Division's net income of non-farm unincorporated business from non-residential rent is added.[15] (Table 5.14)

Rent, paid and imputed

Rent paid to landlords

5.47 The estimate of paid rent begins with the housing stock, as measured by the *Census of Population*. The housing stock is divided into single-family dwellings, multiple dwellings, mobile homes, cottages, garages and farms. The Census figures on these stocks are extrapolated annually by the Investment and Capital Stock Division, which uses the number of new dwellings completed, plus conversions,[16] less demolitions from the survey of the Canada Mortgage and Housing Corporation (CMHC) and the *Building Permits Survey*. The housing stock is also divided between rented or owned dwellings and occupied or vacant dwellings, using fixed ratios based on the census.

5.48 The average rent is defined as the average price paid by renters for the use of a dwelling (single-family dwellings, multiple dwellings and mobile homes). This average rent is estimated using data drawn from the sample of respondents to the *Labour Force Survey*. The housing component of the *Consumer Price Index* is also based on these same data.

5.49 The number of rented and occupied dwelling units (single-family dwellings, multiple dwellings and mobile homes) is multiplied by the average rent to obtain contract rent. The portion of contract rent that is not related to the dwelling space, that is, expenditures relating to facilities and services provided by landlords, is subtracted to obtain paid rent.[17] These expenditures include depreciation of furniture, stoves, refrigerators and washing machines as well as costs related to water, electricity, heating, parking and maintenance services. Since the average rent is not available for cottages and farms, stocks and estimates of rent for other types of dwellings are used in order to obtain an approximation.[18] For garages, the average rent comes from the *Survey of Household Spending*. Finally, an adjustment is made to remove the portion related to offices in the dwelling.

5.50 Several sources are used to estimate expenditures relating to facilities and services provided by landlords, including the *Survey of Household Spending*, personal expenditure data on furniture and household appliances and on energy, and the *Survey of Employment, Payrolls and Hours* for maintenance services.

5.51 Data provided by the Prices Division indicate that approximately 2% of workers use their dwelling as a workplace. The Income and Expenditure Accounts Division hypothesizes that 25% of rent should be attributed to the business portion. The calculation is as follows:

14. Residential rent that is paid to landlords is referred to as paid rent in the rest of this chapter; residential rent imputed to owner-occupants is referred to as imputed rent.
15. The non-residential portion of net rental income of non-farm unincorporated business represents about 3% of the total.
16. These are additional dwelling units created from formerly non-residential buildings or from other types of residential buildings.
17. Paid rent is often referred to as gross space paid rent or gross paid rent for space, emphasizing that this estimate measures only the cost of the space occupied.
18. Paid rent for cottages, garages and farms accounts for less than 3% of the total.

Paid rent

x Ratio of rent used for office space (25%)

x Ratio of individuals using their dwelling as a workplace (2%)

= Adjustment for offices in the dwelling

5.52 Paid rent is the starting point for estimating rent imputed to owner-occupants.

Rent imputed to owner-occupants

5.53 Dividing paid rent by the rented and occupied housing stock, results in an estimate of the average rent. This estimate is adjusted using a coefficient of quality, since a dwelling that is owned is generally larger and of better quality than a rented dwelling. This coefficient is based on the average number of rooms in owned dwellings compared to that of rented dwellings, according to the *Census of Population*. Imputed rent[19] is obtained by multiplying the number of dwelling units owned and occupied (single-family dwellings, multiple dwellings and mobile homes) by the average rent paid adjusted by a quality coefficient. The calculation is as follows:

Paid rent

÷ Rented and occupied housing stock

= Average rent paid

x Coefficient of quality related to a dwelling that is owner-occupied

x Owned and occupied housing stock

= Imputed rent

5.54 To obtain imputed residential rent for garages, cottages and farms, the procedure is the same as for rented and occupied dwellings (see paragraph 5.49).

5.55 An adjustment is made for offices in the dwelling in the same way as in rented and occupied dwellings (see paragraphs 5.49 and 5.51).

5.56 Imputed rent, like paid rent, is the starting point for estimating the net rental income of non-farm unincorporated businesses. It is published in personal expenditure as imputed rent.[20]

Net income of non-farm unincorporated business from rent

5.57 Table 5.12, Table 5.13 and Table 5.15 illustrate the calculation of net rental income of non-farm unincorporated business. The calculation is done in three parts: first, net residential rental income imputed to owner-occupants; then net residential rental income of unincorporated businesses; and lastly, net non-residential rental income of unincorporated businesses. Table 5.14 displays estimates for 2000.

Net residential rental income imputed to owner-occupants

5.58 As shown in Table 5.12, the calculation of net residential rental income imputed to owner-occupants begins with imputed rent. From this, owner-occupants' expenditures related to the dwelling are subtracted. These include repair costs, property and school taxes, insurance, mortgage interest, depreciation and miscellaneous expenditures.

19. Imputed rent is often referred to as gross space imputed rent or gross imputed rent for space, emphasizing that this estimate measures only the costs of the space occupied.
20. *National Income and Expenditure Accounts*, catalogue no. 13-001, Table 16, line 10.

5.59 Repair costs are derived from two sources, the *Survey of Household Spending* and the *Homeowner Repair and Renovation Survey* (HRRS).[21] The total of the expenditures from these two surveys is divided between renters and owners, according to the proportions for the benchmark years, which, again, are based on the HRRS.

5.60 Property and school taxes are derived from the financial documents of provincial and local governments. These are compiled by the Public Institutions Division. The residential portion of property and school taxes is provided by the Industry Accounts Division.

5.61 Insurance expenditures are derived from the reports of the Office of the Superintendent of Financial Institutions Canada.

5.62 Mortgage interest, the largest expenditure item, is calculated from quarterly documents of the financial institutions involved in mortgage lending. This group includes chartered banks, trust companies, mortgage lending companies, caisses populaires and credit unions, life insurance companies, pension funds and other financial institutions. The total of residential mortgage interest is then distributed between owners and renters by using the proportions of paid and imputed rent.

5.63 Depreciation is calculated quarterly on a replacement cost basis, by dwelling type, by the Investment and Capital Stock Division. Depreciation is distributed between owners and renters using data on rented and owned dwelling units.

5.64 In the case of owner-occupied dwellings, miscellaneous expenditures include only wages and expenditures related to legal costs. The benchmark data are projected using the growth rate for residential rent imputed to owner-occupants.

Table 5.12 Calculation of net residential rental income imputed to owner-occupants

Description of steps
Rent imputed to owner-occupants
- Expenses of owner-occupants
Repair costs
Property and school taxes
Insurance
Mortgage interest
Depreciation
Miscellaneous expenditures
= Net residential rental income imputed to owner-occupants

Net residential rental income of unincorporated businesses

5.65 With one exception, estimates of net residential rental income of unincorporated businesses are based on the same methods and information sources as for net residential rental income imputed to owner-occupants (see paragraph 5.58). The exception is due to the fact that rents are paid not only to unincorporated businesses, but also to incorporated businesses and governments.

5.66 Table 5.13 shows how net residential rental income of unincorporated businesses is calculated. The starting point is residential rent paid to landlords from which rent paid to governments and incorporated businesses is subtracted. The share attributable to corporations is derived from the *Annual Survey of Service Industries: Real Estate Rental and Leasing and Property Management*. The share attributable to governments is no longer available from surveys. The current value is derived using the growth rate for residential paid rent. Expenses are then removed to arrive at net residential rental income of unincorporated businesses.

21. This survey has been integrated into the *Survey of Household Spending* as of reference year 2003. However, some ratios from the survey are still used.

Table 5.13 Calculation of net residential rental income of unincorporated businesses

Description of steps
Rent paid to landlords
- Rent paid to governments[1]
- Rent paid to incorporated businesses[2]
= Residential rent paid to unincorporated businesses
- Expenses of unincorporated businesses
Repair costs
Property and school taxes
Insurance
Mortgage interest
Depreciation
Miscellaneous expenditures
= Net residential rental income of unincorporated businesses

1. Rent paid to governments are included in the government sales of goods and services.
2. Rent paid to incorporated businesses are included in corporation profits before taxes.

Net non-residential rental income of unincorporated businesses

5.67 Until 1997, non-residential rent paid to unincorporated businesses came directly from the personal income tax returns. However, the level reported became erratic due to changes in methodologies and treatment of the data. The current approach is to use the growth rate of CRA's T1, linking it to the 1997 level. As seen in Table 5.14, this item accounts for only a very small part of the total.

Table 5.14 Net rental income of non-farm unincorporated businesses, 2000

	Residential		Non-residential
	Paid	Imputed	Paid
	millions of dollars		
Rent, paid[1] and imputed[2]	**28,011**	**82,586**	**...**
- Rent paid to governments or incorporated businesses	10,689	...	...
= **Rent paid to unincorporated businesses and imputed to owner-occupants**	**17,322**	**82,586**	**...**
- Expenses	15,072	58,599	...
Repair costs	1,385	4,136	...
Property and school taxes	2,956	14,007	...
Insurance	418	2,039	...
Mortgage interest	5,156	24,522	...
Depreciation	2,692	12,864	...
Miscellaneous expenditures	2,466	1,031	...
= **Net rent**	**2,250**	**23,987**	**876**
Net rental income of non-farm unincorporated businesses		**27,113**	

1. Paid rent falls under personal expenditures on goods and services. It is a component of the paid rent series on Table 16, line 11 of the *National Income and Expenditure Accounts*, catalogue no. 13-001. In 2000, this item included: rent (28,011), plus rental of furniture and household appliances (310), plus janitorial services (738), for a total paid rent of 29,059.
2. Imputed rent falls under personal expenditures on goods and services, displayed as gross imputed rent on Table 16, line 10 of the *National Income and Expenditure Accounts,* catalogue no. 13-001.

Table 5.15 Calculation of net rental income of non-farm unincorporated businesses

Description of steps
Net residential rental income imputed to owner-occupants
+ Net residential rental income of unincorporated businesses
+ Net non-residential rental income of unincorporated businesses
= Net rental income of non-farm unincorporated businesses

Quarterly estimation methods and data sources

5.68 The quarterly methodology is the same as the annual methodology (see paragraph 5.45 to 5.67). However, some steps must be modified when the data sources are available only annually.

Rent

5.69 The stocks of single-family and multiple dwellings are available quarterly from the Investment and Capital Stock Division. The quarterly distribution of the stock of single-family dwellings is applied to the stock of mobile homes and cottages.

5.70 The average rent (see paragraph 5.48) is available monthly.

5.71 Except for maintenance services, expenditures related to facilities and services provided by owners are distributed and projected quarterly using personal consumer expenditure series. For maintenance services, wages paid to janitors from the monthly *Survey of Employment, Payrolls and Hours* (SEPH) are used.

Net rent

5.72 Repair costs are estimated using quarterly data on repairs and renovations, produced for purposes of estimating investment in residential construction.

5.73 Property and school taxes (see paragraph 5.60) are estimated using quarterly series on property taxes collected by provincial and local governments as estimated by the Public Institutions Division.

5.74 Mortgage interest and depreciation are estimated quarterly (see paragraphs 5.62 and 5.63 respectively).

5.75 In the absence of quarterly information, a technique for quadratic minimization of differences is used to obtain a quarterly distribution of the annual values of insurance and miscellaneous expenditures. This technique is also used for net non-residential rent.

5.76 All quarterly series are seasonally adjusted using the X-11 ARIMA method.

Provincial and territorial estimation methods and data sources

5.77 The calculations that yield estimates of paid and imputed residential rent are done quarterly by province and territory. The Canada total is the sum of these. However, to go from paid and imputed rent to net rental income, the calculations are first done quarterly for Canada, then the estimates are distributed annually by province. When there are no relevant indicators for a component, rent by province and territory is used to make the distribution.

5.78 Provincial and territorial data from the *Homeowner Repair and Renovation Survey* are used to distribute repair costs.

5.79 Property and school taxes (see paragraph 5.60) are available by province and territory. The residential portion by province comes from the Industry Accounts Division.

5.80 Property insurance premiums paid by province and territory, compiled by the Office of the Superintendent of Financial Institutions Canada, are used to distribute insurance expenditures.

5.81 For mortgage interest, there is no provincial or territorial indicator. The Canada growth rate is applied to each province and territory.

5.82 Depreciation (see paragraph no. 5.63), which is supplied by the Investment and Capital Stock Division, is available quarterly by province and territory.

Chapter 6 Taxes less subsidies

Introduction

6.1 In the Canadian System of National Accounts, the aggregate gross domestic product (GDP) is measured at market prices – that is, at prices faced by purchasers. These market prices include the effects of government intervention in the market, specifically: taxes levied on production of goods and services; taxes on the goods and services themselves; subsidies paid to producers to influence the costs of production; and, subsidies paid to directly change the price of goods and services or the incomes arising from their production and sale.

6.2 Taxes on production include property taxes, taxes on payrolls and capital, and the costs of business licences, permits and fees. These taxes are levied regardless of the current level of production of goods and services.

6.3 Taxes on products, on goods and services themselves, include the Goods and Services Tax, provincial sales taxes, federal and provincial taxes on sales volumes of gasoline and other motive fuel taxes, tobacco and alcohol, etc. These taxes only arise as a result of the actual production or sale of goods and services.

6.4 Subsidies are unrequited payments made to business sector entities by governments to affect the current costs of production or the final prices of the goods and services produced or the incomes arising from that production.

6.5 Subsidies on production include payments made to business to influence the mix of factors of production used in their operations. They include assistance for training and other payments to reduce the cost of labour as well as payments to compensate producers for the interest costs of capital, property and other taxes, etc.

6.6 Subsidies on products directly affect either the price of those goods and services or the incomes arising from their production and sale. These subsidies include payments to reduce the price of, for example, passenger rail travel and other transportation services such as ferries and electricity, natural gas and other home-heating fuels. Also included in subsidies on products are payments to farmers to compensate them for low market prices for their products and to enhance their incomes from that production.

6.7 Whenever possible, taxes and subsidies are estimated on an accrual basis of accounting rather than a cash basis of accounting so that output reflects as accurately as possible the costs related to it.

6.8 In the income-based GDP table, two items relate to taxes and subsidies: taxes less subsidies on factors of production, and taxes less subsidies on products.

Concepts and definitions

Taxes on products

6.9 Taxes on products[1] are taxes payable per unit of some good or service sold. The tax may be a specific amount of money per unit or it may be calculated as a specified percentage of the goods and services sold. Taxes on products include:[2]

- general sales taxes such as the Goods and Services Tax (GST) and provincial retail sales taxes;
- taxes on alcoholic beverages and on tobacco, which include special taxes, excise taxes and duties collected on the production and sale of alcoholic beverages and tobacco products;

1. In the *System of National Accounts 1993* (SNA 1993), this aggregate appears under “Taxes on products” in the Primary Distribution of Income Account and is described in paragraphs 7.62 to 7.69.
2. The descriptions of the types of taxes on products are based on the descriptions in section 6.07 of the *Financial Management System* (FMS), catalogue no. 68F0023.

- taxes on entertainment, which include taxes collected on tickets to cinemas and theatres and on recreational, cultural and other entertainment activities. Taxes levied by provincial governments on pari-mutuel betting at racetracks and on casino gambling also fall into this category;
- taxes on fuels, including the revenue from special taxes on gasoline, aircraft fuel, diesel fuel, propane and other substances used as fuel;
- custom duties are solely the domain of the federal government; they include the revenue from duties imposed on goods imported into Canada, such as manufactured goods, food, beverages and tobacco;
- profits from the sale of alcoholic beverages and gambling cover all profits earned by government-owned liquor boards, lotteries and other gaming corporations. Since these organizations are fiscal monopolies, their profits are treated as taxes on products because it is impossible to determine if they are derived from market forces or the fact that they are monopolies;
- other consumption taxes include airport security taxes, taxes on meals and hotel rooms and various other consumption taxes.

Table 6.1 Taxes on products by level of government, 2000

	CANSIM	Millions of dollars
Federal		
Taxes on products	V29346149	37,879
Customs import duties	V690200	2,441
Excise duties	V690201	2,291
Excise and other taxes	V690202	33,078
(of which: Goods and Services Tax)	V690203	27,090
Air transportation tax	V690204	0
Miscellaneous	V29346150	69
Provincial		
Taxes on products	V29346153	48,270
Amusement tax	V690207	595
Gasoline tax	V690212	7,037
Retail sales tax (including liquor and tobacco)	V690217	30,585
Profits of liquor commissions	V690218	3,001
Gaming profits	V690208	5,553
Miscellaneous	V29346154	1,500
Local		
Taxes on products:	V29346157	272
Amusement tax	V690220	4
Retail sales tax	V690223	79
Miscellaneous	V29346158	189
Total taxes on products	**V29346147**	**86,422**

Source: *Provincial Economic Accounts*, Table 12, Taxes on production and imports - Canada, catalogue no. 13-213.

Taxes on factors of production

6.10 Taxes on factors of production[3] are paid by enterprises and are related to operations. Such taxes are collected regardless of the level of goods and services production. They must be paid even in the absence of production. These taxes are payable on land, fixed assets, labour or certain types of activities. Taxes on factors of production include:[4]

- all forms of land taxes (property taxes, property transfer fees, business taxes, etc.);
- taxes on payroll;
- vehicle licences (fees and permits);
- taxes and permits from the exploitation of natural resources;
- farm insurance premiums;
- taxes on insurance premiums;
- other licences and permits associated with operations paid by enterprises; and
- fines and penalties imposed on enterprises.

Table 6.2 Taxes on factors of production by level of government, 2000

	CANSIM	Millions of dollars
Federal		
Taxes on factors of production	V29346148	460
Provincial		
Taxes on factors of production	V29346151	19,445
Corporation tax (not on profits)	V600211	4,060
Motor vehicle licences and permits	V690213	1,036
Other licences, fees and permits	V690214	527
Miscellaneous taxes on natural resources	V690215	553
Real property tax	V690216	3,112
Payroll taxes	V690209	7,939
Miscellaneous	V29346152	2,218
Local		
Taxes on factors of production	V29346155	32,672
Licences, fees and permits	V690221	499
Real and personal property tax	V690222	29,898
Business tax	V690224	1,280
Developer's fees	V690225	980
Miscellaneous	V29346156	15
Total taxes on factors of production	**V29346146**	**52,577**

Source: *Provincial Economic Accounts*, Table 12, Taxes on production and imports - Canada, catalogue no. 13-213.

Subsidies on products and on factors of production

6.11 Subsidies[5] are current payments without compensation that governments make to enterprises on the basis of their production activity or the quantity or value of the goods and services they produce, sell or import. Subsidies are equivalent to negative taxes on production.

3. In the *System of National Accounts 1993* (SNA 1993), this aggregate appears under "Other taxes on production" in the Primary Distribution of Income Account and is described in paragraph 7.70.
4. The descriptions of the types of taxes on factors of production are based on the descriptions in sections 6.08 and 6.09 of the *Financial Management System* (FMS), catalogue no. 68F0023.
5. The description of subsidies in this paragraph is based on paragraph 7.71 of the *System of National Accounts 1993* (SNA 1993).

6.12 Subsidies on products[6] are payable per unit of a good or service sold. They may be a specific amount of money per unit or may be calculated as a specified percentage of the goods and services sold. A subsidy may also be calculated as the difference between a specified target price and the market price actually paid by a buyer.

6.13 Subsidies on factors of production[7] are paid to enterprises based on their production activities. These subsidies include, for example, subsidies on payroll or workforce or subsidies to reduce pollution.

Annual estimation methods and data sources

6.14 Taxes less subsidies, either on products or on factors of production, are estimated from the same sources, using the same methodologies.

6.15 For this discussion of sources and methods, the three stages of the production-revision cycle will be considered starting from the benchmark years (first two years of the four year revision cycle, t-4 and t-3) to the non-benchmark years (last two years, t-2 and t-1) and progressing to the current quarter estimates. This order works better because the benchmark year estimates which are based on information from public accounts, audited financial statements and censuses of universe entities, provide a solid ground for understanding the government institutional sector and its activities.

6.16 The benchmark years estimates also benefit from the commodity and industry balancing of the Input-Output Tables (IOT) and are the product of an integrated effort by statisticians of the Industry Accounts Division, the Income and Expenditure Accounts Division and the Public Institutions Division. These estimates are used in establishing the level of the non-benchmark years.

6.17 Non-benchmark year estimates are based on similar source information – financial reports and statements, budget estimates and survey responses–but final versions are often not yet available and the information is still subject to revision.

6.18 Current quarter estimates are based on sub-annual administrative or financial reports, budget estimates and related indicators.

Federal government

6.19 The federal government sub-sector is divided into two parts for purposes of estimation, as the underlying data sources are different. These two parts are called budgetary[8] and extra-budgetary.

6.20 Information for the budgetary part of the sub-sector comes from the Government of Canada Banking and Accounting System of Public Works and Government Services Canada (PWGSC), specifically the Public Accounts of Canada[9] and from monthly statements provided by PWGSC and by Canada Revenue Agency (CRA). Budgetary taxes include customs duties, excise duties (on alcohol and tobacco), excise taxes on motive fuel and other products and the Air Travellers Security Charge. For the last year of the four-year revision cycle, no public accounts are available and the estimates are based on the monthly CRA and PWGSC information.

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6. In the international system, this aggregate appears under “Subsidies on products” in the Primary distribution of Income account. This item is described in paragraphs 7.73 to 7.78 of the *System of National Accounts 1993*.
7. In the international system, this aggregate appears under “2. Other subsidies on production” in the Primary Distribution of Income Account. This item is described in paragraph 7.79 of the *System of National Accounts 1993*.
8. Budgetary entities is the terminology used in Canadian public finance to describe the ministries, departments and agencies of the government. Similarly, extra-budgetary entities is used to describe what the public sector universe refers to as autonomous organizations, boards, commissions and funds, that is, entities that the Canadian System of National Accounts includes in the federal sub-sector but which are not included in the Government of Canada’s budgetary universe, for example, the Canadian Broadcasting Corporation (CBC).
9. The federal, provincial, territorial and Canada and Quebec pension plans public accounts benchmark data are all on a fiscal-year basis. Since estimates for these entities in the IEA were all originally made for a specific quarter, based on monthly or quarterly information, it is a relatively simple matter to convert the benchmark data from a fiscal-year to a calendar-year basis using the appropriate component quarters.

6.21 Data sources for the extra-budgetary part include annual and sub-annual financial reports and statements of the extra-budgetary entities or other information obtained directly from them. If the information is not forthcoming for the most recent year(s), estimates are calculated using data from earlier periods. Extra-budgetary taxes include the Canadian Dairy Commission Levy, premiums charged by the Canada Deposit Insurance Corporation and licence fees paid into the Canadian Television Fund.

6.22 The Goods and Services Tax (GST), while a part of budgetary revenue for the Government of Canada, is not estimated from information contained in the Public Accounts of Canada. For the benchmark years (and the first non-benchmark year), the annual estimate for GST revenue comes from the GST/HST Revenue Pool established by the Government of Canada and those provinces that have harmonized their sales taxes with the GST (New Brunswick, Nova Scotia and Newfoundland). This estimate is then reconciled with the estimate of GST embedded in the components of the final demand matrix of the Input-Output Tables (IOT) to produce annual control totals.

6.23 For the most recent year, the Goods and Services Tax (GST) is estimated using an aggregate indicator and projector calculated from the estimates of GST embedded in the final domestic demand components of GDP. Through the IOT reconciliation and integration process, control estimates are established for the GST embedded in each GDP final demand component. As these final demand components are estimated for non-benchmark years (and, indeed, for current year quarters) they yield an estimate of related GST. An aggregation of these estimates of embedded GST yields the estimator used to produce the GST for the second non-benchmark year, and subsequent periods. Available quarterly, this estimator is also used to distribute the annual GST data for use in the quarterly IEA.

6.24 Agricultural subsidies[10] are estimated as part of accrued net income of farm operators from farm production (Chapter 5). The main sources are Agriculture Division surveys, Agriculture and Agri-Food Canada, the Canadian Grain Commission and various marketing and regulatory agencies in Canada and the provinces.

6.25 Non-agricultural subsidies paid by the federal administration are derived from the Public Accounts of Canada and financial statements of government business enterprises receiving subsidies for the benchmark years. Non-benchmark years are estimated from monthly PWGSC information and information obtained from federal government business enterprises. All non-agricultural subsidies are part of the budgetary accounts.

Provincial and territorial governments

6.26 For benchmark years, source documents used to estimate provincial and territorial taxes and non-agricultural subsidies include the public accounts of each province and territory for budgetary components, and audited financial statements and annual reports of extra-budgetary entities. Non-benchmark year estimates are prepared from information published, annually and quarterly, by provincial governments in budgets, public accounts and other financial statements. In the case of component entities for which financial statements are not available for the most recent year(s), information from the most currently available year is substituted.

6.27 An exception is the provincial share of the Harmonized Sales Tax (HST) which is derived from the same GST/HST Revenue Pool used to establish the federal GST control. Three provinces, Newfoundland, New Brunswick and Nova Scotia, harmonize their provincial sales taxes with the federal sales taxes. The reported HST figures in the provincial government public accounts are not used because they may contain adjustments for prior periods.

6.28 Agricultural subsidies paid by provinces and territories are part of the estimation of accrued net income of farm operators from farm production (see paragraph 6.24 and Chapter 5).

10. Government program payments to farmer and government payments made under farm support programs are used as alternate terminology for agricultural subsidies in Chapter 5.

Local government

6.29 Taxes and subsidies received or paid by municipal governments are derived from annual reports of provincial and territorial government departments of municipal affairs, which summarize information for all municipalities in their jurisdiction, and from financial statements of municipalities and other local government entities.

6.30 Estimates for school boards are based on provincial and territorial department of education information representing a census of local schools. This information is gathered from surveys conducted by Culture, Tourism and the Centre for Education Statistics.

6.31 For non-benchmark years, local administration taxes and subsidies are estimated using: a sample survey collecting municipal budget estimates information, conducted by Public Institutions Division; and, a sample survey collecting financial information for local schools conducted by Culture, Tourism and the Centre for Education Statistics.

Quarterly estimation methods and data sources

6.32 Current quarter estimates of federal taxes, subsidies and Goods and Services Tax (GST) are calculated from the same information used for the last year of the four year revision cycle. The only difference being an increasing difficulty in obtaining information for extra-budgetary entities for current quarters and hence an increasing reliance on prior-period information.

6.33 Provincial and territorial tax revenue estimates are developed from a variety of source information varying widely across jurisdictions. L'Institut de la Statistique du Québec provides estimates based on Government of Quebec internal information. Other provinces provide monthly and quarterly information from their government accounting systems while estimates of some series for some jurisdictions have to be calculated using budget estimates distributed across quarters, using related indicators.

6.34 Current-quarter estimates of taxes less subsidies for the local sub-sector are derived using estimates of annual values and a variety of quarterly distribution methodologies.

6.35 The bulk of local sub-sector taxes, consisting mainly of realy property taxes, are levied on an annual or semi-annual basis. Since the stream of services produced by real property is, for national accounts' purposes, continuous throughout the year, these annual taxes are divided evenly over the component quarters of the year.

6.36 A small sub-set of local taxes is levied on current, observable activity and these are estimated quarterly using related indicators. An example is the Deed Transfer Tax series, estimated on the volume of real estate transactions.

Estimation methods – Provincial and territorial estimates

6.37 Estimates of provincial and local taxes on products and on factors of production as well as provincial and local subsidies are built up by province in the course of preparing national estimates, and pose no problem for provincial accounts.

6.38 Federal government taxes and subsidies on products and on factors of production, on the other hand, must be allocated across provinces and territories.

6.39 Federal taxes less subsidies on factors of production are allocated by province based on the location of production of the industry being taxed or subsidized. For example, employment development subsidies are first allocated across receiving industries and then geographically, using information on the location of production by each industry.

6.40 Taxes less subsidies on products are allocated by province according to the location of production in the case of subsidies and according to the location of final sale in the case of taxes. Therefore, passenger rail subsidies are allocated by passenger-mile travelled and tobacco excise taxes on sales of tobacco products are allocated by province.

6.41 By-province allocation of the Goods and Services Tax is a special case. As discussed previously, calculation of the GST for non-benchmark years and current year quarters is done using a composite indicator and estimator calculated by aggregating the embedded GST included in the value of GDP final demand components. This same procedure is used to allocate the GST by province and territory. Through the benchmarking of GDP components to the provincial IOT, control totals are established for each GDP final demand component by province. For non-benchmark years, the by-province estimation of each final demand component includes a value for embedded GST. Aggregating these estimates of embedded GST produces a composite by-province allocator, which is applied to the national total for GST.

Chapter 7 Personal expenditure on consumer goods and services

Introduction

7.1 Personal expenditure on consumer goods and services includes outlays of transactors of the persons and unincorporated business sector on durable, semi-durable and non-durable goods, and on services.

7.2 Transactors of the persons and unincorporated business sector include all households as well as associations of individuals serving households and certain collective investment schemes.[1] Associations of individuals include non-profit institutions serving households[2] (NPISHs) such as charitable institutions, labour unions, professional organizations and religious organizations, as well as fraternal organizations, credit unions and mutual life insurance companies. Collective investment schemes, such as trusteed pension funds and mutual funds, are included since they act collectively for the benefit of individuals. Note that unincorporated businesses are also included in this sector because of difficulties in separating their income between the portion which is withdrawn for personal use and the portion which is retained in the business. However, for households owning an unincorporated business, only the expenditures for personal needs are included. The current expenses related to the business are excluded from personal expenditure and from final demand as they are treated as intermediate inputs, while their capital expenditures are classified as business gross fixed capital formation in the Canadian System of National Accounts (CSNA).

7.3 In the CSNA, personal expenditure on consumer goods and services presently covers the value of households' expenditure as well as the value of the expenditures incurred by NPISHs on individual consumption of goods and services provided to households as a social transfer in kind. A project is underway to decompose government consumption expenditure by function, according to the classification of the functions of government (COFOG). Once this project is completed, it will be possible to calculate household actual final consumption, which consists of the consumption of goods and services acquired by individual households, by expenditures or through social transfers in kind received from government units or NPISHs.

Classification, measurement and concepts

7.4 The classification of personal expenditure on consumer goods and services is based on the international classification of individual consumption by purpose (COICOP). "Purpose" and "function" are used interchangeably and refer to the socio-economic objectives that economic agents aim to achieve through various kinds of outlays such as food, clothing, housing, health and education. COICOP also groups expenditures into four classes: durable goods, semi-durable goods, non-durable goods and services. Goods are tangible products[3] that can be stored or inventoried, while services are products that cannot be stored and are consumed at the place and time of their delivery. The distinction between non-durable goods and durable goods is based on whether the goods can be used only once or whether they can be used repeatedly or continuously over a period of considerably more than one year. Semi-durable goods, such as clothing and footwear, differ from durable goods in that their expected lifetime of use, though more than one year, is often significantly shorter.

1. This document refers to the "persons" and unincorporated business sector instead of the "households" and unincorporated business sector because of the inclusion of associations of individuals and of certain collective investment schemes.
2. NPISHs are not currently considered as a separate sector in the Canadian System of National Accounts, although Statistics Canada is in the process of developing it.
3. Although durable goods are more typically viewed as an asset, the only way in which the repeated use of durables by households could be recognized would be to extend the production boundary by postulating that the durables are gradually used up in hypothetical production processes whose outputs consist of services. These services could then be recorded as being acquired by households over a succession of time periods (*System of National Accounts 1993*, paragraph 9.40). However, by SNA convention, household consumption is measured only by expenditures and acquisitions.

7.5 Most commodities can be easily assigned to one of the four classes mentioned previously, but some goods and services could be classified to more than one. Multi-purpose commodities are classified according to their predominant purpose. For example, sports shoes suitable for everyday or leisure wear would be classified as footwear and not as recreational equipment. Other commodities are mixed, such as meals consumed outside the home, which include non-durable goods (food and non-alcoholic beverages) and a service. In this case, the full value of the meals is shown as a service. The classification of personal expenditure on consumer goods and services used in the CSNA is presented in 7.6.

7.6 Expenditure on goods is recorded at the time the ownership changes whether paid with cash, cheques, credit cards or by redeeming a gift card. On the other hand, expenditure on a service is recorded when the delivery of the service is completed; for example, prepaid airline tickets will only be recorded when the trips are taken.

7.7 Expenditures are measured at market prices, i.e. they include the provincial and federal sales taxes. Note that they also include all taxes embedded in the price before sales taxes, such as excise taxes and environmental taxes. All gratuities paid for the delivery of a service are also included, but the expenditures are net of subsidies on products.

7.8 Personal expenditure includes spending by Canadian residents at home or when they are temporarily abroad, either as tourists (but not for business purposes), as members of the armed forces or as diplomats. All expenditures by foreign residents temporarily in Canada are excluded from personal expenditure but are included in exports of services.[4]

7.9 Not all outlays by transactors of the persons and unincorporated business sector are included in personal expenditure. As mentioned in paragraph 7.2, business expenditures of unincorporated businesses are excluded. Similarly, in the CSNA, non-profit institutions and other associations of individuals are treated as businesses with respect to their capital expenditure, but as households with respect to their current expenditure. Therefore, their spending on goods and services is measured by their current expenditure net of revenues from the sale of goods and services, which are mostly food, and alcoholic and non-alcoholic beverages.

7.10 The purchase of a house by a household is considered as an acquisition of an asset,[5] as if the purchaser were an unincorporated business. However, the distinction between personal expenditure and capital expenditure is often difficult to make for expenditures pertaining to a house. Improvements such as major renovations, reconstruction or enlargement, which bring about significant changes in some of the characteristics of an existing house and therefore extends the previously expected service life well beyond ordinary maintenance and repairs, are also considered as capital expenditure. On the other hand, ordinary repairs and maintenance that must be undertaken regularly in order to maintain a house in working order over its expected service life are considered as personal expenditure, for example, replacing defective parts with new parts of the same kind.

7.11 Hospital and medical care premiums and the purchase of marriage licenses, motor vehicle licenses and permits and other miscellaneous licenses and permits such as hunting and fishing permits, as well as various fines and penalties are treated as transfer payments to the government sector and therefore not personal expenditure. The above noted household payments are de facto taxes since no good or service is received in return.

7.12 Fees paid directly by households for certain services provided by government, mostly related to education and health, are included in personal expenditure. Current expenditure incurred by government units on individual consumption of goods and services provided to households as a social transfer in kind is included in household actual final consumption.

4. Although many data sources underlying the estimates of personal expenditure series include expenditures in Canada by non-residents, these transactions are excluded in the aggregate by means of the travel receipts from non-residents, series J218 (see paragraph 7.26).
5. The full value of a new house and the ownership transfer costs associated with the purchase of an existing house are considered as capital expenditure.

7.13 For some services, the value of the purchases included in personal expenditure does not always equal the full value of the outlay, but rather an amount reflecting the value of the service consumed by households. For example, the value of the service “games of chance” purchased by households is assumed to be equal to the amounts wagered less the prizes awarded.

7.14 Similarly, the premiums paid for automobile, property, accident and sickness, and life insurance are not considered to be personal expenditure. Only the cost of the service provided is taken into account for personal expenditure. The cost of service is measured by the premiums earned plus the premium supplements[6] minus claims due. It is net of claims due in order to avoid double-counting of personal expenditure since expenditures reimbursed by insurance companies are accounted for separately in selected goods and services, such as automobile repair and electronic equipment. The automobile, property, accident and sickness, and life insurance net premiums[7] are treated as current transfers from corporations to households. See paragraphs 7.83 to 7.88 for the data sources and estimation methods of personal expenditure on automobile, on property, on accident and sickness, and on life insurance.

7.15 Personal expenditure is net of sales of used goods by households. Hence, interpersonal transactions of used goods, excluding sales taxes, cancel out. For transactions between households through the intermediation of a retailer, only the components which represent new production are included; that is, the cost of parts used to repair and/or refurbish the good plus the value added (profit margin and labour charges). However, the value of used goods purchased by households is included in its entirety if the previous owner belonged to corporations, government business enterprises, unincorporated businesses, governments or non-residents. Sales taxes are always included in full, regardless of the previous owner. The estimation method for used motor vehicles is outlined in paragraphs 7.57 to 7.67.

7.16 Selected non-market transactions are included in personal expenditure. Imputations are made to place a market value on some transactions in order to keep personal expenditure invariant to the way certain activities are carried out. Such is the case for rent of owner-occupied dwellings, for financial services indirectly measured when no explicit charges are recorded (such as the portion of bank interest and deposit charges that represent administration costs), for own-account production of food consumed by farmers and for the special treatment of financial leasing of motor vehicles.

7.17 As mentioned in paragraph 7.10, purchases of dwelling units are considered as investment in fixed capital. This capitalization of dwellings requires that personal expenditure include an imputed rent estimate for owner-occupied housing, representing the service yielded by the dwelling. The housing services produced are deemed to be equal in value to the rentals that would be paid on the market for accommodation of the same size, quality and type. Without this imputation, the measure of housing services and of gross domestic product (GDP) would not be invariant to shifts between the owner-occupied dwellings and the renting of residential dwellings. The estimation method for rents is outlined in paragraphs 7.75 to 7.82.

7.18 Financial services provided by banks and other financial institutions such as service charges for deposits and loans are paid for indirectly through variations in deposit and borrowing rates. A practical approach in imputing a value for these services is by taking the difference between the property income receipts of financial institutions and the property income paid by them, and adjusting the net interest received for the use of the financial institution’s own funds. Note that in the calculation of financial services indirectly measured (FSIM), property income includes only interest. Other financial services such as currency exchange and advice about investments are explicitly charged and can be measured directly. See paragraphs 7.89 to 7.95 for the data sources and estimation methods pertaining to personal expenditure on financial service indirectly measured.

6. Premium supplements represent the income from investments of the insurance technical reserves. Technical reserves are defined as pre-paid premiums and reserves against outstanding claims, both being a form of credit extended by the policyholder to the insurer.
7. Net premiums (or claims) are equal to premiums paid minus the cost of service.

7.19 An imputation is also made to personal expenditure for the value of food grown, manufactured and consumed by farmers and the value of goods or services consumed out of income in kind provided to employees in lieu of wages and salaries.

7.20 Finally, rather than consider the periodic payments made for financial leasing of motor vehicles as the purchase of a service, the full value of the vehicle before sales taxes is recorded as personal expenditure on durable goods, as the vehicle is deemed to be purchased and owned by households. However, only the sales taxes applicable to the lease payments are included for the duration of the lease. See paragraphs 7.50 to 7.56 for more details.

Presentation of estimates

7.21 Personal expenditure on consumer goods and services are estimated quarterly at the national level and annually at the provincial and territorial level. These estimates are available at both current and constant prices.

7.22 National estimates of personal expenditure, which become available approximately 60 days after the reference period, are presented in tables 2, 3 and 4 of the *National Income and Expenditure Accounts* (NIEA) for the four classes: durable goods, semi-durable goods, non-durable goods and services. Seasonally adjusted estimates are presented at current prices in Table 2, at constant prices in Table 3, and the contributions to percent change in real gross domestic product in Table 4. Seasonally adjusted estimates for aggregates of personal expenditure at current and constant prices and their contribution to percent change in real personal expenditure on consumer goods and services are shown in tables 16, 17 and 18, respectively. These aggregates—9 major groups (PSG), 38 groups (PS) and the four classes—are calculated from the 130 series (J) of personal expenditure, which are also available to the public on demand. Table 7.6 describes these 130 series of goods and services and presents them according to the groupings published in tables 16 to 18. It should be noted that tables 17 and 18 have been based on the chain Fisher volume indexes since the release of the NIEA for the first quarter of 2001. Prior to that release, the aggregates were derived by summing the individual personal expenditure series, reflecting a fixed-base Laspeyres measure. For more information, refer to the section on chain Fisher volume indexes presented in Chapter 2.

7.23 At the national level, the annual and quarterly series are available dating back to 1926 and 1947 respectively, but the statistics for the period prior to 1961 do not include the conceptual, methodological and statistical changes made at the time of the 1997 historical revision. Monthly national series have been available for personal expenditure on consumer goods since January 1986.

7.24 Provincial and territorial estimates of personal expenditure are based on the same classification of goods and services as at the national level. These expenditures, which are published in the *Provincial Economic Accounts* (PEA) approximately four months after the reference year, are grouped as consumer durables, semi-durables and non-durables goods and consumer services. In the PEA, the estimates at current prices are found in Table 2, at constant prices in Table 3, and their contribution to percent change in real gross domestic product, expenditure-based for the classes of personal expenditure in Table 4. It should be noted that tables 3 and 4 have been based on the chain Fisher volume indexes since the October 2002 release of the PEA covering the period up to 2001 (see Chapter 2 for more details). Although not published, most of the 130 series of goods and services and their groupings are available to the public.[8]

7.25 At the provincial and territorial level, series that incorporate the conceptual, methodological and statistical changes introduced in the 1997 historical revision are available back to 1981. However, unrevised data, covering the period 1961 to 1980, are accessible at current prices, as are statistics at constant prices for the period 1971 to 1980.

8. For confidentiality reasons, some series are grouped at the provincial and territorial level.

7.26 As noted in paragraph 7.8, the aggregate personal expenditure on consumer goods and services represents all expenditures of Canadians, both within and outside Canada, while they exclude expenditures of non-residents in Canada. However, while this definition holds for total spending, it is not the case for the individual personal expenditure series. Most survey data that are used to estimate expenditures by commodity include purchases made by non-residents in Canada and exclude Canadians' expenditures outside Canada, thus reflecting the domestic concept. To obtain estimates of personal expenditure on a residence basis, that is, according to the national concept, it is necessary to add an estimate of the total expenditure of Canadian households abroad and to deduct all purchases of non-residents in Canada. The series J215, J216 and J218, described in Table 7.6, are therefore neither goods nor services as such but rather counterparts that enable the sum of the 127 other series to be brought into line with the national concept of personal expenditure. The purchases of Canadian households abroad are also included in imports of services, while the expenditures of non-residents are considered exports of services. Personal expenditure in the National Income and Expenditure Accounts (NIEA) and in the provincial and territorial economic accounts (PTEA), according to the domestic and national concepts, are illustrated in Table 7.1. The calculation of personal expenditure for the PTEA is similar to the one for the NIEA except for the fact that the notions of expenditures abroad and non-residents refer to the expenditures incurred by the residents of a province or territory outside their boundaries and to the non-residents of that province or territory.

Table 7.1 Domestic and national concepts

National Income and Expenditure Accounts		Provincial and territorial economic accounts
Personal expenditure by Canadian residents in Canada and Personal and business expenditure by residents of other countries in Canada	$\sum_{j=001}^{214} J$ plus $\sum_{j=219}^{226} J$	Personal expenditure by Canadian residents in their province / territory of residence and Personal and business expenditure by residents of other countries in the province / territory and Personal expenditure by residents of other provinces and territories in the province / territory
equals **Personal expenditure on the domestic concept**		
Personal expenditure by Canadian residents abroad	plus J215	Personal expenditure by Canadian residents abroad and Personal expenditure by Canadian residents in other provinces and territories
Expenditure by military personnel abroad	plus J216	Expenditure by military personnel abroad
Personal and business expenditure by residents of other countries in Canada	minus J218	Personal and business expenditure by residents of other countries in the province / territory and Personal expenditure by residents of other provinces and territories in the province / territory
equals **Personal expenditure on the national concept**		

Data sources and estimation methods

Overview

7.27 As noted in Chapter 2, the Canadian System of National Accounts (CSNA) is an integrated conceptual framework, presented in the form of economic accounts. In this framework, personal expenditure on consumer goods and services are integrated with other statistics from the Income and Expenditure Accounts, in addition to being harmonized with the various components of the CSNA, especially with the Input-Output Tables for the 130 series of goods and services.

7.28 It is important to note that like the other components of gross domestic product (GDP), the estimation of personal expenditure operates within a four-year revision cycle. This cycle ensures that any new information drawn from Statistics Canada surveys and data from administrative and other data sources are incorporated into the system. For the first two estimation years of the cycle, benchmark data or annual benchmarks at current prices, with and without sales tax, are derived by balancing supply and demand by commodity. These benchmarks are incorporated into the Input-Output Tables and the Income and Expenditure Accounts.

7.29 Since the Input-Output Tables cover only the first two of the four years annually subject to revision, the Income and Expenditure Accounts Division (IEAD) is responsible for producing national, provincial and territorial estimates of personal expenditure at current prices for the two most recent reference years. Also, the IEAD produces, for the four-year period, quarterly national estimates at current and constant prices as well as annual constant price estimates by province and territory. All these estimates require various operations or processes, which are described in the following paragraphs.

7.30 The first operation consists of projecting benchmark estimates at current prices without sales tax for the two most recent reference years. The operations that follow differ depending on whether they are carried out at the national or at the provincial/territorial level. In the case of national estimates, it is first necessary to distribute the annual series into quarterly series for the four years subject to revision and then to project them to obtain quarterly values for the current reference year.[9] In the case of projected provincial and territorial estimates, they must be adjusted by distributing any difference that might exist between their sum and the national estimate. One reason for this difference could be that the provincial and territorial series are estimated independently of each other (that is, without the prior constraint of additivity to the national estimate) and that the national estimate previously published was not calculated from provincial/territorial data. Another reason could be that revised or more up-to-date source data have since become available.

7.31 The three operations mentioned above, namely projection (annual or quarterly), quarterly distribution and provincial/territorial distribution, are carried out using data series that are called “estimators”. Projection consists of calculating the rate of change of the estimator observed from one period to the next and applying it to the estimation of personal expenditure for the previous period. Quarterly distribution consists of distributing annual values into quarterly values while trying to reflect the quarterly rates of change observed for the estimator, using quadratic minimization techniques. Lastly, the provincial/territorial distribution consists of allocating the difference between the sum of the provincial and territorial estimates and the national estimate, while minimizing the relative impact on the rate of change of each of the provincial and territorial series. The methods used to calculate the estimators for the national estimates at current prices are presented in paragraphs 7.49 to 7.100 while those for the provincial and territorial estimates at current prices are shown in paragraphs 7.101 to 7.108.

9. This applies only when the estimates resulting from the annual revision cycle are published, that is, usually when the estimates for the first quarter of a reference year are published. When the estimates for the second, third and fourth quarters are published, the estimates for the periods preceding the current reference year are not revisable. Only the projection step is carried out for the quarters of the current reference year.

7.32 Once the estimates of personal expenditure at current prices without sales tax have been calculated, the federal and provincial sales taxes must be added to them to obtain the personal expenditure on consumer goods and services at market value. The federal Goods and Services Tax (GST) and provincial sales taxes are calculated for each expenditure series. For further details, see paragraphs 7.109 to 7.112. Table 7.2 presents the current price estimates of personal expenditure for the provinces, territories and Canada for the year 2000.

Table 7.2 Personal expenditure on consumer goods and services, 2000

	Durable goods	Semi-durable goods	Non-durable goods	Services	Total	Percentage
	millions of dollars at current prices					
Newfoundland and Labrador	1,128	793	2,551	3,987	8,459	*1.4*
Prince Edward Island	289	218	658	1,133	2,298	*0.4*
Nova Scotia	2,148	1,392	4,702	8,393	16,635	*2.8*
New Brunswick	1,897	1,150	3,665	5,988	12,700	*2.1*
Quebec	18,898	11,811	35,174	65,304	131,187	*22.0*
Ontario	33,081	21,294	53,405	131,901	239,681	*40.2*
Manitoba	2,575	1,675	5,222	11,129	20,601	*3.5*
Saskatchewan	2,357	1,500	4,471	9,567	17,895	*3.0*
Alberta	9,341	5,669	14,512	33,752	63,274	*10.6*
British Columbia	10,034	6,442	18,378	46,356	81,210	*13.6*
Yukon	85	51	168	371	675	*0.1*
Northwest Territories	105	79	256	488	928	*0.2*
Nunavut	20	41	102	195	358	*0.1*
Outside Canada	..	..	..	108	108	*0.0*
Canada	**81,958**	**52,115**	**143,264**	**318,672**	**596,009**	*100.0*
Percentage	*13.8*	*8.7*	*24.0*	*53.5*	*100.0*	

7.33 Finally, after the estimates at market prices have been calculated, each expenditure series is deflated using consumer price indices or other related price series in order to derive estimates of personal expenditure at constant prices. The methods used to calculate the constant price estimates are presented in paragraphs 7.113 to 7.115. Table 7.3 presents the constant price estimates of personal expenditure for the provinces, territories and Canada for the year 2000.

Table 7.3 Personal expenditure on consumer goods and services at constant prices, 2000

	Durable goods	Semi-durable goods	Non-durable goods	Services	Total
	millions of chained (1997) dollars				
Newfoundland and Labrador	1,159	777	2,381	3,781	8,094
Prince Edward Island	295	213	609	1,080	2,195
Nova Scotia	2,185	1,349	4,312	7,907	15,746
New Brunswick	1,918	1,118	3,362	5,710	12,100
Quebec	18,997	11,474	32,408	62,117	124,959
Ontario	33,231	20,528	49,107	124,472	227,244
Manitoba	2,580	1,614	4,898	10,538	19,629
Saskatchewan	2,415	1,477	4,227	8,893	17,008
Alberta	9,493	5,522	13,292	31,384	59,659
British Columbia	10,099	6,222	17,309	44,337	77,953
Yukon	87	50	158	353	648
Northwest Territories	109	78	243	472	900
Nunavut	20	40	99	189	348
Outside Canada	..	..	..	102	102
Canada	**82,492**	**50,476**	**132,473**	**301,367**	**566,664**

Personal expenditure at current prices

7.34 The purpose of this guide is not so much to describe in detail the methodologies currently used as to give the reader an overview of them. This section, which deals with current price estimates, is divided in three parts: the first two parts present the data sources and methods of the national and provincial/territorial estimators using summary tables while the third discusses the sales tax estimates. The next section deals with personal expenditure at constant prices.

7.35 Estimates of personal expenditure at current prices are derived using national and provincial/territorial estimators, as described in paragraphs 7.30 and 7.31. The data sources and estimation methods usually used to calculate the estimators for the 130 series of goods and services are presented in paragraphs 7.49 to 7.108. We say “usually used” because the source data used for calculating some personal expenditure estimators are occasionally inconsistent, making it necessary to resort to alternative calculation methods. These statistical inconsistencies are identified in the analysis that is conducted in part to confront the different statistical signals available, in order to assess their quality.

7.36 It should be noted that it is difficult to systematically present the methods of calculating estimators for each of the 130 series of consumer goods and services in a unique and standardized format while avoiding duplication. Conversely, it is also difficult to group them into a limited set of identical methods that would each cover a large number of series. However, it is possible to define two general calculation approaches, which can themselves be divided into six methods. The first approach consists of calculating estimators for expenditure series on the basis of direct indicators, that is, indicators that are very closely related to the series to be estimated. By contrast, the second approach consists of using indirect indicators, which do not in themselves represent a purchase of consumer goods or services. By its nature, the second approach tends to produce estimates of lesser quality. The calculation methods for estimators resulting from these two approaches are as follows:

- The direct “current prices” method [M1] consists of using an estimator that is an expenditure on goods or services. This estimator could differ from the series to be estimated because, for example, it includes not only the expenditures of households but also those of businesses and governments. The estimator for spending on furniture, derived from the *Quarterly Retail Commodity Survey*, represents an example of this method.
- The direct “quantity times price” method [M2] applies to goods and services series for which there are direct indicators of quantities. Expenditure estimators are calculated based on a quantity indicator that is converted to nominal values using consumer prices. This method is used for personal expenditure estimators such as those for certain types of transportation as well as energy consumption.
- The indirect “current prices” method [M3] applies primarily to series for which there is no current information on households’ purchases, but which are nevertheless closely linked to a related series or a given industry through its revenues and/or its payroll. In particular, this method is used to calculate estimators for expenditure on shoe or clothing repair.
- The indirect “quantity times price” method [M4] is used when there is no direct or indirect source of information at current prices and no direct indicator of quantities. It consists of converting an indirect indicator of volume into an estimator of expenditures by applying a consumer price index to it. Quarterly estimators of expenditure on taxi services, among others, are calculated using this method.
- The “time trends” method [M5] is used as a last resort, when no reliable estimator is available. In such cases, the volume indicator will be based on recent or historical trends at constant prices, and a related price index will be applied to it. This method is used for quarterly estimators of expenditure on hairstyling services, among others.
- The specific methods [M6] are used for selected series which usually represent a major expenditure by households and require a complex or specific analysis. The complexity of these methods is due to the fact that they consist, in most cases, of using several types of indicators and/or a combination of the methods described above. This is the case, for example, with estimators of personal expenditure on new and used motor vehicles, on tobacco products, on paid rent, on imputed rent, on insurance services, on financial services indirectly measured and on travel expenditures.

7.37 The use of one method rather than another is based primarily on the availability of specific data when the estimators are being calculated. Since the calculation of a large number of estimators for consumer goods and services is based on two main data sources, namely the *Survey of Household Spending* and the *Quarterly Retail Commodity Survey*, the following paragraphs will provide an overview of these surveys and how they are used.

Survey of Household Spending

7.38 The *Survey of Household Spending*[10] (SHS) is an annual survey conducted since 1997.[11] Its main purpose is to obtain detailed information on the spending habits of Canadian households for a variety of goods and services, extending from food to shelter and including expenditure on education and health care. Estimates derived from this survey are published for different aggregates, including those based on household type, household income and geographic region. The data reflect the value at market prices and are reported annually by province, whereas territorial statistics are available from 1997 to 1999 and every two years starting in 2001. The SHS covers all private households in Canada, although certain groups are excluded, such as persons living in residences for senior citizens or in long-term care facilities, members of the Canadian armed forces living in military camps, Canadian residents posted abroad and persons living on Indian reserves. The above-mentioned groups are, however, covered under personal expenditure.

7.39 Conceptually, household expenditures are very similar to personal expenditure on consumer goods and services, despite some differences between them. The SHS data also include various outlays such as personal income taxes, vehicle registration fees, premiums paid to a public health insurance plan and donations to non-profit organizations, which are excluded from personal expenditure because they are considered transfers. The SHS also includes the value of all purchases of second-hand goods, while personal expenditure represents the value of purchases less sales of used goods.[12] On the other hand, certain expenditures such as imputed rents of homeowners are part of personal expenditure but are either not captured by the SHS, or are treated differently by it.

7.40 The SHS is a primary data source used to project personal expenditure on selected commodities for the year following the last benchmark year. The SHS classification of expenditures is therefore adapted to the one used in the CSNA. For most personal expenditure series, a direct mapping exists, while for others, data from other surveys or from the Input-Output Tables are used to allocate various consumer expenditures from the SHS. No mapping is established when the concepts differ significantly.

7.41 Annual estimators for the following goods and services are derived from the SHS:

J101 - Food and non-alcoholic beverages;
J158 - Domestic services;
J159 - Child care, in the home;
J160 - Child care, outside home;
J161 - Laundry and dry cleaning;
J163 - Pet care;
J178 - Interurban bus;
J181 - Taxis;
J183 - Telecommunications;
J184 - Postal and courier services;
J187 - Other recreational services;
J189 - Fees for education and training, other than university;

10. For more information on the SHS, see the *User Guide for the Survey of Household Spending, 2005* (62F0026MIE), available on the Statistics Canada website.
11. Prior to 1997, an occasional annual survey, *Survey of Family Expenditures* (FAMEX) collected information on household spending.
12. For more information on used goods, refer to paragraph 7.15 and to paragraphs 7.57 to 7.67 which deal specifically with used motor vehicles.

J191 - Hairstyling for men and women;
J192 - Other personal care;
J209 - Legal, accounting and other services;
J211 - Miscellaneous household services;
J219 - Cable television and pay television;
J221 - Parking;
J222 - Driving lessons and membership in automobile associations;
J223 - Motor vehicle renting;
J224 - Cinemas;
J225 - Photographic services.

7.42 Depending on the personal expenditure series, either the value of the estimator, its rate of change, its trend or its provincial/territorial distribution is used. To project estimates for the second year following benchmark years and to distribute estimates on a quarterly basis, other data sources and/or methods of calculating estimators are used. These are described in Table 7.7 and Table 7.8.

Quarterly Retail Commodity Survey

7.43 Estimators derived from the SHS are primarily used to project personal expenditure on services. However, they are also used for some goods, but only as a secondary indicator since they have certain deficiencies. For example, since purchases of durable goods are by definition infrequent, it is possible that the sample drawn might not be sufficiently representative and hence the estimates of expenditure on these goods may have a higher variance. This is one of the reasons why the estimators for approximately 40 series of personal expenditure on consumer goods are calculated using data from the *Quarterly Retail Commodity Survey* (QRCS). Moreover, business surveys have the advantage of covering a major portion of the consumer activities of a country or a given region with a limited sample. This is not generally possible with household surveys, due to respondent burden considerations and other constraints.

7.44 It should be noted that the use of QRCS results as estimators for personal expenditure on consumer goods also has some deficiencies. These commodity sales represent not only the purchases of individuals but also those of businesses (including other retailers) and governments. Moreover, retailers are not the only sources of supply for consumers. For example, consumers may also make purchases from wholesalers or buy goods via the Internet. Because of these deficiencies, the use of estimators derived from the QRCS implies that household purchases of specific goods grow at a rate similar to the retail sales of those goods. This assumption is acceptable for many goods, such as food and non-alcoholic beverages. However, for other commodities, such as hardware goods which are bought in larger proportions by businesses, this assumption may result in less reliable estimators.

7.45 Since the first quarter of 1998, the QRCS has collected information on the sales of approximately 120 detailed series of goods and services for 19 types of retail outlets (trade groups) in Canada.[13] The survey is conducted as a supplement to the *Monthly Retail Trade Survey* (MRTS), which collects data on total retail sales.

7.46 As a first step, the QRCS commodity classification is adapted to the one used in the CSNA. The concordance between the two classifications is often direct, but some QRCS commodities must nevertheless be distributed among several CSNA series of goods. When QRCS results are not available to calculate estimators for a given period,[14] the sales of each commodity from a previous period for a given trade group are then expressed in the form of a ratio representing them as a proportion of total sales. These ratios are then applied to the total of monthly retail sales from the MRTS for the same trade group for the period to be estimated. The estimators are then calculated by simply summing the sales of each good for all the trade groups. An example is provided in Appendix 7A.

13. Previously, the distribution by commodity of sales by type of trade was based on the annual results of the retail commodity surveys of 1974 and 1989.
14. The data are usually available with a lag of one quarter.

7.47 Quarterly and annual estimators for the following products are derived from the QRCS:

J001 - Furniture;
J002 - Floor coverings;
J004 - Refrigerators and freezers;
J005 - Washers and dryers;
J006 - Stoves, ranges and microwave ovens;
J007 - Other major appliances;
J008 - Small electrical appliances;
J010 - Garden tools and equipment for outdoor maintenance;
J012 - Used motor vehicles;
J014 - Road and off-road recreational vehicles;
J015 - Motor vehicle maintenance and repairs;
J016 - Motor vehicle parts and accessories;
J017 - Radios, sound systems and accessories;
J018 - TV sets, video equipment and accessories;
J019 - Boats, aircraft and accessories;
J020 - Photographic and optical equipment;
J021 - Sporting and camping equipment;
J023 - Musical instruments and supplies;
J024 - Trailers;
J026 - Recreation equipment rentals;
J027 - Watches and jewellery;
J051 - Men's and boys' clothing;
J052 - Women's, girls' and infant's clothing;
J053 - Thread, yarn and sewing accessories;
J054 - Piece goods;
J056 - Footwear;
J058 - Luggage, leather goods and other personal effects;
J059 - Toys, games and hobby supplies;
J060 - Films and other photographic supplies;
J061 - Household textiles and furnishings;
J062 - China, glassware and kitchenware;
J063 - Lamps, lighting equipment and accessories;
J064 - Flatware;
J065 - Hardware;
J066 - Newspapers, books, magazines and stationery;
J068 - Pets and supplies;
J101 - Food and non-alcoholic beverages;[15]
J103 - Pet food;
J109 - Soaps and other cleaning supplies;
J110 - Other household supplies;
J111 - Pharmaceutical products and medical goods;
J113 - Flowers, plants and other horticultural supplies;
J114 - Cosmetics and toiletries.

15. As noted in paragraph 7.43, the SHS is the main source used when available, while for other periods the QRCS is used.

Other data sources

7.48 While the SHS and the QRCS are the main information sources for most personal expenditure series, several other data sources are also used to estimate selected series. These other sources include a great number of Statistics Canada surveys collecting information on the operating revenues of companies doing business in sectors as varied as transportation, accommodation, food services, recreational services and personal care. Other surveys, directly focusing on households, are also an extremely important source of information for measuring expenditure on other types of goods and services. These include the *International Travel Survey* and the *Travel Survey of Residents of Canada*. Information on prices, primarily drawn from the *Consumer Price Index*, is also used when the only data available are physical quantities. Lastly, a sizable number of statistics obtained from outside Statistics Canada, more specifically from administrative data sources and from various government agencies, provide valuable information.

National estimates at current prices

7.49 Table 7.7 provides a summary of the data sources and estimation methods usually used to calculate each of the national estimators at current prices, on an annual as well as on a quarterly basis. The majority of the estimators of personal expenditure are calculated using one of the first five methods presented in paragraph 7.36. These methods are referred to in this table as M1 for the first method, M2 for the second, etc. The table presents, under three columns, the estimation methods and data sources of the annual estimators for the two most recent years as well as those for the quarterly estimators. Because the calculation methods for some estimators are more complex than others (method M6), special attention is given to most of them in the following paragraphs.

New cars, vans and trucks

Annual method[16]

7.50 Personal expenditure on new cars, vans and trucks[17] are estimated using monthly data from Statistics Canada's *New Motor Vehicle Sales Survey* (NMVSS) along with the monthly reports of the Canadian Vehicle Manufacturers' Association (CVMA). The survey presents the value and number of new motor vehicles sold by each manufacturer, while the reports provide the number of vehicles sold in Canada by model, in addition to identifying fleet sales. In the Canadian System of National Accounts (CSNA), the personal expenditures on new motor vehicles are expressed in terms of the full value of the vehicles that are purchased or leased by households; in other words, there is no consideration of trade-ins and of the tax savings resulting from trading used vehicles in the expenditure series on new motor vehicles.[18] It should be noted that financial leases are treated as sales,[19] although the applicable taxes are mostly distributed over the duration of the leasing contract on the basis of the lessee's periodic payments.

7.51 The data reported in the NMVSS are matched and confronted with those in the CVMA report. This reconciliation consists of applying the manufacturer's suggested retail price (MSRP) to the number of units of each model that are sold, after adjusting the MSRP to reflect rebates offered by dealers and manufacturers, transportation costs and the accessories commonly purchased as options.[20] The values thus obtained by model are then aggregated by manufacturer so that they can be confronted with the NMVSS data.

16. This methodology is also used to derive the annual benchmark estimates.
17. Includes pickup trucks and sport-utility vehicles.
18. Trade-ins and their tax implications are reflected in the personal expenditure series on used motor vehicles (net value). See paragraphs 7.57 to 7.67 for more details.
19. This treatment is similar to the practice followed by manufacturers.
20. Data on prices by model and data on the cost of options are drawn from the *Canadian Red Book* (ISSN 0045-527X) and the *Guide d'évaluation Hebdo* (ISBN 1488-3821).

7.52 Once this reconciliation is carried out, the personal portion of new motor vehicle sales is calculated in two stages.[21] The first stage consists of classifying vehicles sold according to their main use, i.e., for personal or commercial use. Based on provincial and territorial vehicle registration data and CVMA statistics, this stage consists of subtracting from total sales of new vehicles all those clearly intended for commercial use, such as heavy-duty trucks and fleet sales, as well as all other new vehicles registered by businesses and governments. Although this stage serves to identify the purchases of individuals, it is not necessarily an estimator of personal expenditure, since some individuals, such as a number of self-employed workers, use their vehicle partly for commercial purposes. Conversely, some vehicles purchased by the business and government sectors are partially used for personal purposes. Since personal expenditure must represent the personal use that will be made of new motor vehicles purchased, the second stage will consist of subtracting from sales to individuals that portion representing the commercial use that will be made of the vehicles sold and adding a value reflecting the personal use that will be made of vehicles sold to businesses and governments. In practice, reflecting the personal use of all vehicle sales is a difficult task. Nevertheless, adjustments are derived on the basis of commercial use ratios drawn from the *Survey of Household Spending* (SHS) as well as data from the T4 Supplementary file of the Canada Revenue Agency, reflecting the personal use of purchases by businesses and governments. According to all of these calculations, personal expenditure generally accounts for approximately 70 percent of the value of new car sales and 50 percent of the value of new van and truck sales.

7.53 Apart from financial leases, where taxes are based on periodic payments, the calculation of federal and provincial sales taxes is based on the price of new vehicles, not accounting for trades that are made. The effect of these trades on taxes is discussed in paragraph 7.65.

Quarterly method

7.54 As in the case of the annual method, quarterly estimates of personal expenditure on new cars, vans and trucks are calculated using monthly *New Motor Vehicle Sales Survey* (NMVSS) data and the monthly Canadian Vehicle Manufacturers' Association (CVMA) reports. However, unlike with the annual method, the calculations use data by vehicle model aggregated into selected groupings.

7.55 The first operation in deriving the estimator of personal expenditure on new cars consists of calculating the proportion of car sales that are not fleet sales in relation to the total number of units sold and applying this proportion to the value of total sales (that is, without distinction as to the model or manufacturer) reported in the NMVSS. This estimated value of new cars purchased by individuals is then adjusted to reflect the personal use based on information derived from the annual methodology. The value representing the commercial use is included under business gross fixed capital formation on machinery and equipment.

7.56 The method of calculating the estimator of personal expenditure on new vans and trucks is similar to the annual method, except that sales by model are grouped into sales by vehicle category. Seven categories have been identified: light, standard, sport-utility, van, medium-duty, heavy-duty and bus. The first operation consists of applying average prices to the number of units sold, by category. A reconciliation between the values thus estimated and the official estimate from the NMVSS is then performed by manufacturer, and an adjustment is made to the average price per vehicle category for each manufacturer so that the difference can be allocated to them proportionally. The next operation is to subtract from the value of total sales of new vans and trucks all vehicles intended for commercial purposes, such as medium-duty trucks, heavy-duty trucks and buses as well as the value of fleet sales in the other four categories. This estimated value of new vans and trucks purchased by individuals is then adjusted to reflect the personal use based on information derived from the annual methodology. The value representing the commercial use is included under business gross fixed capital formation on machinery and equipment.

21. The "non-personal" portion appears under gross fixed capital formation in machinery and equipment (see Chapter 9).

Used motor vehicles (net value)

Annual method

7.57 As in the case of other used goods purchased during a given period, only a portion of the value of used vehicle purchases is included in gross domestic product (GDP). For personal expenditure before taxes, this portion is equal to the value of purchases less sales of used motor vehicles made by households, hence the concept of net value of used motor vehicle purchases. Since the value of purchases and the value of sales for interpersonal transactions (i.e. no dealer involved) cancel each other out in the calculation, what is actually recorded is the net value of purchases made by households from other sectors of the economy.

7.58 Households have historically been, and still are, the main purchasers of used motor vehicles,[22] and with the exception of interpersonal transactions, most expenditures of this type are made at new and used motor vehicle dealerships. Since these dealers are actually intermediaries between economic transactors wishing to purchase or sell used vehicles, the treatment of transactions carried out by households with dealers will depend on the sector of origin or destination of the vehicles involved in those transactions. Specifically, the net value of personal expenditure on used vehicles will include the total retail value of the sales made by dealers of vehicles that formerly belonged to businesses, governments or non-residents. However, only a portion of the value of sales to households of vehicles that formerly belonged to other households will be included in the calculation, since the ownership of these vehicles does not change sector. The part or portion that is considered in the latter case is equal to the profits generated by dealers on the sales of the vehicles in question as well as the expenses that they incurred, such as vehicle reconditioning costs, salaries of salespersons, etc. Conversely, the value of used cars, vans and trucks sold by dealers to other sectors will be deducted from the net portion of personal expenditure, if the vehicles previously belonged to households, either owned or leased.

7.59 Table 7.4 presents an example of the calculation of the net value of personal expenditure on used motor vehicles. Accounting for the fact that certain components shown in that table could change considerably from one year to another, the purpose of this example is to show the calculation method and to present the relative importance of each component. This method consists in the first instance of estimating the total margin generated by motor vehicle dealers on their sales of used vehicles, i.e. the profits and the incurred expenses excluding the acquisition costs, regardless of who the previous owners of those vehicles were or to whom they have been sold. Second, the dealers' acquisition costs of vehicles which previously belonged to businesses, to governments and to non-residents are added in order to reflect the total retail value of those vehicles that were acquired by the household sector. Finally, the purchases by other businesses as well as the exports of vehicles that previously belonged to households are subtracted in order to obtain the personal expenditure on used motor vehicles.

Table 7.4 Estimation of personal expenditure on used motor vehicles (net value) excluding taxes, fictive estimates

		millions of dollars
Dealers' profits on the sales of used motor vehicles plus incurred expenses excluding acquisition costs		
	New motor vehicle dealers	1,300
	Used motor vehicle dealers	700
+	Dealers' acquisition costs of vehicles that previously belonged to businesses, governments and non-residents	2,900
-	Business purchases of used motor vehicles	200
-	Exports of vehicles that previously belonged to households	900
=	**Personal expenditure (net value)**	**3,800**

22. However, a significant number of fleet returns and off-lease vehicles were exported to the United States in the early 2000s.

7.60 The main data sources used to estimate the sales of used vehicles by motor vehicle dealers are the *New Motor Vehicle Dealer Commodity Survey* (NMVDCS), the sales of the used and recreational motor vehicle and parts dealers reported in the *Quarterly Retail Commodity Survey* (QRCS), and the federal Goods and Services Tax (GST) file. Despite its name, the NMVDCS is in fact a census carried out among motor vehicle manufacturers who answer on behalf of all their dealers. For its part, the GST file is a databank that includes, among other items, statistics on the revenues of companies collecting the GST on behalf of the federal government. The NMVDCS is used to calculate used vehicle sales made by new vehicle dealers, while the used vehicle dealers' market is estimated with data from the GST file and the QRCS.

7.61 Households' purchases of used motor vehicles from dealers are estimated by deducting from the dealers' total used vehicle sales a notional adjustment reflecting the purchases made by the other sectors of the economy, mostly unincorporated businesses. Because vehicle purchases made by households are treated differently depending on whether or not the vehicles previously belonged to other households, domestic sales and exports must be distributed by sector of origin and destination. In making these distributions, data on new vehicle registrations are used and various assumptions are made regarding the average duration of vehicle use before resale.

7.62 Profit margins realized by dealers on used vehicle sales are mainly based on data reported in the Gu*ide d'évaluation Hebdo* or the *Canadian Red Book*, while expenditures related to vehicle reconditioning are drawn from the NMVDCS.

7.63 The following example illustrates how used motor vehicle transactions involving an auto dealer affect personal expenditure and gross domestic product (GDP), using typical scenarios.

Example of used motor vehicle transactions

Assume that a dealer, in order to sell a new car**,** van or truck to a given household, takes the household's used vehicle in trade. As part of the transaction, the dealer assigns a value of $10,000 to the used vehicle, an amount that is deducted from the price of the new vehicle. The impact of this transaction on the net value of personal expenditure on used vehicles is -$10,000. Note that the full value of the new vehicle purchase prior to the trade-in is recorded for the personal expenditure on new cars, vans or trucks.

Now assume that after taking possession of the used vehicle, the dealer makes various standard repairs on the vehicle (valued at $500), before selling it to another household for the sum of $11,500 before taxes. Since the purchaser is a household, $11,500 must be added to the net value of personal expenditure on used vehicles. The final effect on used vehicle personal expenditure (and GDP) is +$1,500 when both transactions are considered (-$10,000 + $11,500). This effect is equal to the dealer's costs of reconditioning and selling the used vehicle as well as his profit from these activities. In other words, we will include in personal expenditure on used vehicles only the impact of the dealer's activities on GDP. This is consistent with the fact that the residual value ($10,000) of the vehicle before repair and resale contributes no added value to the economy as it was already recorded in GDP when the vehicle was sold the first time as a new car**,** van or truck.

It should be noted that the final effect on GDP would have been the same if the used vehicle had not been purchased by a household, or if it had not been a household that traded it to the dealer for a new vehicle. For example, assume that the original owner was a business that had leased the vehicle when it was new and returned it to the dealer when the leasing contract expired. This transaction will be reported in the Canadian System of National Accounts (CSNA) as a disinvestment in machinery and equipment (-$10,000). Assuming now that the dealer then sells the vehicle to a household for an amount of $11,500, then +$11,500 will be attributed to the net value of personal expenditure on used vehicles. The final effect on GDP is +$1,500 (-$10,000 + $11,500). However, in this case, personal expenditure increased $11,500 compared to only $1,500 in the previous case.

7.64 While this personal expenditure series records the net value of purchases made by households from other sectors of the economy, the taxes that are incorporated into those purchases are nevertheless calculated according to the gross value of used motor vehicle sales, including interpersonal sales.[23] In fact, in addition to the taxes applicable to the gross value of used vehicles that are sold during a given period, two other components of taxes are also part of the calculation of this series, namely:

- the tax differential on trade-ins, and
- taxes paid on lease returns when purchased by lessees.

7.65 The tax differential on trade-ins consists of the sales taxes that a household does not have to pay on the purchase of a new vehicle when they trade their vehicle to a dealer. For a given transaction, the amount of taxes that a household will not have to pay is equal to the federal and provincial sales taxes applicable to the value of the used vehicle that will be traded in for a new vehicle. In the CSNA, the sales taxes on purchased vehicles reported in the new cars, vans and trucks expenditure series are calculated according to their full value. Therefore, by convention, the tax differential on trade-ins will be deducted from the net value of expenditure on used motor vehicles, in order to not overestimate the total value of sales taxes that is reported in the system.

7.66 It was previously noted that financial leases are treated in the CSNA as purchases of new vehicles, except that the taxes are mostly distributed over the duration of the contract on the basis of the lessee's periodic payments. Should the lessee of a vehicle decide to purchase it at the end of the contract, that transaction will not be recorded in the CSNA as a used vehicle sale, since this would amount to saying that the individual involved had purchased the same vehicle twice. This being said, in light of the convention that applies to the treatment of taxes on financial leases, the taxes applicable to the residual value of the vehicle the individual will pay at the end of the contract in order to take legal possession of it must be recorded in this series.

Quarterly method

7.67 The quarterly estimator of personal expenditure on used motor vehicles (net value) is calculated using the results of the *Quarterly Retail Commodity Survey* (QRCS) and the *Monthly Retail Trade Survey* (MRTS) as described in paragraph 7.43 and in Appendix 7A. This estimator represents the total retail value of used motor vehicle sales made by dealers, and its use assumes that its rate of growth is identical to that of personal expenditure on used vehicles.

Tobacco products

Annual method[24]

7.68 Personal expenditure on tobacco products requires a specific calculation methodology, which consists of estimating the quantities consumed, to which consumer unit prices are applied. A specific method is used because several sources of information are available and because personal expenditure on cigarettes and other tobacco products include not only legal purchases (that is, purchases for which all taxes were collected by manufacturers, distributors and merchants and were remitted to the administrative authorities concerned), but also expenditures attributable to contraband activities, making the estimation of this series relatively more complex.

7.69 The estimation of personal expenditure on tobacco products on an annual basis results from a reconciliation exercise between several data sources from both the supply side and the demand side. Among the main sources on the demand side are the revenues from specific taxes imposed on the various tobacco products by administrative authorities. These figures are drawn from the federal, provincial and territorial public accounts, as well as corresponding tax rates legislated by governments. Also noteworthy are data from household surveys conducted to evaluate Canadians' consumption habits: the *Canadian Tobacco Use Monitoring Survey* (CTUMS)

23. Although the federal Goods and Services Tax (GST) and provincial sales taxes apply to used vehicle sales made by dealers, interpersonal transactions, on the other hand, are only subject to the provincial sales taxes.
24. This methodology is also used to derive the annual benchmark estimates.

and the *Survey of Household Spending* (SHS). On the supply side, the main data source consists of the domestic sales reported by the *Production and Disposition of Tobacco Products* survey, supplemented by declared international imports, obtained from the International Trade Division.

7.70 The first step of the methodology is calculating the quantity or volume of cigarettes, cigars and fine cut tobacco for which specific taxes have been collected by the federal, provincial and territorial authorities. This volume, which is expressed in terms of cigarettes and is obtained by dividing tax revenues by the specific rates levied in each province and territory, is then compared to data from household surveys and to the domestic sales reported by manufacturers, supplemented by international imports. Respondents to household surveys tend to underestimate their tobacco consumption, generally resulting in a marked difference between the volumes calculated from surveys and those derived from tax data. However, it has been found that in some provinces, especially those where specific taxes are the highest, the quantities obtained from tax data are below the reported consumption, a situation generally attributed to contraband. This would suggest that many smokers are turning to the black market for their supply of cigarettes and fine cut tobacco. This would also explain the fact that domestic sales reported by manufacturers have declined more substantially than the trends reported in household surveys each time major increases in specific tobacco taxation rates have been imposed in Canada.

7.71 The total volume of tobacco consumed in Canada (including contraband tobacco products) is calculated annually based on trends observed in household survey data, on the level of prices and on the domestic sales reported by manufacturers. Up to the period 2001-2002, the domestic sales reported by the manufacturers were generally a good estimator of the total volume of tobacco consumed in Canada, since the products of contraband were to a great extent composed of cigarettes produced by major manufacturers and purchased by illegal wholesalers for resale on the black market. With the federal and provincial tobacco tax increases of 2001 and 2002, this scheme was partly replaced as the wholesale prices of tobacco sold by the major manufacturers increased in accordance with the taxes. Since the contraband of cigarettes produced in unlicensed manufactures of tobacco products and the imports of illegal cigarettes from other countries took a greater share of the market, the domestic sales reported by the legal manufacturers of tobacco could not be used as a reliable estimator of domestic consumption anymore. In order to determine the total volume of tobacco products consumed in the country, information from a number of data sources is now used, including the trends observed in data from household surveys as well as the price-elasticity of demand for tobacco products.

7.72 Once estimated, the total volume consumed in Canada is then distributed by province or territory, using data drawn from the CTUMS, conducted by Statistics Canada for Health Canada since 1999.[25] The consumption of contraband tobacco is then calculated residually for each province and territory by comparing, among other things, the total volume consumed to the quantity derived from tax sources on tobacco products.

7.73 Finally, consumer unit prices are applied to the volumes estimated by province and territory. The prices retained for the volumes sold on the legal market are drawn from the related consumer price index covering Canada's main population centres, while the prices paid for contraband tobacco are obtained from various sources, particularly media reports and press clippings.

Quarterly method

7.74 Since there is no sub-annual data source for the demand of tobacco products, the personal expenditure must be derived from the supply side. To approximate consumption, we use a moving average of the last four months of the volume of cigarettes sold in the country by Canadian manufacturers and by importers of tobacco products. The domestic sales of Canadian tobacco products are taken from the survey on the *Production and Disposition of Tobacco Products* by tobacco manufacturers with facilities in Canada. The import statistics are provided by the International Trade Division. Since taxes on tobacco products and prices vary from one province or territory to another, the national consumption of tobacco products must then be allocated among the provinces and territories using distributions from recent years as obtained by the annual method. Then, consumer unit prices are applied to

25. The provincial and territorial distribution of expenditures on tobacco products, derived from the CTUMS, yields results comparable to the data reported by the SHS.

the volumes estimated by province and territory. An adjustment is made to take expenditures on fine cut tobacco into account. Adjustments may also be made to reflect changing proportions sub-annually between consumption of legal and contraband products.

Paid and imputed rents

7.75 The annual and quarterly estimates of personal expenditure on paid and imputed rents are both derived using the same methodology. Additional information on this method and the one used to calculate estimates of net rent is presented in Chapter 5.

7.76 The estimation of paid and imputed rents begins with the housing stock, as measured by the *Census of Population*. The housing stock is divided into single-family dwellings, multiple dwellings, mobile homes, cottages, garages and farms. The Census figures on these stocks are extrapolated annually by the Investment and Capital Stock Division, which uses the number of new dwellings completed plus conversions[26] less demolitions, from the survey of the Canada Mortgage and Housing Corporation (CMHC) and the *Building Permits Survey*. The housing stock is then divided between rented or owned dwellings and occupied or vacant dwellings.

7.77 The average rent is defined as the average price paid by renters for the use of a dwelling (single-family dwellings, multiple dwellings and mobile homes). This average rent is estimated using data drawn from part of the sample of respondents to the *Labour Force Survey* (LFS). The housing component of the *Consumer Price Index* (CPI) is also based on these same data.

7.78 The number of rented and occupied dwelling units (single-family dwellings, multiple dwellings and mobile homes) is multiplied by the average rent to obtain contract rent. The portion of contract rent that is not related to the dwelling space, that is, expenditures relating to facilities and services provided by landlords, is subtracted to obtain paid rent.[27] These expenditures include depreciation of furniture, stoves, refrigerators and washing machines as well as costs related to water, electricity, heating, parking and maintenance services. Since the average rent is not available for cottages and farms, stocks and estimates of paid rent for other types of dwellings are used in order to obtain an approximation.[28] For garages, the average rent comes from the *Survey of Household Spending* (SHS). For farms, data from the *Census of Agriculture* and from surveys conducted by Statistics Canada on farm operators are also used. Finally, an adjustment is made to eliminate the portion related to offices in the dwelling.

7.79 Several data sources are used to estimate expenditures relating to facilities and services provided by landlords, including the SHS, the personal expenditure on furniture and household appliances and on energy, and the *Survey of Employment, Payrolls and Hours* (SEPH) for maintenance services.

7.80 Data provided by Prices Division indicate that approximately 2% of workers use their dwelling as a workplace. The Income and Expenditure Accounts Division hypothesizes that 25% of rent should be attributed to the business portion. The adjustment for offices in the dwelling is calculated as follows:

Paid rent (before adjustment)
x Ratio of rent used for office space (25%)
x Ratio of individuals using their dwelling as a workplace (2%)
= Adjustment for offices in the dwelling.

7.81 Paid rent is the starting point for estimating rent imputed[29] to owner-occupants. By dividing paid rent by the rented and occupied housing stock, we obtain the average rent. This average rent is adjusted using a coefficient of quality, since a dwelling that is owned is generally larger and of better quality than a rented dwelling. The quality

26. These are additional dwelling units created from formerly non-residential buildings or from other types of residential buildings.
27. Paid rent is often referred to as gross space paid rent or gross paid rent for space, emphasizing that this estimate measures only the cost of the space occupied.
28. Paid rent for cottages, garages and farms accounts for less than 3% of the total.
29. Imputed rent is often referred to as gross space imputed rent or gross imputed rent for space, emphasizing that this estimate measures only the cost of the space occupied.

coefficient is based on the average number of rooms in owned dwellings compared to that of rented dwellings, according to the *Census of Population*. Imputed rent is obtained by multiplying the number of dwelling units owned and occupied (single-family dwellings, multiple dwellings and mobile homes) by the average rent paid and by the quality coefficient. The calculation is as follows:

Paid rent (J154)
÷ Rented and occupied housing stock
= Average rent paid
x Coefficient of quality related to a dwelling that is owner-occupied
x Owned and occupied housing stock
= Imputed rent (J153)

7.82 The imputed residential rent for garages, cottages and farms and the adjustment made for offices in the dwelling are derived similarly as those for rented and occupied dwellings.

Insurance services

7.83 The output of life and non-life insurance corporations represents the value of the service provided in arranging payments of claims and benefits in exchange for the receipts of premiums and contributions. Four insurance services are measured in personal expenditure: property insurance (J162), accident and sickness insurance (J171), auto insurance (J175) and life insurance (J202).

7.84 Personal expenditure for the first three insurance series is derived using the following formula:

(Premiums earned
- Claims due
+ Investment income on technical reserves)
x Personal ratio

7.85 Premiums are earned by insurance companies on a continuous basis over a period, although it is common for a premium to be paid at the start of the period. Premiums collected from policyholders are invested in financial or other assets which are held to meet future claims arising from the occurrence of the events specified in the insurance policies. These pre-paid premiums are a form of credit extended by the policyholder to the insurer and are part of the technical reserves. Similarly, claims become due for payment by the insurance company when the contingency specified in the policy occurs, but they may not be payable until some time later, often because of negotiations regarding the settlement amounts. This is another form of credit described as reserves against outstanding claims and they are the other component of technical reserves. The investment income on these technical reserves accrues to policyholders and represents a premium supplement paid by policyholders to the insurer in the measurement of insurance output.

7.86 The measurement of life insurance output must also take into account the change in actuarial reserves. The actuarial reserves for life insurance are reserve requirements stipulated by the Superintendent of Financial Institutions and represent amounts set aside for payments of future claims and benefits which exceed the premiums and contributions received to the current date. For life insurance, the following calculation is made:

(Premiums/contributions earned
- Claims/benefits due
+ Investment income on technical reserves
- Increases (+ decreases) in actuarial reserves)
x Personal ratio

7.87 Data on premiums, claims and investment income for the provinces with a public automobile insurance plan[30] are obtained from the Public Institutions Division (PID). For the other provinces and territories, automobile insurance data are obtained from the Office of the Superintendent of Financial Institutions Canada (OSFI) and from the *Quarterly Survey of Financial Statistics for Enterprises* (QFS), compiled by the Industrial Organization and Finance Division (IOFD). For accident and sickness insurance and life insurance, data from the Canadian Life and Health Insurance (CLHI), OSFI and IOFD are used, while property and casualty insurance is calculated using information from IOFD and OSFI.

7.88 The personal proportions are based on historical data obtained from the OSFI. These ratios, used to determine the proportion of insurance output purchased by households, are as follows:

- Property and casualty insurance 70%
- Accident and sickness insurance 70%
- Auto insurance 70%
- Life insurance 95%

Financial services indirectly measured (FSIM)

7.89 In addition to explicit charges for selected services they provide, financial institutions also derive income from the interest rate spread between loans and deposits. This spread represents an implicit charge to borrowers and depositors for services that are provided by financial institutions without explicit fees. The following four personal expenditure series for financial services indirectly measured (FSIM) are calculated:

- Financial intermediaries, implicit loan charges (J200);
- Credit unions, implicit deposit charges (J201);
- Financial intermediaries, implicit deposit charges (J204) and
- Credit unions, implicit loan charges (J207).

7.90 FSIM estimates are calculated as interest received minus interest paid plus adjustments for own funds for all financial institutions that offer lending and/or borrowing services to households, except for credit unions. The calculation for credit unions is slightly different because these institutions are considered to be associations of individuals. Therefore, their profits are not part of corporation profits but are treated as redistributions to the persons and unincorporated business sector. The estimate of FSIM for credit unions is calculated as interest received minus interest paid plus adjustments for own funds minus profits of credit unions.

7.91 The FSIM estimates are roughly equal to the interest received by the financial institutions net of interest paid by them. The term roughly is used because the net interest received needs to be adjusted for the use of their own funds in carrying the lending and borrowing activities. The purpose of this adjustment is to insure that the net interest received (i.e. FSIM) actually reflects the service level provided independently of the source of funds. For example, a client of a bank should receive the same amount of service when borrowing money whether it comes from the bank's own funds or from its deposits. Similarly, the level of service received by a depositor should not be reduced when the bank pays interest on bonds issued. Basically, the own funds' adjustment corresponds to interest paid for non-deposit interest minus interest received for other interest bearing assets excluding mortgage and non-mortgage loans.

7.92 The FSIM estimates are then distributed into a depositors' portion and a borrowers' portion representing the service provided to both types of transactors. This distribution is carried out by type of financial institution using their assets and liabilities. For example, if a financial institution has $12 million in deposit liabilities and $8 million in loan assets, then 60% (i.e. (12/(12+8))) of the FSIM would be allocated to depositors while 40% would be allocated to borrowers.

30. Quebec, Manitoba, Saskatchewan and British Columbia.

7.93 The depositors' portion and the borrowers' portion are further divided among persons, governments, non-residents and businesses (corporations, government business enterprises and unincorporated businesses). The depositors' portion is broken down using the assets of each sector (or liabilities from the financial institution's perspective). The borrowers' portion is broken down using the liabilities of each sector (or assets from the financial institution's perspective).

7.94 Estimates of FSIM provided to persons appear in personal expenditure under the four series mentioned above while those allocated to governments and to non-residents are also included on the expenditure side of the production account under government current expenditure on goods and services and exports of services, respectively. FSIM estimates allocated to corporations, government business enterprises and unincorporated businesses are treated as intermediate expenses.

7.95 Source data for the chartered banks are obtained from the OSFI while data for the other institutions of the personal and commercial banking industry, for consumer lending and sales financing, and for credit unions are obtained from the *Quarterly Survey of Financial Statistics for Enterprises* and from other administrative data sources.

Net expenditure abroad

7.96 As noted in paragraphs 7.8 and 7.26, while personal expenditure on consumer goods and services is defined as spending by Canadian residents at home and when temporarily abroad, the individual series (J001 to J214 and J219 to J226) do not reflect this concept.[31] It is therefore necessary to add spending of Canadians abroad to personal expenditure and remove spending by non-residents (personal and business) in Canada from it. This is done through the aggregate net expenditure abroad, which adjusts the sum of the 127 individual series to reflect the total purchases of goods and services by Canadian residents wherever they were produced. Conceptually, travel payments abroad (J215)[32] and spending of military personnel abroad (J216) are personal expenditure, but they are not part of Canadian production. Offsetting entries are therefore made in imports in order to cancel these expenditures in the derivation of gross domestic product (GDP). Conversely, travel receipts from non-residents (J218) are subtracted in the aggregate from personal expenditure and are shown instead as exports, reflecting Canadian production.

7.97 The *International Travel Survey* (ITS) is the major data source for the calculation of net expenditure abroad. It provides data on travel spending and international transportation fares which are used to derive travel payments abroad and travel receipts from non-residents. Additional data on the education and health related travel spending is obtained from Culture, Tourism and the Centre of Education Statistics in order to adequately calculate J215, J218 and the personal expenditure aggregate.

7.98 The travel payments abroad series (J215) is the sum of two components. The first is derived by removing the travel spending of businesses as well as the spending of Canadians on education and health related travel from the total travel payments obtained from the ITS. The second component is the international transportation fares paid by households to foreign carriers which is calculated using a personal ratio of fares paid, derived from the ITS. The travel payments are recorded as imports of travel services, and the international fares as imports of transportation services.

7.99 Travel receipts from non-residents (J218) is also the sum of two components: the receipts for both personal and business travel spending from which the expenditures of non-residents on education and health related travel are removed, and the international transportation fares paid by non-residents to Canadian carriers. Those fares are

31. A notable exception is the education and health related travel spending. The individual personal expenditure series already include such expenditures by Canadians abroad and exclude those of non-residents in Canada. For example, the university fees of Canadians studying abroad are included with the series university fees (J188).
32. The term "travel" in the series travel payments abroad (J215) is not restricted to pleasure travelling, but refers to all non-business trips by Canadians outside Canada.

included in J218 since they are already part of the individual personal expenditure series such as air transport (J179). The travel receipts are recorded as exports of travel services, and the international fares as exports of transportation services, both reflecting Canadian production.

7.100 The spending of military personnel abroad series (J216) is calculated by multiplying the salaries and wages paid to members of the Canadian military abroad as reported by IEAD, with a ratio reflecting the spending of military personnel outside Canada.

Provincial and territorial estimates at current prices

7.101 Provincial and territorial estimates of personal expenditure are only available annually and are based on the same classification of goods and services as are the national estimates (see). Whenever possible, the same data sources and methods employed at the national level are used to calculate the provincial and territorial estimates. Interprovincial travel expenditure, which is discussed in paragraphs 7.105 to 7.108, represents a notable exception.

7.102 Generally, the provincial and territorial estimates are derived by distributing the national estimates by province and territory. However, for certain expenditure series, such as personal spending on electricity, on natural gas, on paid rent and on imputed rent, the quality and timeliness of the statistical information make it possible to calculate provincial and territorial estimates and summing them to obtain national estimates.

7.103 For most goods purchased at the retail level, the provincial and territorial estimates are obtained with the method outlined in Appendix 7A: a provincial/territorial retail commodity breakdown is applied to the provincial and territorial retail trade sales by trade group. The estimation of spending on services by province and territory relies on more varied data sources, such as the *Survey of Household Spending*, surveys on transportation, accommodation, food services, recreational services and personal care as well as on data from administrative data sources.

7.104 provides a summary of the data sources and estimation methods usually used to calculate each of the provincial/territorial estimators at current prices for the two most recent years. Series of personal expenditure without sales tax are derived with these estimators. Depending on the personal expenditure series and the data sources available, the estimators are used either to directly distribute the national benchmarks or to project the provincial and territorial benchmark data. In the latter case, the difference between the sum of the projected provincial and territorial estimates and the national estimate must be distributed by province and territory while minimizing the relative impact on the rate of change of each of the provincial and territorial series. As with the national estimators, the six methods presented in paragraph 7.36 are identified in the table.

Net expenditure abroad

7.105 In the provincial and territorial economic accounts, the aggregate net expenditure abroad includes an international component and an interprovincial component. The first corresponds exactly to the net expenditure abroad outlined in paragraphs 7.96 to 7.100, with the difference that the travel payments abroad are distributed by province or territory of residence and the travel receipts from non-residents are allocated to the province or territory visited. The second component is an estimate of interprovincial travel expenditure of Canadian residents. For the country as a whole, the net interprovincial travel expenditure is equal to zero because the sum of interprovincial travel payments equals the sum of interprovincial travel receipts.

7.106 The international component of travel payments abroad (J215) and travel receipts from non-residents (J218) is calculated using the same data sources and methods as presented in paragraphs 7.96 to 7.100, that is mostly from the *International Travel Survey*. The interprovincial component is derived using payments by residents of a province or territory while travelling in another province or territory for pleasure and other personal reasons. Data for the latter component are obtained from the *Travel Survey of Residents of Canada* (TSRC). An adjustment is also made to reflect other expenditures not covered by the TSRC such as outlays by residents of a province or territory who work in another province or territory.

7.107 As is the case for the international component, spending on education and health related travel is not included with the interprovincial component of J215 and J218 since it is already included with the individual personal expenditure series. For example, the university fees of a resident of Yukon studying in British Columbia are included with the series university fees (J188) and not with the series J215 of Yukon. Note that those fees are included with imports of services for Yukon and with exports of services for British Columbia.

7.108 By international convention, Canadian diplomatic and military personnel posted abroad are considered residents of Canada and their personal expenditure is shown under a region called “Outside Canada”.

Estimates of sales taxes

7.109 The estimators, for which the data sources and estimation methods were presented in the paragraphs 7.49 to 7.108, are used to derive personal expenditure estimates at current prices excluding the federal and provincial sales taxes.[33] The federal Goods and Services Tax (GST) and the provincial sales taxes must be added to obtain personal expenditure at market prices.

7.110 When it replaced the manufacturers’ sales tax in January 1991, the GST had been set at a rate of 7 percent and remained at that level until July 1, 2006, when it was reduced to 6 percent. It was further reduced to 5 percent on January 1, 2008. The GST is charged on most goods and services that are sold and is similar to the value added taxes (VAT) that exist in many industrialized countries. However, because most businesses are allowed to claim input tax credits or refunds for the GST paid on their intermediate expenses, it is to a large extent a tax on final consumption.

7.111 A general sales tax is also levied by all provincial governments except Alberta.[34] A general sales tax is defined as a tax which is legislated by a provincial act and which applies to most goods and selected services purchased. Historically, provincial sales taxes (PST) have been applicable mostly to the purchase of tangible goods, but the tax base has been expanded in many provinces in recent years. In 1992, the Quebec government harmonized most of its tax base to that of the GST. In 1997, the governments of Newfoundland and Labrador, Nova Scotia and New Brunswick adhered to the Harmonized Sales Tax (HST) Agreement.[35] More recently, other provincial governments have decided to apply the general sales tax to additional products.

7.112 In the Canadian System of National Accounts (CSNA), sales taxes are calculated by province and by territory for each personal expenditure series. The tax rate in effect and a taxable proportion are applied to each personal expenditure series at current prices without sales tax. For any series, the taxable proportion corresponds to the percentage of the personal spending for which the sales tax (GST or PST) is applicable. The use of taxable proportions is necessary because of various exemptions that apply to selected goods and services as well as to specific purchasers. The method used to calculate the GST and PST is identical, except in Prince Edward Island and Quebec where the provincial sales tax rate applies to the personal expenditure estimates including the GST. As in the case for the estimates of personal expenditure at current prices excluding sales tax, the sum of the sales tax estimates by province and territory must correspond to the national estimates. An example of the calculation of the sales taxes applicable to furniture for Ontario is presented in Table 7.5 .

33. A certain number of taxes are already incorporated into the personal expenditure series at current prices without sales tax, such as the federal excise duties on tobacco, the federal excise taxes applicable on the purchase of some new motor vehicles, the air travellers’ security charge, and the excise taxes on gasoline, among others.
34. Although there is no general sales tax in Alberta or in the three territories, taxes are nevertheless levied on certain goods and services. For instance, the four governments levy tobacco taxes; there is a tax on accommodation services in Alberta; and the government of Yukon charges a tax on alcoholic beverages bought in stores.
35. In accordance with the HST Agreement, the federal government collects a 13 percent tax on the retail sales subject to the GST in each of the three participating provinces; between July 1st 2006 and January 1st 2008, the HST rate was set at 14 percent while it was set at 15 percent prior to July 1st 2006. From the amount collected, the federal government keeps the revenue attributed to the GST and redistributes the share corresponding to the 8 percent provincial tax to the participating provinces.

Table 7.5 Calculation of sales taxes on furniture in Ontario

		GST calculation	PST calculation
	Expenditure on furniture (excluding sales tax)	$3.075 billion	$3.075 billion
x	Taxable proportion	0.992	0.994
x	Sales tax rate	0.05	0.08
=	Sales tax on furniture	$152.5 million	$244.5 million

Personal expenditure at constant prices

7.113 Personal expenditure on consumer goods and services at constant prices is available at the same level of detail as the national, provincial and territorial estimates at current prices, that is, for 130 series. They are mostly obtained by deflating the current price estimates using *Consumer Price Indexes* (CPIs) for Canada, the provinces and territories.[36] The CPI series, which are released monthly, are based on multiple weight bases through time, linked together to form continuous series, and so are effectively chain price indexes. When no single CPI corresponds to a given series, many indexes can be combined and weighted together, to obtain the required deflator. In certain cases, indexes not directly related to consumption, such as indexes derived from average weekly earnings from *Survey of Employment, Payrolls and Hours*, are used. In other cases, constant price estimates are derived by multiplying quantity data by the average price for the base year or by applying the rate of change of related volume series to the current price estimates of the base year. The price index is then calculated by dividing the estimate at current prices by the estimate at constant prices. To deflate travel payments abroad (J215) and spending of military personnel abroad (J216), the CPIs of other countries, mostly the United States, are used, after having been adjusted for exchange rates.

7.114 The methods used to calculate the 130 series of personal expenditure at constant prices for the provinces, territories and Canada are presented in . For most commodities, provincial/territorial price indexes consistent with the national price index are available and are used to derive provincial and territorial constant price estimates. Whenever they are not available, the national price index, other related price indexes or provincial/territorial volume projectors are used. For example, provincial and territorial estimates of spending on air transport, postal and courier services and selected financial services are deflated with national price indexes.

7.115 Since the release of the *National Income and Expenditure Accounts* for the first quarter of 2001 and of the *Provincial Economic Accounts* in October 2002 covering the period up to 2001, personal expenditure aggregates such as the 38 groups (PS), 9 major groups (PSG), durable goods, semi-durable goods, non-durable goods, services and total personal expenditure are calculated using the chain Fisher index formula, which is described in Chapter 2. Prior to those releases, the aggregates were derived by summing the individual components, reflecting a fixed-base Laspeyres measure.

36. It should be noted that the CPIs for provinces and territories are in fact specially constructed weighted aggregations of city price indexes which ignore non-urban areas.

Table 7.6 Classification of personal expenditure on consumer goods and services, 2000

Code and title	Millions of dollars	Description
PSG01 Food, beverages and tobacco	77,556	
PS01 Food and non-alcoholic beverages	56,547	
J101 Food and non-alcoholic beverages (N-D)	55,477	Bread and cereals; meat and poultry; fish and seafood; prepared meals; dairy products and eggs; oils and fats; fruits and vegetables; bakery products; sugar, jam, honey, chocolate and confectionery; salt, spices, sauces, condiments and seasonings; and frozen foods.
J102 Imputed food (N-D)	1,070	Value of food grown and/or manufactured and subsequently consumed by farmers; food paid in lieu of wages and salaries.
PS02 Alcoholic beverages bought in stores	11,659	
J104 Alcoholic beverages bought in stores (N-D)	11,659	Beer, wine and distilled alcoholic beverages bought in stores.
PS03 Tobacco products	9,350	
J105 Tobacco products (N-D)	9,350	Cigarettes and other tobacco products.
PSG02 Clothing and footwear	27,575	
PS04 Men's and boys' clothing	9,393	
J051 Men's and boys' clothing (S-D)	9,361	Men's and boys' clothing including accessories.
J069 Men's clothing repairs and alterations (S)	32	
PS05 Women's, girls' and infant's clothing	14,125	
J052 Women's, girls' and infants' clothing (S-D)	13,944	Women's, girls' and infants' clothing including accessories.
J067 Women's clothing repairs and alterations (S)	181	
PS06 Footwear	4,057	
J056 Footwear (S-D)	3,946	Footwear excluding sports specific footwear shown in J021.
J057 Footwear repairs (S)	111	
PSG03 Rent, fuel and power	135,618	

(D) Durable goods (S-D) Semi-durable goods (N-D) Non-durable goods (S) Services

Table 7.6 Classification of personal expenditure on consumer goods and services, 2000

Code and title	Millions of dollars	Description
PS07 Imputed rent	82,586	
J153 Imputed rent (S)	82,586	Imputation for the cost of renting owner-occupied dwellings. It represents the rental value of space only, not including the cost of energy (J106, J107 and J108).
PS08 Paid rent	29,059	
J154 Paid rent (S)	28,011	Rent paid for houses, mobile homes, farms and cottages. It represents the rental value of space only, not including the cost of energy (J106, J107 and J108), furniture and appliance rentals (J164), janitorial services (J165) and parking (J221).
J164 Furniture and appliance rentals (S)	310	Imputed value of furniture and electric household appliances included in paid rent.
J165 Janitorial services (S)	738	Imputed value of janitorial services included in paid rent such as cleaning, lawn mowing and snow removal.
PS09 Other shelter expenses	4,666	
J151 Water, sewage and garbage charges (S)	2,579	
J155 Imputed lodging (S)	709	Value of accommodation provided to employees by employers in industries such as mining and logging.
J156 Paid lodging (excluding universities) (S)	114	Fees for recreational camps, hunting or fishing camps, and rooming and boarding houses.
J157 Lodging in universities (S)	266	
J162 Property insurance (S)	998	Only the cost of service is considered to be personal expenditure. The cost of service is measured by premiums earned plus premium supplements (investment income of pre-paid premiums and unpaid claims) minus claims due. Auto insurance is shown in J175.
PS10 Electricity	11,428	
J106 Electricity (N-D)	11,428	
PS11 Natural gas	5,034	
J107 Natural gas (N-D)	5,034	
PS12 Other fuels	2,845	

(D) Durable goods (S-D) Semi-durable goods (N-D) Non-durable goods (S) Services

Table 7.6 Classification of personal expenditure on consumer goods and services, 2000

Code and title	Millions of dollars	Description
J108 Other fuels (N-D)	2,845	Fuels such as propane, light fuel oil, kerosene for heating and cooking purposes and firewood.
PSG04 Furniture, furnishings and household equipment and maintenance	48,476	
PS13 Furniture, carpets and other floor coverings	7,144	
J001 Furniture (D)	6,431	Indoor and outdoor furniture including mattresses.
J002 Floor coverings (D)	470	Excludes wall to wall carpets and wooden or ceramic floors as they are considered a capital expenditure.
J003 Upholstery and furniture repairs (S)	243	
PS14 Household appliances	8,081	
J004 Refrigerators and freezers (D)	1,243	
J005 Washers and dryers (D)	849	
J006 Stoves, ranges and microwave ovens (D)	1,476	Cooking appliances including barbecues.
J007 Other major appliances (D)	1,023	Dishwashers and other portable household appliances.
J008 Small electrical appliances (D)	1,775	Small household appliances such as fans, food mixers, steam irons and electric blankets; telephone and related equipment including facsimile.
J009 Household equipment repairs (S)	399	Repairs to appliances and equipment shown in PS14.
J010 Garden tools and equipment for outdoor maintenance (D)	1,316	Mowers, snow blowers, sprinklers and hand tools used in horticulture such as hedge shears; engines and parts for lawn and garden tractors.
PS15 Semi-durable household furnishings	14,256	
J053 Thread, yarn and sewing accessories (S-D)	515	
J054 Piece goods (S-D)	1,143	All types of fabrics including awnings and flags.
J061 Household textiles and furnishings (S-D)	4,575	Bedding, shades, blinds, art and decorative goods.
J062 China, glassware and kitchenware (S-D)	2,338	Kitchenware; metal, plastic and wooden kitchen utensils; ceramic and glass household products; mirrors.

(D) Durable goods (S-D) Semi-durable goods (N-D) Non-durable goods (S) Services

Table 7.6 Classification of personal expenditure on consumer goods and services, 2000

Code and title	Millions of dollars	Description
J063 Lamps, lighting equipment and accessories (S-D)	1,259	Portable lighting fixtures; insulated wire and cable (excluding aluminium); wiring materials and electrical meters; electric light bulbs and tubes; electric lighting fixtures.
J064 Flatware (S-D)	266	Silver or metal plated table cutlery including knife sets.
J065 Hardware (S-D)	4,160	Lumber and other building materials; hand and power tools (excluding garden tools); hardware such as nails, fasteners, doorknobs and hinges; household batteries; metal and plastic containers and closures; iron and steel wire and cable; scales and balances.
PS16 Non-durable household supplies	10,278	
J103 Pet food (N-D)	1,626	
J109 Soaps and other cleaning supplies (N-D)	2,642	Bleach and fabric softeners; polish, cream and wax products; other cleaning products such as dishwashing detergent and oven cleaning preparations.
J110 Other household supplies (N-D)	3,854	Various household non durable products such as toilet paper, paper towel and tissue; diapers; plastic and paper bags; aluminium foil.
J113 Flowers, plants and other horticultural supplies (N-D)	2,156	Seeds (excluding oil seeds), nursery stock, peat moss, chemical fertilizers, insecticides and herbicides.
PS17 Domestic and child care services	5,121	
J158 Domestic services (S)	1,220	Domestic help such as cleaning services.
J159 Child care, in the home (S)	1,146	
J160 Child care, outside the home (S)	2,755	
PS18 Other household services	3,596	
J161 Laundry and dry cleaning (S)	1,427	
J163 Pet care (S)	968	Veterinary and other services for pets such as grooming, boarding and training.
J211 Miscellaneous household services (S)	1,201	Fees for plumbers, electricians, carpenters, painters and decorators; investigation and security services; machinery and equipment rental.
PSG05 Medical care and health services	28,986	
PS19 Medical care	13,456	

(D) Durable goods (S-D) Semi-durable goods (N-D) Non-durable goods (S) Services

Table 7.6 Classification of personal expenditure on consumer goods and services, 2000

Code and title	Millions of dollars	Description
J166 Medical care, dental care and the like (S)	8,116	Medical and dental fees; charges for various services such as physiotherapy, chiropractic medicine and acupuncture; fees for laboratory tests such as blood tests.
J167 Special care facilities (S)	3,120	Fees for residential health care facilities such as old age homes, nursing homes and psychiatric homes.
J168 Other health care (S)	2,220	Fees for ambulance services paid by individuals; operating expenses of non-profit family and housing services such as food banks, emergency and other relief services.
PS20 Hospital care and the like	1,388	
J169 Hospital care and the like (S)	1,388	Fees for hospital services such as private room option and rental of television in the room.
PS21 Other medical care expenses	4,137	
J171 Accident and sickness insurance (S)	4,137	Only the cost of service is considered to be personal expenditure. The cost of service is measured by premiums earned plus premium supplements (investment income of pre-paid premiums and unpaid claims) minus claims due.
PS22 Pharmaceutical products and medical goods	10,005	
J111 Pharmaceutical products and medical goods (N-D)	10,005	Pharmaceutical products including prescription and non-prescription drugs; ophthalmic goods; wheelchairs and orthopaedic appliances.
PSG06 Transportation and communications	100,169	
PS23 New and used (net value) motor vehicles	37,852	
J011 New automobiles (D)	16,666	Value representing the personal use of new automobiles purchased or leased. The value for leases reflect the full value of the vehicle and not the periodic payments.
J012 Used motor vehicles (net value) (D)	6,730	The value of purchases less sales of used motor vehicles made by households.
J013 New trucks and vans (D)	14,456	Value representing the personal use of new passenger vans, sport-utility vehicles and trucks purchased or leased. The value for leases reflect the full value of the vehicle and not the periodic payments.
PS24 Motor vehicle repairs and parts	11,704	
J015 Motor vehicle maintenance and repairs (S)	6,028	Includes labour costs only. Replacement motor vehicle parts and accessories are shown in J016.

(D) Durable goods (S-D) Semi-durable goods (N-D) Non-durable goods (S) Services

Table 7.6 Classification of personal expenditure on consumer goods and services, 2000

Code and title	Millions of dollars	Description
J016 Motor vehicle parts and accessories (D)	5,676	Motor vehicle parts and accessories such as tires, engines, wheels, brakes and batteries. Labour costs are shown in J015.
PS25 Motor fuels and lubricants	20,284	
J112 Motor fuels and lubricants (N-D)	20,284	
PS26 Other auto related services	5,995	
J174 Bridges and highway tolls (S)	245	
J175 Auto insurance (S)	3,844	Only the cost of service is considered to be personal expenditure. The cost of service is measured by premiums earned plus premium supplements (investment income of pre-paid premiums and unpaid claims) minus claims due.
J221 Parking (S)	773	
J222 Driving lessons and membership in automobile associations (S)	410	
J223 Motor vehicle renting (S)	723	Rental service of passenger cars and trucks (including operating leases).
PS27 Purchased transportation	12,182	
J173 Commissions paid to tour operators (S)	696	Commission implicit in fees of travel agencies, tour operators and tourist guide services.
J176 Urban transit (S)	1,927	Spending on urban passenger transport services such as city or commuter buses and commuter trains.
J177 Railway transport (S)	193	
J178 Interurban bus (S)	694	Spending on interurban and rural bus transportation (scheduled or chartered) and scenic and sightseeing bus transportation.
J179 Air transport (S)	7,175	
J180 Water transport (S)	260	Spending on passenger water transport including sightseeing trips.
J181 Taxis (S)	524	Spending on taxis, limousines and shuttle services.
J182 Moving and storage (S)	713	Fees for moving household furniture and other goods and charges for storage and warehousing.
PS28 Communications	12,152	

(D) Durable goods (S-D) Semi-durable goods (N-D) Non-durable goods (S) Services

Table 7.6 Classification of personal expenditure on consumer goods and services, 2000

Code and title	Millions of dollars	Description
J183 Telecommunications (S)	11,377	Wireline and wireless communication services; internet access services.
J184 Postal and courier services (S)	775	
PSG07 Recreation, entertainment, education and cultural services	66,269	
PS29 Recreation, sporting and camping equipment	23,040	
J014 Road and off-road recreational vehicles (D)	3,043	Recreational vehicles such as motor homes, motorcycles, bicycles and snowmobiles.
J017 Radios, sound systems and accessories (D)	4,568	
J018 TV sets, video equipment and accessories (D)	3,230	
J019 Boats, aircraft and accessories (D)	1,289	Includes motors.
J020 Photographic and optical equipment (D)	1,315	Includes photocopiers and microfilm equipment.
J021 Sporting and camping equipment (D)	2,993	Tents, sleeping bags, sails, firearms, recreational and sporting equipment such as golf and fishing equipment.
J022 Office machines, computers and equipment (D)	2,786	Includes pre-packaged software products and games for personal computers.
J023 Musical instruments and supplies (D)	878	
J024 Trailers (D)	959	
J025 Recreation equipment repairs (S)	524	Repair services for equipment shown in PS29.
J026 Recreation equipment rentals (S)	1,455	Rental services for equipment shown in PS29 including the rental of electronic games and videos.
PS30 Reading and entertainment supplies	10,118	
J059 Toys, games and hobby supplies (S-D)	3,551	Includes video games.
J060 Films and other photographic supplies (S-D)	549	
J066 Newspapers, books, magazines and stationery (S-D)	5,734	Includes paper stationery, greeting cards, post cards and artists' supplies.
J068 Pets and supplies (S-D)	284	
PS31 Recreational services	25,405	

(D) Durable goods (S-D) Semi-durable goods (N-D) Non-durable goods (S) Services

Table 7.6 Classification of personal expenditure on consumer goods and services, 2000

Code and title	Millions of dollars	Description
J185 Games of chance (S)	10,357	Wagers net of payouts for government-controlled slot machines, lotteries, casinos, video lottery terminals and bingos.
J186 Pari-mutuel (S)	420	Wagers net of payouts on horse racing.
J187 Other recreational services (S)	9,024	Spending on live performing arts, sports and recreational events; operating expenditures of non-profit organizations offering sports and recreation services such as ice rinks and community swimming pools, net of sales of selected goods and services.
J219 Cable television and pay television (S)	3,879	Subscription fees for cablevision and satellite services; rental fees for satellite dishes and TV converters.
J224 Cinemas (S)	810	
J225 Photographic services (S)	915	Spending on photographic processing, extra prints and passport pictures; portrait taking, restoration, copying and retouching services.
PS32 Education and cultural services	7,706	
J188 University fees (S)	3,216	Tuition and other fees.
J189 Fees for education and training, other than university (S)	3,738	Tuition fees for private schools, colleges, post secondary vocational and technical schools paid for by individuals; other educational fees such as ballet, music or business schools.
J190 Other educational and cultural services (S)	752	Operating expenditures of non-profit organizations offering educational and cultural services minus educational fees paid by households to non-profit organizations shown in J189.
PSG08 Miscellaneous goods and services	113,176	
PS33 Personal effects n.e.c.	3,414	
J027 Watches and jewellery (D)	2,786	Includes clocks and precious articles such as silverware (excluding flatware).
J028 Watches and jewellery repairs (S)	138	
J058 Luggage, leather goods and other personal effects (S-D)	490	Includes briefcases and smokers' supplies; excludes leather clothing accessories and footwear shown in J051, J052 and J056.
PS34 Personal care	12,001	
J114 Cosmetics and toiletries (N-D)	5,834	Oral care, skin care and hair care products.

(D) Durable goods (S-D) Semi-durable goods (N-D) Non-durable goods (S) Services

Table 7.6 Classification of personal expenditure on consumer goods and services, 2000

Code and title	Millions of dollars	Description
J191 Hairstyling for men and women (S)	3,895	
J192 Other personal care (S)	1,022	Spending on personal services such as massages and cosmetic treatments.
J210 Undertaking and other funeral services (S)	1,250	Includes caskets.
PS35 Restaurants and accommodation services	43,286	
J193 Meals outside the home (S)	30,679	Meals provided by restaurants, cafés and catering services (including tips).
J194 Alcoholic beverages consumed in licensed establishments (S)	7,393	Beer, wine and distilled alcoholic beverages consumed in licensed premises (including tips).
J195 Accommodation services (S)	5,094	Includes hotels, bed and breakfast and camping grounds (including tips).
J196 Board paid (S)	120	
PS36 Financial and legal services	41,769	
J199 Stock and bond commissions (S)	2,494	Commissions paid by households to licensed securities brokers and dealers for transactions in all stocks and bonds. Excludes commissions paid by trusteed pension plans (J206) and those related to mutual funds (J208).
J200 Financial intermediaries, implicit loan charges (S)	7,059	Imputed service charges on non-mortgage loans to households by banks and other deposit accepting companies (except credit unions), and by other consumer lending institutions.
J201 Credit unions, implicit deposit charges (S)	1,149	Imputed service charges on households' deposits by credit unions.
J202 Life insurance (S)	8,071	Only the cost of service is considered to be personal expenditure. The cost of service is measured by the actual premiums earned plus the premium supplements (investment income of pre-paid premiums and unpaid claims) from which we subtract claims due and increases in actuarial reserves.
J203 Financial intermediaries, explicit charges (S)	3,723	Service charges explicitly collected from households by financial institutions (except credit unions) for deposit accounts, guarantees, letters of credit and safety deposit boxes; annual credit card fees.
J204 Financial intermediaries, implicit deposit charges (S)	5,510	Imputed service charges on households' deposits by banks and other deposit accepting companies (except credit unions).

(D) Durable goods (S-D) Semi-durable goods (N-D) Non-durable goods (S) Services

Table 7.6 Classification of personal expenditure on consumer goods and services, 2000

Code and title	Millions of dollars	Description
J205 Credit unions, explicit charges (S)	731	Service charges explicitly collected from households by credit unions for deposit accounts, guarantees, letters of credit and safety deposit boxes; annual credit card fees.
J206 Trusteed pension funds (S)	1,388	Operating expenses associated with managing trusteed pension funds.
J207 Credit unions, implicit loan charges (S)	435	Imputed service charges on non-mortgage loans to households by credit unions.
J208 Mutual funds (S)	8,527	Operating expenses associated with managing mutual funds and commissions paid by households related to the purchase or sale of funds.
J209 Legal, accounting and other services (S)	2,682	Fees for legal and representation services; payments for newspaper notices and advertisements in all media; services provided only by government such as the granting of visas and passports.
PS37 Operating expenses of non-profit organizations	12,706	
J212 Welfare and charitable organizations (S)	4,906	Operating expenditures of welfare and charitable organizations net of sales of selected goods and services.
J213 Religious organizations (S)	4,046	Operating expenditures of religious organizations net of sales of selected goods and services.
J214 Trade unions (S)	2,322	Operating expenditures of membership organization unions net of sales of selected goods and services.
J220 Political parties (S)	150	Operating expenditures of political parties net of sales of selected goods and services.
J226 Indian bands and Inuit (S)	1,282	Spending on wages, salaries and supplementary labour income of Indian bands and Inuit.
PSG09 Net expenditure abroad	-1,816	
PS38 Net expenditure abroad	-1,816	
J215 Travel payments abroad (S)	16,462	Personal spending outside the country by Canadians. Provincial and territorial estimates also include personal spending by Canadians outside their province or territory.
J216 Spending of military personnel abroad (S)	61	
J218 Travel receipts from non-residents (S)	-18,339	Business and personal spending by foreigners travelling in Canada. Provincial and territorial estimates also include personal spending of Canadians from other provinces and territories.

(D) Durable goods (S-D) Semi-durable goods (N-D) Non-durable goods (S) Services

Table 7.6 Classification of personal expenditure on consumer goods and services, 2000

Code and title	Millions of dollars	Description
Personal expenditure on consumer goods and services	596,009	
Durable goods (D)	81,958	
Semi-durable goods (S-D)	52,115	
Non-durable goods (N-D)	143,264	
Services (S)	318,672	

(D) Durable goods (S-D) Semi-durable goods (N-D) Non-durable goods (S) Services

Table 7.7 Sources and methods for national estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2	Quarters
J001	Furniture	Receipts from the *Annual Retail Trade Survey* (ARTS), survey nos. 2422, 2433 and 2447, or from the *Monthly Retail Trade Survey* (MRTS), survey nos. 2406 and 2408, broken down into commodities according to the *Quarterly Retail Commodity Survey* (QRCS), survey no. 2008 [M1]. See Appendix 7A for further details.		
J002	Floor coverings	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J003	Upholstery and furniture repairs	Moving average of personal expenditure on furniture (J001) for t-6 to t-3, where t is the estimation year [M3].		Personal expenditure on furniture (J001) [M3].
J004	Refrigerators and freezers	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J005	Washers and dryers	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J006	Stoves, ranges and microwave ovens	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J007	Other major appliances	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J008	Small electrical appliances	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J009	Household equipment repairs	Moving average of personal expenditure on refrigerators and freezers (J004), washers and dryers (J005), stoves, ranges and microwave ovens (J006), other major appliances (J007), small electrical appliances (J008) and garden tools and equipment for outdoor maintenance (J010) for t-4 to t-1, where t is the estimation year [M3].		Personal expenditure on refrigerators and freezers (J004), washers and dryers (J005), stoves, ranges and microwave ovens (J006), other major appliances (J007), small electrical appliances (J008) and garden tools and equipment for outdoor maintenance (J010) [M3].
J010	Garden tools and equipment for outdoor maintenance	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J011	New automobiles	Value of sales of new automobiles as reported by the *New Motor Vehicle Sales Survey* (NMVSS), survey no. 2402, from which the portion representing the commercial use that will be made of the vehicles sold is subtracted. The commercial use of new automobile purchases is derived with data from the Canadian Vehicle Manufacturers' Association (CVMA), from the *Survey of Household Spending* (SHS), survey no. 3508, from the T4 Supplementary file of the Canada Revenue Agency (CRA) and from provincial and territorial motor vehicle registration files [M6]. See section on new cars, vans and trucks (paragraphs 7.50 to 7.56) for further details.		

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.7 Sources and methods for national estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2	Quarters
J012	Used motor vehicles (net value)	Purchases minus sales of used motor vehicles by households, derived using data from the *New Motor Vehicle Dealer Commodity Survey* (survey no. 2008), from the QRCS and from the federal Goods and Services Tax (GST) file of the CRA [M6]. See section on used motor vehicles (paragraphs 7.57 to 7.66) for further details.		Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M3]. See paragraph 7.67 for further details.
J013	New trucks and vans	Value of sales of new trucks and vans as reported by the NMVSS from which the portion representing the commercial use that will be made of the vehicles sold is deducted. The commercial use of new trucks and vans is derived with data from the CVMA, from the SHS, from the T4 Supplementary file of the CRA and from provincial and territorial motor vehicle registration files [M6]. See section on new cars, vans and trucks (paragraphs 7.50 to 7.56) for further details.		
J014	Road and off-road recreational vehicles	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J015	Motor vehicle maintenance and repairs	Expenditures on motor vehicle maintenance and repairs according to the SHS [M1], confronted with the indicators for the benchmark year + 2.	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1], confronted with revenues for automotive repair and maintenance services (NAICS 8111) obtained from the GST file of the CRA [M1].	
J016	Motor vehicle parts and accessories	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J017	Radios, sound systems and accessories	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J018	TV sets, video equipment and accessories	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J019	Boats, aircraft and accessories	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J020	Photographic and optical equipment	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J021	Sporting and camping equipment	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J022	Office machines, computers and equipment	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1], confronted with expenditures on computers according to the SHS [M1] and with the residual value between the supply (production and imports) and the disposition to businesses, governments and non-residents [M6], based on data from the Industry Accounts Division (IAD) and from the International Trade Division.		
J023	Musical instruments and supplies	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.7 Sources and methods for national estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2	Quarters
J024	Trailers	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J025	Recreation equipment repairs	Moving average of personal expenditure on road and off-road recreational vehicles (J014), radios, sound systems and accessories (J017), TV sets, video equipment and accessories (J018), boats, aircraft and accessories (J019), photographic and optical equipment (J020), sporting and camping equipment (J021) and office machines, computers and equipment (J022) for t-4 to t-1, where t is the estimation year [M3].		Personal expenditure on road and off-road recreational vehicles (J014), radios, sound systems and accessories (J017), TV sets, video equipment and accessories (J018), boats, aircraft and accessories (J019), photographic and optical equipment (J020), sporting and camping equipment (J021) and office machines, computers and equipment (J022) [M3].
J026	Recreation equipment rentals	Expenditures on recreation equipment rentals according to the SHS [M1], confronted with revenue from the industry as reported by the *Annual Survey of Consumer Goods Rental* (survey no. 2434) [M1].	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J027	Watches and jewellery	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J028	Watches and jewellery repairs	Moving average of personal expenditure on watches and jewellery (J027) for t-4 to t-1, where t is the estimation year [M3].		Personal expenditure on watches and jewellery (J027) [M3].
J051	Men's and boys' clothing	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J052	Women's, girls' and infants' clothing	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J053	Thread, yarn and sewing accessories	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J054	Piece goods	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J056	Footwear	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J057	Footwear repairs	Moving average of personal expenditure on footwear (J056) for t-1 to t, where t is the estimation year [M3].		Personal expenditure on footwear (J056) [M3].
J058	Luggage, leather goods and other personal effects	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.7 Sources and methods for national estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2	Quarters
J059	Toys, games and hobby supplies	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J060	Films and other photographic supplies	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J061	Household textiles and furnishings	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J062	China, glassware and kitchen ware	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J063	Lamps, lighting equipment and accessories	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J064	Flatware	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J065	Hardware	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J066	Newspapers, books, magazines and stationery	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J067	Women's clothing repairs and alterations	Moving average of personal expenditure on women's, girls' and infants' clothing (J052) for t-1 to t, where t is the estimation year [M3].		Personal expenditure on women's, girls' and infants' clothing (J052) [M3].
J068	Pets and supplies	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J069	Men's clothing repairs and alterations	Moving average of personal expenditure on men's and boys' clothing (J051) for t-1 to t, where t is the estimation year [M3].		Personal expenditure on men's and boys' clothing (J051) [M3].
J101	Food and non-alcoholic beverages	Expenditures on food and non-alcoholic beverages according to the SHS [M1], confronted with receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J102	Imputed food	The first component is the farmers' income in kind obtained from the Agriculture Division. The second component represents the value of food and non-alcoholic beverages provided to employees of selected industries in lieu of wages and salaries, projected according to the trend in total labour income as reported by the IEAD [M6].		Personal expenditure on food and non-alcoholic beverages (J101) [M3].
J103	Pet food	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.7 Sources and methods for national estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2	Quarters
J104	Alcoholic beverages bought in stores	Sales to final consumers according to the *Control and Sale of Alcoholic Beverages in Canada* (survey no. 1726) [M1] and to the annual reports of liquor authorities [M1], confronted with the volume of beer distributed, obtained from the Brewers Association of Canada, multiplied by the related *Consumer Price Index* (CPI), survey no. 2301 [M2].	Receipts from the sale of alcoholic beverages in beer, wine and liquor stores from the ARTS or the MRTS [M1]. For Newfoundland and Labrador and for Quebec, the volume of beer distributed, obtained from the Brewers Association of Canada, multiplied by a unit price, is added to the receipts [M2].	
J105	Tobacco products	Volume of tobacco products consumed in each province and territory, to which consumer prices mostly originating from the Prices Division are applied. The volume is obtained from a reconciliation of supply and demand. The demand is based on tobacco tax data reported in the federal, provincial and territorial public accounts, as well as on historical trends reported by surveys on tobacco consumption, such as the *Canadian Tobacco Use Monitoring Survey* (survey no. 4440) and the SHS. The domestic sales reported by Canadian manufacturers and the declared international imports are used on the supply side [M6]. See section on tobacco products (paragraphs 7.68 to 7.73) for further details.		Moving average of the last four months of the volume of cigarettes sold in the country by the Canadian manufacturers and the importers of tobacco products, multiplied by unit prices from the CPI. An adjustment is also made to include the expenditures on fine cut tobacco and contraband products [M6]. See paragraph 7.74 for further details.
J106	Electricity	Revenue of electric power utilities from electricity sales to the residential sector [M1], confronted with the quantity of electricity sold to the residential sector multiplied by the related CPI [M2] and with expenditures on electricity according to the SHS [M1], by province and territory. The revenue and the quantities are obtained from the survey on *Electricity Supply and Disposition* (survey no. 2194).		
J107	Natural gas	Revenue of natural gas distribution utilities from sales to the residential sector [M1], confronted with the quantity of natural gas sold to the residential sector multiplied by the related CPI [M2] and with expenditures on natural gas according to the SHS [M1], by province and territory. The revenue and the quantities are obtained from the monthly survey on *Natural Gas Distribution* (survey no. 2149).		
J108	Other fuels	Quantities of light fuel oil, heavy fuel oil, kerosene and stove oil, natural gas liquids (NGL's) and coal sold to households multiplied by related unit prices [M2] plus the value of firewood projected according to a linear trend [M5], confronted with expenditures on other fuels according to the SHS [M1], by province and territory. The quantity of coal is obtained from the survey *Coal Monthly* (survey no. 2147) while the other quantities are obtained from the survey on the *End Use of Refined Petroleum Products* (survey no. 2168).		Quantity of light fuel oil sold to households from the survey on the *End Use of Refined Petroleum Products* (survey no. 2168) multiplied by a unit price from the CPI, by province and territory [M2].
J109	Soaps and other cleaning supplies	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J110	Other household supplies	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J111	Pharmaceutical products and medical goods	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1], confronted with expenditures on pharmaceutical products and medical goods according to the SHS [M1] and with expenditures on drugs obtained from Canadian Institute for Health Information (CIHI) [M1].		

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.7 Sources and methods for national estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2	Quarters
J112	Motor fuels and lubricants	Number of litres of gasoline delivered to retailers from the survey on *Monthly Refined Petroleum Products* (survey no. 2150) multiplied by an average weighted price per litre from the CPI, by province and territory [M2], confronted with expenditures on gasoline according to the SHS [M1] and to receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J113	Flowers, plants and other horticultural supplies	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J114	Cosmetics and toiletries	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].		
J151	Water, sewage and garbage charges	Revenue from local government for water, garbage collection and sewer services obtained from the Public Institutions Division (PID) [M1].		Personal expenditure on imputed rent (J153) and on paid rent (J154) at constant prices, multiplied by the related CPI [M4].
J153	Imputed rent	Inventory of owned and occupied dwellings multiplied by the average rent adjusted by a quality factor [M6]. See section on paid and imputed rents (paragraphs 7.75 to 7.82) for further details.		
J154	Paid rent	Inventory of rented and occupied dwellings multiplied by the average rent, from which the portion of paid rent not related to the dwelling space is subtracted [M6]. See section on paid and imputed rents (paragraphs 7.75 to 7.82) for further details.		
J155	Imputed lodging	Labour income and current transfers by governments to the persons and unincorporated businesses sector as reported by the IEAD, deflated by the all-items CPI. The result is then multiplied by the implicit price index for paid rent (J154) [M4].		
J156	Paid lodging (excluding universities)	Personal expenditure at constant prices projected according to their trends in recent years, multiplied by the implicit price index for paid rent (J154) [M5].		
J157	Lodging in universities	Number of places in university residences, obtained from the Directory of Canadian Universities, multiplied by the related price index [M2]. This price index is derived from data on living costs in university residences obtained from Culture, Tourism and the Centre for Education Statistics (CTCES).		Personal expenditure at constant prices projected according to their trend in recent years, multiplied by the related price index [M5]. This price index is derived from data on living costs in university residences obtained from the CTCES.
J158	Domestic services	Expenditures on domestic help according to the SHS [M1], confronted with the indicators for the benchmark year + 2.	Personal expenditure at constant prices projected according to their trend in recent years, confronted with certain indicators from the *Labour Force Survey* (LFS), survey no. 3701, such as the number of families in which both parents work and the number of lone-parent families in which the parent works. The result is then multiplied by the related CPI [M5].	
J159	Child care, in the home	Expenditures on child care inside the home according to the SHS [M1], confronted with the indicators for the benchmark year + 2.	Personal expenditure at constant prices projected according to their trend in recent years, confronted with certain indicators from the LFS, such as the number of women who have children and are working full time. The result is then multiplied by the related CPI [M5].	

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.7 Sources and methods for national estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2	Quarters
J160	Child care, outside home	Expenditures on child care outside the home according to the SHS [M1], confronted with the indicators for the benchmark year + 2.	Personal expenditure at constant prices projected according to their trend in recent years, confronted with certain indicators from the LFS, such as the number of women who have children and are working full time. The result is then multiplied by the related CPI [M5].	
J161	Laundry and dry cleaning	Expenditures on cleaning services according to the SHS [M1], confronted with industry revenues reported by the *Annual Survey of Personal Services* (survey no. 2424) [M1].	GDP at constant prices for dry cleaning and laundry services (NAICS 8123) as measured on a monthly basis by the IAD, combined with the related CPI [M4].	
J162	Property insurance	Premiums earned minus claims due plus investment income on technical reserves [M6]. The source data are obtained from the *Quarterly Survey of Financial Statements of Property and Casualty Insurers*, compiled by the Industrial Organization and Finance Division (IOFD), and from statistics of the Office of the Superintendent of Financial Institutions Canada (OSFI). See section on insurance services (paragraphs 7.83 to 7.88) for further details.		
J163	Pet care	Expenditures for veterinary care and boarding, grooming and other pet-related services according to the SHS [M1], confronted with the indicators for the benchmark year + 2.	Personal expenditure at constant prices projected according to their trend in recent years multiplied by the related CPI [M5], confronted with revenues for veterinary services (NAICS 54194) and pet care services (NAICS 81291) obtained from the GST file of the CRA [M1], and with the salaries and wages for those two industries as reported by the IEAD [M3].	
J164	Furniture and appliance rentals	Personal expenditure on furniture (J001), refrigerators and freezers (J004), washers and dryers (J005) and stoves and microwave ovens (J006) [M3], confronted with the quarterly indicators.		Personal expenditure on paid rent (J154) at constant prices, combined with the related CPI [M4].
J165	Janitorial services	Inventory of rented and occupied dwellings combined with the related CPI [M4].		
J166	Medical care, dental care and the like	Private sector health expenditures for physicians and other health professionals from the CIHI [M1].		Personal expenditure at constant prices projected according to their trend in recent years, multiplied by the related CPI [M5].
J167	Special care facilities	Personal expenditure at constant prices projected according to their trend in recent years, multiplied by the related price index [M5]. This result as well as the implied volume are confronted with the growth of compensation [M3] and of the number of employees [M4] reported by the SEPH for nursing and residential care facilities (NAICS 623). An indicator derived by the IAD from data on private sector health expenditures, obtained from the CIHI, is also used when available [M1].		
J168	Other health care	Personal expenditure at constant prices projected according to their trend in recent years, multiplied by the related CPI [M5]. This result as well as the implied volume are confronted with the growth of compensation [M3] and of the number of employees [M4] reported by the SEPH for social assistance (NAICS 624). An indicator derived by the IAD from data on private sector health expenditures, obtained from the CIHI, is also used when available [M1].		

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.7 Sources and methods for national estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2	Quarters
J169	Hospital care and the like	Personal expenditure at constant prices projected according to their trend in recent years, multiplied by the related price index [M5]. This result as well as the implied volume are confronted with the growth of compensation [M3] and of the number of employees [M4] reported by the SEPH for hospitals (NAICS 622). An indicator derived by the IAD from data on private sector health expenditures, obtained from the CIHI, is also used when available [M1].		
J171	Accident and sickness insurance	Premiums earned less claims due plus investment income on technical reserves [M6]. The source data are obtained from the *Quarterly Survey of Financial Statements of Property and Casualty Insurers*, compiled by the IOFD, as well as from statistics of the OSFI and of the Canada Life and Health Insurance Association. See section on insurance services (paragraphs 7.83 to 7.88) for further details.		
J173	Commissions paid to tour operators	Operating revenues of travel agencies (NAICS 56151) from the *Annual Survey of Travel Arrangement Services* (survey no. 2423) [M1].	Revenues for travel agencies (NAICS 56151) obtained from the GST file of the CRA [M1].	
J174	Bridge and highway tolls	The component related to toll bridges is projected by the number of vehicles crossing each toll bridge or tunnel, obtained through the CTCES, multiplied by an average toll per bridge or tunnel. Revenues obtained from each toll highway are used for the second component [M6].		
J175	Auto insurance	Premiums earned less claims due plus investment income on technical reserves [M6]. The source data are obtained from the *Quarterly Survey of Financial Statements of Property and Casualty Insurers* compiled by the IOFD, from reports of the PID for provinces with a public auto insurance plan, and from statistics of the OSFI. See section on insurance services (paragraphs 7.83 to 7.88) for further details.		
J176	Urban transit	Revenues for urban transit and commuter services from the *Canadian Passenger Bus and Urban Transit Industries* (survey no. 2798) [M1]. Annual data on operating revenues [M1] and on the number of passengers [M2] from the Canadian Urban Transit Association are also used as a secondary indicator.	Revenues for urban transit from the *Large Urban Transit Survey - Monthly* (survey no. 2745) [M1].	
J177	Railway transport	Revenues derived from passenger transit obtained from the *Railway Transport Survey - Annual* (survey no. 2734) [M1].	Revenues from passenger fares reported by rail carriers [M1].	
J178	Inter-urban bus	Revenues for regular inter-city transportation, transport by chartered passenger bus or school bus, paratransit services and express parcel transport by bus from the *Canadian Passenger Bus and Urban Transit Industries* (survey no. 2798) [M1], confronted with the expenditures for intercity and rural bus according to the SHS [M1].	Revenues for inter-city transportation from the *Large Urban Transit Survey - Monthly* (survey no. 2745) [M1].	

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.7 Sources and methods for national estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2	Quarters
J179	Air transport	For each type of service, regular and charter, the total number of passenger-kilometers travelled monthly is first multiplied by a factor that reflects the personal use of air transportation for each type. The personal portion of passenger-kilometers is then multiplied by the price index for air transportation [M2]. The number of passenger-kilometers comes from the monthly operating reports of the major Canadian air carriers as provided by the Transportation Division. When monthly reports are not available, passenger-kilometer data from the financial reports of the major Canadian carriers are used. As well, *Aircraft Movements Statistics* (survey no. 2715) are used for data confrontation purposes.		
J180	Water transport	Provincial estimators for t-1, where t is the estimation period, multiplied by the change in the number of passengers and in the related CPI, by province and territory. The number of passengers, according to the routes travelled, is obtained from selected water carriers operating in the Atlantic provinces and in British Columbia. For the other provinces and territories, it is assumed that the number of passengers remains constant from one period to the next. The national estimator is obtained by aggregating the provincial and territorial estimators [M6]. Estimates are confronted with the financial reports for selected water carriers.		
J181	Taxis	Expenditures for taxi travel according to the SHS [M1], confronted with operating revenues from the *Survey of the Taxi and Limousine Services Industry* (survey no. 4707) [M1].	Labour income and current transfers by governments to the persons and unincorporated businesses sector as reported by the IEAD, deflated by the all-items CPI. The result is then multiplied by the related CPI [M4].	
J182	Moving and storage	Expenditures for moving, storage and delivery services according to the SHS [M1], confronted with the indicator for benchmark year + 2.	Number of residential units sold through the Multiple Listing Service (MLS) reported by the Canadian Real Estate Association and lagged by 2 months, combined with the related CPI [M4]. Transfer costs for residential properties are also used as an indicator [M3].	
J183	Telecommunications	Telecommunications expenditures according to the SHS [M1]. Such expenditures include charges for wireline and wireless telecommunications, Internet service and other items such as cabling and installation.	Telecommunications operating revenues from the *Quarterly Survey of Telecommunications* (survey no. 2721) [M1].	
J184	Postal and courier services	Expenditures for postage stamps and other postal services, such as messenger services, according to the SHS [M1].	Personal expenditure at constant prices projected according to their trend in recent years, multiplied by the related CPI [M5].	
J185	Games of chance	Sales of lottery tickets, net of prizes awarded, plus net revenues of casinos, video lotteries and slot machines [M1]. These data, obtained from each lottery and gaming corporation, are confronted with their annual reports.		
J186	Pari-mutuel	Amount bet minus amount won, obtained monthly from the Canadian Pari-Mutuel Agency [M1].		
J187	Other recreational services	Expenditures related to recreation services according to the SHS [M1], confronted with industry revenues as reported by the *Annual Survey of Service Industries : Amusement and Recreation* (survey no. 2425) [M1].	GDP at constant prices for performing arts, spectator sports and related industries (NAICS 711), amusement parks and arcades (NAICS 7131) and other amusement and recreation industries (NAICS 7139) as measured monthly by the IAD, combined with the related CPIs [M4].	

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.7 Sources and methods for national estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2	Quarters
J188	University fees	Tuition and other fees received by university according to the *Financial Information of Universities and Colleges Survey* (survey no. 3121), aggregated by province and calculated on a calendar year basis with specific factors for each province [M1].	Number of university students as reported by the LFS multiplied by the related CPI [M2].	
J189	Fees for education and training, other than university	Personal expenditure at constant prices projected according to their trend in recent years multiplied by the related CPI [M5], confronted with expenditures for post secondary education according to the SHS [M1].		
J190	Other educational and cultural services	Personal expenditure at constant prices projected according to their trend in recent years, multiplied by the related CPI [M5].		
J191	Hairstyling for men and women	Expenditures for hairdressing services according to the SHS [M1].	Personal expenditure at constant prices projected according to their trend in recent years, multiplied by the related CPI [M5].	
J192	Other personal care	Expenditures for personal care services other than hairdressing according to the SHS [M1].	Personal expenditure at constant prices projected according to their trend in recent years, multiplied by the related CPI [M5].	
J193	Meals outside the home	Revenues from the *Monthly Survey of Food Services and Drinking Places* (survey no. 2419) [M1] or operating revenues from the *Annual Survey of Service Industries: Food Services and Drinking Places* (survey no. 4704) [M1], confronted with expenditures for food purchased from restaurants according to the SHS [M1] and with revenues from the food services industries (NAICS 7221 to 7223) obtained from the GST file of the CRA [M1]. Sales of alcoholic beverages are excluded.		
J194	Alcoholic beverages consumed in licensed establishments	Sales to licensed establishments according to the survey on the *Control and Sale of Alcoholic Beverages in Canada* (survey no. 1726) [M1] and to the annual reports of liquor authorities [M1], confronted with the volume of beer distributed, obtained from the Brewers Association of Canada, multiplied by the related CPI [M2].	Sales to licensed establishments for resale from the *Survey of Sales and Inventory of Alcoholic Beverages* (survey no. 2406) [M1], confronted with the volume of beer distributed, obtained from the Brewers Association of Canada, multiplied by the related CPI [M2].	
J195	Accommodation services	Operating revenues from the *Annual Survey of Traveller Accommodation* (survey no. 2418) [M1], confronted with expenditures for temporary accommodation according to the SHS [M1] as well as with the indicators for the benchmark year + 2.	Revenues obtained from the GST file of the CRA for accommodation services (NAICS 721) [M1], confronted with two external sources providing information on occupancy rates, on the number of rooms available and on average prices: *Canadian Lodging Outlook*, published by Smith Travel Research, and reports produced by Pannell Kerr Forster Consulting Inc. [M2].	
J196	Board paid	Personal expenditure at constant prices projected according to their trend in recent years, multiplied by the related CPI [M5].		
J199	Stock and bond commissions	Total commissions paid to investment dealers less commissions paid by trusteed pension funds and those related to mutual funds since they are covered in J206 and J208 respectively. The remaining commissions on stocks and bonds are distributed by major activities and a ratio is applied to each activity to calculate personal spending [M1]. The source data are obtained from the quarterly reports of the *Securities Industry Performance* provided by the Investment Industry Association of Canada.		

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.7 Sources and methods for national estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2	Quarters
J200	Financial intermediaries, implicit loan charges	The value of services provided to borrowers is calculated first by multiplying the net interest received by the financial intermediaries, adjusted for the use of own funds, by the ratio of loan assets to total deposit liabilities and loan assets. Secondly, the household's share of the financial intermediaries' loan assets is applied to the borrowers' portion, calculated in the first step, to derive the implicit loan charges paid by households [M6]. Source data for chartered banks are obtained from the OSFI while the data for the other institutions of the personal and commercial banking industry (NAICS 522111), for consumer lending (NAICS 522291) and for sales financing (NAICS 52222) are obtained from the *Quarterly Survey of Financial Statistics for Enterprises* (QFS), survey no. 2501. See section on financial services indirectly measured (paragraphs 7.89 to 7.95) for further details.		
J201	Credit unions, implicit deposit charges	The value of services provided to depositors is calculated first by multiplying the net interest received by the credit unions, adjusted for their profits and the use of own funds, by the ratio of deposit liabilities to total deposit liabilities and loan assets. Secondly, the household's share of the credit unions' deposit liabilities is applied to the depositors' portion, calculated in the first step, to derive the implicit deposit charges paid by households [M6]. Source data are obtained from the QFS. See section on financial services indirectly measured (paragraphs 7.89 to 7.95) for further details.		
J202	Life insurance	Premiums earned less claims due plus investment income on technical reserves minus increases (plus decreases) in actuarial reserves [M6]. The source data are obtained from the *Quarterly Survey of Financial Statements of Life Insurers* compiled by the IOFD, from the OSFI and from the Canada Life and Health Insurance Association. See section on insurance services (paragraphs 7.83 to 7.88) for further details.		
J203	Financial intermediaries, explicit charges	The explicit charges paid by households to the personal and commercial banking industry (NAICS 522111), to consumer lending (NAICS 522291) and to sales financing (NAICS 52222) include all non-interest fees such as charges on deposit accounts, other payment services, guarantees and letters of credit and credit card fees. The charges paid to banks are calculated by applying a personal ratio to each selected non-interest revenue items identified from the OSFI's financial reports. For the other financial intermediaries, a fixed ratio is applied to the other revenue reported by the QFS in order to reflect personal spending on those services [M1].		
J204	Financial intermediaries, implicit deposit charges	The value of services provided to depositors is calculated first by multiplying the net interest received by the financial intermediaries, adjusted for the use of own funds, by the ratio of deposit liabilities to total deposit liabilities and loan assets. Secondly, the household's share of the financial intermediaries' deposit liabilities is applied to the depositors' portion, calculated in the first step, to derive the implicit deposit charges paid by households [M6]. Source data for chartered banks are obtained from the OSFI while the data for the other institutions of the personal and commercial banking industry (NAICS 522111), for consumer lending (NAICS 522291) and for sales financing (NAICS 52222) are obtained from the QFS. See section on financial services indirectly measured (paragraphs 7.89 to 7.95) for further details.		
J205	Credit unions, explicit charges	All non-interest fees such as charges on deposit accounts, other payment services, guarantees and letters of credit and credit card fees reported by the QFS, multiplied by a fixed ratio in order to reflect personal spending on those services [M1].		
J206	Trusteed pension funds	Administrative expenses of managing the funds, obtained from the *Quarterly Estimates of Trusteed Pension Funds* (survey no. 2607) [M1]. In the absence of survey data, the estimates are projected using historical trends and are also adjusted for the impact of recent developments in financial markets.		
J207	Credit unions, implicit loan charges	The value of services provided to borrowers is calculated first by multiplying the net interest received by the credit unions, adjusted for their profits and the use of own funds, by the ratio of loan assets to total deposit liabilities and loan assets. Secondly, the household's share of the credit unions' loan assets is applied to the borrowers' portion, calculated in the first step, to derive the implicit loan charges paid by households [M6]. Source data are obtained from the QFS. See section on financial services indirectly measured (paragraphs 7.89 to 7.95) for further details.		

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.7 Sources and methods for national estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2	Quarters
J208	Mutual funds	Operating expenses of mutual funds and commissions/redemption fees paid by individuals are used to measure personal expenditure on these funds. Management fees, which represent about 85% of operating expenses, are based on a percentage of the market value of the assets. Commissions or redemption fees are applicable to selected purchases or sales of mutual fund units, such as front-end load and back-end load funds. The operating expenses are obtained from the financial statements of the mutual funds while the commission/redemption data are obtained from the Investment Industry Association of Canada (IIAC). In the absence of data from the IIAC and of operating expenses of the funds, the asset value of the funds and the new sales and redemptions, provided by the Investment Funds of Canada, are used to project operating expenses and commissions, respectively [M6].		
J209	Legal, accounting and other services	Expenditures for notary and lawyer fees, accounting and financial planning services, and advertising services according to the SHS [M1], confronted with the indicator for the benchmark year + 2.	GDP at constant prices for legal services and accounting, tax preparation and bookkeeping services (NAICS 5411 and 5412) as measured monthly by the IAD, combined with the related CPI [M4].	
J210	Undertaking and other funeral services	Number of deaths multiplied by the related price index [M2], confronted with revenues for funeral services (NAICS 8122) obtained from the GST file of the CRA [M1] and with operating revenues for the industry [M1], obtained from the *Annual Survey of Personal Services* (survey no. 2424). The number of deaths is obtained from the Demography Division.		
J211	Miscellaneous household services	Expenditures for miscellaneous household services according to the SHS [M1].	Personal expenditure at constant prices projected according to their trend in recent years, multiplied by the related CPI [M5].	
J212	Welfare and charitable organizations	Salaries and wages paid by non-profit organizations in the social assistance industry (NAICS 624), as reported by the IEAD [M3].	Labour income and current transfers by governments to the persons and unincorporated businesses sector as reported by the IEAD [M3].	
J213	Religious organizations	Salaries and wages paid by religious organizations (NAICS 8131), as reported by the IEAD [M3].	Personal expenditure at constant prices projected according to their trend in recent years, multiplied by the all-items CPI [M5].	
J214	Trade unions	Number of employees under union coverage, obtained through the LFS, combined with the all-items CPI [M4].		
J215	Travel payments abroad	Personal spending by Canadians abroad on international travel from the *International Travel Survey* (ITS), survey no. 3152 [M1]. See section on net expenditure abroad (paragraphs 7.96 to 7.100) for further details.		
J216	Spending of military personnel abroad	Salaries and wages paid to members of the Canadian military abroad [M3]. See section on net expenditure abroad (paragraphs 7.96 to 7.100) for further details.		
J218	Travel receipts from non-residents	Receipts from international travel from the ITS [M1]. See section on net expenditure abroad (paragraphs 7.96 to 7.100) for further details.		
J219	Cable television and pay television	Expenditures for cable television and satellite services according to the SHS [M1]. The number of subscribers [M2] and operating revenues [M1], obtained from the *Annual Cable Television Survey* (survey no. 2728), are used as secondary indicators.	GDP at constant prices for Pay TV, Speciality TV and Program Distribution (NAICS 5132) as measured monthly by the IAD, combined with the related CPI [M4].	

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.7 Sources and methods for national estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2	Quarters
J220	Political parties	Expenditures reported in the annual reports of political parties and in the election expense reports of the parties and their candidates [M1]. Imputations based on historical values are made until the reports become available.		
J221	Parking	Expenditures for parking fees and garage rentals according to the SHS [M1].	Personal expenditure at constant prices projected according to their trend in recent years, multiplied by the related CPI [M5].	
J222	Driving lessons and membership in automobile associations	The estimator is based on two components estimated separately. First, the expenditures for driving courses are obtained from the SHS. A projection of such expenditures according to their trend in recent years is performed for the benchmark year + 2 since the SHS data are not yet available. Second, expenditures for membership in automobile associations are derived from the number of members of the Canadian Automobile Association, as posted on the Internet by a number of provincial associations, as well as the number of licensed vehicles, multiplied by a related price [M6].		Personal expenditure at constant prices projected according to their trend in recent years, multiplied by the related CPI [M5].
J223	Motor vehicle renting	Expenditures for vehicle rental according to the SHS [M1], confronted with revenues from the *Annual Survey of Automotive Equipment Rental and Leasing* (survey no. 2442) [M1].	Revenues from the GST file of the CRA for passenger car rental (NAICS 532111) [M1].	
J224	Cinemas	Expenditures for movies according to the SHS [M1], confronted with the indicators for the benchmark year + 2.	Revenues from the GST file of the CRA for motion picture and video exhibition (NAICS 51213) [M1], confronted with admission revenues published in certain annual and quarterly financial statements [M1] and with monthly statistics on revenues [M1] and attendance [M2] at cinemas and drive-ins in Quebec as published by the Institut de la statistique du Québec.	
J225	Photographic services	Expenditures for photographic services according to the SHS [M1].	Labour income and current transfers by governments to the persons and unincorporated businesses sector as reported by the IEAD, deflated by the all-items CPI. The result is then multiplied by the related CPI [M4].	
J226	Indian bands and Inuit	Salaries and wages paid by aboriginal public administration (NAICS 914) as reported by the IEAD [M3].	Labour income and current transfers by local governments to the persons and unincorporated businesses sector as reported by the IEAD [M3].	

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.8 Sources and methods for provincial and territorial estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2
J001	Furniture	Receipts from the *Annual Retail Trade Survey* (ARTS), survey nos. 2422, 2433 and 2447, or from the *Monthly Retail Trade Survey* (MRTS), survey nos. 2406 and 2408, broken down into commodities according to the *Quarterly Retail Commodity Survey* (QRCS), survey no. 2008 [M1]. See Appendix 7A for further details.	
J002	Floor coverings	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J003	Upholstery and furniture repairs	Moving average of personal expenditure on furniture (J001) for t-6 to t-3, where t is the estimation year [M3].	
J004	Refrigerators and freezers	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J005	Washers and dryers	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J006	Stoves, ranges and microwave ovens	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J007	Other major appliances	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J008	Small electrical appliances	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J009	Household equipment repairs	Moving average of personal expenditure on refrigerators and freezers (J004), washers and dryers (J005), stoves, ranges and microwave ovens (J006), other major appliances (J007), small electrical appliances (J008) and garden tools and equipment for outdoor maintenance (J010) for t-4 to t-1, where t is the estimation year [M3].	
J010	Garden tools and equipment for outdoor maintenance	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J011	New automobiles	Value of sales of new automobiles as reported by the *New Motor Vehicle Sales Survey* (NMVSS), survey no. 2402 [M1].	
J012	Used motor vehicles (net value)	Purchases minus sales of used motor vehicles by households, derived using data from the NMVSS, from the *New Motor Vehicle Dealer Commodity Survey* (survey no. 2008) and from the federal Goods and Services Tax (GST) file of the CRA [M6], confronted with receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M3]. The method retained for the provincial and territorial estimates is comparable to the national annual method presented in the section on used motor vehicles (paragraphs 7.57 to 7.66).	
J013	New trucks and vans	Value of sales of new trucks and vans as reported by the NMVSS from which the portion representing the commercial use that will be made of the vehicles sold is deducted [M6]. The method retained for the provincial and territorial estimates is comparable to the national annual method presented in the section on new cars, vans and trucks (paragraphs 7.50 to 7.53).	
J014	Road and off-road recreational vehicles	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.8 Sources and methods for provincial and territorial estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2
J015	Motor vehicle maintenance and repairs	Expenditures on motor vehicle maintenance and repairs according to the SHS [M1], confronted with the indicators for the benchmark year + 2.	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1], confronted with revenues for automotive repair and maintenance services (NAICS 8111) obtained from the GST file of the CRA [M1].
J016	Motor vehicle parts and accessories	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J017	Radios, sound systems and accessories	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J018	TV sets, video equipment and accessories	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J019	Boats, aircraft and accessories	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J020	Photographic and optical equipment	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J021	Sporting and camping equipment	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J022	Office machines, computers and equipment	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1], confronted with expenditures on computers according to the SHS [M1].	
J023	Musical instruments and supplies	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J024	Trailers	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J025	Recreation equipment repairs	Moving average of personal expenditure on road and off-road recreational vehicles (J014), radios, sound systems and accessories (J017), TV sets, video equipment and accessories (J018), boats, aircraft and accessories (J019), photographic and optical equipment (J020), sporting and camping equipment (J021) and office machines, computers and equipment (J022) for t-4 to t-1, where t is the estimation year [M3].	
J026	Recreation equipment rentals	Expenditures on recreation equipment rentals according to the SHS [M1], confronted with revenue from the industry as reported by the *Annual Survey of Consumer Goods Rental* (survey no. 2434) [M1].	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].
J027	Watches and jewellery	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J028	Watches and jewellery repairs	Moving average of personal expenditure on watches and jewellery (J027) for t-4 to t-1, where t is the estimation year [M3].	
J051	Men’s and boys’ clothing	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J052	Women’s, girls’ and infants’ clothing	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.8 Sources and methods for provincial and territorial estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2
J053	Thread, yarn and sewing accessories	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J054	Piece goods	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J056	Footwear	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J057	Footwear repairs	Moving average of personal expenditure on footwear (J056) for t-1 to t, where t is the estimation year [M3].	
J058	Luggage, leather goods and other personal effects	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J059	Toys, games and hobby supplies	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J060	Films and other photographic supplies	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J061	Household textiles and furnishings	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J062	China, glassware and kitchen ware	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J063	Lamps, lighting equipment and accessories	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J064	Flatware	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J065	Hardware	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J066	Newspapers, books, magazines and stationery	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J067	Women’s clothing repairs and alterations	Moving average of personal expenditure on women’s, girls’ and infants’ clothing (J052) for t-1 to t, where t is the estimation year [M3].	
J068	Pets and supplies	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J069	Men’s clothing repairs and alterations	Moving average of personal expenditure on men’s and boys’ clothing (J051) for t-1 to t, where t is the estimation year [M3].	
J101	Food and non-alcoholic beverages	Expenditures on food and non-alcoholic beverages according to the SHS [M1], confronted with receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.8 Sources and methods for provincial and territorial estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2
J102	Imputed food	The first component is the farmers' income in kind obtained from the Agriculture Division. The second component represents the value of food and non-alcoholic beverages provided to employees of selected industries in lieu of wages and salaries, projected according to the trend in wages and salaries for those industries as reported by the IEAD [M6].	
J103	Pet food	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J104	Alcoholic beverages bought in stores	Sales to final consumers according to the *Control and Sale of Alcoholic Beverages in Canada* (survey no. 1726) [M1] and to the annual reports of liquor authorities [M1], confronted with the volume of beer distributed, obtained from the Brewers Association of Canada, multiplied by the related *Consumer Price Index* (CPI), survey no. 2301 [M2].	Receipts from the sale of alcoholic beverages in beer, wine and liquor stores from the ARTS or the MRTS [M1]. For Newfoundland and Labrador and for Quebec, the volume of beer distributed, obtained from the Brewers Association of Canada, multiplied by a unit price, is added to the receipts [M2].
J105	Tobacco products	Volume of tobacco products consumed, to which consumer unit prices mostly originating from the Prices Division are applied. The volume is obtained from a reconciliation of supply and demand. The demand is based on tobacco tax data reported in the federal, provincial and territorial public accounts, as well as on historical trends reported by surveys on tobacco consumption, such as the *Canadian Tobacco Use Monitoring Survey* (survey no. 4440) and the SHS. The domestic sales reported by Canadian manufacturers and the declared international imports are used on the supply side [M6]. See section on tobacco products (paragraphs 7.68 to 7.73) for further details.	
J106	Electricity	Revenue from electricity sales to the residential sector [M1], confronted with the quantity of electricity sold to the residential sector multiplied by the related CPI [M2] and with expenditures on electricity according to the SHS [M1]. The revenue and the quantities are obtained from the survey on *Electricity Supply and Disposition* (survey no. 2194).	
J107	Natural gas	Revenue from natural gas sales to the residential sector [M1], confronted with the quantity of natural gas sold to the residential sector multiplied by the related CPI [M2] and with expenditures on natural gas according to the SHS [M1]. The revenue and the quantities are obtained from the survey *Natural Gas Distribution Monthly* (survey no. 2149).	
J108	Other fuels	Quantities of light fuel oil, heavy fuel oil, kerosene and stove oil, natural gas liquids (NGL's) and coal sold to households multiplied by related unit prices [M2] plus the value of firewood projected according to a linear trend [M5], confronted with expenditures on other fuels according to the SHS [M1]. The quantity of coal is obtained from the survey *Coal Monthly* (survey no. 2147) while the other quantities are obtained from the survey on the *End Use of Refined Petroleum Products* (survey no. 2168).	
J109	Soaps and other cleaning supplies	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J110	Other household supplies	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J111	Pharmaceutical products and medical goods	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1], confronted with expenditures on pharmaceutical products and medical goods according to the SHS [M1] and with expenditures on drugs obtained from Canadian Institute for Health Information (CIHI) [M1].	

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.8 Sources and methods for provincial and territorial estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2
J112	Motor fuels and lubricants	Number of litres of gasoline delivered to retailers from the survey on *Monthly Refined Petroleum Products* (survey no. 2150) multiplied by an average weighted price per litre from the CPI [M2], confronted with expenditures on gasoline according to the SHS [M1] and with receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J113	Flowers, plants and other horticultural supplies	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J114	Cosmetics and toiletries	Receipts from the ARTS or the MRTS broken down into commodities according to the QRCS [M1].	
J151	Water, sewage and garbage charges	Revenue from local government for water, garbage collection and sewer services obtained from the Public Institutions Division (PID) [M1].	
J153	Imputed rent	Inventory of owned and occupied dwellings multiplied by the average rent adjusted by a quality factor [M6]. See section on paid and imputed rents (paragraphs 7.75 to 7.82) for further details.	
J154	Paid rent	Inventory of rented and occupied dwellings multiplied by average rent, from which the portion of paid rent not related to the dwelling space is subtracted [M6]. See section on paid and imputed rents (paragraphs 7.75 to 7.82) for further details.	
J155	Imputed lodging	Salaries and wages paid by the agriculture, forestry, mining, construction, utilities, and transportation and warehousing industries as reported by the IEAD [M3].	
J156	Paid lodging (excluding universities)	Net income of non-farm unincorporated business for the accommodation industry as reported by the IEAD [M3].	
J157	Lodging in universities	Number of places in university residences, obtained from the Directory of Canadian Universities, multiplied by the related price index [M2]. This price index is derived from data on living costs in university residences obtained from Culture, Tourism and the Centre for Education Statistics (CTCES).	
J158	Domestic services	Expenditures on domestic help according to the SHS [M1], confronted with the indicators for the benchmark year + 2.	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4]. The volume of this service is confronted with indicators from the *Labour Force Survey* (LFS), survey no. 3701, such as the number of families in which both parents work and the number of lone-parent families in which the parent works [M4].
J159	Child care, in the home	Expenditures on child care inside the home according to the SHS [M1], confronted with the indicators for the benchmark year + 2.	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population (0 to 14 years) and in the related CPI [M4]. The volume of this service is confronted with indicators from the LFS such as the number of women who have children and are working full time [M4].

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.8 Sources and methods for provincial and territorial estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2
J160	Child care, outside home	Expenditures on child care outside the home according to the SHS [M1], confronted with the indicators for the benchmark year + 2.	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population (0 to 14 years) and in the related CPI [M4]. The volume of this service is confronted with indicators from the LFS such as the number of women who have children and are working full time [M4].
J161	Laundry and dry cleaning	Expenditures on cleaning services according to the SHS [M1], confronted with industry revenues reported by the *Annual Survey of Personal Services* (survey no. 2424) [M1].	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J162	Property insurance	Premiums earned minus claims due, obtained from the Office of the Superintendent of Financial Institutions Canada (OSFI) and the provincial and territorial reports of the Superintendent of Insurance [M6].	
J163	Pet care	Expenditures for veterinary care and boarding, grooming and other pet-related services according to the SHS [M1].	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J164	Furniture and appliance rentals	Personal expenditure on paid rent (J154) at constant prices, multiplied by the related CPI [M4].	
J165	Janitorial services	Personal expenditure on paid rent (J154) at constant prices, multiplied by the related CPI [M4].	
J166	Medical care, dental care and the like	Private sector health expenditures for physicians and other health professionals from the CIHI [M1].	
J167	Special care facilities	Salaries and wages of nursing and residential care facilities (NAICS 623) as reported by the IEAD [M3].	Salaries and wages of health care and social assistance institutions as reported by the IEAD [M3].
J168	Other health care	Salaries and wages of social assistance institutions (NAICS 624) as reported by the IEAD [M3].	Salaries and wages of health care and social assistance institutions as reported by the IEAD [M3].
J169	Hospital care and the like	Salaries and wages of hospitals (NAICS 622) as reported by the IEAD [M3].	Salaries and wages of health care and social assistance institutions as reported by the IEAD [M3].
J171	Accident and sickness insurance	Premiums earned minus claims due, obtained from the OSFI, from provincial and territorial reports of the Superintendent of Insurance and from the Canada Life and Heath Insurance Association [M6].	
J173	Commissions paid to tour operators	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].	
J174	Bridge and highway tolls	The component related to toll bridges is projected by the number of vehicles crossing each toll bridge or tunnel, obtained through the CTCES, multiplied by an average toll per bridge or tunnel. Revenues obtained from each toll highway are used for the second component [M6].	
J175	Auto insurance	Premiums earned minus claims due, obtained from the OSFI and from reports of the PID for provinces with public auto insurance plan [M6].	

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.8 Sources and methods for provincial and territorial estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2
J176	Urban transit	Revenues for urban transit and commuter services from the *Canadian Passenger Bus and Urban Transit Industries* (survey no. 2798) [M1].	Revenues for urban transit from the *Large Urban Transit Survey - Monthly* (survey no. 2745) [M1].
J177	Railway transport	Revenues derived from passenger transit obtained from the *Railway Transport Survey - Annual* (survey no. 2734) [M1].	Revenues from passenger fares reported by rail carriers [M1].
J178	Inter-urban bus	Revenues for regular inter-city transportation, transport by chartered passenger bus or school bus, paratransit services and express parcel transport by bus from the *Canadian Passenger Bus and Urban Transit Industries* (survey no. 2798) [M1], confronted with the expenditures for intercity and rural bus according to the SHS [M1].	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J179	Air transport	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4]. *Aircraft Movements Statistics* (survey no. 2715) are used for data confrontation purposes.	
J180	Water transport	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in the number of passengers and in the related CPI. The number of passengers, according to the routes travelled, is obtained from selected water carriers operating in the Atlantic provinces and in British Columbia. For the other provinces and territories, it is assumed that the number of passengers remains constant from one period to the next [M6]. Estimates are confronted with the financial reports of selected water carriers.	
J181	Taxis	Expenditures for taxi travel according to the SHS [M1], confronted with operating revenues from the *Survey of the Taxi and Limousine Services Industry* (survey no. 4707) [M1].	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J182	Moving and storage	Expenditures for moving, storage and delivery services according to the SHS [M1], confronted with the indicator for benchmark year + 2.	Number of residential units sold through the Multiple Listing Service (MLS), reported by the Canadian Real Estate Association, combined with the related CPI [M4].
J183	Telecommunications	Telecommunications expenditures according to the SHS [M1]. Such expenditures include charges for wireline and wireless telecommunications, Internet service and other items such as cabling and installation.	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J184	Postal and courier services	Expenditures for postage stamps and other postal services, such as messenger services, according to the SHS [M1].	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J185	Games of chance	Sales of lottery tickets net of prizes awarded, plus net revenues of casinos, video lotteries and slot machines [M1]. These data, obtained from each lottery and gaming corporation, are confronted with their annual reports.	

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.8 Sources and methods for provincial and territorial estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2
J186	Pari-mutuel	Amount bet minus amount won, obtained monthly from the Canadian Pari-Mutuel Agency [M1].	
J187	Other recreational services	Expenditures related to recreation services according to the SHS [M1], confronted with industry revenues as reported by the *Annual Survey of Service Industries : Amusement and Recreation* (survey no. 2425) [M1].	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J188	University fees	Tuition and other fees received by university according to the *Financial Information of Universities and Colleges Survey* (survey no. 3121), aggregated by province and calculated on a calendar year with specific factors for each province [M1]. For the territories, the indicator for the benchmark year + 2 is used.	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J189	Fees for education and training, other than university	Expenditures for post secondary education according to the SHS [M1].	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J190	Other educational and cultural services	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].	
J191	Hairstyling for men and women	Expenditures for hairdressing services according to the SHS [M1].	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J192	Other personal care	Expenditures for personal care services other than hairdressing according to the SHS [M1].	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J193	Meals outside the home	Revenues from the *Monthly Survey of Food Services and Drinking Places* (survey no. 2419) [M1] or operating revenues from the *Annual Survey of Service Industries: Food Services and Drinking Places* (survey no. 4704) [M1], confronted with expenditures for food purchased from restaurants according to the SHS [M1] and with revenues from the food services industries (NAICS 7221 to 7223) obtained from the GST file of the CRA [M1]. Sales of alcoholic beverages are excluded.	
J194	Alcoholic beverages consumed in licensed establishments	Sales to licensed establishments according to the survey on the *Control and Sale of Alcoholic Beverages in Canada* (survey no. 1726) [M1] and to the annual reports of liquor authorities [M1], confronted with the volume of beer distributed, obtained from the Brewers Association of Canada, multiplied by the related CPI [M2].	Sales to licensed establishments for resale from the *Survey of Sales and Inventory of Alcoholic Beverages* (survey no. 2406) [M1], confronted with the volume of beer distributed, obtained from the Brewers Association of Canada, multiplied by the related CPI [M2].

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.8 Sources and methods for provincial and territorial estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2
J195	Accommodation services	Operating revenues from the *Annual Survey of Traveller Accommodation* (survey no. 2418) [M1], confronted with expenditures for temporary accommodation according to the SHS [M1] as well as with the indicators for the benchmark year + 2.	Revenues obtained from the GST file of the CRA for accommodation services (NAICS 721) [M1]. Two external sources provide information on occupancy rates, on the number of rooms available and on average prices: *Canadian Lodging Outlook*, published by Smith Travel Research, and reports produced by Pannell Kerr Forster Consulting Inc. [M2].
J196	Board paid	Net income of non-farm unincorporated business for the restaurant and accommodation industries as reported by the IEAD [M3].	
J199	Stock and bond commissions	Investment and dividend income as reported on the income tax returns (T1) from the CRA [M3].	
J200	Financial intermediaries, implicit loan charges	Non-mortgage loan liabilities of households held by the personal and commercial banking industry (NAICS 522111) and by the Alberta Treasury [M3]. The data are obtained from the *Bank of Canada Review*, from the *Quarterly Survey of Financial Statements of Trust and Mortgage Companies*, compiled by the Industrial Organization and Finance Division (IOFD), and from administrative data sources.	
J201	Credit unions, implicit deposit charges	Deposit assets of households held by credit unions, obtained from the *Quarterly Survey of Financial Statements of Local and Central Credit Unions*, compiled by the IOFD [M3].	
J202	Life insurance	Value of life insurance policies provided by the Canada Life and Health Insurance Association [M3].	
J203	Financial intermediaries, explicit charges	Household deposit liabilities of the personal and commercial banking industry (NAICS 522111), obtained from the *Bank of Canada Review* and from the *Quarterly Survey of Financial Statements of Trust and Mortgage Companies*, compiled by the IOFD [M3].	
J204	Financial intermediaries, implicit deposit charges	Deposit assets of households held by the personal and commercial banking industry (NAICS 522111) and by the Alberta Treasury [M3]. The data are obtained from the *Bank of Canada Review*, from the *Quarterly Survey of Financial Statements of Trust and Mortgage Companies*, compiled by the IOFD, and from administrative data sources.	
J205	Credit unions, explicit charges	Household deposit liabilities of credit unions, obtained from the *Quarterly Survey of Financial Statements of Local and Central Credit Unions* compiled by the IOFD [M3].	
J206	Trusteed pension funds	Wages and salaries as reported by the IEAD [M3].	
J207	Credit unions, implicit loan charges	Non-mortgage loan liabilities of households held by credit unions, as reported in the *Quarterly Survey of Financial Statements of Local and Central Credit Unions*, compiled by IOFD [M3].	
J208	Mutual funds	Investment and dividend income as reported on the income tax returns (T1) from the CRA [M3].	
J209	Legal, accounting and other services	Net income of non-farm unincorporated business for the legal and accounting industries, as reported by the IEAD [M3].	Estimator for t-1, where t is the estimation period, multiplied by the rate of change in population (age group 15 years and over) and in the related CPI [M4].

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.8 Sources and methods for provincial and territorial estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2
J210	Undertaking and other funeral services	Number of deaths multiplied by the related price index [M2], confronted with revenues obtained from the GST file of the CRA [M1] and with operating revenues for the industry, obtained from the *Annual Survey of Personal Services* (survey no. 2424) [M1]. The number of deaths is obtained from Demography Division.	
J211	Miscellaneous household services	Expenditures for miscellaneous household services according to the SHS [M1].	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J212	Welfare and charitable organizations	Salaries and wages paid by non-profit organizations in the social assistance industry (NAICS 624), as reported by the IEAD [M3].	Compensation paid by social assistance (NAICS 624), as reported by the *Survey of Employment, Payrolls and Hours* (SEPH), survey no. 2612 [M3].
J213	Religious organizations	Salaries and wages paid by religious organizations (NAICS 8131), as reported by the IEAD [M3].	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J214	Trade unions	Number of employees under union coverage, obtained through the LFS, combined with the all-items CPI [M4].	
J215	Travel payments abroad	Personal spending by Canadians on international travel from the *International Travel Survey* (ITS), survey no. 3152, as well as on travel in other provinces and territories from the *Travel Survey of Residents of Canada* (TSRC), survey no. 3810 [M1]. See section on net expenditure abroad (paragraphs 7.105 to 7.108) for further details.	
J216	Spending of military personnel abroad	Salaries and wages paid to members of the Canadian military abroad [M3].	
J218	Travel receipts from non-residents	Receipts from non-residents for personal and business trips, obtained from the ITS, plus the travel receipts from residents of other provinces and territories for all non-business trips, obtained from the TSRC [M1]. See the section on net expenditure abroad (paragraphs 7.105 to 7.108) for further details.	
J219	Cable television and pay television	Expenditures for cable television and satellite services, according to the SHS [M1], confronted with the indicators for the benchmark year + 2.	Estimator for t-1, where t is the estimation period, multiplied by the rate of change in population (age group 15 years and over) and in the related CPI [M4]. The number of subscribers [M2] as well as the operating revenues [M1], obtained from the *Annual Cable Television Survey* (survey no. 2728), are used as secondary indicators.
J220	Political parties	Expenditures reported in the annual reports of political parties and in the election expense reports of the parties and their candidates [M1]. An imputation, based on historical values, is made until the reports become available.	
J221	Parking	Expenditures for parking fees and garage rentals according to the SHS [M1].	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.8 Sources and methods for provincial and territorial estimates of personal expenditure at current prices[1]

Series	Description	Benchmark year + 1	Benchmark year + 2
J222	Driving lessons and membership in automobile associations	Expenditures for driving courses are obtained from the SHS. A projection of such expenditures according to their trend in recent years is performed for the benchmark year + 2 since the SHS data are not yet available. Expenditures for the second component, membership in automobile associations, are derived from the number of members of the Canadian Automobile Association, as posted on the Internet by a number of provincial associations, as well as the number of licensed vehicles, multiplied by a related price [M6].	
J223	Motor vehicle renting	Expenditures for vehicle rental according to the SHS [M1], confronted with revenues from the *Annual Survey of Automotive Equipment Rental and Leasing* (survey no. 2442) [M1] as well as indicators for the benchmark year + 2.	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J224	Cinemas	Expenditures for movies according to the SHS [M1], confronted with box office receipts according to the Annual Survey of Service Industries : *Motion Picture Theatres* (survey no. 2416) [M1] as well as indicators for the benchmark year + 2.	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4]. For Quebec, revenues [M1] and attendance [M2] at cinemas and drive-ins, as published by the Institut de la statistique du Québec, are also used.
J225	Photographic services	Expenditures for photographic services according to the SHS [M1].	Estimator for t-1, where t is the estimation year, multiplied by the rate of change in population and in the related CPI [M4].
J226	Indian bands and Inuit	Salaries and wages paid by aboriginal public administration (NAICS 914) as reported by the IEAD [M3].	Compensation paid by aboriginal public administration (NAICS 914) as reported by the SEPH [M3].

1. For more information on the methodologies M1 through M6, see paragraph 7.36.

Table 7.9 Sources and methods of personal expenditure estimates at constant prices

Series	Title	Price index for deflation or volume projector of base-year value[1]
J001	Furniture	CPI for furniture.
J002	Floor coverings	CPI for area rugs and mats.
J003	Upholstery and furniture repairs	CPI for services related to household furnishings and equipment.
J004	Refrigerators and freezers	CPI for refrigeration and air conditioning appliances.
J005	Washers and dryers	CPI for laundry and dishwashing appliances.
J006	Stoves, ranges and microwave ovens	CPI for cooking appliances.
J007	Other major appliances	CPI for refrigeration and air conditioning appliances (25%). CPI for laundry and dishwashing appliances (16%). CPI for other household appliances (59%).
J008	Small electrical appliances	CPI for electric hairstyling and personal care appliances (84%). CPI for all other household appliances (16%).
J009	Household equipment repairs	CPI for maintenance and repair and other services - household furnishings and equipment.
J010	Garden tools and equipment for outdoor maintenance	CPI for household tools (including lawn, garden and snow removal equipment).
J011	New automobiles	CPI for purchases of automobiles.
J012	Used motor vehicles (net value)	Price index derived using the CPI for purchases of motor vehicles, the average price of used motor vehicle sales obtained from *New Motor Vehicle Dealer Commodity Survey* (survey no. 2008) and the average auction price of used cars reported by industry sources.
J013	New trucks and vans	CPI for purchases of trucks (including vans and sport utility vehicles).
J014	Road and off-road recreational vehicles	CPI for bicycles, parts and accessories (22%). CPI for snowmobiles and outboard motors (16%). CPI for motor homes and truck campers (13%). CPI for other purchase of recreational vehicles (49%).
J015	Motor vehicle maintenance and repairs	CPI for passenger vehicle maintenance and repair services.
J016	Motor vehicle parts and accessories	CPI for passenger vehicle parts and supplies.

1. The numbers in parenthesis represent the weight assigned to each component for Canada. These weights are based mostly on data from the 2002 *Survey of Household Spending*.

Table 7.9 Sources and methods of personal expenditure estimates at constant prices

Series	Title	Price index for deflation or volume projector of base-year value[1]
J017	Radios, sound systems and accessories	CPI for audio equipment (63%). CPI for purchase of pre-recorded audio and video media (37%).
J018	TV sets, video equipment and accessories	CPI for video equipment (93%). CPI for purchase of blank audio and video recording media (7%).
J019	Boats, aircraft and accessories	CPI for purchase of recreational vehicles.
J020	Photographic and optical equipment	CPI for digital cameras (70%). CPI for 35-millimeter cameras (30%).
J021	Sporting and camping equipment	CPI for sporting equipment (84%). CPI for camping and picnic equipment, excluding barbecues (16%).
J022	Office machines, computers and equipment	CPI for computer equipment and supplies.
J023	Musical instruments and supplies	CPI for musical instruments, accessories and parts.
J024	Trailers	CPI for purchase of recreational vehicles.
J025	Recreation equipment repairs	CPI for other recreational equipment and services.
J026	Recreation equipment rentals	CPI for rental of DVDs and videogames (88%). CPI for other recreational equipment and services (10%). CPI for other home entertainment equipment, parts and services (2%).
J027	Watches and jewellery	CPI for jewellery, excluding watches (74%). CPI for watches (26%).
J028	Watches and jewellery repairs	CPI for other clothing services.
J051	Men’s and boys’ clothing	CPI for men's clothing (90%). CPI for children's clothing, including infants (10%).
J052	Women’s, girls' and infants' clothing	CPI for women's clothing (88%). CPI for children's clothing, including infants (12%).
J053	Thread, yarn and sewing accessories	CPI for clothing material and notions.

1. The numbers in parenthesis represent the weight assigned to each component for Canada. These weights are based mostly on data from the 2002 *Survey of Household Spending*.

Table 7.9 Sources and methods of personal expenditure estimates at constant prices

Series	Title	Price index for deflation or volume projector of base-year value[1]
J054	Piece goods	CPI for clothing material and notions.
J056	Footwear	CPI for footwear.
J057	Footwear repairs	CPI for shoe repairs.
J058	Luggage, leather goods and other personal effects	CPI for other household equipment (45%). CPI for other accessories (40%). CPI for other tobacco products and smokers' supplies (15%).
J059	Toys, games and hobby supplies	CPI for toys, non-video games and hobby supplies.
J060	Films and other photographic supplies	CPI for other photographic equipment and supplies.
J061	Household textiles and furnishings	CPI for household textiles (65%). CPI for other furniture (35%).
J062	China, glassware and kitchenware	CPI for non-electric kitchen utensils and tableware.
J063	Lamps, lighting equipment and accessories	CPI for homeowners' maintenance and repairs (8%). CPI for other furniture (79%). CPI for other household supplies (13%).
J064	Flatware	CPI for metal tableware and flatware.
J065	Hardware	CPI for homeowners' material costs (85%). CPI for hand tools, excluding lawn and garden (10%). CPI for tenants' maintenance, repairs and other expenses (5%).
J066	Newspapers, books, magazines and stationery	CPI for reading material and other printed material, excluding textbooks (56%). CPI for school textbooks and supplies (28%). CPI for paper supplies (16%).
J067	Women’s clothing repairs and alterations	CPI for other clothing services.
J068	Pets and supplies	CPI for pet food and supplies.
J069	Men’s clothing repairs and alterations	CPI for other clothing services.

1. The numbers in parenthesis represent the weight assigned to each component for Canada. These weights are based mostly on data from the 2002 *Survey of Household Spending*.

Table 7.9 Sources and methods of personal expenditure estimates at constant prices

Series	Title	Price index for deflation or volume projector of base-year value[1]
J101	Food and non-alcoholic beverages	CPI for food purchased from stores.
J102	Imputed food	CPI for food purchased from stores.
J103	Pet food	CPI for pet food and supplies.
J104	Alcoholic beverages bought in stores	CPI for alcoholic beverages purchased from stores.
J105	Tobacco products	CPI for cigarettes combined with the price index for contraband tobacco calculated by the Income and Expenditure Accounts Division (IEAD).
J106	Electricity	CPI for electricity. The constant price estimates are confronted with those calculated with the volume projector of electricity sold to households.
J107	Natural gas	CPI for natural gas. The constant price estimates are confronted with those calculated with the volume projector of natural gas sold to households.
J108	Other fuels	CPI for fuel oil and other fuels confronted with the weighted price of light oil, heavy fuel oil, kerosene and stove oil, natural gas liquids, coal and firewood.
J109	Soaps and other cleaning supplies	CPI for detergent and soap, other than for personal care (54%). CPI for other household chemical products (46%).
J110	Other household supplies	CPI for paper, plastic and foil supplies (30%). CPI for other household supplies (10%). CPI for other personal care supplies and equipment (60%).
J111	Pharmaceutical products and medical goods	CPI for medicinal and pharmaceutical products (75%). CPI for optical goods (25%).
J112	Motor fuels and lubricants	CPI for gasoline (97%). CPI for passenger vehicle maintenance and repair services (3%).
J113	Flowers, plants and other horticultural supplies	CPI for seeds, plants and cut flowers (83%). CPI for other horticultural goods (17%).
J114	Cosmetics and toiletries	CPI for personal care supplies and equipment.
J151	Water, sewage and garbage charges	CPI for water.
J153	Imputed rent	Quarterly value of owner-occupied housing stocks at constant prices by province and territory, derived using data from the Investment and Capital Stock Division (ICSD). The Canada estimate is obtained by summing the provincial and territorial estimates.

1. The numbers in parenthesis represent the weight assigned to each component for Canada. These weights are based mostly on data from the 2002 *Survey of Household Spending*.

Table 7.9 Sources and methods of personal expenditure estimates at constant prices

Series	Title	Price index for deflation or volume projector of base-year value[1]
J154	Paid rent	Quarterly value of rented and occupied housing stocks at constant prices by province and territory, derived using data from the ICSD. The Canada estimate is obtained by summing the provincial and territorial estimates.
J155	Imputed lodging	Implicit price index (IPI) of paid rent (J154), calculated by dividing the current price estimates by the constant price estimates.
J156	Paid lodging (excluding universities)	IPI of paid rent (J154), calculated by dividing the current price estimates by the constant price estimates.
J157	Lodging in universities	Price index calculated from the living accommodation cost at residences according to Culture, Tourism and the Centre for Education Statistics (CTCES), weighted with the number of places in residence obtained from the Directory of Canadian Universities, by university.
J158	Domestic services	CPI for domestic services.
J159	Child care, in the home	CPI for child care in the home.
J160	Child care, outside home	CPI for day-care centres, nurseries and other child care outside the home.
J161	Laundry and dry cleaning	CPI for laundry services (41%). CPI for dry cleaning services (59%).
J162	Property insurance	Volume projector for the national estimates is the sum of net premiums (premiums minus claims) and investment income at constant prices. The constant price net premiums are calculated by projecting the base year net premiums paid by households with total premiums deflated by CPI for tenants (10%) and homeowners (90%) insurance premiums, multiplied by the current year's personal ratio of net premiums. The constant price investment income is calculated by projecting the base year investment income with interest bearing assets deflated by the all-items CPI. The national IPI, calculated by dividing the current price estimates by the constant price estimates, is used to calculate the provincial and territorial estimates. The constant price estimates by province and territory are confronted with those derived with volume projectors based on the value of housing stocks at constant prices, obtained from ICSD, and on personal expenditure on selected durable goods.
J163	Pet care	CPI for pet related services (including veterinarian services).
J164	Furniture and appliance rentals	CPI for cooking appliances (41%). CPI for refrigeration and air conditioning appliances (34%). CPI for furniture (17%). CPI for laundry and dishwashing appliances (8%).
J165	Janitorial services	CPI for domestic services.
J166	Medical care, dental care and the like	CPI for health care services.
J167	Special care facilities	National price index calculated by dividing the current price estimates of labour income for hospitals, residential care and other health care facilities by the constant price estimates of labour income for those institutions. The latter are derived in the calculation of government current expenditure on goods and services at constant prices (see Deflation - Estimates in real terms in Chapter 8). The national IPI is used to derive the provincial and territorial estimates.

1. The numbers in parenthesis represent the weight assigned to each component for Canada. These weights are based mostly on data from the 2002 *Survey of Household Spending*.

Table 7.9 Sources and methods of personal expenditure estimates at constant prices

Series	Title	Price index for deflation or volume projector of base-year value[1]
J168	Other health care	CPI for health care services.
J169	Hospital care and the like	National price index calculated by dividing the current price estimates of labour income for hospitals, residential care and other health care facilities by the constant price estimates of labour income for those institutions. The latter are derived in the calculation of government current expenditure on goods and services at constant prices (see Deflation - Estimates in real terms in Chapter 8). The national IPI is used to derive the provincial and territorial estimates.
J171	Accident and sickness insurance	Volume projector for the national estimates is the sum of net premiums (premiums minus claims) and investment income at constant prices. The constant price net premiums are constructed by projecting the base year net premiums paid by households with total premiums deflated by the all-items CPI, multiplied by the current year's personal ratio of net premiums. The constant price investment income is calculated by projecting the base year investment income with interest bearing assets deflated by the all-items CPI. The national IPI, calculated by dividing the current price estimates by the constant price estimates, is used to calculate the provincial and territorial estimates. The constant price estimates by province and territory are confronted with those derived with a volume projector based on the number of individuals covered by various types of accident and sickness insurance, obtained from the Canadian Life and Health Insurance.
J173	Commissions paid to tour operators	CPI for services.
J174	Bridge and highway tolls	Price index calculated from tolls for selected bridges and highways, weighted by the personal expenditure for each of the selected bridges and highways.
J175	Auto insurance	Volume projector for the national estimates is the sum of net premiums (premiums minus claims) and investment income at constant prices. The constant price net premiums are constructed by projecting the base year net premiums paid by households with total premiums deflated by the CPI for passenger vehicle insurance premiums, multiplied by the current year's personal ratio of net premiums. The constant price investment income is calculated by projecting the base year investment income with interest bearing assets deflated by the all-items CPI. The national IPI, calculated by dividing the current price estimates by the constant price estimates, is used to calculate the provincial and territorial estimates. The constant price estimates by province and territory are confronted with those derived with a volume projector based on the number of vehicles registered obtained from the Transportation Division.
J176	Urban transit	CPI for city bus and subway transportation.
J177	Railway transport	CPI for rail transportation.
J178	Interurban bus	CPI for highway bus and inter-city transportation.
J179	Air transport	National CPI for air transportation, confronted with the price index calculated by dividing the passenger revenue by the number of passenger-kilometers, obtained from the monthly operating reports of the major Canadian air carriers. The national IPI is used to deflate the provincial and territorial estimates.
J180	Water transport	CPI for other inter-city transportation - ferry fares.
J181	Taxis	CPI for taxi and other local and commuter transportation.
J182	Moving and storage	CPI for services related to household furnishings and equipment.
J183	Telecommunications	CPI for telephone services.

1. The numbers in parenthesis represent the weight assigned to each component for Canada. These weights are based mostly on data from the 2002 *Survey of Household Spending*.

Table 7.9 Sources and methods of personal expenditure estimates at constant prices

Series	Title	Price index for deflation or volume projector of base-year value[1]
J184	Postal and courier services	CPI for postal services and other communication services.
J185	Games of chance	Personal expenditure on lotteries is deflated with the price index calculated using the ratio of sales to prizes, combined with the all-items CPI. Sales and prizes of lottery tickets are obtained from each lottery and gaming corporation. Personal expenditure on casinos, VLTs and slot machines at racetracks is deflated using the all-items CPI.
J186	Pari-mutuel	All-items CPI.
J187	Other recreational services	CPI for use of recreational facilities and services (62%). CPI for spectator entertainment, excluding cablevision (38%).
J188	University fees	CPI for university tuition fees.
J189	Fees for education and training, other than university	CPI for college tuition fees (70%). CPI for other lessons, courses and education services (30%).
J190	Other educational and cultural services	CPI for other lessons, courses and education services.
J191	Hairstyling for men and women	CPI for personal care services.
J192	Other personal care	CPI for personal care services.
J193	Meals outside the home	CPI for food purchased from restaurants.
J194	Alcoholic beverages consumed in licensed establishments	CPI for alcoholic beverages served in licensed establishments.
J195	Accommodation services	CPI for traveller accommodation, confronted with average prices reported by Smith Travel Research and Pannell Kerr Forster Consulting Inc. The constant price estimates are confronted with those calculated using a volume projector derived from occupancy rates and the number of rooms available, obtained from the two sources listed above.
J196	Board paid	CPI for food purchased from stores.
J199	Stock and bond commissions	Number of shares traded on all Canadian markets, obtained from the TMX Group Inc., is used to project the national base year current price estimate. The national IPI, calculated by dividing the current price estimates by the constant price estimates, is used to calculate the provincial and territorial estimates.
J200	Financial intermediaries, implicit loan charges	National volume projector calculated by deflating the institutions' consumer loan assets with the all-items CPI. The consumer loan assets are obtained from the Office of the Superintendent of Financial Institutions (OSFI). The national IPI, calculated by dividing the current price estimates by the constant price estimates, is used to calculate the provincial and territorial estimates.
J201	Credit unions, implicit deposit charges	National volume projector calculated by deflating the credit unions' deposit liabilities with the all-items CPI. The deposit liabilities are obtained from the *Quarterly Survey of Financial Statistics for Enterprises* (QFS), survey no. 2501. The national IPI, calculated by dividing the current price estimates by the constant price estimates, is used to calculate the provincial and territorial estimates.

1. The numbers in parenthesis represent the weight assigned to each component for Canada. These weights are based mostly on data from the 2002 *Survey of Household Spending*.

Table 7.9 Sources and methods of personal expenditure estimates at constant prices

Series	Title	Price index for deflation or volume projector of base-year value[1]
J202	Life insurance	National volume projector based on the number of "insurance policies in force", obtained from the OSFI. The national IPI, calculated by dividing the current price estimates by the constant price estimates, is used to calculate the provincial and territorial estimates.
J203	Financial intermediaries, explicit charges	National price index calculated using the average weekly earnings for financial institutions, obtained from the *Survey of Employment, Payrolls and Hours* (SEPH), survey no. 2612. The national IPI is used to calculate the provincial and territorial estimates.
J204	Financial intermediaries, implicit deposit charges	National volume projector calculated by deflating the institutions' deposit liabilities with the all-items CPI. The deposit liabilities are obtained from the OSFI. The national IPI, calculated by dividing the current price estimates by the constant price estimates, is used to calculate the provincial and territorial estimates.
J205	Credit unions, explicit charges	National price index calculated using the average weekly earnings for financial institutions, obtained from the SEPH. The national IPI is used to calculate the provincial and territorial estimates.
J206	Trusteed pension funds	National price index calculated using the average weekly earnings for financial institutions, obtained from the SEPH. The national IPI is used to calculate the provincial and territorial estimates.
J207	Credit unions, implicit loan charges	National volume projector calculated by deflating the credit unions' consumer loan assets with the all-items CPI. The consumer loan assets are obtained from the QFS. The national IPI, calculated by dividing the current price estimates by the constant price estimates, is used to calculate the provincial and territorial estimates.
J208	Mutual funds	Volume projector for the national estimates is the sum of operating expenses and commissions at constant prices. The constant price operating expenses are calculated by projecting the base year operating expenses with the asset value deflated by the all-items CPI. The constant price commissions are calculated by projecting the base year commissions with the sales of mutual fund units deflated by the all-items CPI. The national IPI, calculated by dividing the current price estimates by the constant price estimates, is used to calculate the provincial and territorial estimates. Data on operating expenses, investment income and asset value are obtained from financial statements of the mutual funds, commission data are obtained from the Investment Dealers Association while the Investment Funds of Canada provide data on the sales of mutual funds.
J209	Legal, accounting and other services	National price index derived from the average weekly earnings for legal services (NAICS 5411), obtained from the SEPH. The national IPI is used to deflate the provincial and territorial estimates.
J210	Undertaking and other funeral services	National price index calculated by weighting the average weekly earnings for funeral services (NAICS 8122), obtained from the SEPH (91.4%) and the CPI for operation of passenger vehicles (8.6%). The national constant price estimates are confronted with those derived from the volume projector of the number of deaths obtained from the Demography Division. The number of deaths is the volume projector used to calculate provincial and territorial estimates.
J211	Miscellaneous household services	CPI for homeowners' maintenance and repairs (50%). CPI for services related to household furnishings and equipment (50%).
J212	Welfare and charitable organizations	All-items CPI.
J213	Religious organizations	All-items CPI.
J214	Trade unions	All-items CPI.

1. The numbers in parenthesis represent the weight assigned to each component for Canada. These weights are based mostly on data from the 2002 *Survey of Household Spending*.

Table 7.9 Sources and methods of personal expenditure estimates at constant prices

Series	Title	Price index for deflation or volume projector of base-year value[1]
J215	Travel payments abroad	In the National Income and Expenditure Accounts (NIEA), a composite price index is calculated using CPIs of the United States for travel related expenditures such as air transport, accommodation and restaurants, adjusted for the exchange rate. An adjustment is also made to take into account travel spending in countries other than the US. In the Provincial and Territorial Economic Accounts (PTEA), the international component of travel payments abroad by province or territory is deflated using the same price index calculated for the NIEA. For the interprovincial component, a composite price index is calculated by province and territory of residence of the traveller using CPIs of the provinces and territories visited for travel related expenditures. The spending in each province and territory visited is deflated with the corresponding composite price index. The constant price estimates for interprovincial travel payments of a province/ territory are then obtained by summing all the deflated expenditures made in the provinces and territories visited.
J216	Spending of military personnel abroad	Composite price index calculated from the all-items CPI of the United States and from the cost of living index of selected countries, adjusted for exchange rates.
J218	Travel receipts from non-residents	In the NIEA, a composite price index is calculated using CPIs for travel related expenditures of non-residents in Canada. In the PTEA, the international component of travel receipts of non-residents by province or territory is deflated using the same price index calculated for the NIEA. For the interprovincial component, the receipts of a province or territory from travel spending of residents of other provinces and territories are deflated with a composite price index calculated using CPIs of that province or territory for travel related expenditures.
J219	Cable television and pay television	CPI for cablevision and satellite services (including pay television).
J220	Political parties	CPI for services excluding shelter services.
J221	Parking	CPI for parking fees.
J222	Driving lessons and membership in automobile associations	CPI for all other passenger vehicle operating expenses.
J223	Motor vehicle renting	CPI for rental of passenger vehicles.
J224	Cinemas	CPI for motion picture showings.
J225	Photographic services	CPI for photographic services.
J226	Indian bands and Inuit	All-items CPI.

1. The numbers in parenthesis represent the weight assigned to each component for Canada. These weights are based mostly on data from the 2002 *Survey of Household Spending*.

Appendix 7A Principal methodology[1] for computing estimators of personal expenditure on consumer goods

7A.1 In this appendix, a fictitious example is used to illustrate the steps in the methodology required for computing approximately 40 seasonally unadjusted[2] estimators of personal expenditure on consumer goods (excluding sales tax) with data from the *Quarterly Retail Commodity Survey*[3] (QRCS) and the *Monthly Retail Trade Survey* (MRTS).

7A.2 The purpose of this example is not to portray the two surveys faithfully but to describe how their data are used. Hence, a simplified scenario involving only a limited number of trade groups and commodities[4] was used (see Table 7A.1).

Table 7A.1 Trade groups and commodities

Trade groups		Commodities	
TG001	Furniture stores	C0001	Furniture
TG002	Household appliance stores	C0002	Carpets and other floor coverings
TG003	Motor vehicle dealers	C0003	Household appliances
TG004	Clothing, shoes and accessories stores	C0004	New cars
TG005	Renovation centres and hardware stores	C0005	Used motor vehicles
TG006	Supermarkets	C0006	New trucks
TG007	Pharmacies	C0007	Clothing and footwear
TG008	Gas stations	C0008	Hardware and building materials
TG009	Department stores	C0009	Meat and fish
		C0010	Fruits and vegetables
		C0011	Dairy products and pastries
		C0012	Non-alcoholic beverages
		C0013	Other food
		C0014	Drugs
		C0015	Gasoline, motor oil and additives

7A.3 The example covers the estimation process for the two most recent periods t-1 and t. The results of both surveys are available in t-1, while only the MRTS results are available for the most recent period t.[5]

7A.4 The QRCS data are the cornerstone of the methodology. The data for period t-1 are given in Table 7A.2, and the MRTS results also appear implicitly in the “Total” portion of the table, since the total sales are benchmarked from one survey to the other at the trade group level.

1. See paragraph 7.47 for a list of estimators computed with this methodology. Alternative methodologies have been developed to compute the remaining estimators of personal expenditure on consumer goods which are not included in the list.
2. None of the data used are adjusted for seasonal variation. Only the estimators computed in the last step are seasonally adjusted.
3. While the QRCS results are officially published only on a quarterly basis for Canada, they are nevertheless benchmarked to the MRTS results at the trade group level on a monthly basis. These national monthly series by trade group are provided to the Income and Expenditure Accounts Division (IEAD) by the Distributive Trades Division (DTD). The DTD also produces annual provincial and territorial estimates of commodity sales from these surveys for the IEAD.
4. The retail trade surveys include results for 19 trade groups based on special aggregations of the 2002 North American Industry Classification System (NAICS). The QRCS collects information on the sales of nearly 120 commodities.
5. QRCS data are usually available about two months after MRTS data.

Table 7A.2 Source data (QRCS and MRTS), period t-1

Commodities	Trade groups								
	TG001	TG002	TG003	TG004	TG005	TG006	TG007	TG008	TG009
	thousands of dollars								
C0001	37,900	200			200	900			3,700
C0002	500				5,500				500
C0003	8,100	10,600			1,400				7,500
C0004			158,200						
C0005			150,700						
C0006			162,500						
C0007				128,400		1,800			48,200
C0008					72,900				3,500
C0009						61,900			
C0010						48,700		100	
C0011						64,500		1,800	300
C0012						16,600	2,300	3,800	2,200
C0013						147,800	6,500	6,600	5,600
C0014						14,400	110,000		8,200
C0015					200	1,900		172,700	700
Total	**46,500**	**10,800**	**471,400**	**128,400**	**80,200**	**358,500**	**118,800**	**185,000**	**80,400**

Step 1: Convert the classification

7A.5 Step 1 involves mapping commodity sales based on the QRCS classification into the J series according to the classification of personal expenditure.[6] This operation is carried out with a concordance table similar to Table 7A.3. The mapping between a commodity and a J series is the same no matter what the trade group is.

Table 7A.3 Concordance between QRCS commodities and personal expenditure series

QRCS commodities			Personal expenditure series	
Code	Description	Proportion	Code	Description
C0001	Furniture	1.00	J001	Furniture
C0002	Carpets and other floor coverings	0.40	J002	Floor coverings
C0002	Carpets and other floor coverings	0.60	Jxxx	(dummy)
C0003	Household appliances	0.30	J004	Refrigerators and freezers
C0003	Household appliances	0.20	J005	Washers and dryers
C0003	Household appliances	0.35	J006	Stoves, ranges and microwave ovens
C0003	Household appliances	0.15	J007	Other major appliances
C0004	New cars	1.00	J011	New automobiles
C0005	Used motor vehicles	1.00	J012	Used motor vehicles (net value)
C0006	New trucks	1.00	J013	New trucks and vans
C0007	Clothing and footwear	0.28	J051	Men's and boys' clothing
C0007	Clothing and footwear	0.55	J052	Women's, girls' and infant's clothing
C0007	Clothing and footwear	0.17	J056	Footwear
C0008	Hardware and building materials	0.90	J065	Hardware
C0008	Hardware and building materials	0.10	Jxxx	(dummy)
C0009	Meat and fish	1.00	J101	Food and non-alcoholic beverages
C0010	Fruits and vegetables	1.00	J101	Food and non-alcoholic beverages
C0011	Dairy products and pastries	1.00	J101	Food and non-alcoholic beverages
C0012	Non-alcoholic beverages	1.00	J101	Food and non-alcoholic beverages
C0013	Other food	1.00	J101	Food and non-alcoholic beverages
C0014	Drugs	1.00	J111	Pharmaceutical products and medical goods
C0015	Gasoline, motor oil and additives	1.00	J112	Motor fuels and lubricants

6. See for a complete list of personal expenditure series on consumer goods and services.

7A.6 It is often a direct mapping, as in the case of calculation example 1 for commodity C0001, which maps exactly to series J001, and for commodities C0009 to C0013, which all map to series J101.

Calculation example 1

Cell J001_TG001 from Table 7A.4	= Cell C0001_TG001 from Table 7A.2	= 37,900	
	× Proportion C0001_J001 from Table 7A.3	× 1.00	= 37,900

Cell J101_TG006 from Table 7A.4	= (Cell C0009_TG006 from Table 7A.2	= (61,900	
	× Proportion C0009_J101 from Table 7A.3)	× 1.00)	
	+ (Cell C0010_TG006 from Table 7A.2	+ (48,700	
	× Proportion C0010_J101 from Table 7A.3)	× 1.00)	
	+ (Cell C0011_TG006 from Table 7A.2	+ (64,500	
	× Proportion C0011_J101 from Table 7A.3)	× 1.00)	
	+ (Cell C0012_TG006 from Table 7A.2	+ (16,600	
	× Proportion C0012_J101 from Table 7A.3)	× 1.00)	
	+ (Cell C0013_TG006 from Table 7A.2	+ (147,800	
	× Proportion C0013_J101 from Table 7A.3)	× 1.00)	= 339,500

7A.7 However, some commodities map to more than one J series of personal expenditure. When a breakdown is required, it is based on more detailed data from the Input-Output Tables or from the *Survey of Household Spending* (SHS), or on the analyst's judgement. This is the case in calculation example 2 for commodity C0003, which must be distributed across series J004, J005, J006 and J007.

Calculation example 2

Cell J004_TG002 from Table 7A.4	= Cell C0003_TG002 from Table 7A.2	= 10,600	
	× Proportion C0003_J004 from Table 7A.3	× 0.30	= 3,180

Cell J005_TG002 from Table 7A.4	= Cell C0003_TG002 from Table 7A.2	= 10,600	
	× Proportion C0003_J005 from Table 7A.3	× 0.20	= 2,120

Cell J006_TG002 from Table 7A.4	= Cell C0003_TG002 from Table 7A.2	= 10,600	
	× Proportion C0003_J006 from Table 7A.3	× 0.35	= 3,710

Cell J007_TG002 from Table 7A.4	= Cell C0003_TG002 from Table 7A.2	= 10,600	
	× Proportion C0003_J007 from Table 7A.3	× 0.15	= 1,590

7A.8 Finally, it is important to note that the purchase of certain commodities sold by retailers constitutes gross fixed capital formation rather than personal expenditure, such as hardwood flooring, which would appear under C0002, or renovation materials, which would appear under C0008. As shown in calculation example 3, such commodities are assigned to a dummy series (identified as Jxxx), which ensures that the totals remain unchanged following the process of converting the classification. This is reflected in the "Total" heading in Table 7A.4, which is identical to the "Total" heading in Table 7A.2.

Calculation example 3

Cell Jxxx_TG005 from Table 7A.4	= (Cell C0002_TG005 from Table 7A.2	= (5,500	
	× Proportion C0002_Jxxx from Table 7A.3)	× 0.60)	
	+ (Cell C0008_TG005 from Table 7A.2	+ (72,900	
	× Proportion C0008_Jxxx from Table 7A.3)	× 0.10)	= 10,590

7A.9 The results of all the computations in the conversion of classification are in Table 7A.4.

Table 7A.4 Converted source data, period t-1

J series	Trade groups								
	TG001	**TG002**	**TG003**	**TG004**	**TG005**	**TG006**	**TG007**	**TG008**	**TG009**
	thousands of dollars								
J001	37,900	200			200	900			3,700
J002	200				2,200				200
J004	2,430	3,180			420				2,250
J005	1,620	2,120			280				1,500
J006	2,835	3,710			490				2,625
J007	1,215	1,590			210				1,125
J011			158,200						
J012			150,700						
J013			162,500						
J051				35,952		504			13,496
J052				70,620		990			26,510
J056				21,828		306			8,194
J065					65,610				3,150
J101						339,500	8,800	12,300	8,100
J111						14,400	110,000		8,200
J112					200	1,900		172,700	700
Jxxx	300				10,590				650
Total	**46,500**	**10,800**	**471,400**	**128,400**	**80,200**	**358,500**	**118,800**	**185,000**	**80,400**

Step 2: Convert sales into proportions

7A.10 In step 2, the proportion of each J series' sales relative to total sales is computed for each trade group, as shown in calculation example 4.

Calculation example 4

Cell J001_TG001 from Table 7A.5	= Cell J001_TG001 from Table 7A.4	= 37,900	
	÷ Cell Total_TG001 from Table 7A.4	÷ 46,500	= 0.815

7A.11 The results of all the computations of the conversion of sales into proportions are in Table 7A.5.

Table 7A.5 Source data converted into proportions, period t-1

J series	Trade groups								
	TG001	**TG002**	**TG003**	**TG004**	**TG005**	**TG006**	**TG007**	**TG008**	**TG009**
J001	0.815	0.019			0.002	0.003			0.046
J002	0.004				0.027				0.002
J004	0.052	0.294			0.005				0.028
J005	0.035	0.196			0.003				0.019
J006	0.061	0.344			0.006				0.033
J007	0.026	0.147			0.003				0.014
J011			0.336						
J012			0.320						
J013			0.345						
J051				0.280		0.001			0.168
J052				0.550		0.003			0.330
J056				0.170		0.001			0.102
J065					0.818				0.039
J101						0.947	0.074	0.066	0.101
J111						0.040	0.926		0.102
J112					0.002	0.005		0.934	0.009
Jxxx	0.006				0.132				0.008
Total	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**

7A.12 There are a number of advantages in converting sales into proportions. First, it is much easier to analyze their movements (i.e., their stability or volatility). Second, it allows total sales to be decomposed when MRTS results are available for a given period while QRCS results are not, as is the case for the most recent estimation period t.

Step 3: Decompose total sales

7A.13 In step 3, the proportions from a previous period computed in step 2 are applied to the MRTS total sales for period t. The previous period is selected on the basis of seasonality; that is, the proportions for the same period of a previous year are generally used. It is important to note that the analyst may, when judged appropriate, adjust the proportions borrowed from a previous period to reflect recent trends in the retail trade sector.

7A.14 As shown in calculation example 5, the proportions for period t-1 from Table 7A.5 are applied to the MRTS total retail sales for period t from Table 7A.6.

Table 7A.6 Total retail sales from MRTS, thousands of dollars, period t

Trade groups								
TG001	**TG002**	**TG003**	**TG004**	**TG005**	**TG006**	**TG007**	**TG008**	**TG009**
47,500	10,100	477,700	121,200	80,500	360,700	123,600	183,200	78,800

Calculation example 5

Cell J001_TG001 from Table 7A.7	= Cell TG001 from Table 7A.6	= 47,500	
	× Cell J001_TG001 from Table 7A.5	× 0.815	= 38,715

7A.15 The results of all the computations in the decomposition of total sales are in Table 7A.7.

Table 7A.7 Estimated data, period t

J series	Trade groups								
	TG001	TG002	TG003	TG004	TG005	TG006	TG007	TG008	TG009
	thousands of dollars								
J001	38,715	187			201	906			3,626
J002	204				2,208				196
J004	2,482	2,974			422				2,205
J005	1,655	1,983			281				1,470
J006	2,896	3,470			492				2,573
J007	1,241	1,487			211				1,103
J011			160,314						
J012			152,714						
J013			164,672						
J051				33,936		507			13,227
J052				66,660		996			25,982
J056				20,604		308			8,031
J065					65,855				3,087
J101						341,583	9,156	12,180	7,939
J111						14,488	114,444		8,037
J112					201	1,912		171,020	686
Jxxx	306				10,630				637
Total	**47,500**	**10,100**	**477,700**	**121,200**	**80,500**	**360,700**	**123,600**	**183,200**	**78,800**

Step 4: Compute the estimators

7A.16 The estimators for the J series of personal expenditure excluding sales tax are computed by adding up the commodity sales for all trade groups. Calculation example 6 shows this process for the personal expenditure series J001 and J002.

Calculation example 6

Cell J001[t-1] from Table 7A.8	= Cell J001_TG001 from Table 7A.4	= 37,900	
	+ Cell J001_TG002 from Table 7A.4	+ 200	
	+ Cell J001_TG003 from Table 7A.4	+ 0	
	+ Cell J001_TG004 from Table 7A.4	+ 0	
	+ Cell J001_TG005 from Table 7A.4	+ 200	
	+ Cell J001_TG006 from Table 7A.4	+ 900	
	+ Cell J001_TG007 from Table 7A.4	+ 0	
	+ Cell J001_TG008 from Table 7A.4	+ 0	
	+ Cell J001_TG009 from Table 7A.4	+ 3,700	= 42,900

Cell J002[t] from Table 7A.8	= Cell J002_TG001 from Table 7A.7	= 204	
	+ Cell J002_TG002 from Table 7A.7	+ 0	
	+ Cell J002_TG003 from Table 7A.7	+ 0	
	+ Cell J002_TG004 from Table 7A.7	+ 0	
	+ Cell J002_TG005 from Table 7A.7	+ 2,208	
	+ Cell J002_TG006 from Table 7A.7	+ 0	
	+ Cell J002_TG007 from Table 7A.7	+ 0	
	+ Cell J002_TG008 from Table 7A.7	+ 0	
	+ Cell J002_TG009 from Table 7A.7	+ 196	= 2,608

7A.17 The results of all the estimator computations are in Table 7A.8.

Table 7A.8 Estimators[7]

J series	Period t-1	Period t
	thousands of dollars	
J001	42,900	43,635
J002	2,600	2,608
J004	8,280	8,083
J005	5,520	5,389
J006	9,660	9,431
J007	4,140	4,042
J011	158,200	160,314
J012	150,700	152,714
J013	162,500	164,672
J051	49,952	47,670
J052	98,120	93,638
J056	30,328	28,943
J065	68,760	68,942
J101	368,700	370,858
J111	132,600	136,969
J112	175,500	173,819

7. As alluded to in footnote 1, the estimators for the series J011, J012, J013 and J112 that are produced by the methodology described in this annex and which appear in this table are used only as indicators. Alternative methodologies have been developed to compute the estimators for these personal expenditure series; they are described in Table 7.7.

Chapter 8 Government current expenditure on goods and services

Introduction

8.1 Canadian governments play an important role in the national economy. One way in which this role is evident is as a producer of public goods and services. Some government-produced goods and services cannot be provided by non-government producers, such as the administration of justice or military defence. Canadians prefer other goods and services to be provided by their governments, such as most education and health-care services. The value of the goods and services produced by Canadian governments must be included in gross domestic product for that measure to accurately describe the economy.

8.2 The value of the goods and services produced by government is estimated in two places in the Income and Expenditure Accounts (IEA): government current expenditure on goods and services and government gross fixed capital formation. These aggregates are two of the components of expenditure-based gross domestic product (GDP) and, as such, represent the direct contribution of the government sector to aggregate economic activity.

8.3 Canadian governments also redistribute income and provide economic incentives to influence behaviour. A comprehensive depiction of government economic activity is presented in the IEA government sector accounts (see Chapter 1 and Chapter 2). In these accounts government income is disaggregated into various taxes and transfers, investment income and sales of goods and services. Government outlay components include purchases of goods and services, transfers to persons, to businesses, to non-residents and interest on the public debt.

8.4 While this chapter is devoted to the sources and methods used in estimating government current expenditure on goods and services, it should be kept in mind that an analysis of the role of governments in the national economy should include statistical information presented in other aggregates of the IEA and in other parts of the Canadian System of National Accounts (CSNA) such as the Financial Flow Accounts and the National Balance Sheet Accounts, produced by the Income and Expenditure Accounts Division (IEAD), the Public Sector Statistics, produced by the Public Institutions Division and Canada's International Investment Position, produced by the Balance of Payments Division.

Concepts and definitions

8.5 In national accounting, goods and services are usually valued using the prices buyers pay for them. Most government production, however, is not sold but is delivered without charge and consumed either individually by Canadians—education or health care, for instance—or collectively by all Canadians, like military defence or the administration of justice. The absence of market transactions and selling prices for most government-produced goods and services creates difficulties for national accountants, in Canada and around the world, in estimating the value of this production. The method adopted as the international national accounting standard is to assume that the value of the goods and services produced by government is equal to the cost of producing those goods and services. That is to say, the value of government-produced goods and services is equal to government current expenditure on goods and services.

8.6 Government current expenditure on goods and services[1] appearing in the IEA as a component of expenditure-based GDP does not include the value of those goods and services produced by government that are sold to other institutional sectors. The value of these sales is netted from total purchases of goods and services by government, to estimate the value of government final consumption—Canadian society's final consumption of government goods and services.

1. In the *System of National Accounts 1993* (SNA 1993), the government current expenditure on goods and services is named government final consumption expenditure. The definition in this section is derived from paragraph 9.94b of SNA 1993. The examples for individual and collective consumption were added to the SNA 1993 definition.

8.7 Government goods and services purchased by the household sector are recorded in the IEA as personal expenditure on consumer goods and services and those purchased by non-residents of Canada are part of exports of goods and services. Goods and services purchased by business from government are part of the intermediate inputs of business in the production of the goods and services produced by that sector.

8.8 Government current expenditure on goods and services appearing in government outlay in the IEA sector accounts has not been reduced by the value of sales to other institutional sectors because those sales are shown as a component of government income in those sector accounts.

Table 8.1 Government current expenditure on goods and services, 2000

	Table[1]	CANSIM	Millions of dollars
In expenditure-based GDP			
Government current expenditure on goods and services	Table 2	V498092	200,084
In government sector accounts			
Sales of goods and services: government sector	Table 9	V498325	33,414
Federal government	Table 10	V498370	4,534
Provincial and territorial governments	Table 11	V498405	18,201
Local governments	Table 12	V498433	10,679
Gross current expenditure on goods and services: government sector	Table 9	V498327	233,498
Federal government	Table 10	V498372	42,137
Provincial and territorial governments	Table 11	V498407	122,292
Local governments	Table 12	V498435	68,705
Canada Pension Plan	Table 13	V499663	296
Quebec Pension Plan	Table 13	V499671	68
By calculation - Current expenditure = Gross current expenditure - Sales			
Current expenditure on goods and services: government sector			200,084
Federal government			37,603
Provincial and territorial governments			104,091
Local governments			58,026
Canada Pension Plan			296
Quebec Pension Plan			68

1. Table number refers to the tables in the *National Income and Expenditure Accounts*, catalogue no. 13-001.

Who is included in the government institutional sector?

8.9 In the Canadian System of National Accounts, the government institutional sector is divided into the following basic components called sub-sectors:[2]

- federal government;
- provincial and territorial government;
- local government; and
- Canada and Quebec pension plans.

8.10 The sub-sectoring of the CSNA's government institutional sector and the components of each sub-sector for calculation of current expenditure on goods and services is illustrated in Table 8.2.

2. When data become available, it is intended to add another sub-sector: First Nations, Métis and Inuit Government.

Table 8.2 Components of current expenditure on goods and services by government sub-sector, 2000

	CANSIM	Millions of dollars
Government current expenditure on goods and services	V498092	200,084
Federal government		
Gross current expenditure on goods and services	V500017	42,137
Non-defence	V500018	27,961
Defence	V500019	10,398
of which: military	V500020	4,292
Capital consumption allowances	V500021	3,451
Financial services indirectly measured (FSIM)	V500022	327
Minus: Sales of goods and services	V500015	4,534
Current expenditures on goods and services		37,603
Provincial and territorial governments		
General government and provincial non-autonomous pension plans		
Gross current expenditure on goods and services	V500137	58,370
Operating expenditures	V500138	52,723
Capital consumption allowances	V500139	5,506
Financial services indirectly measured (FSIM)	V500140	141
Minus: Sales of goods and services	V500135	6,063
Current expenditures on goods and services		52,307
Health and social services institutions		
Gross current expenditure on goods and services	V500207	45,489
Operating expenditures	V500208	43,652
Capital consumption allowances	V500209	1,807
Financial services indirectly measured (FSIM)	V500210	30
Minus: Sales of goods and services	V500205	5,845
Current expenditures on goods and services		39,644
Universities and colleges		
Gross current expenditure on goods and services	V500190	18,433
Operating expenditures	V500191	17,211
Capital consumption allowances and financial services indirectly measured (FSIM)	V500192	1,222
Minus: Sales of goods and services	V500188	6,293
Current expenditures on goods and services		12,140
Local governments		
Gross current expenditure on goods and services	V500240	68,705
Operating expenditures	V500241	60,340
Municipalities	V500242	28,520
Schools	V500243	31,820
Capital consumption allowances	V500244	8,159
Municipalities	V500245	6,536
Schools	V500246	1,623
Financial services indirectly measured (FSIM)	V500247	206
Minus: Sales of goods and services	V500238	10,679
Current expenditures on goods and services		58,026
Canada and Quebec pension plans		
Canada Pension Plan	V499663	296
Quebec Pension Plan	V499671	68

8.11 The government sector of the Canadian System of National Accounts is one part of a larger group of entities called the public sector universe. The other component of the public sector universe is called government business enterprises (GBE) which, in the CSNA, is classified to the corporate sector. The primary distinction between government controlled institutional units assigned to government and those assigned to government business enterprises is the nature of their principal activity. Non-commercial institutional units, controlled by government, are classified to the government institutional sector, while government controlled commercial entities are classified to the GBE component. An institutional unit is considered to be commercial, and therefore a GBE, if it operates in the marketplace, charging economically significant prices for its products.[3] In the measurement of government current expenditure on goods and services, GBEs are not included.

Table 8.3 Public sector universe

Public sector data					
Government					Government business enterprises
Federal government	Canada and Quebec pension plans	Provincial and territorial government	Local government	First Nations and other aboriginal government	
General government • Ministries and departments, non-autonomous funds and organisations • Autonomous funds and organisations	Canada Pension Plan	General government • Ministries and departments, non-autonomous funds and organisations • Autonomous funds and organisations	General government • Municipalities, non-autonomous funds and organisations • Autonomous funds and organisations	General government • First Nations and other aboriginal government, non-autonomous funds and organisations[1] • Autonomous funds and organisations[1]	Federal government business enterprises • Financial enterprises •Monetary authorities •Other financial enterprises • Non-financial enterprises
Federal non-autonomous pension plans	Quebec Pension Plan	Provincial non-autonomous pension plans	School boards[2]	Universities and colleges • Universities[1] • Colleges, vocational and trade institutions[1]	Provincial and territorial government business enterprises • Financial enterprises • Non-financial enterprises
		Universities and colleges • Universities[2] • Colleges, vocational and trade institutions[2]		School boards[1]	Local government business enterprises
		Health and social service institutions • Health boards[1,2] • Social service organisations and community boards[1,2] • Other health and services organisations[1,2]		Health and social service institutions • Health boards[1] • Social service organisations and community boards[1] • Other health and services organisations[1]	First Nations and other aboriginal government business enterprises[1]

1. Data are not available
2. Except institutions which are integrated in the federal or provincial and territorial public accounts or local government audited financial statements

Annual estimation methods and data sources

8.12 For this discussion of sources and methods the three stages of the production-revision cycle will be considered starting from the benchmarked years and progressing to the current quarter estimates. This order works for two reasons: first, because for some sub-sectors the more timely estimates are based, to some extent, on the benchmark periods; and, second, because for all sub-sectors the benchmark period estimates are based on information from public accounts, audited financial statements and censuses of universe entities.

8.13 Revised estimates of government current expenditure on goods and services for benchmarked years benefit from the commodity and industry balancing of the Input-Output Tables (IOT) and are the product of an integrated effort by statisticians of the Industry Accounts Division, the Income and Expenditure Accounts Division and the Public Institutions Division. Annual estimates for benchmarked years are based on the final, audited financial accounts and statements of each government entity.

8.14 Non-benchmarked year estimates are based on similar source information—financial reports and statements, budget estimates and survey responses—but final versions are often not yet available and the information is subject to revision.

3. Economically significant prices being those that influence the quantity of product supplied by producers and demanded by consumers.

8.15 Current year quarterly estimates are based on sub-annual administrative or financial reports, budget estimates and related indicators.

Federal government

8.16 The federal government sub-sector is divided into two parts for purposes of estimation, as the underlying data sources are different. These two parts are called budgetary[4] and extra-budgetary. Information for the budgetary part of the sub-sector comes from the Government of Canada Banking and Accounting System of Public Works and Government Services Canada. Data sources for the extra-budgetary part include annual and sub- annual financial reports and statements of the extra-budgetary entities or other information obtained from them directly.

8.17 Current expenditure on goods and services for the budgetary part of the federal government sub-sector is estimated as a remainder. Data on total budgetary expenditures are provided in the Public Accounts of Canada[5] and Public Works and Government Services monthly statements. From this total, statisticians working in the Public Institutions Division identify and remove all spending that is not on goods and services, as illustrated in Table 8.4. The resulting budgetary goods and services expenditure includes both current and capital spending.

8.18 For the extra-budgetary part of the sub-sector expenditure, transactions in the source documents are analyzed and those that are purchases of goods and services are identified and aggregated. As for the budgetary part of the sub-sector, this aggregate includes both current and capital amounts.

8.19 Finally, current expenditure on goods and services is obtained by removing an estimate of investment in fixed capital and adding capital consumption allowances and financial services indirectly measured (FSIM) from the sum of budgetary and extra-budgetary total goods and services expenditure as all three appear elsewhere in the Income and Expenditure Accounts.[6]

Table 8.4 Estimation method of federal government current expenditure on goods and services

Total budgetary expenditures
- Spending not on goods and services
e.g. Transfer payments
Interest on public debt
Intergovernmental transfers
Transfers to extra-budgetary entities
= Current and capital budgetary expenditures
+ Current and capital extra-budgetary expenditures
= Current and capital expenditures
- Capital spending
+ Capital consumption allowances
+ Financial services indirectly measured
= Gross current expenditure on goods and services
- Sales of goods and services
= Current expenditure on goods and services

4. Budgetary entities is the terminology used in Canadian public finance to describe the ministries, departments and agencies of the government. Similarly, the term extra-budgetary entities is used to describe what the public sector universe refers to as autonomous organizations, boards, commissions and funds—that is, entities that the Canadian System of National Accounts includes in the federal sub-sector but which are not included in the Government of Canada's budgetary universe, for example, the Canadian Broadcasting Corporation (CBC).
5. The federal, provincial, territorial, Canada and Quebec pension plans public accounts benchmark data are all on a fiscal-year basis. Since estimates for these entities in the IEA were originally made for a specific quarter, based on monthly or quarterly information, it is a relatively simple matter to convert the benchmark data from a fiscal-year to a calendar-year basis using the appropriate quarters.
6. Investment in fixed capital sources and methods are described in Chapter 10 while the capital consumption allowances methodology is described in Chapter 9. Financial services indirectly measured (FSIM) methods are described in detail in Chapter 7.

8.20 Sales of goods and services are identified directly in source documents for both budgetary and extra-budgetary entities.

8.21 Federal government estimation is done in two parts for the non-benchmark years, just as for benchmark years. For the budgetary part, the same procedure is used for both benchmark and non-benchmark years, except that since the Public Accounts of Canada is not usually available for the last non-benchmark year, only Public Works and Government Services Canada's monthly reports are used.

8.22 Extra-budgetary estimates are also prepared in the same way as for benchmark years. Again, the main difference with benchmark years is source-data availability; for some extra-budgetary entities, financial statements are not available for the reference year and information for the most currently available year is used instead.

Provincial and territorial government

8.23 The provincial and territorial sub-sector has budgetary and extra-budgetary parts too, but unlike the federal sub-sector, the same methodology is used for both parts. Source documents are analyzed and transactions that are purchases (or sales) of goods and services are identified and aggregated. Source documents used to estimate provincial and territorial government current expenditure on goods and services include the public accounts of each province and territory for budgetary components and audited financial statements and annual reports of extra-budgetary entities.

8.24 The estimates derived from provincial and territorial sub-sector information, as for the federal sub-sector, include both current and capital spending. Current expenditure on goods and services is obtained by removing an estimate of investment in fixed capital and adding both capital consumption allowances and financial services indirectly measured (FSIM).

8.25 For the non-benchmark years, source information is much less uniform than for benchmark years and includes budget estimates, quarterly and monthly financial reports and information obtained directly from governments and their subordinate entities. As with the benchmark years, provincial and territorial governments expenditure on (and sales of) goods and services are identified in source documents and aggregated—the methodology for both budgetary and extra-budgetary parts of the sub-sector being identical.

8.26 Current expenditure on goods and services of hospitals, residential care facilities and other health and social service entities is obtained by summing their operating expenditures, as reported in Canadian Institute for Health Information (CIHI), Health Statistics Division surveys and provincial health ministry records. These surveys and records also provide the information to estimate sales of goods and services.

8.27 Estimates of universities and colleges expenditures on, and sales of, goods and services are obtained through surveys conducted by the Culture, Tourism and the Centre for Education Statistics.

8.28 For hospitals, residential care facilities, other health and social institutions, and universities and colleges, estimates for the more current years are projected from earlier benchmarks using various indicators, including information on provincial and territorial funding transfers and related labour income time series.

Local government

8.29 Source documents are the annual reports of provincial and territorial governments' departments of municipal affairs, which summarize information for all municipalities in their jurisdiction, and financial statements of municipalities and other local government entities. The current expenditure on goods and services of municipalities and other local government entities are calculated by summing all transactions identified as purchases of goods and services. Sales of goods and services are also aggregated.

8.30 Estimates for school boards are based on provincial and territorial departments of education information, representing a census of local schools. This information is gathered from surveys conducted by the Public Institutions Division.

8.31 For the non-benchmark years, estimates of transactions in goods and services of municipalities and other local government entities are developed from information gathered through sample surveys conducted by the Public Institution Division[7] and then inflated to represent the universe of local government entities in Canada. The surveys collect information originally developed for budget estimates and financial statements.

8.32 Operating expenditures and sales of goods and services estimates of local schools boards are based on information from provincial departments of education, compiled by the Culture, Tourism and the Centre for Education Statistics, for the non-benchmark years.

Canada and Quebec pension plans

8.33 Administrative expenditures of the Canada Pension Plan and Quebec Pension Plan are obtained from the accounting statements of the plans for both the benchmark and non-benchmark years.

Quarterly estimation methods and data sources

8.34 When possible, quarterly estimates are built using monthly and quarterly information from government accounting systems, reports, financial statements and surveys. When quarterly source information is not available, quarterly indicators are used to estimate the series from benchmark and non-benchmark years or to establish quarterly values from annual values.

Federal government

8.35 For benchmark and non-benchmark years, federal government estimation is done separately for the budgetary and extra-budgetary parts of the sub-sector. For the budgetary part, the procedure and data sources are exactly the same. For the extra-budgetary part, estimates are also prepared in the same way as for benchmark and non-benchmark years, the only difference being the increasing difficulty in obtaining source information for some component entities. In these cases, values are estimated from the most currently available period.

Provincial and territorial government

8.36 Quarterly estimates for provincial and territorial governments expenditure on (and sales of) goods and services are developed from a variety of source information, varying widely across jurisdictions: l'Institut de la Statistique du Québec provides estimates based on Government of Quebec accounting-system information, other provinces submit monthly and quarterly information from their government accounting systems while estimates for some components and jurisdictions have to be compiled from official budget estimates and other published and unpublished information.

8.37 For hospitals, residential care facilities, other health and social institutions, universities and colleges, quarterly data on operating expenditures and sales on goods and services are estimated from earlier periods, based on related labour income series.

Local government

8.38 Quarterly estimates are projected from earlier periods, based on related labour income series.

Canada and Quebec pension plans

8.39 Administrative expenditures of the Canada Pension Plan and Quebec Pension Plan are obtained from the quarterly accounting statements of the plans.

7. See *Public Sector Statistics,* catalogue no. 68-213 for the methodology and sample size of the surveys.

Table 8.5 Government current expenditure on goods and services in the Provincial Economic Accounts, 2000

	Total government sector		Federal government		Provincial and territorial governments		Local governments		Canada and Quebec pension plans[1]	
	Table 2		Table 7		Table 8		Table 9		Table 10	
	CANSIM	Millions of dollars	CANSIM	Millions of dollars	CANSIM	Millions of dollars	CANSIM	Millions of dollars	CANSIM	Millions of dollars
Canada	V687347	200,084	V688955	37,603	V689269	104,091	V689565	58,026	V[2]	364
Newfoundland and Labrador	V687381	4,000	V688979	751	V689292	2,412	V689584	831	V689823	6
Prince Edward Island	V687415	1,065	V689002	315	V689315	565	V689603	184	V689830	1
Nova Scotia	V687449	7,458	V689025	2,876	V689338	3,102	V689622	1,475	V689837	5
New Brunswick	V687483	5,330	V689048	1,327	V689361	3,600	V689641	400	V689844	3
Quebec	V687517	47,421	V689071	8,161	V689384	25,981	V689660	13,211	V689858	68
Ontario	V687551	72,687	V689094	14,739	V689407	32,682	V689679	25,019	V689865	247
Manitoba	V687585	7,874	V689117	1,545	V689430	4,275	V689698	2,049	V689872	5
Saskatchewan	V687619	6,679	V689140	836	V689453	3,880	V689717	1,960	V689879	3
Alberta	V687653	19,531	V689163	2,635	V689476	10,998	V689736	5,888	V689886	10
British Columbia	V687687	25,202	V689186	3,502	V689499	14,877	V689755	6,807	V689893	16
Yukon	V687721	606	V689209	142	V689522	429	V689774	35	V689900	0
Northwest Territories	V1407375	969	V1407637	169	V1407683	720	V1407726	80	V1407761	0
Nunavut	V1407409	684	V1407660	27	V1407706	570	V1407745	87	V1407768	…
Outside Canada	V687785	578	V689250	578	…	…	…	…	…	…

Note: Table number refers to the tables in the *Provincial Economic Accounts,* catalogue no. 13-213.

1. Canada Pension Plan data are for all provinces and territories except Quebec where current expenditure on goods and services relates to Quebec Pension Plan.
2. Canada Pension Plan CANSIM number V689808 and Quebec Pension Plan CANSIM number V689816.

8.40 Table 8.5 provides estimates of government current expenditures on goods and services by province and territory. These estimates are published annually in the *Provincial Economic Accounts* (PEA).

8.41 Provincial, territorial and local government estimates of current expenditure on goods and services are built-up by province and territory when preparing national estimates. As described in paragraphs 8.23 to 8.33, this is done using information from the public accounts of the provinces and territories, various financial statements and surveys conducted by Statistics Canada.

8.42 The federal government estimate must be allocated geographically. From one point of view, some operations of the central government cannot be divided among the provinces, for example, Parliament, the Bank of Canada and Statistics Canada are all indivisible in that they are equally attributable to all Canadians regardless of where the Parliament Buildings stand, where monetary policy is conducted or where the Census results are tabulated. Other activities could be allocated more easily: harbours, passport sales and the salaries of most Royal Canadian Mounted Police (RCMP) officers all have very specific geographic locations associated with them. Still other expenditures could be distributed in more than a single way: the purchases of particular supplies or equipment could be allocated on a procurement basis (where it was sold), a purchasing basis (where it was bought) or a consumption basis (where it was used).

8.43 As discussed in the concepts part of this chapter, the value of government-produced goods and services resembles approximately the cost of its inputs. In the PEA, the value of the goods and services produced by the federal government is distributed by province and territory, following the original concept used to estimate that value.

8.44 The current expenditure on goods and services of the federal government sub-sector can be broken down into about 60% for wages, salaries and supplementary labour income, 10% for consumption of capital and 30% for other current goods and services. Each of these different types of expenditure is distributed geographically using the same concept but a different method.

8.45 Wages, salaries and supplementary labour income are distributed geographically on the basis of employment, for example, where employees work. However, the provincial distribution of capital consumption allowances (CCA) is a function of the distribution of the capital stock of the federal government. The Investment and Capital Stock Division estimates investment in fixed capital, the capital stock and the CCA for the federal government on a provincial and territorial basis at replacement cost.

8.46 Other non-wage expenditure on goods and services is allocated by province and territory where the goods and services were consumed in production. This distribution is based on information obtained by the Industry Accounts Division for the various components of the federal government sub-sector. The following two examples demonstrate the allocation process used for non-wage goods and services:

- Suppose uniforms for all RCMP officers are produced in Ontario and purchased by the Government of Canada. In the *Provincial Economic Accounts* the associated expenditure would be allocated not to Ontario, where the uniforms were produced, but, instead, to the provinces where the uniforms were used by RCMP officers in producing government goods and services (law enforcement).
- Another example is the acquisition of the submarine HMCS[8] Victoria. The vessel was purchased from non-residents (the United Kingdom) and is based in British Columbia. Although the service produced by the government (defence), is consumed by all Canadians, in the *Provincial Economic Accounts*, the expenditure is allocated to British Columbia because that is where the submarine is used in production.

Deflation – Estimates in real terms

8.47 For deflation purposes, government current expenditure on goods and services is broken down into 24 components. The deflation is carried out in three broad segments: wages, salaries and supplementary labour income (called, broadly, labour income); capital consumption allowances; and, all other current expenditures.

Labour income

8.48 Labour income represents about 60% of total net government expenditure on goods and services and is considered separately for 11 sub-sectors. The associated hours worked in the period are used as an indicator of volume, and the price indexes are obtained implicitly, as the ratio of the current dollars estimate to the constant dollar estimate. Estimates of labour income in current dollars are produced by the Income and Expenditure Accounts Division (IEAD) as part of the estimation of the wages, salaries and supplementary labour income aggregate. Data on hours worked in each sub-sector are also compiled by the IEAD, using public sector employment data from the Public Institutions Division and average hours worked per employee provided by the *Labour Force Survey*. The sub-sectors are:

- federal government
  - civilian defence
  - military pay
  - other civil servants
- provincial and territorial government
  - general government
  - universities
  - colleges
  - hospitals
  - residential care facilities

8. Her Majesty's Canadian Ship.

    - other health and social services
- local government
    - general government
    - school boards

8.49 Over time, compositional changes occur in federal and provincial government sector employment that amount to a quality change in the labour input to production. These changes need to be reflected in the estimates in real terms, but cannot be captured through the total hours worked data. To reflect this type of change in the estimates in real terms, quality indexes are applied during the benchmarking revision cycle. On an annual basis, Industry Accounts Division provides quality indexes for federal civilian defence, military pay and allowances and all other civil servants, while the Income and Expenditure Accounts Division provides a quality index for provincial government employment.

Capital consumption allowances

8.50 Capital consumption allowances (CCA) are estimated in current dollars for nine sub-sectors. As for other estimates related to capital, the CCA estimates and their associated price indexes are produced by the Investment and the Capital Stock Division. The sub-sectors are:

- federal government
    - civilian defence
    - other civil servants
- provincial and territorial government
    - general government
    - universities
    - colleges
    - hospitals
    - residential care facilities
- local government
    - general government
    - school boards

Other non-wage current expenditures

8.51 Other non-wage current government expenditure on goods and services is broken down into four parts: defence, medicare, hospitals, and a remainder for all other outlays. Combined, they represent about 30% of net government expenditure on goods and services.

8.52 The deflation of defence expenditures presents unusually difficult problems. First, an object breakdown of these expenditures in the level of detail most appropriate for deflation is not available from the Department of National Defence. Second, the problem of pricing individual products or commodities within the available breakdown of defence expenditure is particularly troublesome. Changes in price can be measured readily if the nature of the priced object remains constant. For example, a bushel of Number 1 Northern Wheat in 2000 is essentially unchanged from a bushel of that commodity in 1990. But commodities such as aircraft are constantly undergoing technological and structural changes so that an aircraft produced today is not easily comparable to an aircraft produced fifteen years earlier. Consequently, changes in the cost of these goods to the government cannot be regarded wholly as changes in their price. Because of these difficulties, the present deflator for defence expenditure combines various material and average-hourly-earning indexes, with the implicit assumption that these prices move in the same way as do the prices of the final products.

8.53 Medicare expenditures are deflated using a fee-benefits index for physicians provided by the Canadian Institute of Health Information (CIHI).

8.54 Hospital expenditures are deflated with a fixed-weighted index of commodities used in hospitals.

8.55 The remaining portion of government current expenditure on goods and services is deflated using a base-weighted composite price index covering major operating expenditure categories: freight, postage, and telephones; utility expenses; office supplies and equipment; and building maintenance and repairs. The component price indexes used to build this composite index for all other expenditures are largely final-purchase prices as incorporated in the *Consumer Price Index* (CPI) although some use is made of intermediate input prices in the form of Industry Price Indexes (IPI). The weights come from the latest Input-Output Tables.

Chapter 9 Gross fixed capital formation

Introduction

9.1 In the Income and Expenditure Accounts (IEA), gross fixed capital formation is divided into three principal types of investment expenditure:

- residential structures;
- non-residential structures; and
- machinery and equipment.

9.2 Estimates of each type of investment are produced for the business[1] and government sectors in the IEA. The discussion in this chapter is structured around these three major categories of gross fixed capital formation.

9.3 Fixed investment expenditure is a significant part of aggregate demand. This activity is tied to economic growth through its impact on the productive stock of capital, to social welfare in relation to government infrastructure, and to business cycles in terms of the volatility of its components.

Concepts and definitions

9.4 Defining capital and capital expenditure is increasingly challenging, given the changing nature of production. Recently, the investment boundary has shifted, resulting in the re-classification of certain types of current expenditure to capital expenditure (e.g., software). In the simplest terms, any expenditure that gives rise to an asset could be considered investment; or, spending on an item whose expected life equals or exceeds one year could be considered investment. However, investment spending must be linked to future use in production.[2]

9.5 Fixed capital covers tangible or intangible assets which are produced as outputs from production processes and which are themselves used repeatedly or continuously in other production processes for more than one year. Fixed assets exclude, by definition, certain non-produced intangible assets, such as non-cultivated biological resources (e.g., virgin forests).[3]

9.6 Generally speaking, capital formation refers to additions to the stock of the nation's non-financial assets resulting from investment activities. The scope of this investment is described in detail in the capital account chapter of *System of National Accounts 1993* (SNA 1993). The IEA closely follows this international standard, with a few exceptions, as noted in this chapter.

9.7 Gross fixed capital formation[4] is the total value of acquisitions, less disposals, of fixed assets during the reference period, plus the activity related to certain additions to the value of non-produced assets (such as mineral deposits or major improvements to the quantity, quality or productivity of land)[5] owing to the productive activity of institutional units. The word gross preceding the term fixed capital formation denotes that investment is measured before deduction of capital consumption allowances. Fixed capital formation includes many types of investment.

9.8 According to the SNA 1993, fixed capital formation includes:

1. Includes corporations, unincorporated businesses and non-profit institutions serving households.
2. It is on this basis that expenditure on consumer durable goods is excluded from investment in the national accounts.
3. However the value of major improvements to such assets is included.
4. Correspond to paragraphs 10.33 and 10.34 of *System of National Accounts 1993*.
5. Improvements to land consists of the following kinds of activities: reclamation of land from the sea by the construction of dykes, sea walls or dams for this purpose; clearance of forests, rocks, etc., to enable land to be used in production for the first time; draining of marshes or the irrigation of deserts by the construction of dykes, ditches or irrigation channels; prevention of flooding or erosion by the sea or by rivers, by construction of breakwaters, sea walls or flood barriers. Paragraphs 10.51 to 10.54 of *System of National Accounts 1993* (SNA 1993).

a) acquisitions, less disposals, of new or existing tangible fixed assets, sub-divided by type of asset into:
   - dwellings;
   - other buildings and structures;
   - machinery and equipment; and
   - cultivated assets – trees and livestock – that are used repeatedly or continuously to obtain products such as fruit, rubber, milk, etc.

b) acquisitions, less disposals, of new or existing intangible fixed assets, sub-divided by type of asset into:
   - mineral exploration;
   - software;
   - entertainment, literary or artistic originals; and
   - other intangible fixed assets.

c) major improvements to non-produced tangible assets, including land; and

d) costs of transfers of ownership of non-produced assets.

9.9 It is recognized that the above list is not exhaustive and that capital assets should ideally include explicitly (under paragraph 9.8b) other research and development expenditure and goodwill and marketing assets, which have taken on increased importance in the modern economy. In the ongoing revision to the SNA 1993, it is proposed that the definition of non-financial assets or investment be expanded to include these increasingly important forms of intangible capital. In anticipation of this proposed change, estimates of research and development investment flows and stocks are currently under development for Canada.

9.10 Business and government gross fixed capital formation in the IEA encompasses most of the SNA 1993 recommended items. Investment in residential structures includes dwellings, structure and land improvements, as well as costs of ownership transfers. Investment in non-residential structures covers buildings and structures, mineral exploration, structure and land improvements, as well as costs of ownership transfers. Investment in machinery and equipment also covers software. Cultivated assets are largely excluded as are entertainment, literary or artistic originals which are considered negligible. Notably, the breakdown between tangible and intangible assets is not drawn in the estimates for Canada, though this distinction will likely be incorporated at the time of the next historical revision.

9.11 According to the SNA 1993 gross fixed capital formation is recorded when the ownership of a fixed asset is transferred to the institutional units that will use them, except for own-account capital formation. Canada does not always practice this convention, as with investment in residential structures. In the case of financial leasing, the SNA 1993 says that a change of ownership is imputed.

9.12 In the IEA, gross fixed capital formation is presented first as part of expenditure-based gross domestic product (GDP) and then again in the institutional sector accounts. It should be noted that, in the measurement of expenditure-based GDP, business gross fixed capital formation is the sum of investment spending for the persons and unincorporated businesses sector and the corporate and government business enterprises sector.

9.13 Illustrated in Table 9.1 and Table 9.2 are the gross fixed capital formation by component and by sector.

Table 9.1 Gross fixed capital formation in the Income and Expenditure Accounts, 2000

	CANSIM	Table[1]	Line[1]	Millions of dollars
Gross fixed capital formation				**206,272**
Government gross fixed capital formation	V498093	Table 2	Line 7	24,524
Residential structures	V498642	Table 19	Line 6	270
Non-residential structures and equipment	V498663	Table 22	Line 1	24,254
Non-residential structures	V498664	Table 22	Line 2	15,520
Building	V498665	Table 22	Line 3	7,397
Engineering	V498666	Table 22	Line 4	8,123
Machinery and equipment	V498667	Table 22	Line 5	8,734
Furniture	V498668	Table 22	Line 6	550
Agricultural machinery	V498669	Table 22	Line 7	7
Industrial machinery	V498670	Table 22	Line 8	394
Computers and other office equipment	V498671	Table 22	Line 9	2,219
Software	V1992212	Table 22	Line 10	2,809
Automobiles	V498672	Table 22	Line 11	144
Trucks	V498673	Table 22	Line 12	257
Other transportation equipment	V498674	Table 22	Line 13	241
Telecommunications equipment	V498675	Table 22	Line 14	519
Other machinery and equipment	V498676	Table 22	Line 15	1,594
Business gross fixed capital formation	V498095	Table 2	Line 9	181,748
Residential structures	V498096	Table 2	Line 10	48,572
Non-residential structures and equipment	V498097	Table 2	Line 11	133,176
Non-residential structures	V498098	Table 2	Line 12	49,826
Building	V498679	Table 22	Line 18	15,528
Engineering	V498680	Table 22	Line 19	34,298
Machinery and equipment	V498099	Table 2	Line 13	83,350
Furniture	V498682	Table 22	Line 21	3,471
Agricultural machinery	V498683	Table 22	Line 22	3,045
Industrial machinery	V498684	Table 22	Line 23	20,992
Computers and other office equipment	V498685	Table 22	Line 24	9,755
Software	V1992213	Table 22	Line 25	9,419
Automobiles	V498686	Table 22	Line 26	8,120
Trucks	V498687	Table 22	Line 27	8,466
Other transportation equipment	V498688	Table 22	Line 28	6,061
Telecommunications equipment	V498689	Table 22	Line 29	7,727
Other machinery and equipment	V498690	Table 22	Line 30	6,294

1. Refers to table and line numbers in the *National Income and Expenditure Accounts*, catalogue no. 13-001.

Table 9.2 Gross fixed capital formation by institutional sector, 2000

	CANSIM	Table[1]	Line[1]	Millions of dollars
Gross fixed capital formation				**206,272**
Government sector	V498342	Table 9	Line 27	24,524
Federal government	V498390	Table 10	Line 35	3,489
Provincial governments	V498423	Table 11	Line 33	10,961
Local governments	V498451	Table 12	Line 28	10,074
Business sector	V498095	Table 2	Line 9	181,748
Persons and unincorporated businesses	V498196	Table 5	Line 31	56,475
Corporations and government business enterprises	V498234	Table 6	Line 22	125,273
Non-financial	V498267	Table 7	Line 6	117,710
Financial	V498291	Table 8	Line 6	7,563

1. Refers to table and line numbers in the *National Income and Expenditure Accounts*, catalogue no. 13-001.

Gross fixed capital formation in residential structures

General concepts

9.14 Gross fixed capital formation in residential structures is often referred to as investment in residential construction. It is a key variable in any macroeconomic model, owing to its importance in explaining economic fluctuations. Residential construction tends to precede the business cycle and to react quickly to changes in employment, interest rates, inflation and consumer confidence.

9.15 Gross fixed capital formation in residential structures originates in the corporate, government and persons and unincorporated business sectors. Most of the activity in any given quarter is recorded in the persons and unincorporated business sector, largely reflecting the acquisition of newly constructed houses by households. Capital formation excludes the cost of land, since land is not a produced asset. Associated residential land flows are therefore excluded from GDP but are included as part of existing assets in the sector account's total non-financial capital acquisition.

9.16 Residential structures are assets that produce housing services. Where dwellings are used as a principal residence by individual owners – the case for the majority of the housing stock – those individuals are considered (in national accounting) to be unincorporated businesses producing housing services for their own final consumption (see 5.53 to 5.66).

9.17 On average, gross fixed capital formation in residential structures accounted for 24% of investment, or 5% of GDP in 2000. It includes three major elements:

- new residential construction;
- renovations; and
- ownership transfer costs.

New residential construction

9.18 New residential construction is the largest element of gross fixed capital formation in residential structures, encompassing single-family dwellings, semi-detached dwellings, row houses, apartments, condominiums, cottages, mobile homes as well as dwelling conversions and other costs (e.g., the value of acquisition costs).

9.19 In the IEA, productive activity is recorded at the time it takes place, commonly known as work in progress. Therefore, new residential construction is recorded on the basis of work put in place (WPIP), that is, the value of construction that took place during the reference period (quarter or year). It does not represent the value at the

time of acquisition, but rather the volume of work completed during a given period, regardless of whether the final product is purchased or not. This is important, as the construction of a residential structure may extend over several months.

9.20 In the SNA 1993 it is recommended that newly constructed dwellings for sale be recorded as capital only when ownership is transferred, and prior to this point should be recorded as a work in progress inventory change. In the IEA the newly constructed dwellings for sale are classified to gross fixed capital formation in residential structures, under the sub-category change in work in progress inventory. In fact, the value of new housing construction item is categorized into three components: Change in work in progress inventory, change in inventory of completed dwellings and sales of new dwellings excluding land. On this point IEA differs only in presentation from the SNA 1993. This treatment was deemed to be both more useful to the user community and more consistent with associated financing activity.

9.21 In addition to the construction of new buildings, dwelling conversions are also included in new residential construction. Examples would be the conversion of a single-family dwelling into multiple dwellings, and additional housing units created from non-residential buildings or other types of residential structures.

9.22 New residential construction also includes all costs associated with the construction and sale or purchase of a building. These costs are as follows:

- federal and provincial taxes on new buildings;
- land preparation and development costs;
- engineering, architectural and development fees;
- builders' administration costs (including marketing and insurance costs) that are passed on to the purchaser;
- mortgage costs assumed by the purchaser (for example, mortgage insurance costs); and
- other costs (including acquisition costs).

Renovations

9.23 Renovations to existing residential structures are the second largest element of gross fixed capital formation in residential structures. Renovations, also known as alterations and improvements, are made up of spending on additions, renovations and alterations, new installations and replacement of equipment.

- Additions are structural extensions to property (such as rooms, decks, garages, car ports, garden sheds) and swimming pools, fences, patios, driveways and major landscaping;
- Renovations and alterations involve work intended to upgrade the property to acceptable building standards, rearrange the interior space and modernize existing facilities without changing the type of occupancy such as remodelling rooms, adding or replacing doors and windows, renovating exterior walls, upgrading insulation and adding eaves trough;
- New installations involve the installation of equipment not previously in existence, for example, the installation of fixed electrical home appliances;
- Replacement of equipment is the installation of equipment that replaces an existing unit. It includes upgrading to a superior quality and conversion from one type to another (for example, the replacement of a roof, carpet, heating system or air conditioning system).

9.24 All of these activities change the value of assets or extend their service life.

9.25 The value of renovations to residential structures encompasses all costs associated with the work, including margins and taxes.

9.26 Renovations exclude repairs and maintenance. These items are included in personal expenditures on consumer goods and services. The difference between ordinary repair and maintenance work and improvement or renovation of dwellings is not always clear. According to national accounting concepts, ordinary maintenance and repair work merely serves to maintain capital in working order, without improving the performance or, in the case of dwellings, the overall quality of the dwelling. Renovation work constitutes an increase in the value of capital. In the case of dwellings, such work is intended to improve the overall quality of the dwelling or its service life. The enlargement of a dwelling is an improvement and a major change.

Ownership transfer costs

9.27 The category ownership transfer costs is the third element of gross fixed capital formation in residential structures. It includes all costs associated with the transfer of a residential asset from one owner to another. These costs are as follows:

- real estate commissions;
- land transfer taxes;
- legal costs (fees paid to notaries, surveyors, experts, etc.); and
- file review costs (inspection and surveying).

9.28 Table 9.3 shows the working level detail for investment in residential structures

Table 9.3 Gross fixed capital formation in residential structures, 2000

	CANSIM	Table[1]	Line[1]	Millions of dollars
Gross fixed capital formation in residential structures	**V498634**	**Table 19**	**Line 4**	**48,842**
Value of new housing construction	V498635	Table 19	Line 1	23,676
Value of work put in place				19,410
Single houses				13,401
Semi-detached houses				1,260
Row houses				1,678
Apartments and condominiums				3,071
Other new construction				4,266
Cottages				296
Mobile homes				199
Conversions				167
Value of acquisition costs				3,604
Federal tax on goods and services				1,304
Provincial sale taxes				284
Land developer fees				733
Other acquisition costs				1,283
Renovations	V498639	Table 19	Line 2	17,549
Ownership transfer costs	V498640	Table 19	Line 3	7,617
Real estate commissions				5,837
Land transfer tax				792
Legal fees				719
Appraisal and inspection fees				269

1. Refers to table and line numbers as they appear in the *National Income and Expenditure Accounts,* catalogue no. 13-001.

Annual estimation methods and data sources

9.29 Estimates for benchmark years (t-4 and t-3) and non-benchmark years (t-2 and t-1) for gross fixed capital formation in new residential construction are produced using the same methods and data sources. Only renovations and ownership transfer costs (see paragraphs 9.32 through 9.36) use different sources of information for the two periods. It should also be noted that estimates for the current years (t-2 and t-1) are not subject to the Input–Output Tables balancing process.

9.30 Gross fixed capital formation in residential structures is estimated for both the business and government sectors. The government share accounted for less than 0.6% of the total in 2000. New residential construction is first estimated for the economy as a whole. The availability of detailed data on the government sector allows for the direct estimation of new residential construction for government and the balance is allocated to the business sector.[6] Government data are taken directly from government financial statements obtained from the Public Institutions Division. Included in this item are expenditures on non-profit housing.[7]

New residential construction

9.31 New residential construction consists of two sub-elements: work put in place (WPIP) and other new construction. Each item has its own estimation method. In 2000, the value of WPIP represented 82% of the value of new residential construction and 40% of total gross fixed capital formation in residential structures. Other new construction consists of new residential construction of cottages, mobile homes, building conversions and acquisition costs such as taxes and land development costs.

9.32 WPIP corresponds to the value of construction of single-family dwellings, semi-detached dwellings, row houses, apartments and condominiums realized during a given period. The construction of those residential buildings may have started a month ago, six months ago or even two years ago (to a maximum of 21 months). As an example, the estimation of WPIP in June 2005 included the value of construction realized in June 2005 for all residential buildings for which the construction started between October 2003 and June 2005. However, not much of the October 2003 vintage construction would be reflected in the data by June 2005, except in the case of large multiple housing projects, (such as apartment buildings).

9.33 The Investment and Capital Stock Division (ICSD) is responsible for calculating WPIP based on housing starts, the average value of building permits and WPIP coefficients. The value of starts in a given period is estimated by combining housing starts from the *Starts and Completions Survey* of the Canada Mortgage and Housing Corporation (CMHC) and the average value of starts using the reported value from the *Building Permits Survey*. The value of building permits includes material, labour and overhead costs. It excludes the cost of land but may include some acquisition costs. This value is corrected to account for the fact that building permits systematically underestimate the final value of the dwelling.

9.34 The value of starts does not only correspond to the construction activity in the current month, but also to the progress of construction projects launched in previous months. The work may extend over a period of 21 months. The Investment and Capital Stock Division (ICSD) distributes the value of starts over these months. This operation is made using a vector of WPIP coefficients which combines the number of months needed to complete each start[8] with the percentage of construction added during the construction period.[9]

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6. Expenditures other than those on new residential construction (e.g., renovations) are all drawn from the business sector, owing to the lack of data.
7. The construction of residences and dormitories for universities, houses and sleeping cabins in public parks and for coast guards, as well as embassies, consulates, government properties and barracks are part of government non-residential construction.
8. For example, for starts of single-family dwellings in Ontario in June 2005, 4% of the work is completed in the first month, 8% of the work is completed in the second month, etc.
9. For example, for the construction of a single-family dwelling being built over three months, 35% of the value of construction is completed in the first month, 37% in the second month and 28% in the third month. It is possible that the total construction period may extend over 21 months.

9.35 For the estimation of the vector of WPIP coefficients, information from CMHC on completed dwellings by construction duration is used. The distribution of work completed by construction duration is derived using a special data compilation from the CMHC (Flows and Stocks of Fixed Residential Capital).

9.36 Other new construction also has several sub-categories, all prepared monthly by province and territory by ICSD. Estimates for cottages, conversions and mobile homes are calculated using data from the *Building Permits Survey*.

9.37 Acquisition costs include the federal tax on goods and services, provincial sales taxes, land developer fees and other acquisition costs.

9.38 The Goods and Services Tax (GST), applies to sales of dwellings, conversions, cottages and mobile homes. This federal tax on sales of new dwellings (single-family, semi-detached, row houses, apartments and condominiums) is calculated using data from the Canada Mortgage and Housing Corporation (CMHC) and the tax rebate file (from the Canada Revenue Agency). The value of new home sales is the product of the number of houses sold and CMHC prices, adjusted to the fair market value from the GST rebate file. The federal tax on conversions, cottages and mobile homes is obtained by applying the GST rate to their respective values.

9.39 The second item in acquisition costs is the Provincial Sales Tax (PST), calculated in the same way as the GST for provinces, where a tax equivalent to the GST applies.

9.40 Thirdly, land development costs are associated with the development of infrastructures that make the land usable, such as new streets and electrical power, water and sewage systems. These data are obtained annually, by province or territory, from the Public Institutions Division, which obtains them from provincial and local governments.

9.41 Finally, other acquisition costs include a range of expenditures related to the construction of new dwellings. These include mortgage-related costs (such as the cost of mortgage insurance), promotion and marketing costs and other administrative costs incurred by the contractor (insurance, maintaining an office, etc.) as well as architectural and engineering fees. These data are supplied by ICSD on a monthly basis, and are based on the *Building Permits Survey* and the *Starts and Completions Survey* from CMHC.

Renovations

9.42 Renovations include expenditures on structural modifications which do not create a separate dwelling but which prolong the service life of a building or add to its quality. Renovation expenditures are calculated for owner-occupants, landlords, cottage owners and renters.

9.43 Until 2002, estimates of spending on renovations were drawn from the *Homeowner Repair and Renovation Survey* (HRRS) results. This survey was discontinued and the *Survey of Household Spending* (SHS) is now the main source of information used to produce estimates for benchmark years and for the first projection year (t-2). The results from this survey are examined in light of other indicators such as renovation permits and sales of building materials. Finally, estimates for the last projection years (t-1) are obtained by summing quarterly estimates (see paragraph 9.47).

Ownership transfer costs

9.44 Ownership transfer costs include several sub-categories. The largest consists of real estate commissions, which are commissions paid to real estate brokers and agents. A value was established in 1992 by analysing the GST file obtained from the Tax Data Division. Since 2000, annual benchmarks have been established using the *Annual Survey of Service Industries: Real Estate Agents, Brokers, Appraisers and Other Real Estate Activities* and the *Survey of Household Spending*. Estimates of real estate commissions are also based on the monthly report of listings through the Multiple Listing Service (MLS) of the Canadian Real Estate Association. This report provides monthly data, by province, on the number of houses sold and their average selling price.

9.45 Land transfer taxes which are real estate taxes levied by provincial or local governments, are produced on an annual basis by the Public Institutions Division, which obtains them from those governments.

9.46 Legal costs include professional fees or commissions paid by the dwelling purchaser (fees paid to notaries, surveyors, experts, etc.). File review costs are the inspection and surveying costs borne by the purchaser. In both cases, these costs are calculated as a proportion of real estate commissions, the proportions being drawn from the *Survey of Household Spending*.

Quarterly estimation methods and data sources

9.47 For most of the above categories, the quarterly methodology is identical to that for benchmark years, since the information sources are readily available on a monthly basis. However, there are some exceptions. Land development costs are estimated quarterly following the trend in housing starts. Renovations are based on sales of building supplies from the *Quarterly Retail Commodity Survey* (QRCS), building permits for alterations from the *Building Permits Survey* and building materials from the *Wholesale Trade Survey (Monthly)*. Finally, quarterly land transfer taxes are obtained by applying the rate of growth of real estate commissions to the last quarterly benchmark.

Provincial and territorial estimation methods and data sources

9.48 Provincial and territorial estimates are produced at the same level of detail as the estimates for Canada as a whole. In fact, in most cases the national estimate is built up from provincial estimates. The exceptions are renovation expenditures and ownership transfer costs.

9.49 For renovation expenditures, three sources of information are used to produce provincial and territorial estimates. These are the *Survey of Household Spending*, the *Building Permits Survey* and a provincial allocator of renovation expenditures produced by the Investment and the Capital Stock Division (ICSD). The advantage of the ICSD allocator is that it allows for exceptional events such as the implementation of a government incentive. It combines two elements:

- the importance of the housing stock of each province and territory relative to the total; and
- the value of renovation permits in each province and territory coming from the *Building Permits Survey*.

9.50 As to ownership transfer costs, data from the Multiple Listing Service (MLS) of the Canadian Real Estate Association, the *Survey of Household Spending* and the *Survey of Annual Real Estate Agents, Brokers, Appraisers and Other Real Estate Activities* serve as provincial and territorial distributors.

Deflation – Estimates in real terms

9.51 The new construction series are deflated using price indexes reflecting the price paid by purchasers. Expenditures on renovations are deflated using an index of the cost of renovation work (price of materials and labour costs). Ownership transfer costs are deflated using price indexes constructed from the average sale price of existing homes sold, based on data from the Multiple Listing Service (MLS) of the Canadian Real Estate Association. Table 9.4 provides details on the deflation method by category.

Table 9.4 Deflation procedures for gross fixed capital formation in residential structures

Description	Deflation method
Gross fixed capital formation in residential structures	
Value of new residential construction	
Value of construction work put in place	
Single-family dwellings	Work put in place for single family dwellings is deflated monthly, by province, using the *New Housing Price Index*[1] (NHPI).
Semi-detached dwellings	Work put in place for semi-detached houses is deflated monthly, by province, using the *New Housing Price Index*[1] (NHPI).
Row houses	Work put in place for row houses is deflated monthly, by province, using the *New Housing Price Index*[1] (NHPI).
Apartments and condominiums	Work put in place for apartments is deflated monthly, by province, using the *Apartment Building Construction Price Index*[2] (ABCPI). This index is compiled by the Prices Division.
Other new construction	
Cottages	New construction of cottages is deflated monthly, by province, using the *New Housing Price Index*[1] (NHPI).
Mobile homes	The mobile home series are deflated with the industry price indexes for machinery and equipment - mobile homes (CANSIM vector no. V1575570), compiled by the Prices Division as part of survey no. 2318, *Industrial Product Price Index* (IPPI).
Conversions	Conversions are deflated using the renovation price index described under renovations.
Value of additional costs	
Federal tax on goods and services	Federal tax, in real terms, on new dwellings, conversions, cottages and mobile homes is obtained by applying the GST rate to their respective values.
Provincial sales tax	Provincial taxes, in real terms, on new dwellings, conversions, cottages and mobile homes are obtained by applying the different provincial tax rates to their respective values.
Land development costs	Average land development costs per dwelling are calculated for the base year (2000), then multiplied for the base year and subsequent years by the number of housing starts.
Other acquisition costs	Other acquisition costs are deflated using the average weekly earnings for advertising and related services from the *Survey of Employment, Payrolls and Hours* (SEPH).
Renovations	A price (cost) index is created using wage and cost of materials indexes. The deflator for the labour component is average weekly earnings for the residential construction industry from the *Survey of Employment, Payrolls and Hours* (SEPH). The cost of construction materials index is compiled by the Prices Division and is partially adjusted for the GST. A weight of 60% is applied to materials whereas the cost of labour accounts for 40%.
Costs of ownership transfer	
Real estate commissions	Deflation is based on the indexed average selling price of existing homes sold, according to listings in the Multiple Listing Service (MLS) of the Canadian Real Estate Association.
Land transfer taxes	The deflator for real estate commissions is used.
Legal costs	These costs are calculated in proportion to real estate commissions (12.3% in 2000), on a provincial and monthly basis. This ratio is drawn from the *Survey of Household Spending* (SHS).
File review costs	These costs are calculated in proportion to real estate commissions (4.6% in 2000).
Government sector	Government new residential construction is deflated monthly, by province using the *New Housing Price Index*[1] (NHPI).

1. The *New Housing Price Index* (NHPI) is a monthly series that measures changes over time in the contractors' selling prices of new residential houses, where detailed specifications pertaining to each house remain the same between two consecutive periods. The "house only" component of the index is used. The land portion is excluded. The index is compiled by the Prices Division.
2. The *Apartment Building Construction Price Index* (ABCPI), survey no. 2330, CANSIM table 327-0040, measures changes in the contractors' selling price of a representative apartment building. The index relates to both general and trade contractors' work and excludes the cost of land, design and real estate fees. The index is compiled by the Prices Division.

Gross fixed capital formation in non-residential structures

General concepts

9.52 Gross fixed capital formation in non-residential structures represents about 32% of investment or 6% of GDP (in 2000). It is a key variable in the macroeconomic system. It tends to be cyclical, as business investment in non-residential structures tends to lag the business cycle, largely because of its long-term nature involving major contractual commitments. The time that elapses between a businesses' decision to invest and the deployment of new capital results in a cascading lag.

9.53 When the economy is expanding, businesses make profits and begin to consider increasing their capacity either by building new plants, purchasing equipment or by improving existing facilities to meet growing demand. Before new capital can go into operation, there is the planning and design phase, followed by the construction phase. Depending on the nature and size of the investment, this process can take anywhere from a few months to many years, even as much as a decade. This cascading lag is a major determinant of the cyclical nature of investment and many economists argue that it is a major determinant of the cyclical nature of the economy.

9.54 The component non-residential structures includes the gross value of:

- all new non-residential construction put in place with the exception of defence installations (treated as government current expenditure on goods and services);
- all additions and major renovations; and
- all conversions and alterations that extend the life of an existing asset.

9.55 In the IEA, these estimates are grouped into two categories. The first category, building construction, refers to investment in industrial, commercial and institutional buildings. It includes any permanent structure with walls and a roof, any attachment that forms part of the structure, plumbing, electrical wiring, air conditioning or elevator installations. It covers hotels, office buildings, railway stations, schools and shopping centres.

9.56 The second category, engineering construction, includes all capitalized costs: legal fees, engineering and architectural fees, capitalized interest and work completed for the business by its own employees. It includes items such as bridges, roads, highways, waterworks, sewage systems, airports, seaways, power line construction, oil well drilling, mine development, dams, street lighting, railway tracks and pipelines.

9.57 The estimates include both contract work and work completed by the firm's own employees. The cost of site preparation and land improvement is included; however the purchase value of land is excluded. Transfer costs associated with the purchase of existing fixed assets are included. The estimates cover the value of work put in place (WPIP) during the reference period.

Table 9.5 Gross fixed capital formation in non-residential structures in the Income and Expenditure Accounts, 2000

	CANSIM	Table[1]	Line[1]	Millions of dollars
Non-residential structures				**65,346**
Government non-residential structures	V498664	Table 22	Line 2	15,520
Building	V498665	Table 22	Line 3	7,397
Engineering	V498666	Table 22	Line 4	8,123
Business non-residential structures	V498678	Table 22	Line 17	49,826
Building	V498679	Table 22	Line 18	15,528
Engineering	V498680	Table 22	Line 19	34,298

1. Refers to table and line numbers in the *National Income and Expenditure Accounts*, catalogue no. 13-001.

Annual estimation methods and data sources

9.58 The annual benchmark estimates (for t-4 and t-3 years) for gross fixed capital formation in non-residential building and engineering construction are reconciled to the final demand matrix of the Input-Output Tables (IOT). The Industry Accounts Division (IAD) primarily uses information from the Investment and Capital Stock Division's *Capital Repair Expenditures Survey*[10] (CES) by asset type. This information is based on the North American Industry Classification System (NAICS). The data are produced on a January-December basis and are consistent (in most cases) with national accounts' concepts.

9.59 The CES totals are not identical to IEA's gross fixed capital formation measures because a number of adjustments are made to ensure consistency with the CSNA definitions. One difference between the survey and IEA data is related to sectoring. The survey data are reclassified because the business and government sectors are defined differently in the CSNA.

9.60 In addition, IEA totals are based on other sources of information, such as the *Quarterly Survey of Financial Statistics for Enterprises.*[11] This survey focuses on revenues, profits and assets, but also includes a number of questions on capital spending. It differs from the CES in coverage (based on enterprises rather than establishments) and content (e.g., includes the purchase price of land and used buildings).

9.61 Information is also taken from ICSD's *Investment in Non-residential Building Construction* data based on the *Building Permits Survey* for comparison with CES data on the value of some investment projects.

9.62 The Input-Output supply-disposition framework, which is used to refine the estimates for the benchmark years, and the values for the various sub-items that are generated with the methodologies developed for the production of quarterly estimates, also contribute to the accuracy or completeness of the investment estimates.

9.63 As in the case of the annual benchmark estimates, the CES is the main source of information. For the t-2 period, actual data[12] from the survey are used whereas for the t-1 period, the preliminary actual estimates are used as the main indicator along with the quarterly estimates based on related indicators.

Quarterly estimation methods and data sources

9.64 In the absence of a quarterly capital expenditure survey, related indicators must be used. Non-residential building and engineering construction estimates are published separately on a quarterly basis. The methodologies used to produce these aggregates are closely related.

9.65 There are essentially two approaches: a detailed approach and a global approach. The results of both approaches are carefully examined and analysed in order to arrive at an acceptable estimate. In this process, we also take into consideration the annual forecasts of the *Capital Expenditure Survey* (CES) for the current year (spending intentions released each February).

The detailed approach

9.66 The detailed approach consists of multiplying the most recent quarterly estimate of capital spending for each component by the percentage change in a related indicator, and then summing the results to produce an overall estimate. This method is used for building and engineering construction expenditures for both the government and business sectors.

10. Survey no. 2803. The data are published in *Private and Public Investment in Canada, Intentions*, catalogue no. 61-205. This survey is often referred to as *Private and Public Investment* or PPI.
11. Survey no. 2501. The data are published in *Quarterly Survey of Financial Statistics for Enterprises*, catalogue no. 61-008.
12. For more information on the CES concepts of intentions, preliminary actual and actual expenditures, see Appendix 1: A Brief Description of the *Capital Expenditure Survey.*

Government sector

9.67 For building construction, the quarterly indicator used is the investment in non-residential institutional building construction, produced by ICSD. It is based on the *Building Permits Survey* of municipalities, which provides information on construction intentions for this type of building. Work put in place (WPIP) patterns are assigned to this category of structure. The patterns which are used to distribute the value of building permits according to project length, differ by type and value of construction project— a project worth millions of dollars will usually take longer to complete than a project worth $100,000.

9.68 Engineering construction expenditures are calculated for highways, bridges, railways and other engineering. Material costs (asphalt purchases in cubic metres multiplied by the *Industrial Product Price Index* (IPPI) price for asphalt) and labour costs based on earnings in the highway, streets and bridge industry, from the *Survey of Employment, Payrolls and Hours* (SEPH) make up the highways' estimator. This same estimator is used to estimate expenditures on the other, less important, components.

Business sector

9.69 For the buildings category, the quarterly indicators are the investment in non-residential industrial and commercial buildings, produced by ICSD.

9.70 The business sector's engineering expenditures are made up of two categories: private roads and other engineering. The private roads estimator is the same one used for public highways described in paragraph 9.68. One of the estimators used for other engineering is based on capital spending (reported in the *Quarterly Survey of Financial Statistics for Enterprises*) by large companies, in mining, telecommunications, railways, etc., which invest mainly in engineering. Other information used includes such items as capital spending by provincial electric utilities and the value added in drilling and rigging services[13] in the oil and gas industry.

9.71 Finally, qualitative information on major construction projects is extracted from budget documents, newspapers articles, specialized publications and project inventories maintained by private consulting firms, etc.

The global approach

9.72 The global approach consists of constructing an overall indicator of capital spending on construction. This indicator or estimator is also used to derive quarterly estimates of investment in non-residential construction. Total construction spending[14] is estimated primarily by combining data on employment, wages and shipments of various materials used in construction. Other variables, such as profits in the construction industry and inventories of building materials are also taken into account.

9.73 Employment in construction is taken from the *Labour Force Survey* (LFS). Average hourly earnings are pulled from the monthly *Survey of Employment, Payroll and Hours* (SEPH). Another key monthly indicator, the value added in drilling and rigging services, is obtained from provincial ministries in oil and gas producing provinces. These indicators are combined to obtain an overall level of construction activity for each quarter. The quarterly estimate for residential construction (new construction, alterations and improvements) is then subtracted from the total, yielding an estimate of spending on non-residential construction. The resulting estimates are then compared with the annual estimates from the *Capital Expenditure Survey*. The allocation of expenditures between the government and business sectors[15] is based on *Private and Public Investment Intentions.*[16]

13. Drilling activity is measured in metres, while rigging is measured in rig operating days by depth (in metres).
14. Includes both residential and non-residential expenditures.
15. Some government enterprises are transferred from the government to the business sector to maintain consistency with the CSNA.
16. Survey no. 2803. The data are published in *Private and Public Investment in Canada, Intentions*, catalogue no. 61-205. This survey is often referred to as Private and Public Investment or PPI.

9.74 Little information is available on the supply side, other than data on building materials from various monthly surveys, such as the production of cement and asphalt, sales of lumber, and imports and exports of other building materials. Supply based estimates for the construction industry tend to be lower than the demand-side estimates incorporated into the National Accounts.

9.75 Finally, the quarterly data are benchmarked to the annual levels at the time of the production of the annual estimates. These annual estimates reflect the most recent aggregates from the Input-Output Tables, data from the *Capital Expenditure Survey by Type of Asset*[17] and the latest *Capital Expenditure Survey*.

9.76 For the quarters of the current year, the series are built on the basis of the movement of the specially constructed indicators discussed previously, of which inputs are all available up-to-date on a sub-annual basis.

Provincial and territorial estimation methods and data sources

9.77 The provincial distribution of non-residential construction investment comes from the *Capital Expenditure Survey*. Note that the provincial estimates are benchmarked to the most recent provincial Input-Output Tables (for t-4 and t-3 years).

Deflation – Estimates in real terms

9.78 Estimates are produced for each component at current prices and then deflated at the following levels of detail:

- Non-residential buildings
- Engineering
  - Highways and roads
  - Railways
  - Other engineering

9.79 Both output and input price indexes are used. Output price indexes produced by the Prices Division are used to deflate building investment, while input prices indexes, most of them produced within the IEA, are used to deflate engineering construction. The input price indexes are based on:

- average earnings for the labour component;
- IPPI for the materials; and
- a mix of average weekly earnings indexes and consumer price indexes for overhead costs.

9.80 These price indexes are then weighted together on the basis of detailed annual estimates from the Input-Output Tables.

9.81 The non-residential buildings deflator is based on non-residential building construction price indexes, with contracted investment by industry having a weight of 90% and own-account work having a weight of 10%.

9.82 Output price indexes measure the variation in contractors' selling prices for non-residential structures (i.e., commercial, industrial and institutional buildings). These indexes relate to both general and trade contractors' work and exclude land improvement costs and real estate fees. Prices for work put in place (WPIP) are provided by the Prices Division, which surveys subcontractors and general contractors whose bids are based on specifications and quantities set by real estate markets. The latter survey covers such items as overhead and profits that reflect market conditions. Prices for certain materials, labour rates, equipment rental costs, municipal charges and sales taxes are obtained from a variety of secondary sources.

17. This information is also produced by the *Capital Expenditure Survey* (CES). Previously published in *Capital Expenditures by Type of Asset*, catalogue no. 61-223, now available only on CANSIM.

9.83 Prices for own-account work are obtained from a fixed-weighted composite index of average hourly earnings for the construction sector, based on the *Survey of Employment, Payrolls and Hours* (SEPH) data; materials prices, based on the *Industrial Product Price Index* (IPPI); and overhead costs, based on various price indexes, such as average weekly earnings indexes and various consumer price indexes.

9.84 The highways and roads, railways and other engineering deflators are all input price indexes based on a fixed-weighted composite of wages, materials and overhead costs. Table 9.6 shows the relative weights of the deflators, derived from the 1997 Input-Output Tables. Indexed average weekly earnings from SEPH are used for the wages portion. The materials component of the deflator is based on IPPIs. The overhead costs share is based on a mix of average weekly earnings indexes and consumer price indexes.

Table 9.6 Relative weights of engineering deflators

	Weights of indexes			
	Labour	Materials	Overhead costs	Total
	percent			
Transportation	37	39	24	100
Other engineering	34	43	23	100

Gross fixed capital formation in machinery and equipment

General concepts

9.85 Gross fixed capital formation in machinery and equipment, is a key component of investment, accounting for 45% of gross fixed capital formation in 2000. It enhances productivity and potential output and contributes to economic growth. It is also one of the more cyclical components of GDP, as in an expansion and strong profit period when businesses consider modernizing or increasing their capacity either by purchasing equipment or by improving existing machinery to meet growing demand. In addition, since a large proportion of investment goods are imported, machinery and equipment has a substantial impact on the merchandise trade balance.

9.86 Table 9.7 presents the value of gross fixed capital formation in machinery and equipment for both the business and government sectors for the year 2000.

Table 9.7 Gross fixed capital formation in machinery and equipment, 2000

	Business	Government	Total
	millions of dollars		
Gross fixed capital formation in machinery and equipment	83,350	8,734	92,084
Furniture	3,471	550	4,021
Agricultural machinery	3,045	7	3,052
Industrial machinery	20,992	394	21,386
Computers and other office equipment	9,755	2,219	11,974
Software	9,419	2,809	12,228
Automobiles	8,120	144	8,264
Trucks	8,466	257	8,723
Other transportation equipment	6,061	241	6,302
Telecommunications equipment	7,727	519	8,246
Other machinery and equipment	6,294	1,594	7,888

Source: *Guide to the Income and Expenditure Accounts,* Statistics Canada, catalogue no. 13-017.

9.87 In the Canadian System of National Accounts (CSNA), gross fixed capital formation in machinery and equipment comprises spending on produced durable goods that have a productive life of one year or more. Purchase, construction and installation costs are included for both the replacement and addition of assets. Assets are recorded as gross fixed capital formation in machinery and equipment whether they are owned or leased. The following costs are capitalized:

- feasibility studies[18]
- exploration and development costs;
- tooling;
- progress payments;
- the net portion of purchases of used assets (vehicles, aircraft, other assets); and
- an adjustment for scrap and salvage.

9.88 By definition, investment in machinery and equipment can be moved without altering the structure in which it is housed. Otherwise, it is regarded as an integral part of the structure itself and is included in gross fixed capital formation in non-residential structures.

9.89 Machinery and equipment investment is valued at purchaser prices (including taxes) and includes spending on smaller goods such as hand tools and office furniture, even though firms often treat these as current expenditures. Non-military investment expenditures for national defence are included in gross fixed capital formation in machinery and equipment, however strictly military expenditures such as tanks, are considered part of government current expenditure. In 2001, business and government investment in software was included in gross fixed capital formation in machinery and equipment, with estimates beginning in 1981.

9.90 Estimates published by the IEAD cover ten major groups for both the business and government sectors (see tables 22, 23 and 24 in the *National Income and Expenditure Accounts*). The categories for which data are published are as follows:

- Furniture: office furniture and special-purpose furniture;
- Agricultural machinery: tractors and other agricultural equipment;
- Industrial machinery: industrial machinery such as pumps, compressors, furnaces and electric turbines;
- Computers and other office equipment: computers and peripheral equipment and other office machines;
- Software: own-account, pre-packaged and custom design software;
- Automobiles: passenger cars;
- Trucks: trucks and tractor trailers;
- Other transportation equipment: locomotives, boxcars, ships, aircraft, buses, parts and equipment;
- Telecommunications equipment: radar and equipment related to telephone systems and radio and television transmission systems;
- Other machinery and equipment: other investment goods such as hand tools and medical and electric equipment.

Annual estimation methods and data sources

9.91 The annual benchmark estimates for gross fixed capital formation in machinery and equipment are obtained from the final demand matrix of the Input-Output Tables (IOT). The Industry Accounts Division (IAD) primarily uses information from the Investment and Capital Stock Division (ICSD) *Capital Expenditure Survey* (CES) by asset type.[19] Analysts also draw on various annual industry surveys to calibrate the information. A comparison of the

18. In theory, feasibility studies, exploration and development costs are all capitalized. In practice, some of these costs are recorded as current expenditure by businesses. They then become intermediate rather than final expenditure.

main information sources with all secondary sources, both at the industry and commodity level (a process known as balancing the Input-Output Tables), involves more than 100 investment goods. In the event of a significant imbalance between inputs or outputs, the source data and estimation methods are re-examined.

9.92 The CES and the most recent Input-Output Tables are the main sources of information for the non-benchmark (t-2, t-1) years. Table 9.8 displays a reconciliation of the CES machinery and equipment estimates and those published by IEAD. The following adjustments are made:

- net additions;
- sectoring;
- software adjustments; and
- Canadian System of National Accounts adjustments.

9.93 Net additions refer to investment capital projects not captured by the CES. This small adjustment only accounts for about 1% of the CES estimates.

9.94 The CES data are subject to sectoring adjustments to ensure consistency with the CSNA definitions. These adjustments involve a reclassification from the private to the public sector (for example, universities and hospitals).

9.95 Another adjustment is made for software expenditures. The CES provides a part of software investment – the already reported portion – while Industry Accounts Division calculates the comprehensive estimate. Due to different production deadlines, the CES data need to be adjusted by the difference between IAD's final and IEAD's preliminary estimates.

9.96 Canada System of National Accounts adjustments are also made to CES data. One adjustment stems from a comparison of Public Accounts data for government investment estimates with the CES data, which leads to corrections to the survey data. A second, more conceptual adjustment involves eliminating used machinery and equipment from the survey data, as these were already included in the GDP when first produced. Specifically, this means removing business spending on scrap and salvage, used motor vehicles and used aircraft.[20,21]

9.97 Another modification is based on the comparison of the value of certain investment projects according to the CES and to other information sources. For passenger cars and trucks, for example, a more direct approach is taken in conjunction with personal expenditure estimation on motor vehicles.

9.98 An adjustment is also made to compensate for CES's underestimation of investment in aircraft. Information from the International Trade Division provides coverage of aircraft leasing contracts missed by the survey.

9.99 Lastly, on the basis of the Input-Output Tables, an adjustment is made to offset under coverage in a number of commodities including agricultural machinery and motor vehicles.

19. A brief description of the survey is provided in Appendix 1: A Brief Description of the Capital Expenditure Survey.
20. The value of capital formation is equal to acquisitions less disposals. As the data on disposals is not available by industry, the estimate is made at the total level.
21. Sales of used cars are included in personal expenditure and are therefore not deducted from capital.

Table 9.8 Reconciliation statement between Private and Public Investment and Income and Expenditure Accounts estimates of machinery and equipment, 2003

	Government	Business	Total
Machinery and equipment, *Private and Public Investment in Canada*[1]	4,916	83,170	88,086
+ sectoring[2]	4,062	-4,062	0
+ software adjustment[3]	542	852	1,394
- exclusion of used equipment and scrap estimates[4]		2,455	2,455
+ net additions and other adjustments[5]	545	3,326	3,871
= machinery and equipment, Income and Expenditure Accounts	10,065	80,831	90,896

1. CES, *Private and Public Investment in Canada, Intentions*, Table 1, Summary by sector.
2. The public and private sectors are defined differently in the CSNA, where government includes not only public administration as defined in NAICS, but also other elements primarily in the health and education sectors.
3. A part of the software number is measured directly by the CES survey, while the rest is estimated in the CSNA. IEAD provides preliminary estimates of total software to the CES due to timing constraints. The number that appears as software adjustment is simply the difference between the final and preliminary estimates of software.
4. GDP measures current production; as such all production from previous periods must be excluded. In the case of machinery and equipment, spending on scrap and salvage, used motor vehicles and used aircraft are removed.
5. Net additions correspond to projects that were missed by the CES. Other adjustments are made to remove vehicles used for personal use and include the business use of personal vehicles. Also adjustments are made because after confrontation with the IOT, an adjustment is made for the underestimation of certain commodities such as agricultural machinery and motor vehicles.

Quarterly estimation methods and data sources

9.100 In the absence of a quarterly survey of capital expenditures, the annual series are distributed into quarters using related indicators. For the current year, data are estimated on the basis of the rate of change in quarterly indicators.

9.101 Due to timing and data constraints a supply-disposition approach is used to determine the final demand for 39 of the more than 100 Input-Output machinery and equipment commodities,[22] which are then used to develop estimates for seven of the ten major groups. More direct approaches are used to measure spending on passenger cars, trucks and software.

The supply-disposition model

9.102 The supply-disposition model provides an estimate of components of final demand (domestic supply[23] less intermediate consumption and change in inventories).

9.103 The model's starting point is the accounting identity below, which states that for the economy as a whole, the supply or availability of a commodity is necessarily equal to its disposition or use, see equations 9.1, 9.2 and 9.3 below. Supply is the sum of what is produced domestically (gross output) and what is imported. The result is expressed in market prices, therefore transport, trade, sales tax and tariff margins are added. Disposition includes final demand, taking into account international exports, intermediate consumption and changes in inventories.

General equations in the supply-disposition model

Equation 9.1

Supply = disposition

Equation 9.2

22. For a list see Table 9.9.
23. Domestic supply is equal to output plus imports minus exports.

$GO + II + MA = FD + ID + \Delta inv$

and since

$FD = FDD + IX = Final\ demand$

Equation 9.3

$GO + II + MA = (FDD + IX) + ID + \Delta inv$

where,
GO = gross output,
II = international imports,
MA = transport, trade, sales tax and tariff margins,
FD = FDD + IX = final demand,
FDD = final domestic demand,
IX = international exports,
ID = intermediate demand,
Δinv = change in inventories

9.104 This model is applied to machinery and equipment investment goods. Final domestic demand (FDD) corresponds to gross fixed capital formation in machinery and equipment (GFME) in the measurement of expenditure-based GDP.

General equations in machinery and equipment investment[24]

Equation 9.4

$GO + II + MA = GFME + IX + ID + \Delta inv$

where,

GFME = gross fixed capital formation in machinery and equipment

Equation 9.5

$GFME = GO + II + MA - IX - ID - \Delta inv$

9.105 To obtain a quarterly estimate of gross fixed capital formation in machinery and equipment with Equation 9.5, the model uses several datasets.

9.106 Gross output (GO) is estimated using manufacturing shipments by industry, obtained from the *Monthly Survey of Manufacturing*. This industry-based information is converted to a commodity classification using an Input-Output matrix which shows the proportion[25] of output attributable to each commodity group in each industry.

9.107 International exports (IX) and international imports (II) are obtained from the International Trade Division. The data, classified according to the Harmonized System, are converted to the Input-Output classification system.

9.108 Data from the most recent Input-Output Tables are used to calculate margin rates, which in turn, are used to convert supply at basic prices to total supply. The margin rates are calculated from annual Input-Output data by taking the ratio of total supply to supply at basic prices Equation 9.6.

24. Equation specification differs by commodity.
25. Each component of the conversion matrix is calculated as follows: (Output of commodity i by industry j) / (Output of industry j).

Equation 9.6

Margin rates = total supply at market rates ÷ total supply at basic prices = (output + imports + margins) ÷ (output + imports)

9.109 As shown in the following equations, total supply is obtained by multiplying output and imports by the margin rates.

Equation 9.7

Total supply at basic prices = GO + II

Equation 9.8

Total supply at market prices = (GO + II) x margin rate

9.110 The result of Equation 9.8 is the same as the first three terms of Equation 9.5.

9.111 The next step is to estimate domestic supply at market prices, that is, total supply at market prices Equation 9.8 minus exports. This leads to Equation 9.9, which is the same as the first four terms of Equation 9.5.

Equation 9.9

Domestic supply at market prices = total supply at market prices - exports

9.112 Since there are no quarterly estimates of final demand for each commodity, the most recent data from the Input-Output Tables are used to compute final demand ratios. These ratios are obtained by dividing final demand for machinery and equipment investment goods by domestic supply. Structural changes are taken into account via the use of *Capital Expenditure Survey* (CES) data for non-benchmark years.

9.113 Final demand is then obtained by multiplying the domestic supply at market prices by the final demand ratios, as shown in Equation 9.10.

Equation 9.10

Business GFME = business final demand ratio x domestic supply at market prices

9.114 The IAD produces monthly data on changes in inventories by industry. Changes in inventories, particularly at the wholesale level, are also available by commodity and institutional sector in the estimate of the business and government investment in inventories component of expenditure-based GDP.

9.115 The derived estimators are used to produce quarterly estimates from the annual Input-Output data, using a quadratic minimization procedure known as the Denton-Cholette[26] method. This procedure adjusts the sub-annual data so that the annual totals (or averages) match the annual benchmarks while keeping the adjusted sub annual variations as close as possible to the original sub-annual variations by minimizing the sum of the squares of the differences between them.

9.116 For the current quarters, the same supply-disposition model is used, as all the inputs are available on a monthly basis up to date. The 39 commodities are then regrouped into 7 major groups (i.e. furniture, agricultural machinery, industrial machinery, computers and other office equipment, other transportation equipment, telecommunications equipment and other machinery and equipment). Their movements are used to project investment in these categories.

26. For more detail about the method, see Cholette, P.A. (1984): Adjusting sub-annual series to yearly benchmarks. *Survey Methodology*, 10, 35-49.

Passenger cars and trucks

9.117 For passenger cars and trucks, there are direct estimates of final demand made in conjunction with personal expenditure estimates. Total sales by type of vehicle are provided by the *New Motor Vehicle Sales Survey*. The government and business sectors' shares of passenger car sales are based on data from the Motor Vehicle Manufacturers Association (MVMA); for trucks, the shares are estimated on the basis of buyer profiles. Sales of car or truck fleets are treated separately and allocated entirely to the business and government sectors.

Software

9.118 Investment in software was incorporated into GDP and gross fixed capital formation in machinery and equipment in the first quarter of 2001 (backdated to 1981), in response to the SNA 1993 recommendation that business and government acquisition of software be treated as investment instead of current expenditure.[27] Investment in pre-packaged and custom design software is determined residually as the total supply of software (domestic production plus imports plus margins) less personal consumption less exports to non-residents. Estimates for own-account software (software developed by in-house employees to meet specific organization's needs) are based on the labour costs for computer programmers and systems analysts and other costs (non-salary) of in-house software development.[28]

Provincial and territorial estimation methods and data sources

9.119 As in the case of non-residential structures, national totals for gross fixed capital formation in machinery and equipment are distributed among the provinces and territories using information from the *Capital and Repair Expenditures Survey*.

9.120 It should be noted that the provincial and territorial distribution of investment in mobile assets, such as aircraft, locomotives, trucks, ships and satellites, presents some difficulties. In principle, investment should be distributed according to the place of consumption. In practice, the distribution is based on the limited amount of data available, and there is no guarantee that it is always consistent and uniform. The various distribution methods used in the *Capital Expenditure Survey* are also employed in the *Provincial Economic Accounts*.

Deflation – Estimates in real terms

9.121 Gross fixed capital formation in machinery and equipment is deflated at the same level of detail as the compilation of current-price estimates, using, for the most part, machinery and equipment price indexes from the Prices Division.

9.122 For computers and other office equipment, a weighted index is calculated using export and import price indexes. For software, the Prices Division's price index for pre-packaged software, average hourly earnings indexes for programmers and systems analysts, and non-labour input costs are used.

27. Statistics Canada, Capitalization of Software in the National Accounts, catalogue no. 13-604, issue no. 37.
28. Quarterly sources of data include earnings of computer system designers from the *Survey of Employment, Payrolls and Hours* (SEPH) and employment, and hourly earnings of software publishers, data processors and system designers from the *Labour Force Survey* (LFS).

9.123 Table 9.9 outlines the machinery and equipment price indexes used to deflate each of the projection series.

Table 9.9 Deflators used in machinery and equipment

Major group / Input-Output commodity code		Estimator level	Deflator[1]
G1. Furniture			
2050	Office furniture	W205000	MEPI, office furniture
2069	Commercial and institutional furniture	W206900	MEPI, commercial and institutional furniture
G2. Agricultural machinery			
3149	Bulldozers, farm and garden tractors	W314900	MEPI, bulldozers, farm and garden tractors
3150	Other agricultural machinery	W315000	MEPI, other agricultural machinery
G3. Industrial machinery			
2961	Machine tools	W396100	MEPI, machine tools
2962	Tool accessories	W396200	MEPI, tool accessories
3170	Pumps, compressors, fans and blowers	W317000	MEPI, pumps, compressors, fans and blowers
3180	Conveyors, elevators and hoisting machinery	W318000	MEPI, conveyors, elevators and hoisting machinery
3190	Industrial trucks and material handling equipment	W319000	MEPI, industrial trucks and material handling equipment
3211	Packaging and bottling machinery	W321100	MEPI, packaging and bottling machinery
3212	Air purification equipment	W321200	MEPI, air purification equipment
3213	Other general purpose machinery	W321300	MEPI, other general purpose machinery
3231	Construction, mining and oil and gas machinery	W323100	MEPI, construction, mining and oil and gas machinery
3232	Logging, pulp and paper industry machinery	W323200	MEPI, logging, pulp and paper industry machinery
3233	Metal working machinery	W323300	MEPI, metal working machinery
3234	Other industry specific machinery	W323400	MEPI, other industry specific machinery
3235	Service industry machinery	W323500	MEPI, service industry machinery
3650	Welding machinery and equipment	W365000	MEPI, welding machinery and equipment
3661	Power generation and marine propulsion, non-electric	W366100	MEPI, power generation and marine propulsion, non-electric
3662	Electrical generators and motors	W366200	MEPI, electrical generators and motors
G4. Computers and other office equipment			
3291	Computers, video units, printers, etc.		The deflator for computers and other office equipment is a weighted average of import and export computer prices, from International Trade Division (ITD). The export price of office machines and equipment is an implicit price index including computers, printers, monitors, bank ATM machines, photocopiers, fax machines, etc. It is built largely from Canadian producer price indexes. The import price of office machines and equipment is an implicit price including mostly computers. ITD uses three sources to obtain its electronic computer index: the US Bureau of Economic Analysis, the US Bureau of Labor Statistics, and Japanese export price indexes.
3292	Office equipment, excluding photocopy and facsimile		

1. Machinery and equipment price indexes (MEPI's) are used in the deflation process of all commodities with the exception of computers and other office equipment and software. MEPI's measure price change for annual gross additions to capital for machinery and equipment by industry of purchase.

Table 9.9 Deflators used in machinery and equipment (concluded)

Major group / Input-Output commodity code		Estimator level	Deflator[1]
G5. Software[2]			
52011	Recorded media (including music and movies), musical instruments and artistics' supplies		Pre-packaged software: *Commercial Software Price Index* from the Prices Division
5554	Royalties and licence fees (excluding natural resource)		Own-account software: The price index used to deflate own-account software is a fixed-weighted average of an index of the average hourly earnings of programmers and systems analysts and an index of the costs of non-labour inputs of the computer services industry. The hourly earnings index is derived from and benchmarked to *Census of Population* data on derived hourly earnings of programmers and systems analysts. Fixed-weighted average hourly earnings indexes from *Survey of Employment, Payrolls and Hours* (SEPH) are used to interpolate and extrapolate the benchmarks. Average hourly earnings indexes from the *Labour Force Survey* (LFS) are used to project the current year data. It is assumed that there is no change in the productivity of programmers and systems analysts. The price index for non-labour inputs is a weighted price of intermediate inputs, built up using consumer price indexes, industrial product price indexes and personal expenditure deflators.
5751	Software products development		Custom design: following the U.S. Bureau of Economic Analysis (BEA) practice, the price index for custom-designed software is a weighted average of the pre-packaged and own-account software price indexes.
G6. Automobiles			
3340	Automobiles, including passenger vans	W334000	MEPI, automobiles, including passenger vans
G7. Trucks			
3350	Trucks, road tractors and chassis	W335000	MEPI, trucks, road tractors and chassis
G8. Other transportation equipment			
3300	Aircraft	W330000	MEPI, aircraft
3392	Commercial trailers and semi-trailers	W339200	MEPI, commercial trailers and semi-trailers
3409	Truck and bus bodies and cargo containers	W340900	MEPI, truck and bus bodies and cargo containers
3459	Locomotive, railway and urban transport rolling stock	W345900	MEPI, locomotive, railway and urban transport rolling stock
3489	Ships, boats and parts, excluding pleasure	W348900	MEPI, ships, boats and parts, excluding pleasure
G9. Telecommunications equipment			
3580	Telephone and related equipment, including facsimile	W358000	MEPI, telephone and related equipment, including facsimile
3599	Broadcasting and radio communications equipment	W359000	MEPI, broadcasting and radio communications equipment
3600	Radar and radio navigation equipment	W60000	MEPI, radar and radio navigation equipment
G10. Other machinery and equipment			
2979	Hand and measuring tools	W297900	MEPI, hand and measuring tools
3262	Air conditioners and refrigerator equipment, commercial and transport	W326200	MEPI, air conditioners and refrigerator equipment, commercial and transport
3672	Transformers and converters	W367200	MEPI, transformers and converters
3689	Industrial electrical equipment, including safety	W368900	MEPI, industrial electrical equipment, including safety
4989	Laboratory and scientific instruments, and flight simulators	W498900	MEPI, laboratory and scientific instruments, and flight simulators
4999	Measuring and controlling instruments	W499900	MEPI, measuring and controlling instruments
5001	Medical and dental equipment and supplies	W500100	MEPI, medical and dental equipment and supplies
5032	Photocopy and microfilm equipment	W503200	MEPI, photocopy and microfilm equipment

1. Machinery and equipment price indexes (MEPI's) are used in the deflation process of all commodities with the exception of computers and other office equipment and software. MEPI's measure price change for annual gross additions to capital for machinery and equipment by industry of purchase.
2. The sub categories are different, however the totals match.

Appendix 9A A brief description of the Capital Expenditure Survey

9A.1 The Capital Expenditure Survey has a sample of some 27,000 establishments, both private and government-owned. The industry sectors are based on the North American Industry Classification System (NAICS). Even though the survey covers all industries, some industries are not actually surveyed. For instance, estimates for agriculture and fishing are produced with survey data and indirect indicators. For certain industries, estimates come from other sources or the survey is conducted separately from the main survey. A case in point is the Local Government Capital Expenditure Survey, which asks respondents to provide a specific breakdown of assets and spending by government function. Similarly, not all establishments are covered. The survey is sent to all establishments above a certain threshold, which varies by industry and province (take-all portion). Below the threshold, a sample is selected (take-some portion), and the results are blown up. For small establishments (take-none portion), tax data are used to produce estimates, which are included in the totals.

9A.2 The survey collects three sets of annual data (intentions, preliminary actual investment and actual investment) during two survey periods, and the results are released as shown below.

Table 9A.1 Release dates

Release date	Data	Collection period
February (*t*)	Intentions (*t*)	November (*t*-1) to February (*t*)
February (*t*)	Preliminary actual (*t*-1)	November (*t*-1) to February (*t*)
February (*t*)	Actual (*t*-2)	March (*t*-1) to October (*t*-1)

Note: *t* = current calendar year or fiscal year closest to current calendar year

9A.3 Establishments receive the regular questionnaire (long or short form), a specialized questionnaire (long or short form) or the new project questionnaire. The regular short questionnaire collects basic information on capital spending and changes in capital expenditure plans. The regular long questionnaire, used only in the survey on actual spending (i.e., t-2), is sent to establishments that previously reported large capital expenditures. In addition to basic data, it asks for a breakdown by type of asset, capitalized interest payments, asset lives, leasing, etc., and, every five years, the proportions of own-account work and contract work. Specialized questionnaires go to the mining and oil and gas industries. New-project questionnaires are sent to establishments not yet in the survey frame. Spending on repair and maintenance is requested only in the survey on actual investment.

9A.4 Additional information is available on the mining industry. The federal Department of Natural Resources collects the required data annually for mining operations, including general exploration expenditures (part of capital formation in SNA 1993), and the Industry Division does the same for the oil and gas industry, including geological and geophysical expenditures (part of capital formation in SNA 1993).

Chapter 10 Investment in inventories

Introduction

10.1 In the Income and Expenditure Accounts, investment in inventories is estimated for the agricultural and non-agricultural business sector and for the government sector.

10.2 Inventory fluctuations essentially represent the gap between aggregate production and final demand in any given period. Inventories can play a crucial role in generating swings in economic activity despite the fact that changes in inventories are a relatively small component of GDP. However, their importance stems from the fact that they typically fluctuate to a substantially greater extent than other GDP components—and can either be strongly positive or strongly negative. The average absolute quarterly contribution of inventory movements to quarterly growth can be large, sometimes making it a major factor in GDP growth.

10.3 Changes in inventories have always had a major influence on business cycles. However, the role of inventories is evolving, as indicated in the article *The Changing Role of Inventories in the Business Cycle.*[1] The article deals specifically with non-farm inventories and concludes that the economy benefits when businesses manage their inventories better. Changes in farm inventories can have a significant effect on changes in the gross domestic product. Changes in such inventories are caused by developments in the global economy as well as by weather conditions or, as has been the case more recently, by national and international events such as the mad cow crisis.

Concepts and definitions

10.4 Investment in inventories, commonly referred to as the value of physical change in inventories or as changes in inventories in the international system, includes the following:

- changes in stocks of outputs that are still being held by the units that produced them prior to their being further processed, sold, delivered to other units or used in other ways;
- changes in stocks of products acquired from other units that are intended to be used for intermediate consumption or for resale without further processing; they are measured by the value of the entries into inventories less the value of withdrawals, less the value of any recurrent losses of goods held in inventories;[2]
- changes in work in progress inventories.

10.5 In the Canadian System of National Accounts (CSNA), business inventory investment is subdivided into farm inventories and non-farm inventories. Estimates of business investment in farm inventories fall under three major headings: grain,[3] other farm-held inventories,[4] grain in commercial channels.[5] Non-farm inventories are estimated at a very detailed level and are published for five main categories:

- Manufacturing (durable and non-durable goods);
- Retail trade (durable and non-durable goods);
- Wholesale trade (durable and non-durable goods);
- Non-monetary gold; and
- Other non-farm inventories.[6]

1. Cross, P. and Salvatore, G. 2003; "*The Changing Role of Inventories in the Business Cycle*". Canadian Economic Observer, catalogue no. 11-010.
2. This definition has been taken from *System of National Accounts 1993*, paragraphs 10.7 and 10.28 and glossary, under changes in inventories.
3. Grain includes eight components: wheat, oats, barley, rye, flax, canola, soybeans and corn.
4. Other inventories have eight components: potatoes, tobacco, special crops, cattle, calves, hogs, sheep and lambs, and poultry.
5. Grain in commercial channels is grain held by the Canadian Wheat Board or by private traders.

10.6 Work in progress for uncompleted structures is not treated as part of inventories in the CSNA.

10.7 Manufacturing, retail trade, and wholesale trade comprise the major categories of non-farm inventories. The manufacturing industries encompass 23 categories of goods, while retail trade has 19 and wholesale trade, 16. Table 10.2 provides a complete list of these categories.

10.8 Aside from the classification of goods by category, inventories in the manufacturing industries can also be classified according to the product's state of development. First are finished goods, that is, the goods an industry produces. Next are goods purchased for resale, meaning goods purchased by the industry to be resold without any processing taking place. Third, there are goods in process,[7] or goods that have not been completed and which must undergo further processing before they can be sold. Finally, raw materials include goods that a business owns and intends to use in the production of other goods. Raw materials include both the "nuts and bolts" and the goods used indirectly in production, such as fuel oil and paper for administrative purposes. Inventories of raw materials differ from gross fixed capital formation in that the goods are incorporated into the finished products rather than used[8] in the production process. In addition, the goods in question are used during a relatively short period (generally less than a year).

10.9 All gold bullion, including that held by individuals, is included in gold inventories since it can be resold for use in the production process. Gold coins are excluded from inventories since they are considered to be finished products. The only gold coins included in inventories are those classified as goods in process that are produced by coin manufacturers. Monetary gold (a financial asset in the financial account) and gold held in Canada by non-residents are also excluded from inventories.

10.10 The last category is that of other non-farm inventories, which includes six categories of goods—logging, mining, finance and services, transportation and construction. For these goods, inventory estimates pertain to finished products only.

Presentation: Income and Expenditure Accounts and Input-Output Tables

10.11 The investment in inventories that appears in the Income and Expenditure Accounts (IEA) is not formally reconciled with the estimates that appear in the Input-Output Tables (IOT) for Canada, as is the case for all other GDP expenditure items.

10.12 This is because the IEA statistical discrepancy is implicitly included in the investment in inventories in the IOT (Table 10.1).

6. Inventories of natural resources (minerals in the ground or forests), are not included in inventories of raw materials. Stocks of natural resources, such as timber and subsoil minerals, are included in the economy-wide measures of non-financial non-produced tangible assets in the *National Balance Sheet Accounts* (catalogue no. 13-214). These are not treated as inventories in the national accounts.
7. According to the *System of National Accounts 1993*, goods in process should include housing under construction (par. 10-102). However, in the Income and Expenditure Accounts, the latter are included with gross fixed capital formation in residential buildings (see Chapter 9).
8. This is referred to as "wear and tear", known as "depreciation of capital assets" or "rate of depreciation of fixed capital".

Table 10.1 Investment in inventories in the Input-Output Tables and in the Income and Expenditure Accounts, 2000

	CANSIM	Millions of dollars
Input-Output Tables[1] final demand categories		
Inventories: Value of physical change		12,277
Additions	V29346714	21,506
Withdrawals	V29346743	-9,229
Income and Expenditure Accounts[2]: Expenditure-based GDP categories		
Investment in inventories and statistical discrepancy		12,278
Government investment in inventories	V498094	24
Business investment in inventories	V498100	11,505
Statistical discrepancy	V498109	749

1. Input-Output Tables are published in the *Input-Output Structure of the Canadian Economy*, catalogue no. 15-201.

2. Income and Expenditure Accounts estimates are published in *National Income and Expenditure Accounts*, catalogue no. 13-001. Provincial and territorial estimates appear in *Provincial Economic Accounts*, catalogue no. 13-213.

Business investment in non-farm inventories

Estimation methods, benchmark years and non-benchmark years

10.13 For manufacturing, retail trade and wholesale trade industries, the annual surveys are extensions of the monthly surveys; they provide more detail and cover a broader universe. They are used to calibrate the monthly or quarterly information. However, the estimation method is still monthly, and quarterly and annual figures are derived by adding up the sub annual estimates.

10.14 Annual data for the logging industry are obtained from the *Annual Survey of Forestry* and those for the mining industry from the Annual Census of Mines, conducted by Natural Resources Canada.

10.15 For other non-farm inventories categories (construction, mining, finance, insurance and real estate, transportation and utilities) the monthly or quarterly approach for manufacturing and retail and wholesale trade, described below, is applied annually.

Estimation methods, monthly and quarterly

10.16 For each of the 128 categories of goods for which business investment in non-farm inventories is measured (see Table 10.2), a 10-step approach is used. The inventory valuation adjustment item, an aggregate that is part of the calculation of income-based gross domestic product, is estimated as part of the same process.[9]

9. For further details on concepts, see the inventory valuation adjustments section of Chapter 4. Calculation methods are described in this chapter.

Table 10.2 Series and deflators used in the calculation[1] of business investment in non-farm inventories, 2000

Component[2]	Deflator[3]	Millions of dollars
Manufacturing		4,848
Durable goods		4,479
Electrical and electronic (4 stages)	IPPI	
Furniture and fixtures (4 stages)	IPPI	
Machinery (non-electrical) (4 stages)	IPPI	
Fabricated metal (4 stages)	IPPI	
Other (4 stages)	IPPI	
Motor vehicles (4 stages)	IPPI	
Non-metallic mineral (4 stages)	IPPI	
Other transportation (4 stages)	IPPI	
Motor vehicles parts (4 stages)	IPPI	
Primary metals (4 stages)	IPPI	
Wood (4 stages)	IPPI	
Non-durable goods		369
Beverages (4 stages)	IPPI	
Chemicals (4 stages)	IPPI	
Food (4 stages)	IPPI	
Clothing (4 stages)	IPPI	
Leather (4 stages)	IPPI	
Paper (4 stages)	IPPI	
Refined petroleum (4 stages)	IPPI	
Plastic (4 stages)	IPPI	
Printing (4 stages)	IPPI	
Rubber (4 stages)	IPPI	
Textiles (4 stages)	IPPI	
Tobacco (4 stages)	IPPI	
Trade		7,903
Retail		5,649
Durable goods		5,332
Motor vehicles		2,284
New car dealers	CPI	
Used and recreational motor vehicle and parts dealers	CPI	
Furniture stores	CPI	
Home furnishings stores	CPI	
Computer and software stores	CPI	
Home electronics and appliance stores	CPI	
Home centres and hardware stores	CPI	
Specialized building material and garden stores	CPI	
Pharmacies and personal care stores	CPI	
Non-durable goods		317
Supermarkets	CPI	
Convenience and specialty food stores	CPI	
Beer, wine and liquor stores	CPI	
Gasoline stations	CPI	
Clothing stores	CPI	
Shoe, clothing accessories and jewellery stores	CPI	
Sporting goods, hobby, music and book stores[4]	CPI	
Department stores[4]	CPI	

Table 10.2 Series and deflators used in the calculation[1] of business investment in non-farm inventories, 2000

Component[2]	Deflator[3]	Millions of dollars
Other general merchandise stores[4]	CPI	
Miscellaneous store retailers[4]	CPI	
Wholesale		2,254
Durable goods		1,830
Household and personal products	IPPI and import price index	
Pharmaceuticals	IPPI and import price index	
Motor vehicles	IPPI and import price index	
Motor vehicle parts and accessories	IPPI and import price index	
Building supplies	IPPI and import price index	
Metal products	IPPI and import price index	
Lumber and millwork	IPPI and import price index	
Machinery and equipment	IPPI and import price index	
Computers and other electronic equipment	IPPI and import price index	
Office and professional equipment	IPPI and import price index	
Non-durable goods		424
Farm products	IPPI and import price index	
Food products	IPPI and import price index	
Alcohol and tobacco	IPPI and import price index	
Apparel	IPPI and import price index	
Other products	IPPI and import price index	
Petroleum products	IPPI and import price index	
Gold	Price in US$ per ounce from Platts Metals Week converted to Canadian dollars	-117
Other non-farm inventories		-1,279
Construction	Construction implicit price index from the gross fixed capital formation section of the Income and Expenditure Accounts	
Finance, insurance and real estate	CPI - services	
Logging	RMPI - logs	
Mining	RMPI metals and MEPI mines	
Transportation and communication	IPPI - transportation equipment	
Utilities	Uranium price, RMPI - coal, natural gas, MEPI electrical utilities	
Total		11,355

1. Calculation includes finished goods, goods bought for resale, goods in progress and raw materials.
2. The series having numeric values correspond to published levels. They appear in tables 28 and 29 of *National Income and Expenditure Accounts*, catalogue no. 13-001.
3. IPPI: *Industrial Product Price Index*; CPI: *Consumer Price Index*; RMPI: Raw Materials Price Index; MEPI: Machinery and Equipment Price Index.
4. This category appears in both non-durable goods and durable goods in retail trade. Half of it is allocated to non-durables the other half to durables.

10.17 Estimates of business investment in inventories are produced monthly for the manufacturing, retail trade and wholesale trade industries. The quarterly data are obtained by adding up the monthly figures. For gold and other sectors, estimates are produced on a quarterly basis.

10.18 The following data are needed for the calculations:

- the value of sales and shipments;
- the book value of inventories as reported by businesses;
- the accounting method used by businesses to arrive at the book value; and
- price indexes that, to the extent possible, reflect purchase costs rather than selling prices.

10.19 Each of these datasets is explored in the sections below. A description of the 10-step calculation method follows (paragraphs 10.38 to 10.50).

Sales and shipments

10.20 Sales and shipments for manufacturing are derived from the *Monthly Survey of Manufacturing* (MSM).[10] For the wholesale industry, monthly sales and shipments data are provided by the *Wholesale Trade Survey (Monthly)*.[11] For the retail industry, the data are taken from the *Monthly Retail Trade Survey (Department Store Organizations)* and the *Retail Trade Survey (Monthly)*.[12]

10.21 For gold, a supply and demand model is used as a quarterly distributor of the annual benchmarks provided by the Input-Output Tables. The same model is used to produce the current estimates; it relies on the Industry Accounts Division's estimates of gold production, gold exports and imports from the International Trade Division, and the Balance of Payments Division's surveys for the Bank of Canada's activities in managing gold reserves and sales of gold coins.

10.22 For construction, the benchmark data are projected using information from the *Survey of Employment, Payrolls and Hours*[13] and the *Survey of Employment, Payrolls and Man-hours*. The same approach is followed for financial services, except that the projectors are taken from personal expenditure on consumer financial services.

10.23 For the logging industry, a supply and demand model is used. The information is provided by the Industry Accounts Division and the International Trade Division.

10.24 For the mining industry and the transportation and telecommunications industry, quarterly information is available from the *Quarterly Survey of Financial Statistics for Enterprises.*[14]

10.25 For electric utilities, information is provided by the Public Institutions Division. For gas utilities, it is supplied by the Manufacturing, Construction and Energy Division.

Book value stocks

10.26 The book values of inventory stocks for the manufacturing, wholesale, retail, gold and other industries are derived from the same sources as sales and shipments.

Accounting method

10.27 The accounting method refers to the LIFO (last in first out) and FIFO (first in first out) methods of booking inventories. The FIFO assumes for costing purposes that the goods are charged to production or sales in order of their acquisition. The LIFO method assumes that the goods charged out first are the goods last acquired.

10. Survey no. 2101, published in *Monthly Survey of Manufacturing*, catalogue no. 31-001.
11. Survey no. 2401, published in *Wholesale Trade*, catalogue no. 63-008.
12. Survey no. 2406, published in *Retail Trade*, catalogue no. 63-005.
13. Survey no. 2612, published in *Employment, Earnings and Hours*, catalogue no. 72-002.
14. Survey no. 2501, published in *Quarterly Financial Statistics for Enterprises*, catalogue no. 61-008.

10.28 Since the accounting method used for inventories is not captured in surveys, the Income and Expenditure Accounts Division assumes that the FIFO method is used.[15] The exception is inventories of petroleum for both the wholesale and the manufacturing industries. In that case, producers specified that they were using the LIFO method.

Price indexes for deflation and revaluation

10.29 Price indexes are used twice in the calculation of business investment in inventories. In one case, they are used to deflate the book values of inventories reported by businesses. In the other, they are used to revalue the physical change in inventories at average quarterly prices (revaluer price indexes).

10.30 While deflators and revaluer price indexes are constructed from the same price indexes, they are distinct because of differences in weighting. For details on the indexes used, see Table 10.2. In general, the manufacturing series use industrial product price indexes[16] while consumer price indexes[17] are used to construct the deflators for retail trade, and a combination of industry product price indexes and import price indexes[18] (from the *International Trade Price Indexes)* are used to produce the deflators and revaluer price indexes for the wholesale sector. For gold and other commodities, raw materials price indexes[19] and other specific price indexes are used.

Book value deflators

10.31 The price indexes used to deflate the book values of inventories reported by businesses have to reflect the accounting method used.[20] In the IEA, it is assumed that businesses use the FIFO (first in, first out) method. In this case, each commodity included in the inventories has its own turnover rate, which is the average time that the commodity remains in inventory. One way of understanding the turnover rate is to look at the number of production days, months or years that a business holds a commodity in inventory. Thus, the book value of inventories reported by businesses for the reference period is the sum of the costs of the commodities that entered inventory during the reference period.

10.32 Table 10.3 provides an example of how to calculate a turnover rate; in this case, the rate is based on the inventories-to-sales ratios reported by the *Wholesale Trade Survey (Monthly)* for two trade groups, food products and machinery and equipment. The turnover rate is less than one month for food products and over two months for machinery and equipment.

Table 10.3 Example of turnover calculation using wholesale trade data, November 2004 to February 2005

		2004		2005	
		November	December	January	February
Food products					
Inventories (seasonally adjusted)	millions of dollars	4,269	4,167	4,306	4,413
Sales (seasonally adjusted)	millions of dollars	6,435	6,480	6,370	6,538
Turnover period expressed as:					
Months of sales held in inventories (monthly inventories divided by monthly sales)	months	0.66	0.64	0.68	0.67
Days of sales held in inventories (monthly inventories divided by monthly sales times number of days in month)	days	19.9	19.9	21.0	18.9

15. Two studies provided information on the accounting method. According to the 1975 study, 35% of manufacturers were using the FIFO method and 31% the average cost method. In 1990, a small study with retailers and wholesalers indicated that 68% of them were using the specific cost method, confirming the increasing role of computer in the control of inventories.
16. *Industrial Product Price Index*, survey no. 2318, published in *Industry Price Indexes*, catalogue no. 62-011.
17. *Consumer Price Index*, survey no. 2301, published in *Consumer Price Index*, catalogue no. 62-001.
18. Estimates from this survey are published in *Canadian International Merchandise Trade*, catalogue no. 65-001.
19. Estimates from this survey are published in Industry Price Indexes, catalogue no. 62-011.
20. Financial information reported to Statistics Canada are those that appear in the financial statements of businesses. This Statistics Canada policy was established to reduce the response burden of businesses.

Table 10.3 Example of turnover calculation using wholesale trade data, November 2004 to February 2005

Machinery and equipment					
Inventories (seasonally adjusted)	millions of dollars	8,687	8,803	8,753	8,777
Sales (seasonally adjusted)	millions of dollars	3,522	3,427	3,529	3,681
Turnover period expressed as:					
Months of sales held in inventories (monthly inventories divided by monthly sales)	months	2.47	2.57	2.48	2.38
Days of sales held in inventories (monthly inventories divided by monthly sales times number of days in month)	days	74.0	79.6	74.4	73.9

Source: *Wholesale Trade*, February 2005, catalogue no. 63-008, tables 1.1 and 4.1.

10.33 To deflate the book values of inventories reported by businesses, the deflator must reflect price movements during the turnover period. Hence, the deflator is calculated as the weighted average of the price indexes during the turnover period. For example, for machinery and equipment and food products in Table 10.3, the inventory book value deflator for February 2005 is computed as follows:

Examples of the calculation of inventory book value deflators, February 2005

Deflator food products (turnover rate of 0.67) = Combination of the IPPI index and import index of February.

Deflator machinery and equipment (turnover rate 2.38) = ((Combination of the IPPI index and import index of February)
+ (combination of the IPPI index and import index of January)
+ (0.38 × combination of the IPPI index and import index of December))
÷ 2.38

10.34 When the turnover rate is less than a month, the index of the last month is used as the deflator.

10.35 For the manufacturing sector, the turnover rates are an average of the turnover for the last four years, based on manufacturing shipments and inventories data from the *Annual Survey of Manufactures and Logging*. For gold and other stocks, the ratio is determined yearly based on data from various annual surveys. For retail and wholesale trade, the turnover rates are estimated monthly using the sales and inventories series (see Table 10.3). This information is provided by the surveys of retail and wholesale sales (see paragraph 10.20).

Revaluer price indexes

10.36 Like book value deflators, revaluers are price indexes, but they have a different purpose. They are used to revalue the volume of business investment in inventories at average prices for the reference period in order to make the series comparable with other aggregates of final expenditure. The aim is to reflect the average cost of inventories during the current period. For the monthly estimates, the revaluers are simply the price indexes reported in the price surveys (see paragraph 10.30). For the quarterly estimates, an average of the monthly indexes is used.

10.37 It is important to note that the method described above applies to the most detailed components of the estimate. The implicit indexes used at aggregate levels (ratio of current dollars to volumes) can be quite different from the component indexes.

Ten-step calculation process

10.38 Table 10.4 summarizes the calculation method used at the most detailed level. The first six steps show the calculation of business investment in non-farm inventories in current dollars, which appears in the IEA's expenditure-based gross domestic product table.[21] Lines 7 and 8 show the derivation of the inventory valuation

21. *National Income and Expenditure Accounts*, catalogue no. 13-001, Table 2, line 15.

adjustment item that appears in the IEA's income-based gross domestic product table.[22] Lines 9 and 10 contain the equations for calculating the inventory level used to produce volume estimates under the chain Fisher formula (see paragraphs 10.69 to 10.81).

Table 10.4 The ten step calculation for investment in non-farm inventories and inventory valuation adjustment

A. The 6 steps for calculating investment in non-farm inventories	
1. CBV_e	Reported current dollar book values of inventories at the end of the period.
2. DEF_e	Deflator of book values at the end of the period.
3. $KBV_e = CBV_e / DEF_e$	Constant dollar book values of inventories at the end of the period.
4. $KVPC_t = KBV_e - KBV_{e-1}$	Constant dollar value of physical change for period *t*.
5. REV_t	Revaluer of the value of physical change for period *t*.
6. $VPC_t = KVPC_t \times REV_t$	Current dollar value of physical change for period *t*.
B. The 2 steps for the calculating inventory valuation adjustment	
7. $\Delta CBV_t = CBV_e - CBV_{e-1}$	Change in reported closing book value of inventories in current dollar for period *t*.
8. $IVA_t = VPC_t - \Delta CBV_t$	Inventory valuation adjustment in current dollar for period *t*.
C. The 2 steps for the calculating volume estimates of investment in inventories using the Chain-Fisher method	
9. $RBV_e = KBV_e \times REV_t$	Value of inventories at the end of the period, in current dollars, estimated at average prices of the period.
10. $RBV_b = RBV_e - VPC_t$	Value of inventories at the beginning of the period, in current dollars, estimated at average prices of the period.

10.39 **Step 1.** Obtain the end-of-period inventory book values reported by businesses. These are the reported book values. The code for this is CBV_e, the e indicating that it is the end-of-period value.

10.40 **Step 2.** Create a weighted price index for deflation of inventory book values. This implies knowledge of the composition of inventories, their turnover period, changes in the prices of goods in inventory, and the various methods of valuing them. These series are known as book value deflators. The code is DEF_e, the e indicating that it is the end-of-period inventory composition.

10.41 **Step 3.** Deflating the book values ($CBV_e \div DEF_e$) produces the end-of-period inventory book value at constant prices. The code is KBV_e, the e indicating that it is the end-of-period volume measure.

10.42 **Step 4.** Taking the first difference of the end-of-period inventory book value obtained in Step 3 yields a measure of the change in inventory volume between the beginning and end of a period. This concept is also referred to as the value of physical change in inventories at constant prices. The code is $KVPC_t$; the t indicates that the physical change in inventories is being measured for a particular period (e.g., the first quarter of 2001), whereas e indicates that the series reflect the situation at the end of a period (e.g., KBVe would be the volume of inventories on March 31, 2001, and KBV_{e-1} would be the volume on February 28, 2001).

10.43 **Step 5.** A revaluer price index is introduced in this step, reflecting the composition of inventories and the average value of inventories during the current period. The code is REV_t, the t indicating that it is an index that reflects the average price of inventories during the period.

22. *National Income and Expenditure Accounts*, catalogue no. 13-001, Table 1, line 7.

10.44 **Step 6.** Compute the value of physical change in inventories at current prices. The calculation involves multiplying the value of physical change in inventories at constant prices from Step 4 by the revaluer price index from Step 5. Using an average quarterly price to estimate the value of physical change in inventories at current prices makes the investment in inventories estimates comparable to other GDP aggregates.

10.45 The next two steps compute the inventory valuation adjustment item and have no effect on the business investment in inventories aggregate.

10.46 **Step 7.** Calculate the change in inventory book value reported by businesses, compiled in Step 1. The code is ΔCBV_t; the t indicates that the change in inventory book value is being measured for a particular period (e.g., the first quarter of 2001), whereas e indicates that the series reflect the situation at the end of a period (e.g., CBV_e could be the inventory book value on March 31, 2001, and CBV_{e-1} could be the value on February 28, 2001).

10.47 **Step 8.** The inventory valuation adjustment is the difference between the physical change in inventories at current prices (Step 6) and the value of change in inventory book value (Step 7). This adjustment, usually negative because of ongoing inflation, is a distinct entry on the income side of the GDP ledger. This entry amounts to an ex-post correction to the profits of corporations and government enterprises and the net income of unincorporated businesses for the net capital gains or losses that businesses incur on their inventories as a result of price changes. Those gains or losses must be eliminated before the value of current dollar output can be measured.

10.48 Steps 9 and 10 compute the value of inventories held at the start and end of a period. The estimates obtained are used in the chain Fisher formula that calculates volume estimates of investment in inventories aggregates.

10.49 **Step 9.** To obtain Fisher volume estimates of investment in inventories, we need to measure the end-of-period inventory value at current prices for the quarter. This is done by multiplying the inventory value in constant dollars (KBV_e) by the average price of inventories during the period (REV_t). The code for the series is RBV_e, the e indicating that it is the end-of-period value; for monthly estimates, for example, it could be the value of inventories in current dollars on March 31, 2001, the inventories having been evaluated at the average prices for March 2001.

10.50 **Step 10.** To produce the Fisher volume estimates of investment in inventories, we also need to measure the start-of-period inventory value at current prices for the quarter. This is done by subtracting the value of physical change in inventories at current prices from the end-of-period inventory value computed in Step 9. This method of calculating the start-of-period inventory value is equivalent to multiplying the start-of-period inventory values in constant dollars (KBV_{e-1}) by the average price of inventories during the period (REV_t). The code for the series is RBV_b, the b indicating that it is the start-of-period value. For monthly estimates, for example, it could be the value of inventories in current dollars on March 1, 2001, the inventories having been evaluated at the average prices for March 2001. In mathematical terms it is expressed as follows:

$$RBV_b = RBV_e - VPC_t \quad \text{Step 10 equation}$$

$$RBV_b = (KBV_e \times REV_t) - (\Delta KPC_t \times REV_t), \text{ substitution of Step 9 equation and Step 6 equation}$$

$$RBV_b = (KBV_e - \Delta KPC_t) \times REV_t$$

$$RBV_b = (KBV_e - (KBV_e - KBV_{e-1})) \times REV_t, \text{ substitution of Step 4 equation}$$

$$RBV_b = (KBV_e - KBV_e + KBV_{e-1}) \times REV_t$$

$$RBV_b = KBV_{e-1} \times REV_t$$

Estimation methods, provinces and territories

10.51 For most series, the national estimates of business investment in non-farm inventories are distributed by region on the basis of the reported book values for each province and territory. The exceptions are:

- Gold;
- finance, insurance and real estate; and
- construction.

10.52 For finance, insurance and real estate, the provincial or territorial distribution is based on household expenditure on legal and financial services, reported in *Detailed Average Household Expenditure for Canada, Provinces/Territories and Selected Metropolitan Areas.*

10.53 For construction, the provincial or territorial distribution of national data is based on the value of building permits for each province and territory, published in *Building Permits*.

10.54 For gold, the provincial or territorial breakdown is based on the distribution of families with incomes over $60,000. This information is taken from Income in Canada.

10.55 For inventory valuation adjustment, the 10-step method is followed using provincial or territorial book values and national price indexes.

Business investment in farm inventories

10.56 Business investment in farm inventories can be broken down into three main categories: grain, other farm-held inventories and grain in commercial channels. Table 10.5 shows the levels of publication, the level of analysis and their values for 2000. The source data are quarterly and come from the Agriculture Division, the Canadian Wheat Board and the Canadian Grain Commission.

Table 10.5 Business investment in farm inventories, 2000

	Table[1]	Line[1]	Millions of dollars
Business investment in farm inventories	Table 2	Line 16	150
Grain	Table 28	Line 16	-244
Wheat (including durum)			83
Oats			-36
Barley			15
Flaxseed			-48
Canola			-66
Soybeans			-22
Corn			-162
Rye			-8
Other farm-held inventories	Table 28	Line 17	322
Potatoes			50
Tobacco			-138
Special crops			47
Cattle			302
Calves			-45
Hogs			73
Sheep and lambs			31
Poultry			2
Grain in commercial channels	Table 28	Line 18	72

1. Refers to table and line numbers in the *National Income and Expenditure Accounts*, catalogue no. 13-001.

Estimation methods, non-benchmark years

10.57 For business investment in farm inventories, the annual estimates represent the sum of the quarterly estimates. Levels for benchmark years are established following annual revisions conducted by the Agriculture Division in November of each year.

Estimation methods, quarterly estimates

10.58 Quarterly estimates of business investment in farm inventories in Canada are obtained by summing the quarterly provincial estimates.

Estimation methods, provincial estimates

10.59 The Agriculture Division provides quarterly estimates of market prices and farm-held inventories. This information is available by province.[23] For grain in commercial channels, information on prices and level of inventories is available from the Canadian Wheat Board and the Canadian Grain Commission.

10.60 Following are descriptions of the estimation methods for crops, livestock and poultry and grain in commercial channels. In each case, estimates are produced by product and by province. Aggregates at current prices are obtained by summation. Aggregates in chained dollars are obtained using the Fisher formula.

Crops

10.61 This method applies to grain, potatoes, tobacco and special crops. To obtain the value of the business investment in farm inventories (or the value of physical change (VPC)), the value of production (VP) and the value of depletion of inventories (VDI) are calculated, on a quarterly basis, from the quantities multiply by the average quarterly prices as shown in the following equation:

$$VPC_t = VP_t + VDI_t$$

where,

$VP_t = P_t \times PR_t$, where value of production = production in metric tonnes x average quarterly prices;
$DI_t = I_e - I_b - P_t$, where depletion in metric tons = end-of-quarter inventories - beginning-of-quarter inventories - production during the period;
$VDI_t = DI_t \times PR_t$, where value of depletion = depletion in metric tonnes x average quarterly prices.

10.62 Business investment in farm inventories is equal to the change in inventories in volume multiplied by the average price during the period. The calculation is equivalent to the method referred to in the following Livestock and poultry section (paragraph 10.64). However, both estimates of the value of production and the value of depletion are prepared, as the value of production is provided to the Industry Accounts Division for use in calculating the monthly GDP.

10.63 For seasonally adjusted estimates, the annual value of production is distributed among the quarters using a minimum sum-of-squared-changes criterion.[24] This procedure minimizes the breaks between the fourth quarter of a year and the first quarter of the following year. The technique also gives special treatment to years with bumper crops or droughts by reflecting most of the production excess or shortfall in the harvest quarter. Industry Accounts Division makes this adjustment for its estimates of the monthly GDP at basic prices. Since production is

23. There is no information available for farm inventories in the territories. It should be noted that agricultural activity is very limited in the northern part of Canada.
24. For further details, see the technical paper *Treatment of Grain Production in the Quarterly Income and Expenditure Accounts*, catalogue no. 13-604, no. 2.

concentrated in the third and fourth quarters, harvests are evaluated using the prices for those periods. In contrast with production, withdrawals on inventories are distributed throughout the entire year and are seasonally adjusted using the X-11 ARIMA method.

Livestock and poultry

10.64 The estimates of livestock and poultry inventories (number of head) and the average market price during the quarter are obtained from Agriculture Division's *Livestock Survey.*[25] To obtain the value of business investment in farm inventories in current prices, which corresponds to the value of physical change (VPC) for non-seasonally adjusted series, the calculation consists of simply taking the difference between inventories at the end (I_e) and at the beginning (I_b) of the quarter and multiplying it by the average price (PR) for the period, as illustrated by the following equation:[26]

$$VPC_t = (I_e - I_b) \times PR_t$$

10.65 Seasonally adjusted series are obtained using the X-11 ARIMA method.

Grain in commercial channels

10.66 This method applies to grain held off-farm in commercial channels.[27] The calculation of investment in farm inventories is done using the same method as the one described in the section livestock and poultry except that the quantities are expressed in metric tonnes. Information on inventories and market prices comes from the Canadian Wheat Board and the Canadian Grain Commission. Seasonally adjusted series are obtained using the seasonal movements of grain exports and grain withdrawals from inventories.

Government investment in inventories

10.67 Government investment in inventories includes only changes in the inventory of industrial milk and milk products held by the Canadian Dairy Commission (CDC). Estimates are based on the figures from the CDC's quarterly financial statements. The provincial distribution is also based on the CDC's reports.

10.68 Two industrial price indexes, for butter and for powdered milk, are used for the deflation of government investment in inventories.

Calculating volume aggregates with the chain Fisher formula for investment in inventories

10.69 Like other expenditure-based gross domestic product aggregates, real investment in inventories is estimated by means of the chain Fisher formula. However, this formula cannot be used directly for investment in inventories aggregates because the series can take positive or negative values. To avoid the problems created by sign changes, the estimates are produced using inventory levels, which always take a positive value. Essentially, the indirect approach to estimating real investment in inventories involves estimating real inventory levels at the start and end of the period using the Fisher formula and subtracting one from the other.

25. Survey no. 3460, published in *Cattle Statistics*, catalogue no. 23-012; *Hog Statistics*, catalogue no. 23-010; *Livestock Statistics*, catalogue no. 23-603; and *Sheep Statistics*, catalogue no. 23-011.
26. This calculation corresponds to steps 4 to 6 of the 10-step method used to estimate business investment in non-farm inventories (see Table 10.4). The only difference between the non-farm and the farm inventories calculations is that for farm inventories, beginning and end of period inventories are expressed in terms of units and prices in terms of dollars per unit, whereas for non-farm inventories they are expressed in constant dollars.
27. Grain in commercial channels estimates are compiled for wheat, oats, barley, rye, flaxseed and canola.

Calculation formulas

10.70 The Fisher formula used to compute non-chained volume indexes[28] is

Equation 10.1

$$FV_t = \sqrt{\frac{\sum P_t Q_t}{\sum P_t Q_{t-1}} \times \frac{\sum P_{t-1} Q_t}{\sum P_{t-1} Q_{t-1}}}$$

10.71 In practice, this formula is not useful because the quantities would have to be observed directly. Consequently, the formula is transformed to include only current dollars (C_t and C_{t-1}) and prices (P_t and P_{t-1}), two kinds of data that are available to statisticians. Equation 10.1 becomes

Equation 10.2

$$FV_t = \sqrt{\frac{\sum C_t \times (P_{t-1}/P_t)}{\sum C_{t-1}} \times \frac{\sum C_t}{\sum C_{t-1} \times (P_t/P_{t-1})}}$$

10.72 Equation 10.2 produces a non-chained volume index. To obtain estimates in chained dollars, the non-chained indexes must be added together from a particular starting point (CFV_0). For us, the starting point is 2002, the reference period for which the real and nominal estimates of the aggregates are equal. The formula used is:

Equation 10.3

$$CFV_t = CFV_0 \text{ x } FV_1 \text{ x } FV_2 \text{ ... x } FV_t$$

10.73 For example, to calculate real personal expenditure on consumer goods and services in millions of chained (2002) dollars, the current value and the price index for each of the 130 categories of goods and services that make up the aggregate for all periods since 2002 are used.

Using the formula for investment in inventories

10.74 In the case of investment in inventories, the non-chained Fisher index (FV_t) cannot be used because of sign changes. It is impossible to take the square root of a negative number. The solution is to compute two "real" estimates using the chain Fisher formula for each period (*t*), one for the inventory level at the end (*e*) of period *t* (e.g., March 31, 2005) and the other for the inventory level at the beginning (*b*) of period t (e.g., January 1, 2005). As a result, investment in inventories for period t will be written as:

Equation 10.4

$$CFV_t = CFV_e - CFV_b$$

10.75 As in the case of any aggregate, the data needed to calculate the end component (CFV_e) and the start component (CFV_b) are current dollar series and component prices series.

28. Unchained indexes means that the index represents the growth relative to the preceding period. In other words, it is as if the preceding period value was always "1" or "100".

Components of the calculation of investment in non-farm inventories

10.76 The current dollar series for each basic component are evaluated in Steps 9 and 10 (see paragraphs 10.49 to 10.50) of the 10-step method (see Table 10.4). The end-of-period inventory value is estimated by multiplying end-of-period inventory quantities by the average price for the quarter. By the same logic, the start-of-period inventory value is computed by multiplying start-of-period inventory quantities by the same average price for the quarter.

10.77 The price series corresponding to the current-dollar series are simply the revaluation price indexes (Step 5 of the 10-step method). For a description of these prices, see paragraphs 10.29 to 10.37. The prices are used for both the start-of-period estimates and the end-of-period estimates.

Components of the calculation of investment in farm inventories

10.78 The calculation of real investment in farm inventories is also based on start-of-period and end-of-period inventory levels expressed in terms of the average prices of goods sold during the estimation period. The average prices are the same as those used in estimating investment in inventories at current prices. Inventory levels in current dollars are calculated in two steps: first, the inventory level is estimated in constant dollars, and then inventory value is computed at current prices.

10.79 Real end-of-period inventory levels (KBV_e) are estimated for each of the 17 basic farm components (see Table 10.5). To estimate the inventories at constant prices, a starting point is needed; the fourth quarter of 2001 was chosen. By performing the calculation for the periods before and after the fourth quarter of 2001, we can obtain the inventories at constant prices. This calculation involves adding business investment in inventories at constant prices for the period (i.e., the value of physical change at constant prices (KVPC)) to inventories for the previous period (KBV_{e-1}). This is shown in Equation 10.5 below.

Equation 10.5

$$KBV_e = KBV_{e-1} + KVPC$$

10.80 The end-of-quarter inventories at current prices (RBV_e) are obtained by multiplying the end-of-quarter inventories at constant prices (KBV_e) by the average price[29] of the current period (REV_t) for each of the 17 basic components. This calculation is shown in Equation 10.6, (Step 9 of the 10-step method used for non-farm inventories).

Equation 10.6

$$RBV_e = KBV_e \times REV_t$$

10.81 As in non-farm inventories, the start-of-quarter inventories at current prices (RBV_b) are obtained by subtracting the value of physical change in inventories at current prices (VPC) from the end-of-period inventory value (RBV_e) given by Equation 10.6. This calculation is shown in Equation 10.7, which is identical to Step 10 of the 10-step method used for non-farm inventories. This method of calculating the start-of-period inventory value is equivalent to multiplying the start-of-period inventory values in constant dollars by the average price of inventories during the period (see paragraph Table 10.50).

Equation 10.7

29. As noted, the same prices are used to revalue the level of farm inventories as are used in the investment in farm inventories at current prices. However, the seasonally adjusted version is used in the form of a price index since real inventory levels are estimated on a seasonally adjusted basis and in constant dollars rather than on a non-seasonally adjusted basis and in quantity terms, as is the case for investment in inventories.

$RBV_b = RBV_e - VPC$

Investment in inventories, level of aggregation

10.82 Real business investment in non-farm inventories is published for 14 aggregates while real business investment in farm inventories is published for four aggregates (Table 10.6). The estimates for these aggregates are produced using the chain Fisher formula.

10.83 It is important to note that the 38 basic components of business investment in non-farm inventories and the 17 basic components of business investment in farm inventories are included in the calculation of real GDP. Also included are start-of-quarter and end-of-quarter inventories.

Table 10.6 Business investment in inventories, 2000

	Table[1]	Line[1]	Millions of chained (2002) dollars
Business investment in non-farm inventories	Table 3	Line 15	13,708
Manufacturing	Table 29	Line 2	6,067
Durable goods	Table 29	Line 3	5,128
Non-durable goods	Table 29	Line 4	770
Trade	Table 29	Line 5	8,675
Retail	Table 29	Line 6	6,177
Durable goods	Table 29	Line 7	5,704
of which: motor vehicles	Table 29	Line 8	2,356
Non-durable goods	Table 29	Line 9	358
Wholesale	Table 29	Line 10	2,533
Durable goods	Table 29	Line11	2,001
Non-durable goods	Table 29	Line 12	444
Gold	Table 29	Line 13	-149
Other non-farm inventories	Table 29	Line 14	-1,561
Business investment in farm inventories	Table 3	Line 16	775
Grain	Table 29	Line 16	-85
Other farm-held inventories	Table 29	Line 17	560
Grain in commercial channels	Table 29	Line 18	99

1. Refers to table and line numbers in the *National Income and Expenditure Accounts*, catalogue no. 13-001.

Chapter 11 International and inter-provincial trade in goods and services

Introduction

International trade

11.1 International trade is part of a vast system of statistics on Canada's transactions with non-residents. The system measures the flow of thousands of different goods and services across the border to and from countries around the world. The statistics on goods can be compiled on either a customs-basis or a Balance of Payments basis. The Canadian System of National Accounts (CSNA) uses the latter interpretation. This chapter discusses trade in the income and expenditure-based gross domestic product (GDP) framework.

11.2 Statistics on international trade are compiled both nationally and provincially. Foreign trade is reflected in both the quarterly economy-wide measures of GDP and the non-resident sector account (*National Income and Expenditure Accounts*) as well as the annual provincial measures of GDP (*Provincial Economic Accounts*).

11.3 International trade is essential to Canada's open economy. In 2002, for example, exports accounted for 42% of Canada's GDP and imports 37%. In other words, exports totalled $479 billion while imports totalled $428 billion relative to a total GDP of $1,153 billion in 2002. Export demand is largely determined by foreign income and the ratio of foreign to domestic prices; where import demand is largely determined by national income and the relationship of domestic prices to foreign prices. International trade flows are also affected by factors including sharp fluctuations in exchange rates and international trade arrangements.

Inter-provincial trade

11.4 Inter-provincial trade flows by province are similarly significant. These sales or purchases of goods and services among provinces and territories are largely determined by the regional levels of economic activity (income) and by the composition of economic activity in those regions of Canada. The *Provincial Economic Accounts* provides this detail alongside the international trade detail for each province and territory.

Concepts and definitions[1]

11.5 In general terms, international trade statistics can be defined as the statistical compilation of flows of goods and services between residents of an economy and non-residents over a given period. More broadly, international transactions can also cover income flows as well as financial transactions. This chapter specifically deals with trade in goods and services.

11.6 The Balance of Payments convention constitutes the conceptual framework for international trade within Canadian System of National Accounts (CSNA). To the extent possible, this framework reflects the standards and conventions set out in the *System of National Accounts 1993* and in the *Balance of Payments Manual* (1993), Fifth edition of the International Monetary Fund. These standards and conventions provide the means for developing a record of transactions between residents and non-residents.

11.7 The conceptual framework of the Balance of Payments establishes the line between residents and non-residents. Such delineation is important because the Balance of Payments records only transactions between these units. Institutional units that reside, (e.g., produce, consume) in Canada are considered residents of Canada. Canadian residents may be legal entities (businesses) or persons. For individuals, this usually means that they must have their principal residence in Canada. For businesses (unincorporated, corporations or public

1. For a more detailed description see *Canada's Balance of International Payments and International Investment Position: Concepts, Services, Methods and Products*, catalogue no. 67-506.

enterprises), their residence is linked to their Canadian production activities. In other words, they are Canadian residents if they carry out production in Canada through resident entities. These entities may be Canadian corporations or a Canadian branch or subsidiary of a foreign corporation.[2]

11.8 International trade in goods and services is defined as follows in the *System of National Accounts 1993*[3] *(SNA 1993)*:

> "Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents, while imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non-residents."[4]

11.9 The concepts associated with trade in goods and services are defined in detail in the next two sections.

11.10 The Income and Expenditure Accounts (IEA) make direct use of the data on flows of goods and services from the Balance of Payments Division (BPD).[5] The only exception is the addition in IEA of the category of financial services indirectly measured (FSIM). These services represent an indirect measure of the value of certain financial services – specifically, the income earned by financial institutions on services provided but for which financial institutions do not charge explicitly.

Trade in goods

11.11 As noted above, goods are considered imported or exported in the Balance of Payments when there is a change of ownership between residents and non-residents. By international convention, the cross-border movement of goods, as measured by customs data, represents a proxy for the change in ownership. Most goods that cross the border and appear in customs documents are therefore included in the Balance of Payments and, as a result, in the Income and Expenditure Accounts.

11.12 However, there are two general instances where customs data do not correspond to a change in ownership. First, there is the case of goods that change ownership but which are not recorded in customs documents. These goods could include, for example, satellites or vessels (which do not necessarily cross a country's economic territory) or non-monetary gold traded with non-residents, but which remain in the country. In these cases, the customs data are amended with information from other administrative sources or Balance of Payments Division surveys. Second, there are cases of goods recorded in the customs data that are clearly not subject to change of ownership. These include goods for processing, repair and financial leases of capital equipment. These, however, are still treated as goods by international standards.

11.13 In the Balance of Payments framework, goods are recorded at market prices at the border (customs frontier) of the exporting country. Generally, this matches the customs value of the goods. In the Canadian customs documents goods are valued at the transaction value – that is, at the point of exit for Canadian exports and at the point of last direct shipment for Canadian imports. For the most part, the transaction value corresponds to the market price at the frontier of the exporting country. Canadian exports shipped to overseas countries are valued at free on board prices (FOB),[6] port of exit, inland freight included to the point of exit. Similarly, exports to the United States are valued at the point of exit from Canada. For imports, however, the transactions prices at the point of

2. Foreign businesses can produce in Canada through the establishment of foreign direct investment subsidiaries, which are Canadian corporations, or through a Canadian branch of a foreign enterprise.
3. Commission of European Communities, International Monetary Fund, Organization for International Cooperation and Development, United Nations, and the World Bank. *1993 System of National Accounts*, manual prepared under the auspices of the Inter-secretariat Working Group on National Accounts, Brussels/Luxembourg, New York, Paris, Washington, D.C., 1993, 773 p.
4. SNA 1993, paragraph 14.88.
5. Balance of Payments statistics have historically preceded national accounts, in Canada and elsewhere.
6. The FOB price can be regarded as the purchaser's price that would be paid by an importer taking delivery of the goods after these have been loaded onto his own carrier (or other carrier) at the exporter's frontier after payment of any export taxes or the receipt of any rebates (SNA 1993, paragraph 14.37).

direct shipment to Canada (and not at the frontier of the exporting country) exclude freight costs from the point of shipment to the border. These inland freight costs and all related costs incurred for the goods prior to direct shipment to Canada are included to arrive at the FOB valuation at the customs frontier.

Adjustments to customs data

11.14 Adjustments are made to customs data for both exports and imports to bring them to a Balance of Payments basis. These adjustments reflect change in ownership or, in the case of imports, to add the cost of freight to the border. Other adjustments are also needed to bring customs data in line with Balance of Payments concepts. There are four types of adjustments: coverage, timing, valuation for inland freight, and adjustments for valuation and residence. Table 11.1 summarizes the various adjustments to customs data.

Table 11.1 Summary of Balance of Payments adjustments

	Exports	Imports
Coverage adjustments	Crude petroleum	Crude petroleum
	Natural gas	Mail addition
	Undercoverage adjustment	Undeclared tobacco addition
	Rail cars	Custom software deduction
Timing adjustments	Grains	
	Late documents, general	
Other valuation and residency adjustments	Inland freight addition	Inland freight addition
	Prepackaged software U.S. addition (valuation)	Freight deduction (valuation)
	Non-monetary gold addition (residency)	Non-monetary gold addition (residency)
	Pharmaceutical products sold over the Internet addition	Country of shipment (residency)
	Correction for exchange rate conversion	

Source: Adapted from *Canada's Balance of International Payments and International Investment Position,* catalogue no. 67-506*,* Table 3.2.

11.15 For exports, four main coverage adjustments are made. The first two affect crude petroleum and natural gas exports to the United States. The crude petroleum and natural gas adjustments involve replacing customs data with more accurate information from the Manufacturing, Construction and Energy Division of Statistics Canada and the National Energy Board. A third adjustment corrects an under reporting of exports to countries other than the United States. This adjustment is based on regular studies of the goods balancing done by the Industry Accounts Division and periodic studies by the International Trade Division in cooperation with the Canada Border Services Agency (CBSA). Finally, an adjustment is made for rail cars and locomotives exported to the U.S. but not included in customs data.

11.16 There are two timing adjustments that affect exports: the first is for customs exports of grains and the second takes into account late customs documents. For grains (wheat, canola, barley, oats, rye, flaxseed and corn), customs data are replaced by volume data from the Canadian Grain Commission – considered more reliable for movements of Canadian grain – and by price data from the Agriculture Division.

11.17 For exports to the United States, an adjustment or revaluation is applied to inland freight. Although inland freight is included in customs data it is removed in the derivation of Balance of Payments based export and import commodity flows. The Balance of Payments Division makes the adjustment in two stages. The first step involves

removing the inland freight valued by the International Trade Division. The second consists of calculating a new estimate, based on various sources, and recording it in a separate series, Other Balance of Payments adjustments.[7]

11.18 Each of the following elements are calculated and included as part of inland freight for exports to the United States:

a) Freight by truck, as reported in U.S. customs data;

b) Rail freight of forestry products, as reported in U.S. customs data, adjusted on a cost, insurance and freight beyond the border basis;

c) Movement of petroleum by pipeline, as calculated by the National Energy Board and the Manufacturing, Construction and Energy Division;

d) An amount added for miscellaneous freight in cases where no mode of transport is indicated in customs data; and

e) An adjustment for double-counting of rail charges on exports transiting through the United States and already estimated for goods to overseas destinations.

11.19 There are three final adjustments to export data on software, gold and pharmaceutical products. Pre-packaged software exports are undervalued because certain transactions of U.S. imports, the source of these data, are estimated at the value of the medium (CD, DVD) rather than the value of the content. The data used to calculate the adjustment comes from the Bureau of Economic Analysis. The adjustment on non-monetary gold consists of adding the gold sold to non-residents, but which is left in Canada. Data for these adjustments are obtained from surveys of Canadian banks and refiners. Also added to exports of non-monetary gold is the value of monetary gold sold by Canadian monetary authorities to foreign residents other than foreign monetary authorities.[8] Pharmaceutical products are adjusted to take into account Internet sales that may not be properly evaluated by customs data.

11.20 On the import side, there are four coverage adjustments made to customs data. The first pertains to crude petroleum, where customs data are replaced by more accurate data from the Manufacturing, Construction and Energy Division. A second coverage adjustment deals with data on imports by mail that are not recorded in customs data. This adjustment is derived from internal surveys and administrative sources. The third adjustment pertains to imports of undeclared tobacco products, which have been estimated from studies on production and trade. Lastly, a fourth adjustment is compiled by the International Trade Division to subtract custom software already covered in service statistics.

11.21 As noted previously, customs imports are valued at the point of last direct shipment to Canada, making it necessary to add inland freight to the border of the exporting country in order to bring the customs data in line with Balance of Payments concepts – that is, valuation at the frontier of the exporting country. For imports from the United States, the adjustment for inland freight to the border of the United States is done by mode of transport (truck, rail) and by commodity. The International Trade Division uses direct imputation for trucking, while rail freight is compiled from Balance of Payments Division surveys among Canadian and American carriers. In the case of imports from other countries, the freight is derived from freight rates applied to the value of imports.

11.22 Lastly, two residency adjustments are made to imports. The first adjustment deals with gold bought in Canada from non-residents, but which does not cross the border. Data drawn from a survey of banks and refiners are used for this adjustment. The second adjustment is aimed at showing imports according to country of last shipment which is believed to be a better indicator of the change of ownership. This adjustment is made on the level of countries and cancels out on a global basis. In some respects, it amounts to a redistribution of imports by country.

7. Given its size and the methodology applied, this adjustment is not redistributed among commodities but presented *en bloc* in the item Other Balance of Payments adjustments.
8. This is considered a normal export of non-monetary gold.

Trade in services

11.23 Services differ fundamentally from goods in that they are intangible in nature. In the past, trade in services was referred to as the trade in invisibles. According to the SNA 1993, services are not separate entities over which ownership rights can be established. They cannot be traded separately from their production. By the time their production is complete, they must have been provided to the consumer.

11.24 As covered in the *Balance of Payments Guide*,[9] services transactions normally require the simultaneous presence of both the producer and the consumer of the services. This simultaneity is not easily realized between countries where distance and political boundaries separate the supplier and the client.[10] This may explain the low volume of international services transactions relative to goods, where both the sellers and buyers of goods remain in their respective economies while the traded goods move across the border. This situation exists despite the fact that, in industrialized countries, services often represent close to three-quarters of the economy in value. However, there is ongoing interest in the trade in services, perhaps because a large part of international trade negotiations in recent years has focused on services.

11.25 The Income and Expenditure Accounts (IEA) use the four main service categories of the Balance of Payments, to which are added financial services indirectly measured (FSIM). The IEA categories are:

- travel;
- transportation;
- commercial services;
- government services; and
- financial services indirectly measured (FSIM).

Travel services

11.26 In conformity with international standards, travel covers purchases of goods and services by:

- persons travelling in another country for less than a year;
- persons travelling in another country for more than a year for medical or education reasons;
- seasonal and border workers working in another country (cross-border workers); and
- crews of airplanes, ships, trucks or trains stopping off or laying over in other countries.

11.27 Purchases of goods and services consist of expenditures for food, lodging, recreation, gifts, incidentals and local transportation purchased in the country of travel. Travel statistics exclude passenger fares for international transportation (which are included in transportation services), as well as spending of diplomats and military personnel posted for more than one year in their host country.[11] No upper limit is spelled out for health and education travel. Travel imports represent the purchases of goods and services by Canadians when travelling abroad while travel exports represent the purchases of goods and services of foreigners while travelling in Canada.

Transportation services

11.28 Transportation[12] services include revenues (receipts) and expenses (payments) at the international level arising from transportation of goods and cross-border travellers, as well as from supporting services related to transportation.

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9. Catalogue no. 67-506, 6.1.1.
10. See page 41 of *Canada's Balance of International Payments and International Investment Position: Concepts, Sources, Methods and Products*, catalogue no. 67-506.
11. These personnel remain residents of their home countries, and their spending in the host countries is included in trade in government services; however, a visit in the interim, whether on leave or on official business, is considered part of travel.
12. See chapter 5 of *Canada's Balance of International Payments and International Investment Position: Concepts, Sources, Methods and Products*, catalogue no. 67-506.

11.29 Canadian transportation receipts (exports of transportation services) cover passenger revenues of Canadian carriers (mainly airlines) from cross-border fares purchased by foreign travellers. It also includes freight revenues earned from non-residents by Canadian carriers for transporting:

- Canadian exports beyond the Canadian border;
- Canadian imports to the Canadian border; and
- Foreign-owned goods in transit in Canada and between foreign ports.

11.30 Revenues earned by Canadian residents chartering vessels to non-residents are also included, as well as those earned by Canadian residents providing port services in Canada to foreign air and shipping carriers.

11.31 Conversely, Canadian transportation payments (imports of transportation services) cover cross-border passenger fares purchased from non-resident carriers (mainly airlines) by Canadian travellers, as well as freight expenses paid to non-resident carriers for transporting:

- Canadian imports beyond the Canadian border;
- Canadian exports to the Canadian border; and
- Canadian-owned goods between foreign ports.

11.32 Expenses of Canadian residents chartering vessels from non-residents are also included, as well as expenses incurred by Canadian carriers receiving port services abroad, largely from air and water-bound carriers.

11.33 Cross-border trucking with the United States is a special transportation case as discussed in previous paragraphs. The value of imports and exports of transportation services is determined by the residence of the carrier and the location from which the transportation services are provided. Services provided by Canadian truckers beyond Canadian borders are considered to be exports of transportation services, while services provided by U.S. truckers in Canada are considered as imports of transportation services (see Table 11.2 – Cross-border trucking).

Table 11.2 Cross-border trucking

	Exports of goods	Imports of goods
Canadian transporter	*From Canadian plant to U.S. border:* Cost to transport to border included in the value of exports	*From U.S. plant to Canadian border:* Cost to transport to border included in the value of imports plus exports of transportation services
	From U.S. border to U.S. plant: Exports of transportation services	*From Canadian border to Canadian plant:* Nothing applicable
U.S. transporter	*From Canadian plant to U.S. border:* Cost to transport to border included in the value of exports plus imports of transportation services	*From U.S. plant to Canadian border:* Cost to transport to border included in the value of imports
	From U.S. border to U.S. plant Nothing applicable	*From Canadian border to Canadian plant:* Imports of transportation services

Commercial services

11.34 International trade negotiations—which extended in recent years to cover services—increased the demand to provide detailed breakdowns of service categories as well as data for individual countries. Prominent among cross-border services[13] are those described in Canadian statistics as commercial services.[14] Canadian statistics on cross-border commercial services are produced for over 26 categories based on the international standards initially set out by the International Monetary Fund and subsequently extended by the Organisation for Economic

13. Published in *Canada's International Transactions in Services,* catalogue no. 67-203.
14. For more commercial services information, see *Canada's Balance of International Payments and International Investment Position: Concepts, Sources, Methods and Products*, catalogue no. 67-506, chapter 6.

Cooperation and Development (OECD) and Eurostat (the statistical arm of the European Union). This breakdown is based on the Central Product Classification (CPC),[15] whose main objective "is to provide a framework for international comparison of various kinds of statistics dealing with goods, services and assets."[16]

Government services

11.35 Government services[17] cover international transactions arising largely from official representation and military activities, as well as commercial activities of governments not covered in other accounts. They include expenses of staff at embassies and missions and of individuals stationed on military bases. Receipts (exports of government services) chiefly comprise expenditures in Canada by foreign governments and their staff recruited abroad. Receipts also include overheads to administer official assistance. Payments (imports of government services) cover expenditures abroad of both the Canadian federal and provincial governments and their staff recruited in Canada. Beginning with the reference year 1996, separate information is available on construction, existing building and land transactions for both embassy and other use by the Government of Canada abroad. Construction is now included in imports of commercial services while purchases of existing buildings continue to be treated as imports of government services. In conformance with international standards, land transactions are classified as non-produced non-financial assets in the capital account.

11.36 Outlays by the federal government for contributions to the operations of international organizations and programs are excluded and shown in current transfers, as per international standards. For provincial governments, the data excludes receipts and payments by provinces for the promotion of tourism, which are included in commercial services. To the extent that the source data—official government records—are on a cash basis, they are incorporated as such in the Balance of Payments Accounts and not on an accrual basis, as called for by international standards.

Financial services indirectly measured (FSIM)

11.37 Financial services indirectly measured arise when a financial institution such as a bank or finance company channels funds to lenders and/or to borrowers. Most financial institutions do not charge explicitly for these services. Instead, they pay lower interest rates to their depositors than the rates they charge to their borrowers. The services they provide to their depositors and borrowers have to be measured indirectly. These services are referred to as financial services indirectly measured (FSIM).[18]

11.38 There is a notional reference rate of interest at which lending and borrowing can take place directly between a lender and a borrower, satisfactory to both parties. This reference rate represents the pure cost of borrowing funds—that is, a rate from which the risk premium has been eliminated to the greatest extent possible and which does not include any financial services indirectly measured. In principle, it is the difference between the interest rate paid to depositors or paid by borrowers and the reference rate that enables the calculation of financial services indirectly measured (FSIM).

11.39 Table 11.3 shows the logic in the calculation of FSIM for imports. In this case, FSIM is paid by Canadian residents to non-residents, related to a) deposits held by Canadians in other countries and b) loans contracted by Canadians in other countries' financial institutions. Table 11.3 shows the case of a Canadian resident having a deposit of $600 in a Swiss bank paying an 8% interest rate on deposits. This person receives $48. But, after making the calculation using a reference rate of 10%, it is apparent that this person should have received $60 in interest and paid $12 of service charge. Borrowing is similar. The Canadian resident paid $60 in interest on a loan

15. Refer to United Nations, *Central Product Classification (CPC) Version 1.0*, Statistical Papers, (Series M, No. 77, 1998).
16. International Monetary Fund, *Balance of Payments Manual*, (Fifth edition, IMF Publication Services, 700 19th Street NW, Washington DC 20431 USA, 1993), paragraph 521, p. 146.
17. See *Canada's Balance of International Payments and International Investment Position: Concepts, Sources, Methods and Products*, catalogue no. 67-506, chapter 7.
18. See paragraph 7.89 for further explanation.

of $500 to a foreign bank, but this $60 can be split into an interest portion of $50 and a service charge of $10. Overall, Canadian residents paid $22 of service charges to foreign financial institutions. This amount would appear as international imports of FSIM in the Income and Expenditure Accounts.

Table 11.3 Example of imports of Financial Services Indirectly Measured (FSIM)

	Canadian residents deposits in other countries		Canadian residents borrowing in other countries	
	dollars			
Value of deposits or loans of Canadian residents in other countries		600		500
Observed flow (interest received or paid)	(600 x 8%)=	48	(500 x 12%)=	60
Flow at reference rate[2] (interest received and implicitly received or paid and implicitly paid)	(600 x 10%)=	60	(500 x 10%)=	50
Implicit service charges (FSIM)	(60 - 48)=	12	(60 - 50)=	10
FSIM imports[1]	(deposits portion + borrowing portion)= (12 + 10 = 22)			

1. FSIM imports are implicit service charges paid by Canadian residents to residents of other countries.
2. A reference rate represents the pure cost of borrowing funds - that is, a rate from which the risk premium had been eliminated to the greatest extent possible and which does not include any intermediation services. A rate of 10% is used in this table.

11.40 Table 11.4 presents the situation for international exports. Implicit service charges paid by non-residents to Canadian residents on deposits and loans in Canadian financial institutions are measured. FSIM related to deposits of foreign residents in Canadian financial institutions are valued at $20. This service charge corresponds to the difference between what was really paid by banks to the non-residents (8% of its $1,000 deposits) and the interest that should have paid if the reference rate had been used (10% of its $1,000 deposits). The other part of the FSIM calculation relates to an $800 loan contracted by a non-resident in a Canadian financial institution. The table shows that the non-resident paid $96 for this loan (at a 12% rate). In reality, this amount is split in two: $80 for the interest portion and $16 of administrative charges related to the loan.

Table 11.4 Example of exports of Financial Services Indirectly Measured (FSIM)

	Non-residents deposits in Canada		Non-residents borrowing in Canada	
	dollars			
Value of deposits or loans of non-residents in Canada		1,000		800
Observed flow (interest received or paid)	(1000 x 8%) =	80	(800 x 12%) =	96
Flow at reference rate[2] (interest received and implicitly received or paid and implicitly paid)	(1000 x 10%) =	100	(800 x 10%) =	80
Implicit service charge (FSIM)	(100 - 80) =	20	(96 - 80): =	16
FSIM exports[1]	(deposits portion + borrowing portion) = (20 + 16 = 36)			

1. FSIM exports are implicit service charge paid by non-residents to residents of Canada.
2. A reference rate represents the pure cost of borrowing funds - that is, a rate from which the risk premium had been eliminated to the greatest extent possible and which does not include any intermediation services. A rate of 10% is used in this table.

Link between the Balance of Payments and the Income and Expenditure Accounts

11.41 Every component of the current account of the Balance of Payments is present in the Income and Expenditure Accounts. However, the link between both accounts is not straightforward. One difference is related to the financial services indirectly measured (FSIM). A second is related to the treatment of reinvested earnings on direct investment. Appendix 11A shows a full reconciliation table between the Income and Expenditure Account's non-residents sector and the Balance of Payments current account.

Treatment of FSIM

11.42 In the Income and Expenditure Accounts (IEA), financial services indirectly measured (FSIM) are explicitly shown as a service charge. In the Balance of Payments (BOP), only paid interest is shown. No distinction between the interest and service charges is made in BOP. With the upcoming BOP manual, this delineation will be included. The explicit inclusion of FSIM is equivalent to reclassifying a portion of interest as financial services. It is thus possible to reconcile the interest portion of investment income in the current account of the BOP with interest, dividends and miscellaneous investment income and receipts in the IEA of non-residents. Table 11.5 presents the data from Table 11.3 and 11.4 as they would appear in the BOP current account.

Table 11.5 FSIM and Interest Investment income and receipts within Balance of Payments Accounts

	Observed receipts or payments
	dollars
Current Accounts Receipts (of Canadians)	**144**
Investment income, interest receipts (of Canadians)	**144**
Canadian interest receipts on deposits in other countries	48
Non-residents interest payments on loans in Canada	96
Current Accounts Payments (to non-residents)	**140**
Investment income, interest payments (to non-residents)	**140**
Non-residents interest receipts on deposits in Canada	80
Canadian interest payments on loans in other countries	60
Current Accounts Balance (receipts - payments)	**4**

11.43 Table 11.6 also presents data from Table 11.3 and Table 11.4 in the context of the Income and Expenditure non-residents sector accounts.[19] In this case the investment income and receipts appearing in the Balance of Payments are split into an implicit service charge (FSIM) and investment income. As shown in the table, this investment income can be presented in two ways. It can be shown net of the implicit charges or including investment income and implicit charges (as is done in BOP) plus an adjustment for FSIM. Both methods yield the same income and outlay, but the first one is a more appropriate theoretical presentation while the second one is a more practical approach. In practice the second one is used in the Income and Expenditure Accounts.

19. See Table 14 in the *National Income and Expenditure Accounts*, catalogue no. 13-001.

Table 11.6 FSIM and interest investment income and receipts within Income and Expenditure Account of non-residents sector - example using fictive numbers

	Interest net of charges	Gross interest with adjustments
	dollars	
Outlay (of non-residents)	**176**	**176**
Exports of FSIM	**36**	**36**
On non-residents interest receipts on deposits in Canada	20	20
On non-residents interest payments on loans in Canada	16	16
Interest, dividends and miscellaneous payments (of non-residents)	**140**	**140**
Canadian interest receipts on deposits in other countries	60	48
Non-residents interest payments on loans in Canada	80	96
Implicit income paid to Canadians by non-residents		-4
On Canadian interest receipts on deposits in other countries		12
On non-residents interest payments on loans in Canada		-16
Income (of non-residents)	**172**	**172**
Imports of FSIM	**22**	**22**
On Canadian interest receipts on deposits in other countries	12	12
On Canadian interest payments on loans in other countries	10	10
Investment income, interest payments (to non-residents)	**150**	**150**
Non-residents interest receipts on deposits in Canada	100	80
Canadian interest payments on loans in other countries	50	60
Implicit income paid to non-residents by Canadians		10
On non-residents interest receipts on deposits in Canada		20
On Canadian interest payments on loans in other countries		-10
Current Accounts Balance (receipts - payments)	**4**	**4**

Treatment of reinvested earnings on direct investment

11.44 In the Balance of Payments current account, one flow of investment income is reinvested earnings on direct investment. As an example, Company A in the United States, is 60% owned by a Canadian corporation, makes $10.0M in profits and is not distributing dividends. In this example, 60% of profits ($6.0M) are imputed reinvested earnings.[20] As such, it is classified as receipts under the investment income aggregate of the BOP current account with a counterpart entry in the financial account.

11.45 This imputed flow of investment income is not counted as part of the income and outlay account of the non-resident sector. That is because, in this account, saving must reflect current income and current outlay of the non-residents sector arising from actual transactions on goods and services or transfers, in order to be consistent with the other sectors.

20. While there are no actual flows, or remittances, the income flows are deemed to have occurred. An imputation is required to take these deemed income flows into account. A further offsetting adjustment is required in the BOP financial account. Specifically, the imputed re-investment is treated as additional acquisitions of direct investment equity in the BOP financial account. As re-invested earnings are not included in either the IEA income and outlay account or the capital account, the IEA sector account financial transactions also do not reflect the imputed equity flows.

11.46 As such, the reconciliation of the Balance of Payments current account with the income and outlay account of non-residents is done after the balancing item (net saving) is measured in the income and outlay account (see the reconciliation table in Appendix 11A).

Estimation methods and data sources–International imports and exports

11.47 The International Trade Division (ITD) compiles and publishes customs administrative data. Customs documents are produced by the Canada Border Services Agency and are compiled by the ITD for all imports from foreign countries and for exports to countries other than the United States. Since import data is usually considered more reliable than export data, the value of exports to the U.S. is gathered from U.S. customs documents on imports from Canada. In addition, Statistics Canada periodically conducts surveys of Canadian exporters and uses the information gathered to supplement its administrative data.

11.48 Goods are recorded in conformity with the standards set out in the General System of Trade Statistics of the United Nations Statistics Division. Both exports and imports are classified and published in accordance with the Harmonized Commodity Description and Coding System (HS). HS coding is an international standard that was developed under the auspices of the World Customs Organization and is currently used by 167 countries, covering 95% of all goods traded in the world.

11.49 Although trade estimates are collected at the very detailed HS level, the ITD subsequently aggregates commodities into 64 major export groups and 63 major import groups, on a customs basis and on a Balance of Payments basis. The Income and Expenditure Accounts Division uses the Balance of Payments framework to present trade data.[21]

11.50 As previously mentioned, services differ from goods in terms of the link between their production and their trade. For goods, their trade can generally be separated in time from their production, because a good produced in one country can later be traded at any time, even years after production. That is not the case for services, where the production is closely linked to their trade. This has a major impact on the way in which they are measured.

11.51 The services categories are set out in the *Balance of Payments Manual*. The categories used by the Income and Expenditure Accounts Division (IEAD) are those of the Balance of Payments Division (BPD), the classification of which represents in part a regrouping of the more detailed categories of the *Balance of Payments Manual,* plus FSIM. Trade in services is derived from a variety of sources (see paragraphs 11.63 to 11.106).

Presentation of estimates within the Income and Expenditure Accounts

11.52 Table 11.7 shows the level of detail at which international trade estimates are published in the *National Income and Expenditure Accounts*, Table 25, for 2000. The goods categories represented correspond to those published by the International Trade Division, the source division for commodity data. The services correspond to the categories published by the Balance of Payments Division, except for the financial intermediation category, which is calculated by IEAD.[22]

11.53 The eight goods categories set out in Table 11.7, which are called sectors, are aggregations of the 64 major export groups and 63 major import groups published and provided by ITD, as presented in Appendix 11C. Unlike ITD, IEAD does not publish at the level of the 64 major export groups and 63 major import groups, but uses them as the working level.

21. This framework of 64 export groups and 63 import groups is not a natural extension of the HS system or an official classification of commodities of Statistics Canada. Its origin goes back 60 years when it was born of the defunct MCC (Import Commodity Classification) and the XCC (Export Commodity Classification).
22. For goods published by ITD, see *Canadian International Merchandise Trade*, catalogue no. 65-001. Services are published in *Canada's International Balance of Payments*, No. 67-001.

Table 11.7 Exports and imports of goods and services in the Income and Expenditure Accounts, 2000

	Exports	Imports
	millions of dollars	
Goods and services	**490,688**	**428,754**
Goods	429,375	362,337
Agricultural and fish products	27,602	18,557
Energy products	53,158	17,853
Forestry products	42,774	3,065
Industrial goods and materials	67,980	69,247
Machinery and equipment	110,051	122,913
Automotive products	97,886	77,433
Other consumer goods	15,199	40,116
Special transactions[1]	7,980	6,654
Other Balance of Payments adjustments[2]	6,745	6,499
Services	61,313	66,417
Travel	15,997	18,444
Transportation	11,196	13,916
Commercial	31,101	32,365
Government	1,423	774
Financial Intermediation	1,596	918

1. Includes low value transactions, cost of repairs to equipments, merchandises returned to their country of origin, unidentified items, diplomatic and confidential transactions.
2. Adjustments to transform administrative data to System of National Accounts concepts.

11.54 It should be noted that while the categories bear the same names, they do not contain exactly the same detail on the export and the import side. This asymmetry reflects the fact that Canada exports certain products that it does not import and vice-versa. Energy and forestry products are two examples, as are agricultural and fishing products. In fact, even at the level of the 64 major export and 63 major import groups, the categories are different and, in many instance, cannot be compared.

11.55 A ninth category, Other Balance of Payments adjustments, consists of a variety of Balance of Payments adjustments that are not incorporated in the goods groups. Like the other categories, contents differ depending on whether it is on the export or import side. For exports, it includes the total estimated value of inland freight (see paragraph 11.17), an adjustment to take into account fluctuations in the exchange rate between the Canadian and U.S. dollars, and another adjustment for exports of pharmaceuticals to the U.S. that are not recorded by customs.[23] For imports, the other Balance of Payments adjustments includes the addition of inland freight (see paragraph 11.21), an adjustment for imports of cigarettes (because of illegal trafficking in cigarettes), and an adjustment for imports by mail.

11.56 The services, except FSIM, categories are based on the *Balance of Payments Manual*. As a result, the travel, transportation and government services categories are those of the manual, while the commercial services category represents a combination of various commercial services listed in the manual. Lastly, the FSIM category is added and calculated by the Income and Expenditure Accounts Division.

23. The list of adjustments included in this item can vary over time. For example, the drug adjustment is recent, linked to the export of drugs ordered from the United States via the Internet.

Revision cycle

11.57 Estimates of international imports and exports follow the Canadian System of National Accounts four year revision cycle, such that, once a year, revisions are incorporated for all four years of annual and quarterly data. The three stages of the production-revision cycle are:

- current year quarterly estimates (t)
- non-benchmarked years (t-1, t-2)
- benchmarked years (t-3, t-4)

11.58 Non-benchmarked years international trade data are assembled by the International Trade Division (ITD) for goods and by the Balance of Payments Division (BPD) for services. For goods, data are collected monthly and aggregated to obtain quarterly data. For services, the data are obtained from annual and quarterly surveys by BPD, other Statistics Canada surveys and other statistical sources.

11.59 For benchmark years, the Industry Accounts Division develops the estimates, based largely on the ITD and BPD estimates. These estimates consist of re-valuing the Balance of Payments adjustments in light of the rebalancing of the economy by commodity. This rebalancing also makes it possible to provide a better valuation of the under reporting adjustment for overseas exports.

Annual and quarterly estimation methods and data sources—Trade in goods

11.60 The data for goods are assembled monthly, while annual estimates are the summation of months of trade. Trade in goods is largely based on customs documents. In Canada, the customs records are processed and published for statistical purposes by the International Trade Division of Statistics Canada. That division compiles Canadian imports from all foreign countries and Canadian exports to countries other than the United States from the Canadian customs documents filed with the Canada Border Services Agency.

11.61 Since January 1, 1990, Canadian exports to the United States have been based on U.S. customs' imports from Canada documents. The data are compiled by the U.S. Census Bureau of the U.S. Department of Commerce and provided to the International Trade Division of Statistics Canada.

11.62 Although most categories of goods can be easily compiled by the recording of their crossing the border, Balance of Payments adjustments are needed to bring customs data to a Balance of Payments basis (Table 11.1).

Annual and quarterly estimation methods and data sources—Trade in services

11.63 Estimates for services use a variety of sources, some annual, others quarterly. They are described in the following sections.

Travel services

11.64 The Culture, Tourism and Centre for Education Statistics Division of Statistics Canada compiles the basic Canadian travel statistics. These statistics are derived from a combination of census data and sample counts of travellers crossing the border, coupled with sample surveys used to collect specific information from travellers, including their expenditures and main purpose of visit (business or personal).[24]

24. For more information, see *Canada's Balance of International Payments and International Investment Position: Concepts, Sources, Methods and Products*, catalogue no. 67-506, pages 32 and 33. A full description of methods and data sources is available from the same source, Chapter 4.

11.65 The Canada Border Services Agency collects information on the number of crossings at frontier ports and distributes the travel survey questionnaires. The frontier count is made by categories, based on mode of transportation (including, in the case of highways and ferry points, cars, trucks, motorcycles and bicycles). Complete counts are taken at all but seven points of entry where automobile, motorcycle and bicycle flows are estimated from samples. The questionnaires that collect the travel expenditure data are distributed according to pre-arranged schedules to non-resident travellers (exports of travel services) upon exit from Canada, or to residents of Canada (imports of travel services) upon their return from travel abroad. Completion of the questionnaires is voluntary and travellers are asked to mail their completed questionnaires directly to Statistics Canada.

11.66 In business travel, estimates of spending by crews (of airplanes, ships, boats, trains and trucks) are calculated by the Culture, Tourism and Centre for Education Statistics Division.

11.67 Personal travel includes travel for health, travel for education and travel for tourism. The receipts data (exports) for health consist of foreign spending for hospital services in Canada, as recorded from the annual hospital survey of the Canadian Institute for Health Information, with projections for recent years where survey results are not yet available. Recent estimates for physician services linked to U.S. data on the payments side were introduced with the 1995 reference year. The payments for health (imports) consist of Canadian residents spending in other countries for hospital and physician charges paid under provincial and other private health plans. Other expenses related to health but not identified as such by the sources would be included under tourism.

11.68 On the receipt (export) side of the education series, the Culture, Tourism and Centre for Education Statistics Division produces the estimates by combining the time series on the number of students with average tuition fees and adding estimates of other expenditures. For payments (imports) of Canadian students in the United States, the data have been supplied by the U.S. Bureau of Economic Analysis from 1981 onward and were linked with Balance of Payments data for prior years. Data on student expenditures overseas are estimated according to the United Nations Educational, Scientific and Cultural Organization (UNESCO) data on the number of Canadian students who study in various countries abroad. Account is taken of relative living cost indexes overseas, developed by the Prices Division of Statistics Canada.

11.69 Receipts and payments related to basic tourism spending are derived from the *International Travel Survey.*

Transportation services

11.70 Transport services are a combination of freight transport and passenger fares. In general, passenger fares are obtained from the Culture, Tourism and Centre for Education Statistics Division's surveys. Freight information is derived from various Balance of Payments Division and Transportation Division surveys.

11.71 The Culture, Tourism and Centre for Education Statistics Division estimates passenger fare receipts and expenditures. The monthly data on air travellers, provided by Canada Border Services Agency, are combined with estimates of average passenger fares, obtained from the quarterly sample survey of travellers.[25]

11.72 Quarterly estimates of transportation of goods by truck[26] beyond the exporting country are derived from customs documentation compiled by the International Trade Division for payments (imports) and by the U.S. Census Bureau for receipts (exports). The earnings of Canadian truckers for the carriage of goods in the United States, as well as the expenses paid to U.S. truckers for transporting goods in Canada, are obtained from the U.S. Bureau of Economic Analysis (BEA). The BEA incorporates freight data from the customs data compiled by the International Trade Division of Statistics Canada.

25. Information on passenger fares is from *Canada's Balance of International Payments and International Investment Position: Concepts, Sources, Methods and Products*, catalogue no. 67-506, p. 37.
26. For more information on transportation of goods by truck, see *Canada's Balance of International Payments and International Investment Position: Concepts, Sources, Methods and Products*, catalogue no. 67-506, p.37, and *Canada's International Trade in Services*, catalogue no. 67-203, p. 53.

11.73 For estimates of trucking freight beyond the Canadian/American border, most components of the calculation are taken from the U.S. Bureau of Economic Analysis whose basic methodology is followed for this series.[27] Beginning with the reference year 1987, the receipts of Canadian-domiciled truckers comprise the freight for carrying exports within the United States to the U.S. destination and the freight for carrying goods from U.S. suppliers within the United States to the U.S.–Canadian border. Freight on the Canadian imports for the remaining journey within Canada is classified as a resident-to-resident transaction, outside the scope of Balance of Payments.

11.74 In the opposite direction, since 1981, the payments made to U.S. based truckers have included the payments made for carrying imports within Canada from the Canadian border to their destination in Canada, as well as the payments to carry Canadian exports in Canada to the Canadian border.

11.75 The other transportation components are derived from five annual surveys conducted by the Balance of Payments Division:

- Great Lakes–St. Lawrence Seaway Shipping Transactions;
- Report of Cargo, Earnings and Expenses of Ocean Vessels Operated by Non-resident Companies;
- Report of Cargo, Earnings and Expenses of Ocean Vessels Operated by Canadian Companies;
- Report on Imports of Crude Petroleum and Petroleum Products and Other Shipping Operations; and
- Transactions of Foreign Airlines with Residents of Canada.

Commercial services

11.76 The Balance of Payments Division collects information and estimates for 26 categories of commercial services. The information is published on an annual basis by type of control, affiliation, geography and industry. Income and Expenditure Accounts only publishes the total. Table 11.8 presents the category and the estimates of commercial services for year 2000, as they are shown in *Canada's International Trade in Services, 2003*.

Table 11.8 International trade in commercial services by category, 2000

	Receipts	Payments
	millions of dollars	
Communications services	2,046	2,050
Construction services	323	119
Insurance services	2,877	4,215
Primary life and non-life	693	636
Reinsurance, life	795	1,717
Reinsurance, non-life	1,021	1,719
Insurance commissions	368	142
Other financial services	1,304	2,290
Computer and information services	3,604	1,335
Computer services	3,288	867
Information services	316	469
Royalties and licence fees	3,353	5,600
Patents and industrial design	1,079	2,588
Trademarks	96	691
Franchises	20	265
Copyrights and related rights	274	576
Software and other royalties	1,884	1,480
Non-financial commissions	713	711
Equipment rentals	280	679
Management services	3,257	4,783

27. A description of the U.S. treatment appears on page 70 of the June 1, 1995 issue of the U.S. Department of Commerce publication, *Survey of Current Business*.

Table 11.8 International trade in commercial services by category, 2000

	Receipts	Payments
Legal services	407	458
Other management services	2,850	4,325
Advertising and related services	495	536
Research and development	4,230	1,711
Architectural, engineering, and other technical services	2,654	1,546
Architectural and engineering services	1,688	719
Other technical services	965	827
Miscellaneous services to business	3,809	4,342
Miscellaneous business services	2,051	1,086
Tooling and other services	1,758	3,256
Audio-visual services	1,966	2,283
Personal, cultural and recreational services	188	166
Total	**31,101**	**32,366**

Source: *Canada's International Trade in Services, 2003*, tables 4-1, 4-2 and 4-3, catalogue no. 67-203.

11.77 The Balance of Payments Division (BPD) collects much of the annual data on commercial services[28] through its questionnaire *International Transactions in Commercial Services* - BP-21S (annual). A shorter version of this survey is conducted quarterly (BP-21SQ). The results of this survey are used to establish the quarterly patterns of many series. Other divisions at Statistics Canada also conducts many other surveys, some very specific, that are used by BPD to estimate some categories of commercial services. A complete list of those surveys is available in Appendix 11B of this chapter.

11.78 For the current year, commercial services estimates are derived from quarterly sample surveys, which are calculated at a much higher level of aggregation. Those surveys are:

- *International Transactions in Commercial Services* - BP-21SQ (quarterly);
- *Transactions Between Canada and Other Countries* - BP-21A (quarterly);
- *Canada's International Transactions in Securities* - BP-30 (monthly).

11.79 The coverage of the survey is updated from listings provided by trade associations and from the monitoring of events by an ongoing scanning of the business media for international transactions. Tracked events are both company-specific and of a general background nature (for example, industry trends and developments). The information assists with the editing and updating of survey coverage for Balance of Payments Division surveys and other series.

11.80 Communication services include postal and courier services (pick-up, transport, and delivery of letters and other printed matter, parcels, packages and postal outlet services) and telecommunications services (basic service, such as telephone, e-mail, electronic data exchange or teleconferencing). Data include costs associated with use of communications infrastructure. The data are drawn from the annual *International Transactions in Commercial Services* survey and information provided by industry participants.

11.81 Construction services cover the erection of structures, structural repairs, installation, refurbishing, special trade, demolition and site work. Rentals of construction equipment are excluded, appearing instead with equipment rentals. Labour and local supplies are included in construction services. The data is obtained from the annual *International Transactions in Commercial Services* survey.

28. The commercial services that appear in paragraphs 11.77 to 11.97 are from *Canada's Balance of International Payments and International Investment Position: Concepts, Sources, Methods and Products*, catalogue no. 67-506, pp. 42-43. The only elements not in the list are those that are covered in sub-annual surveys which are being used for the derivation of quarterly estimates. These elements appear in the section on quarterly methodology.

11.82 Insurance services cover the provision of various types of insurance to non-residents by resident insurance companies and the provision of various types of insurance to Canadian residents by non-resident insurance companies. Broker and agency commissions are included.[29] Contrary to international standards, Canadian statistics are established on the basis of gross premiums and claims. Exports of insurance services are calculated as the sum of premiums received by Canadian residents abroad and claims paid to clients in Canada by non-resident insurers. Imports are the sum of claims paid abroad by insurers resident in Canada and premiums paid to outside insurers by policyholders in Canada.

11.83 The insurance series are divided into four categories: primary life and non-life, which includes premiums and claims of insurance carriers for fire, accident, risk and miscellaneous insurance; reinsurance – life, subcontracted risk on life insurance for a proportional share of the premium income; reinsurance – non-life, for other subcontracted risks; and finally, insurance commissions, which covers commissions by brokers and agencies and commissions identified by carriers.

11.84 Insurance data are drawn from surveys by the Balance of Payments Division of Canadian and foreign insurers in Canada,[30] to which are added data from the annual *International Transactions in Commercial Services* survey. Data from the U.S. Bureau of Economic Analysis on cross-border insurance activity is also used, especially for insurance of Canadian resident individuals with U.S. insurance companies.

11.85 Other financial services cover intermediary and auxiliary financial services between residents and non-residents. It includes commissions and other fees related to transactions in securities (brokerage, placement of issues, underwriting, redemption and arrangement of swaps, options and other hedging instruments), commissions of commodity futures traders, as well as services related to asset management, financial market operational and regulatory services and lastly, intermediary service fees (fees associated with letters of credit, bankers' acceptance, lines of credit and financial leasing). Note that financial services indirectly measured (FSIM) are excluded from this category and are posted separately under trade in services (see paragraph 11.23).

11.86 Commissions on new issues and fees related to securities transactions—which constitute the vast majority of services in this category—are calculated by applying ratios. The commissions on new issues are largely derived by applying a percentage against the proceeds from new issues,[31] percentages that are checked from time to time against prospectuses. Fees on securities transactions are derived from gross trading data coupled with certain rate factors based on discussions with the industry. Other fees and commissions in this commercial services category are derived from corporate and regulatory sources, supplemented by the annual *International Transactions in Commercial Services* survey.

11.87 Within computer and information services, computer services include the design, manufacture and management of computer systems (exclusive of the value of hardware). Also covered are the development and production of original software. Pre-packaged software for general commercial or personal use are excluded from this category and included in goods. Information services includes online information retrieval services, especially database services and computer-assisted document searches, and news agency services. Data on computer services and on information services are derived from the annual *International Transactions in Commercial Services* survey. These data are supplemented by receipts of major computer industry firms surveyed by Statistics Canada's Services Industries Division.

29. *Canada's Balance of International Payments and International Investment Position: Concepts, Sources, Methods and Products*, catalogue no. 67-506, p. 44.
30. The surveys used are: International Transactions between Insurance Brokers in Canada and their Foreign Affiliates, Agents and Other Companies or Persons Outside Canada (annual); Transactions between Canadian Incorporated Insurance Companies and their Foreign Affiliates, Agencies and Bank Accounts and Other Companies or Persons Outside Canada (annual); Transactions between Canadian Branches of Foreign Insurance Companies in Canada and Head or Other Offices, Companies or Persons Outside Canada (annual).
31. *Canada's Balance of International Payments and International Investment Position: Concepts, Sources, Methods and Products*, catalogue no. 67-506, p. 45.

11.88 The royalties and licence fees category covers the use of intellectual property rights. It is broken down into five subcategories: patents and industrial designs, which covers royalties or licence fees for use of patents, industrial designs, industrial know-how or manufacturing rights; trademarks, which includes royalties and fees for use of trademarks; franchises, which covers contractual privileges granted by an individual or corporation to another, permitting the sale of a product or service in a specified area or manner; copyrights and related rights covers royalty and licence fees for use of original artistic, literary, dramatic or musical works, for example, to stage productions or performances or make recordings or a film; and lastly, software and other royalties covers mainly computer-related royalties, notably, the right to replicate, distribute or use software, whether custom or pre-packaged, and to a lesser degree, fees for the exclusive use of natural resources. Most of the data is derived from the annual *International Transactions in Commercial Services* survey.

11.89 Non-financial commissions covers commissions on transactions of goods and services between non-residents and resident brokers, commodity traders, dealers, manufacturers' sales branches and commission agents. The data are derived from the annual *International Transactions in Commercial Services* survey and estimates from the application of fixed factors to merchandise exports and imports.

11.90 Equipment rentals cover rentals (without operator) of light and heavy equipment and tools, drilling rigs and supply vessels, rail and road or off-road vehicles, and aircraft. It also includes the rental of containers, office machinery and equipment, including computers, as well as rentals of household and personal goods. Estimates for equipment rentals are based on the annual *International Transactions in Commercial Services* survey and other smaller surveys.

11.91 The management services category covers legal, accounting and business management services (which include management and administrative overheads between related enterprises and business management consulting). Legal services cover legal advisory and representational services in any legal, judicial and statutory procedures, and the drawing up of legal instruments or documentation. Other management services covers accounting (business and other accounts, including reviews and audits, bookkeeping and preparation of related statements and tax returns), business management consulting (public relations services) and other management services (charges for managerial and administrative services rendered by an individual or corporation that cannot be included in any other service category). The data are derived largely from the annual *International Transactions in Commercial Services* survey.

11.92 Advertising and related services covers design, creation and marketing of advertisements by advertising agencies, placement of advertisements in various media (print, electronic, various advertising spaces), participation in trade fairs and other promotional outlays (for example, exhibition services, telemarketing and promotional material). The data are derived from the annual *International Transactions in Commercial Services* survey. Tourism promotion outlays are obtained from provincial authorities on an annual basis.

11.93 Research and development covers charges related to systematic investigation through experiment or analysis to achieve a scientific or commercial advance for, or through, the creation of new or significantly improved products or processes.[32] The statistics are derived from the annual *International Transactions in Commercial Services* survey and other surveys of the Science, Innovation and Electronic Information Division.

11.94 Architectural, engineering and other technical services includes a range of architectural and engineering activities, together with a diverse group of scientific and technical services and specific services related to mineral extraction, processing and the environment. More specifically, architectural and engineering services comprise consulting, design and pre-design, as well as contract supervision services. Urban planning and landscape architectural services are covered, as are project management services. Other technical services covers scientific and technical services (geological and geophysical services, mineral exploration and prospecting work, surveying, mapping and weather services, services of testing, analysis, inspection or certification of materials or products), mining services (drilling and field services) and environmental services (sanitation services, waste storage, treatment and destruction, decontamination, clean-up, confinement and pollution control, environmental

32. *Canada's Balance of International Payments and International Investment Position: Concepts, Sources, Methods and Products*, catalogue no. 67-506, p. 49.

consulting, environmental audits and site assessments). The statistics for this category are derived from the annual *International Transactions in Commercial Services* survey, which are supplemented by data from other surveys of technical, engineering and architectural services by the Services Division.

11.95 Miscellaneous services to business comprises tooling and other services (e.g., retooling for production of new models for automobile companies) and miscellaneous business services (transactions not allocated elsewhere: real estate services, suits and settlements, medical and dental laboratories, education, training and staff development). The data on tooling and other automotive charges are based on the annual *International Transactions in Commercial Services* survey and customs data from the International Trade Division. Remaining data are in part based on unspecified services reported by individual companies in the annual *International Transactions in Commercial Services* survey and reported under other transactions. Compensation of non-residents employees (including commuter and seasonal worker's remuneration) is included under miscellaneous services to business since these employees are treated as self-employed service providers. This is a departure from international standards where such compensation should be included under income, not services.

11.96 Audiovisual services cover film and video production and distribution, performing arts and organized sports. Services related to the production of motion pictures, radio and television programs and sound recording are included in this category, as are rentals, the services of actors, directors, producers and other crew members for artistic productions. Most of the data are derived from annual surveys of the Science, Innovation and Electronic Information Division and the Culture, Tourism and Centre for Education Statistics Division.

11.97 Personal, cultural and recreational services are presently limited to international activities of trade unions. Figures, that until recently were estimated from annual returns filed with Statistics Canada under the former Corporations and Labour Unions Returns Act, are now projected since the Act no longer covers labour unions.

11.98 The Balance of Payments Division also relies on other Statistics Canada surveys and on administrative data to produce estimates of commercial services. An exhaustive list of these sources and surveys is found in Appendix 11B.

Government services

11.99 Most of the data are collected from administrative sources; except for ad hoc surveys conducted to obtain estimates of spending by foreign embassies in Canada (the last such survey collected 1995 data). Federal government administrative sources include the following:

- Public Accounts of Canada;
- National Defence;
- Canadian International Development Agency;
- Department of Foreign Affairs and International Trade; and
- International Development Research Centre.

11.100 Data for provincial and territorial governments come from the provincial Public Accounts while data for crown corporations are taken from federal and provincial Public Accounts and supplementary data obtained directly from selected corporations.

11.101 Most of the data on spending in Canada by U.S. government authorities are provided by the U.S. Bureau of Economic Analysis (BEA). Data on spending by country, other than the U.S., are obtained from Canadian administrative records.

11.102 For Canadian expenditures by personnel posted abroad, two-thirds of their salary is assumed to be available for personal spending in the local economy. Payments for Canadian military personnel are calculated and provided by the Government section of the Income and Expenditure Accounts Division.

11.103 Canadian expenditures abroad are based on quarterly estimates of salary paid to military and embassies personnel. Quarterly expenditures in Canada by the U.S. come from the BEA and expenditures of other countries in Canada are obtained from Canadian administrative records.

Financial services indirectly measured (FSIM)

11.104 The estimation of FSIM is done on a quarterly basis; annual estimates are obtained by summing quarterly estimates. Financial services indirectly measured (FSIM) are calculated as follows for all types of financial institutions except credit unions:

Interest received minus interest paid

- Adjustments for own funds used

= Net interest (Total FSIM)

11.105 The calculation for credit unions is slightly different, these institutions being considered associations of individuals. As such, the profits made are not part of corporate profits but considered as rebates and subtracted from the FSIM estimate. The calculation of FSIM is presented in paragraphs 11.39 and 11.40.

11.106 Source data are obtained from:

- Chartered banks: Office of Superintendent of Financial Institutions (OSFI);
- Trust companies, mortgage loan companies and consumer loan companies and credit unions; and
- Industrial Organization and Finance Division (IOFD).[33]

Deflation

Deflation—Estimates of international trade in goods in real terms

11.107 The goods series are deflated on a monthly basis by the International Trade Division. Deflation is done at a very detailed level and relies on various data sources for prices.

11.108 On the exports side, most of the goods are deflated by the price indexes of domestic industrial products, by unit values derived from customs data, and by price indexes for exported industrial products. In a few other special cases, prices are drawn from alternative sources, such as the *U.S. Bureau of Labor Statistics,* the National Energy Board of Canada and the Manufacturing, Construction and Energy Division.

11.109 On the imports side, goods are deflated primarily by producer price indexes from the *U.S. Bureau of Labor Statistics* multiplied by the exchange rate. When applicable, unit values are drawn from customs data and export prices of the Bank of Japan are used.

11.110 Once deflated, goods at the HS level are aggregated into 64 major export groups and 63 major import groups. The groups, both in nominal and Laspeyres fixed-weight volume terms, are published monthly[34] by the International Trade Division and sent as is to the Income and Expenditure Accounts Division (IEAD) for compilation of the quarterly gross domestic product (GDP).

11.111 IEAD uses the 64 major export groups and 63 major import groups, aggregated quarterly, as the starting point for calculating the chain Fisher indexes. In this case, the groups are considered as unit series, each with its unit price (the implicit price for the group). Real Fisher aggregates are calculated for the nine sectors defined in nominal value and for the totals of goods exports and imports.

Deflation—Estimates of international trade in services in real terms

11.112 Services are deflated by the Income and Expenditure Accounts Division (IEAD). Although the published level of services consists of five large groups, deflation is applied at a more detailed level, with the exception of travel services. At this lower level of detail, the series are deflated individually by price indexes and aggregated to

33. *Financial and Taxation Statistics for Enterprises*, survey no. 2510, catalogue no. 61-219.
34. *Canadian International Merchandise Trade*, catalogue no. 65-001.

the level of the five groups published, using the fixed-base Laspeyres index method. Once the real series have been aggregated to their published level, they are used, along with their nominal value counterparts, as the basis for calculating the chain Fisher index of the aggregate of services and the aggregates of exports and imports.

Quarterly deflation of services exports

11.113 The unique deflator of travel services comes from the personal expenditure section of the Income and Expenditure Accounts Division (IEAD). It is unique because it is used both to deflate travel services for personal expenditures and for exports. A detailed description of this deflator is provided in the chapter on personal expenditures on consumer goods and services.

11.114 Transportation services are deflated in two distinct parts: passenger transport services and goods transport services. The travel services deflator for fares (see paragraph 11.113) serves for deflation of the passenger transport services. Goods transport services, for their part, are divided into five categories: air, marine, rail, truck transport services and pipeline services. A deflator is constructed for each of these categories, based on the index of industrial product prices for all goods, indexes of industrial product prices for certain fuels and the index of wages for the industry that is conceptually closest to the transportation category concerned.[35] These indexes are weighted based on the structure of the inputs of the industry that, once again, most closely corresponds to the transportation category concerned.

11.115 Commercial services are deflated for the 48 components provided by the Balance of Payments Division. A combination of average weekly earnings from the *Survey of Employment, Payrolls and Hours*, personal expenditure deflators, and consumer and industry price indexes are used for deflating the 48 commercial export services. The weights of these prices are based on the weights of inputs into these industries coming from the Input-Output Tables.

11.116 Government services, excluding immigration and work permits, are deflated using the *Consumer Price Index* of non-durable goods. Immigration and work permits are deflated by the price index of non-wage expenditures of public administrations.

11.117 Exports of financial services indirectly measured (FSIM) are deflated using a current weighted price index based on the borrowing and deposits portion of FSIM. For the borrowings portion, the personal expenditure deflator of financial intermediation, implicit loan charges is used. For the deposits portion, the personal expenditure deflator for financial intermediation, implicit deposit charges is being used; a description of those deflators is available in the personal expenditure on consumer goods and services chapter of this guide.

Quarterly deflation of services imports

11.118 Prices to deflate imports of travel services are constructed by the personal expenditure area of Income and Expenditure Accounts Division. The deflator is based on a combination of foreign prices and exchange rates.

11.119 Transportation services are deflated according to two categories—passenger transportation services and transportation services for goods. Passenger transportation services are deflated using the travel price index for imports. Goods transportation services are deflated according to five categories: transport by pipeline, air, marine, train and truck. The weighting used is based on the nominal values of transportation services for each category, as provided by the Balance of Payments Division.

11.120 Similar to exports, deflation of imports of commercial services is done at a very detailed level. U.S. Average Weekly Earnings (AWE), CPI's, PPI's and services price indexes from the Bureau of Labor Statistics (BLS) are the principal sources of information. Where applicable, the BLS series are supplemented by Canadian consumer price indexes and industrial product price indexes.

35. These indexes are calculated from the results of the *Survey of Employment, Payroll and Hours* (SEPH).

11.121 Imports of government services are deflated in two parts: military pay and allowances abroad and other expenditures. The first part is deflated using a weighted average of indexes of the cost of living at bases abroad, adjusted to take into account exchange rates. The second part is deflated by the index of international travel services. A description of these deflators is available in the chapter on personal expenditure on consumer goods and services.

11.122 As is the case for exports, imports of financial services indirectly measured (FSIM) are deflated using a current weighted price index based on the borrowings and deposits portion of FSIM. For the borrowings portion, the personal expenditure price for financial intermediation, implicit loan charges is used. The personal expenditure price for financial intermediation, implicit deposit charge is used for the deposits portion; a description of these deflators is available in the personal expenditure on consumer goods and services chapter of this guide.

Provincial and territorial estimation methods and sources

11.123 Inter-provincial trade flows measure the annual sales of goods and services among Canada's provinces and territories while international trade by province reflects annual sales between individual provinces/territories and the rest of the world.[36]

11.124 Estimating inter-provincial and international trade flows consists of determining the origin and destination of goods within and outside Canada. The point of origin represents the location where the goods and services are produced or withdrawn from inventory, while destination represents the place where the goods and services are sold or entered into inventory.

11.125 Inter-provincial and international flows of goods and services are determined through a process of balancing the supply and demand for goods and services by province. Thus, for each province or territory and for each product (whether a good or service), domestic demand must equal imports from the rest of the world (international trade), from other provinces (inter-provincial trade) and production (including changes in inventory) in the same province. There is an additional constraint in the case of international trade, where the sum of the provinces is benchmarked to the national totals published by the Income and Expenditure Accounts Division (IEAD).[37]

11.126 This balancing of supply and demand by province is done in the framework of the provincial and territorial Input-Output Tables produced by the Industry Accounts Division (IAD). These tables summarize production, final demand and the estimate of trade flows, both international and inter-provincial. The estimates are produced by IAD in current dollars only, for benchmark and non-benchmark years. Benchmark year data are fully balanced and are part of the published Input-Output Tables, while the estimates for the non-benchmark years are derived from models developed by the IAD and integrated into the IEA.

11.127 International trade by the provinces is valued at market prices[38] as required by the Balance of Payments concepts. For international exports, trade margins and transportation margins are redistributed among the goods. Inter-provincial trade, however, is not tied to the Balance of Payments concept and is calculated at the producer's price rather than at market prices.

11.128 The International Trade Division (ITD) and the Balance of Payments Division (BPD), which are data sources of international trade at the national level, are considered important sources of data for the input-output system, but not as suppliers of final estimates, as is the case in the national system. Although essential, the data recorded by the ITD and the BPD are not sufficient in a provincial framework because they do not allow for a strong regional breakout of flows. This inadequacy is especially apparent with international imports of goods, where customs data refer to the province of entry and not the province of final use. In the case of exports of goods,

36. For more information, see *The Derivation of Provincial (Inter-regional) Trade Flows: The Canadian Experience*, prepared for presentation at the 14th International Input-Output Techniques Conference, October 10 to 15, 2002, Montreal, 48 pp.
37. The accounting identities are described in greater detail in Appendix 11D: Balancing of provincial trade flows.
38. These are often referred to as purchaser prices.

customs data do not always distinguish between the plant and the wholesaler or retailer, which distorts the data on product origin.[39] On the services side, the BPD only produces estimates at the national level and no provincial data are available.

11.129 There are also significant differences between the quarterly national and annual provincial systems. The most obvious one relates to classification: since the input-output classification is different from that used by the Balance of Payments Division at the national level, it is difficult to match products between the provincial and national systems. This difference in classification is exacerbated during the deflation process where the chain Fisher indexes are calculated from different levels of detail on different aggregates. A second difference exists in the definition of certain services, such as travel services. At the national level, travel services include the purchase of goods by foreign tourists in Canada or the reverse, by Canadians abroad. For input-output purposes, these goods are placed in their corresponding categories.[40] These two fundamental differences of classification and definition of goods and services mean that the goods and services totals of the provincial and national systems do not match, that is, the sum of the goods of the provinces does not equal the Canadian total published in the national system, and the same applies to services.

Presentation of provincial and territorial estimates

11.130 As mentioned, international provincial and inter-provincial trade data are calculated by the Industry Accounts Division, which uses its own system of goods classification for its calculations. The level of work of the IEAD (for deflation, in particular) and the presentation framework of the data are therefore substantially influenced by the IAD classification.

11.131 The Industry Accounts Division uses a classification consisting of 679 goods and services for both international and inter-provincial trade. These 679 goods and services are remitted as is, in current dollars, to the IEAD. The IEAD uses the 679 groups as a working level, from which a first edit of the most important groups in terms of nominal value and an initial deflation is made. These 679 goods and services are then aggregated into 57 groups that serve as the basis for calculating the chain Fisher volume indexes. These groups have no direct link to the 64 export groups and 63 import groups used on a national basis.

39. On the international exports side, the exporting province is recorded as the province of origin. There are, however, a number of problems: wholesalers and retailers are often confused with the producer; storage facilities and the routes used by carriers can create errors (for example, iron from Labrador assigned to Quebec); international sales are sometimes managed by agents (for example, uranium from Saskatchewan sold by an Ontario agent); the province of origin not recorded in customs documents; exports to the United States come from U.S. import customs documents, which are less accurate in terms of origin; the coding can contain errors. For international imports, the documents record only the province at which the goods cleared customs and not the final destination.
40. Travel services, commercial services, transportation services and government services are re-classified when they are moved into the input-output balancing system.

11.132 The *Provincial Economic Accounts* presents the totals for international and inter-provincial trade, as shown in Table 11.9.

Table 11.9 International and interprovincial trade in goods and services in the Provincial Economic Accounts, 2000

	Exports						Imports					
	To other countries			To other provinces			From other countries			From other provinces		
	Total	Goods	Services	Total	Goods	Services	Total	Goods	Services	Total	Goods	Services
	millions of dollars											
Canada	490,687	435,999	54,688	217,666	121,291	96,375	428,754	373,915	54,839	217,665	121,292	96,373
Newfoundland and Labrador	5,899	5,566	333	2,085	1,423	662	4,998	4,646	352	5,295	2,578	2,717
Prince Edward Island	1,035	904	131	883	528	355	782	685	97	1,838	1,011	827
Nova Scotia	6,953	6,058	895	5,269	3,059	2,210	8,502	7,703	799	8,365	4,523	3,842
New Brunswick	8,441	7,653	788	6,135	4,229	1,906	8,917	8,264	653	8,104	4,407	3,697
Quebec	97,305	85,940	11,365	44,398	27,346	17,052	89,999	80,129	9,870	47,052	25,505	21,547
Ontario	237,395	211,208	26,187	83,141	38,564	44,577	215,663	185,006	30,657	58,850	36,183	22,667
Manitoba	10,471	9,483	988	10,957	5,568	5,389	10,473	9,032	1,441	11,518	6,738	4,780
Saskatchewan	14,684	14,087	597	9,240	6,822	2,418	9,367	8,311	1,056	12,817	6,262	6,555
Alberta	61,198	56,725	4,473	34,952	24,141	10,811	40,419	35,939	4,480	33,539	18,600	14,939
British Columbia	46,028	37,261	8,767	19,570	9,017	10,553	38,240	33,085	5,155	27,828	14,353	13,475
Yukon	210	127	83	193	85	108	263	220	43	500	218	282
Northwest Territories	804	745	59	764	503	261	581	509	72	1,257	582	675
Nunavut	261	242	19	71	6	65	232	189	43	567	230	337
Outside Canada	3	0	3	8	0	8	318	197	121	135	102	33

Source: *Provincial Economic Accounts, catalogue* no. 13-213, Table 2.

Estimation methodology—International and interprovincial trade

Sources - International trade

11.133 There is no single source for measuring inter-provincial and international trade flows by province. The principal sources of information used by the Industry Accounts Division are:

- Merchandise Trade of Canada;
- *Annual Survey of Manufactures and Logging*;
- The *Wholesale Trade Commodity Survey by Origin and Destination*;
- The destination of sales from the *Survey of Services Industries*; and
- Out-of-province expenditures from the *Travel Survey of Residents of Canada*.

11.134 These data sources have different and varied shortcomings in terms of coverage, frequency, valuation and consistency and may not accord entirely with the desired concepts and definitions of accurate measurement of provincial trade flows. Given the limitations of the survey or administrative information, inter-provincial and international trade flows are developed through a blended approach of, on one hand, survey or administrative data providing essential information on provincial trade patterns and on the other hand, an economic structural accounting framework in which the trade patterns are transformed into trade flow measures consistent with provincial supply (mainly production) and demand statistics. The provincial Input-Output Tables (IOT) are the basis of the accounting framework since the IOT are the most detailed economic accounting framework available.

11.135 Each of the data sources provide some information on provincial trade flows. For international trade in goods, the *Canadian International Merchandise Trade* (catalogue no. 65-001) has a provincial dimension. Merchandise trade is said to be by province of origin for the export estimates and by province of customs clearance

for imports. For export data, the province of origin corresponds to the requirement of the trade flows program. But since the export estimates to U.S. are based on U.S. import data from Canada, the province of origin for the bulk of our exports is in effect the last point of direct shipment to the U.S. The province of origin data from customs documentation is therefore not a reliable source for provincially allocating international exports. For this reason, trade in grains is corrected using *Canadian Grain Commission* information, energy commodities are provided by the Manufacturing, Construction and Energy Division (MCED). *Census of Mines* is put to contribution to validate international merchandise exports of mining commodities. Finally, the *Annual Surveys of Manufacturers* and the *Wholesale Trade Commodity Survey by Origin and Destination* provide key information about the origin of international exports.

11.136 For international imports, the data from the *Canadian International Merchandise Trade* are by province of customs clearance which is not consistent with the province of destination (consumption) concept required by inter-provincial and international trade flows program. Again, the *Wholesale Trade Commodity Survey by Origin and Destination* and survey data which provides information on demand by province is used to reallocate international imports to the proper destination.

11.137 The Canadian Balance of Payments form the basis of the international trade in services measure in the Canadian System of National Accounts. However, they are not produced by province or territory as is required by the provincial trade flows program. Since survey data is generally unavailable at the provincial or territorial level, the national data are allocated according to the province or territory in which the activity is estimated to take place. A wide range of distributors are used such as:

- Wages by province to allocate many of the commercial services;
- Number of international students by host province to apportion education-related travel;
- Cargo tonnage of foreign carriers by province to distribute freight payments; and
- Number of foreign representatives by province to allocate foreign government spending in Canada.

11.138 The latest provincial allocation of BOP national estimates are for reference year 1996 and are used as a starting point for international trade in services by province for all years since that time. Additional and more current sources are used to complement specific services in international trade. They are:

- Annual surveys of the business services industries occasionally include a question on the geographic residence of clients;
- Various annual transport surveys provide rail/truck/marine origin and destination transport data which are used in the derivation of both international transport imports and exports;
- The *International Travel Survey* is the basis for provincial allocation of specific travel-related commodities in deriving both international imports and exports; and
- Wholesale Trade Commodity Surveys by Origin and Destination provides a pattern to provincialize the wholesale margins for both international imports and exports. The latest results are for reference years 1998 and 2001.

Sources—Inter-provincial trade

11.139 The Industry Accounts Division (IAD) obtains measures of inter-provincial trade either by asking producers where goods and services are sold or by asking buyers where goods and services originated from. In general, inter-provincial trade in goods is based on the producers information, while retail, wholesale and travel related expenditures is based on buyers information. For many other commodities, mainly services, only very proxy information is available to estimate trade patterns. In those cases the use of the IO framework fills the data gap. Table 11.10 presents the methods used by IAD for three groups of goods and four groups of services.

Table 11.10 Summary of interprovincial trade flows methods and sources

Goods	Source
Primary goods	Trade patterns are generally obtained by asking producers where goods and services are sold. - **Agricultural products** (livestock, grains, dairy products): Surveys from Statistics Canada's Agriculture Division; Records from the Canadian Grain Commission, Records from Canadian Dairy Commission; Records from Agriculture Canada. - **Metallic and non-metallic ores and concentrates**: *Annual Census of Mines, Quarries and Sand Pits* conducted by Natural Resources Canada. - **Energy commodities**: Surveys of the Energy section of Statistics Canada. The trade patterns for crude oil is modified to correspond to the concept of the trade flow program. This is done based on trade movement of crude oil subject to domestic demand/supply constraints.
Manufactured goods	The principal source is "destination of shipments" from Statistics Canada *Annual Survey of Manufacturers and Logging*. This information is combined with the results of the *Wholesale Trade Commodity by Origin and Destination survey* to bridge the gap between "first" and "final" destination of shipments.
Other goods	Construction and Utilities related commodities are included in this category. By nature, the output of construction cannot be traded outside province where work is put in place. For utilities, electricity is the only commodity for which trade flows are measured. These flows are obtained from published electricity disposition table by Statistics Canada Energy section.
Services	
Transportation and storage	- Storage (grain): Based on flows of major grain commodities. - Transport related to travel (Taxi, urban and interurban bus and air): Derived from *Travel Survey of Residents of Canada* and *Air Transport Origin and Destination surveys* of the Transport Division of Statistics Canada. - Freight (trucking): *Trucking Commodity Origin and Destination Survey.* - Freight (marine): *Marine International Freight Origin and Destination Survey.* - Freight (rail): *Rail Commodity Origin and Destination Statistics.*
Communications	Commodities included are "telephone and telecommunications", "postal services", radio and television broadcasting" and "cable and other subscription programs". For these commodities, source data are limited. Trade patterns are derived from provincial domestic demand of the Input-Output framework.
Business and computer services	Trade patterns derived from occasional information on destination of sales of Statistics Canada annual surveys of various industries. The latest years are (1998 and 2003).
Financial services	No survey or administrative information on origin and destination of financial services is available. Trade flows fluctuate as a result of changes in domestic supply/demand constraints.
Wholesale and retail margins	- Wholesale margins: Interprovincial trade distributions are derived from the *Wholesale Trade Commodity Survey by Origin and Destination*. The location of the wholesaler represents the province of origin of the wholesale margin, and the destination of wholesale sale represents the destination of the wholesale margin. - Retail margins: Trade patterns are derived from 1994 survey of growing small and medium-sized enterprises. The survey provided the proportion of out-of-province sales of small to medium-sized retailers; see catalogue no. 61-523 *Strategies for Success: A profile of Growing Small and Medium-sized Enterprises in Canada.*
Personal and recreational services	Various recreation and personal services can be exported when consumed by non-residents (travel and tourism). Interprovincial trade in these services were derived from the *Travel Survey of Residents of Canada* which contains information on the province of origin of travelers and province of travel expenditures by broad categories of outlays such as transportation fares, vehicle operations, accommodations, restaurants and drinking places. These expenditure trade flows are allocated to appropriate commodities such as accommodation, meals, alcoholic beverages consumed on licensed premises, motor vehicle rentals as well as recreation and entertainment services.

11.140 International trade by province and inter-provincial trade flows estimates for the non-benchmark years do not benefit from the full provincial Input-Output Tables (IOT). In other words, the supply/demand constraints of the accounting framework are not available.

11.141 With the objective of having a current set of supply and demand constraints, the Industry Accounts Division produces synthetic or projected provincial Input-Output Tables based on data available in the current period. Those synthetic tables are, in essence, a projection of the most recent benchmarked provincial IOT and its associated trade matrix, using the following limited but current information:

- internally-produced current price provincial gross outputs from the provincial gross domestic product (GDP) by industry program;
- major components of the provincial expenditure-based gross domestic product from the *Provincial Economic Accounts*;
- industrial and provincial distributions of the private and public investment;
- international merchandise trade by province;
- national Balance of Payments estimates and their breakdown;
- trade flows for agricultural and energy commodities (from Statistics Canada surveys);
- miscellaneous heterogeneous information such as provincial employment and wages by industry;
- economic intelligence gathered through press releases and provincial governments; and
- final domestic demand estimates.

Deflation of regional estimates

11.142 The Income and Expenditure Accounts Division (IEAD) deflates inter-provincial and international trade flow series at the detailed level of 679 products. As a general rule, for a given product, the same price will be applied in all provinces, by trade flow. Province specific prices may be used where province specific price or volume data is available.

11.143 Series are deflated at the most detailed level, then aggregated to the S level (57 groups). Implicit prices used in calculating the chain Fisher index are then deduced from the 57 groups in current and constant dollars. A chain Fisher index is calculated for the totals of exports and imports, and for totals of flows to other provinces (inter-provincial trade) and to other countries (international trade).[41] Fisher indexes are also calculated for goods and services of these flows.

11.144 Deflation of the series at the most detailed level uses prices from several sources. The various sources used for international trade and for flows in inter-provincial products are summarized in Table 11.11. For flows of inter-provincial products, there is no differentiation in export and import prices by product because the flow of exports from one province is the flow of imports to another.

11.145 International exports of goods are generally deflated by prices provided by the International Trade Division. They provide IEAD with a set of detailed prices (a more detail level than the major groups) to facilitate their incorporation into the provincial system.[42] As in the national deflation, for exports, these prices are mainly derived from price indexes of domestic industrial products, produced by the Prices Division, and, to a lesser degree, from unit values derived from customs data and price indexes of industrial export products. For some commodities, the implicit prices of the major groups of the national system are also used for international exports of provinces. This is the case, in particular, for exports of automobiles, petroleum products and natural gas.

11.146 International exports of services are mainly deflated by prices from the national system, where weekly average earnings, *Industrial Product Price Index* (IPPI), personal expenditure prices and CPIs largely serve as the basis for calculating price indexes.

11.147 The Income and Expenditure Accounts Division (IEAD) sometimes receives province or commodities specific information that can be taken into account and used to adjust some prices.

41. This index is subsequently benchmarked on current dollar values of a reference year, as is the case in the national system.
42. The provincial system has 679 products while the national has 64. ITD is able to provide IEAD with a lower level of detail than the major groups of the national system, which allows for some refinement of provincial deflation. These prices are also used as the basis for deflation of the national system.

11.148 For international imports, most of the prices are again derived from ITD's deflation system, which provides IEAD with a set of price indexes at a more detailed level than that of the major groups. About two-thirds of these price indexes are constructed from the producer price indexes of the U.S. Bureau of Labor Statistics multiplied by the exchange rate; another portion is drawn from the unit values of customs documents. Deflation of international imports also relies, to a large extent, on the implicit prices of the national system, especially for services.

11.149 For inter-provincial trade, prices from domestic producers are used for most goods, although a substantial part of the deflation is based on the prices used to deflate international exports. Services are deflated using the same prices as international service exports, that is, that average weekly earnings and IPPIs generally serve as the basis for the price indexes.

Table 11.11 Prices sources for provincial and territorial trade

Flow	Source
International exports	- Industrial price indexes
	- Implicit prices of national system's major groups
	- Unit values from custom documents
	- Industrial products price indexes for exports
	- Personnal expenditures prices
	- Various prices (CPI, IPI, National Energy Board, etc.)
International imports	- Producer price indexes from U.S. Bureau of Labor Statistics
	- Implicit prices of national system's major groups
	- Unit values from custom documents
	- Various prices (National Energy Board, etc.)
	- Bank of Japan export prices
Interprovincial flows	- International exports prices
	- Industrial products price indexes for exports
	- Various prices

Appendix 11A Reconciliation between the Balance of Payments current account and the Income and Expenditure Accounts' non-residents sector

Table 11A.1 Reconciliation between the Balance of Payments current account and the Income and Expenditure Accounts' non-residents sector, 2000

Current account of Canada				Income and Expenditure Accounts: Non-residents sector accounts
	millions of dollars			
Current accounts receipts	**531,962**		**525,947**	**Outlay of non-residents, Income and Expenditure Accounts**
Goods and services	489,090	(1)	490,688	Purchases of goods and services
Goods	429,372		429,375	Purchases of goods (exports)
Services	59,718		61,313	Purchases of services (exports)
Travel	15,997		15,997	Travel
Transportation	11,196		11,196	Transportation
Commercial	31,101		31,101	Commercial
Government	1,424		1,423	Government
		(2)	1,596	Financial intermediation
			1,294	On non-residents interest receipts on deposits in Canada
			302	On non-residents interest payments on loans in Canada
Total investment income	36,755		29,143	Interest, dividends and miscellaneous payments
Total interest	17,244	(3)	17,244	Total interest
Direct investment, interest	584		3,381	Interest paid to persons by non-resident
Portfolio investment, interest	2,184		9,684	Interest paid to corporations by non-resident
Other investment income, interest	14,476		1,845	Interest paid to GBEs by non-resident
			2,334	Interest paid to Governments by non-resident
Total dividends	11,756	(3)	11,755	Total dividends
Direct investment, dividends	6,751		5,005	Dividends paid to persons by non-resident
Portfolio investment, dividends	5,005		6,750	Dividends paid to corporations by non-resident
Total reinvested earnings	7,755	(2)	144	Adjustment for implicit financial intermediation (implicit income paid by non-residents)
Direct investment, reinvested earnings	7,755	(4)	446	On Canadian interest receipts on deposits in other countries
			-302	On non-residents interest payments on loans in Canada
Current transfers	6,117	(5)	6,116	Current transfers
Canadian taxes	2,361			
Official contributions	3,756			
Current accounts payments	**502,693**		**490,921**	**Income of non-residents, Income and Expenditure Accounts**
Goods and services	427,837	(1)	428,754	Sales of goods and services
Goods	362,337		362,337	Sales of goods (imports)
Services	65,500		66,417	Sales of services (imports)
Travel	18,444		18,444	Travel
Transportation	13,916		13,916	Transportation
Commercial	32,366		32,365	Commercial
Government	774		774	Government

Table 11A.1 Reconciliation between the Balance of Payments current account and the Income and Expenditure Accounts' non-residents sector, 2000

Current account of Canada				Income and Expenditure Accounts: Non-residents sector accounts
	millions of dollars			
		(2)	918	Financial intermediation
			446	On Canadian interest receipts on deposits in other countries
			472	On Canadian interest payments on loans in other countries
Total investment income	69,863		57,175	Interest, dividends and miscellaneous receipts
Total interest	45,085	(3)	45,086	Total interest
Direct investment, interest	1,946		0	Interest paid to non-residents by persons
Portfolio investment, interest	27,591		27,409	Interest paid to non-residents by corporations
Other investment income, interest	15,548		3,680	Interest paid to non-resident by GBEs
			13,997	Interest paid to non-resident by Governments (Interest on public debt)
Total dividends	11,267	(3)	11,267	Total dividends
Direct investment, dividends	9,020		11,267	Dividends paid to non-resident by corporations
Portfolio investment, dividends	2,247			
Total reinvested earnings	13,511	(2)	822	Adjustment for implicit financial intermediation (implicit income paid by canadian corporations)
Direct investment, reinvested earnings	13,511	(4)	1,294	On non-residents interest receipts on deposits in Canada
			-472	On Canadian interest payments on loans in other countries
Current transfers	4,993	(5)	4,992	Current transfers
Private transfers	2,777			
Official contributions	2,216			
			-35,026	**Saving: Income - outlay of non-residents, Income and Expenditure Accounts**
		(4)	5,756	Add: Net reinvested earnings on direct investment
			13,511	Direct investment, reinvested earnings, payments
			7,755	Direct investment, reinvested earnings, receipts
Current accounts, balance (receipts - payments)	**29,269**	**(6)**	**-29,270**	Equals: Balance of Payments surplus (-) or deficit(+) on current account

1. Transactions in goods and in travel, transportation, commercial and government services are identical in both accounts.
2. Financial services indirectly measure (FSIM) are shown only in IEA, in BOP they are implicitly embedded in Investment Income information. Since Income and expenditure Accounts is presenting Interest paid and received by non-resident on the same basis as BOP (including implicit charges), the sum of FSIM services and the adjustment for FSIM in the investment income portion of the account for Outlay and Income are equal as shown in the following table.

FSIM outlay components	**1,740**	**1,740**	**FSIM income components**
FSIM exports	1,596	918	FSIM imports
Adjustment for implicit intermediation, outlay	144	822	Adjustments for implicit intermediation, income

3. The total Interest and dividends investment income are identical in both accounts. In IEA, the categories of interest and dividends are based on institutional sector while on BOP it relates to type of investment.
4. The reinvested earnings flows of investment income are not counted as part of the income and outlay accounts of non-residents sector. As such, the reconciliation of Balance of Payments current account with income and outlay account of non-residents is performed by including the saving in the Income and Expenditure Accounts.
5. The total current transfers are identical in both accounts.
6. In the Income and Expenditure Accounts, the saving represents the position of non-residents with respect to their transactions with Canadian residents. The sign of these aggregates is, therefore, the reverse of what appears in the *Canadian Balance of International Payments.*

Appendix 11B Data sources for commercial services

Balance of Payments Division surveys

- *International Transactions in Commercial Services* - BP-21SQ (quarterly)
- *Transactions Between Canada and Other Countries* - BP-21 (annual)
- *Transactions Between Canada and Other Countries* - BP-21A (quarterly)
- *International Transactions Between Insurance Brokers in Canada and their Foreign Affiliates, Agents, and Other Companies or Persons Outside Canada* - BP-17 (annual)
- *Transactions Between Canadian Incorporated Insurance Companies and their Foreign Affiliates, Agencies and Bank Accounts and Other Companies or Persons Outside Canada* - BP-27 (annual)
- *Transactions Between Canadian Branches of Foreign Insurance Companies in Canada and Head or Other Offices, Companies or Persons Outside Canada* - BP-28 (annual)
- *Report by Trust and Mortgage Loan Companies in Canada on Transactions with Non-residents* - BP-29 (annual)
- *Canada's International Transactions in Securities* - BP-30 (monthly)

Enterprise Survey Division:

- *Survey of Head Office and Other Business Support Units*

Environment Accounts and Statistics Division:

- *Environment Industry Survey*

Science, Innovation and Electronic Information Division:

- *Annual Survey of Telecommunications*
- *Radio and Television Broadcasting Survey*
- *Research and Development in Canadian Industry*

Service Industries Division:

- *Annual Survey of Advertising and Related Services*
- *Annual Survey of Architectural Services*
- *Annual Survey of Automotive Equipment Rental and Leasing*
- *Annual Survey of Commercial and Industrial Machinery and Equipment Rental and Leasing*
- *Annual Survey of Consumer Goods Rental*
- *Annual Survey of Engineering Services*
- *Annual Survey of Internet Service Providers and Related Services*
- *Annual Survey of Personal Services*
- *Annual Survey of Service Industries: Accounting Services*
- *Annual Survey of Service Industries: Book Publishers*
- *Annual Survey of Service Industries: Database, Directory and Specialty Publishers*
- *Annual Survey of Service Industries: Employment*
- *Annual Survey of Service Industries: Film and Video Distribution, and Wholesaling of Pre-recorded Videos*
- *Annual Survey of Service Industries: Film, television and video post-production*
- *Annual Survey of Service Industries: Film, Television and Video Production*
- *Annual Survey of Service Industries: Management, Scientific and Technical Consulting Services*
- *Annual Survey of Service Industries: Newspaper Publishers*
- *Annual Survey of Service Industries: Performing Arts*
- *Annual Survey of Service Industries: Repair and Maintenance Services*
- *Annual Survey of Service Industries: Sound Recording*
- *Annual Survey of Service Industries: Specialized Design*
- *Annual Survey of Service Industries: Surveying and Mapping*
- *Annual Survey of Software Development and Computer Services*
- *Survey of Service Industries: Amusement and Recreation*

Federal government administrative sources

- Tax forms T-106, GST, and NR-4 (withholding taxes);
- Citizenship and Immigration Canada;
- Bank of Canada; and
- Office of the Superintendent of Financial Institutions (federal).

Other governments and crown corporations administrative sources

- Public Accounts of Crown Corporations (federal and provincial), with supplementary data obtained directly from selected corporations;
- Film and tourism authorities (provincial); and
- Power utilities (provincial).

Others

- Regular correspondence with corporations engaged in international communications, air and rail transportation, consulting, etc.;
- U.S. Department of Commerce data (with annual reconciliations of U.S. current account data);
- foreign embassies;
- World Bank;
- Patent agents;
- International organizations operating in Canada;
- Canadian banks;
- Benchmark studies on sports and other entertainment;
- Annual reports of individual companies engaged in international transactions; and
- Media.

Appendix 11C Level of detail for the trade in goods

Table 11C.1 Level of detail for the goods, international exports and imports

Exports commodity groupings, BOP basis		Imports commodity groupings, BOP basis	
100	**Agricultural and fishing products**	100	**Agricultural and fishing products**
101	Live animals	101	Live animals
201	Fish and fish preparations	201	Meat and meat preparations
202	Barley	202	Fish and marine animals
203	Wheat	203	Fresh fruits and berries
204	Wheat flour	204	Dried fruits and fruit preparations
205	Other cereals unmilled	205	Fresh vegetables
206	Other cereal preparations	206	Other vegetables and vegetable preparations
207	Meat and meat preparations	207	Cocoa, coffee, tea and other food preparations
208	Alcoholic beverages	208	Dairy produce, eggs and honey
209	Other food, feed, beverages and tobacco	209	Corn (a.maize) shelled
301	Rapeseed	210	Other cereals and cereal preparations
302	Other crude vegetable products	211	Sugar and sugar preparations
		212	Fodder, feed, excluding unmilled cereal
200	**Energy products**	213	Beverages
308	Crude petroleum	214	Tobacco
309	Natural gas	305	Crude vegetable products
310	Coal and bituminous substances	307	Cotton
411	Petroleum and coal products		
422	Electricity	200	**Energy products**
		302	Coal and other related products
300	**Forestry products**	303	Crude petroleum
313	Other crude wood products	406	Petroleum and coal products
401	Lumber		
402	Other wood fabricated materials	300	**Forestry Products**
403	Woodpulp and similar pulp	306	Crude wood products
404	Newsprint paper	401	Wood fabricated materials
405	Other paper and paperboard		
		400	**Industrial goods and material**
400	**Industrial goods and material**	301	Metals in ores, concentrates and scrap
303	Iron ores, concentrates and scrap	304	Crude animal products
304	Copper ores, concentrates and scrap	308	Wool and man-made fibres
305	Nickel ores, concentrates and scrap	309	Crude non-metallic minerals
306	Zinc ores, concentrates and scrap	402	Textile fabricated materials
307	Other ores, concentrates and scrap	403	Organic chemicals
311	Asbestos unmanufactured	404	Plastic materials
312	Other crude animal products	405	Other chemicals and related products
314	Other crude non-metallic minerals	407	Steel bars, rods, plates and sheets
315	Other crude materials, inedible	408	Other iron and steel products
406	Inorganic chemicals	409	Precious metals including alloys
407	Organic chemicals	410	Other non-ferrous metals and alloys
408	Fertilizers and fertilizer materials	411	Metal fabricated basic products
409	Synthetic rubber and plastics	412	Rubber fabricated materials
410	Other chemical products	413	Oils and fats, animal and vegetable
412	Primary iron and steel	414	Non-metallic minerals
413	Steel bars, rods, plates and sheets	415	Other fabricated materials
414	Other iron and steel and alloys		
415	Aluminium including alloys	500	**Machinery and equipment**
416	Copper and alloys	501	Engines, turbines and electric motors
417	Nickel and alloys	502	Drilling and mining machinery
418	Precious metals and alloys	503	Excavating machinery
419	Zinc and alloys	504	Metal working machinery

Table 11C.1 Level of detail for the goods, international exports and imports

Exports commodity groupings, BOP basis		Imports commodity groupings, BOP basis	
420	Other non-ferrous metals and alloys	505	Other industrial machinery
421	Metal fabricated basic products	506	Agricultural machinery including tractors
423	Textile fabricated materials	511	Other communications and related equipment
424	Non-metallic mineral basic products	512	Office machines and equipment
425	Other fabricated materials	513	Other equipment and tools
		514	Aircraft, engines and parts
500	**Machinery and equipment**	515	Other transportation equipment and parts
501	Industrial machinery		
502	Agricultural machinery including tractors	600	**Automotive products**
506	Television and telecommunication equipment	507	Passenger autos and chassis
507	Aircraft, engines and parts	508	Trucks and other motor vehicles
508	Other transportation equipment	509	Motor vehicle parts including engines
509	Office machines and equipment		
510	Other equipment and tools	700	**Other consumer goods**
512	Other end products, inedible	510	Televisions, radios and phonographs
		516	Apparel and apparel accessories
600	**Automotive products**	517	Footwear
503	Passenger autos and chassis	518	Printed matter
504	Trucks and other motor vehicles	519	Watches, sporting goods and toys
505	Motor vehicle parts including engines	520	House furnishings
		521	Photographic goods
700	**Other consumer goods**	522	Miscellaneous end products
511	Other consumer goods		
		800	**Special transactions, trade**
800	**Special transactions, trade**	601	Special transactions trade
601	Special transactions trade		
		900	**Other BOP adjustments**
900	**Other BOP adjustments**	602	Unallocated BOP adjustments
602	Unallocated BOP adjustments		

Appendix 11D Balancing of provincial trade flows

11D.1 The provincial balancing of trade flows – both international and inter-provincial – is calculated using the Input-Output Tables (IOT) framework. The following accounting identities are used to constrain trade flows within the IOT.

11D.2 In each province and for each commodity, total domestic supply (DS) must be identical to sales to the rest of the world (international exports (XW)), to other provinces (interprovincial exports (XP)) and to its own province (PS). Total domestic supply (DS) is defined as the value of production (PR) plus shipment out of the inventories[1] of producers, wholesalers and retailers ($\Delta^{-}\mathrm{INV}$). Equation 11D.1 reflects this, where *i* is for provinces or territories and *x* stands for commodities.

Equation 11D.1

$$DS_{i,x} = XW_{i,x} + XP_{i,x} + PS_{i,x}$$

where

$$DS_{i,x} = PR_{i,x} + {}_{i,x}$$

hence

$$PR_{i,x} + {}_{i,x} = XW_{i,x} + XP_{i,x} + PS_{i,x}$$

11D.3 In each province and for each commodity, total domestic demand (DD) must be identical to purchases from the rest of the world (international imports (MW)), from other provinces (interprovincial imports (MP)) and from its own province (PS). Total domestic demand is equal to final domestic demand (FDD) (personal expenditure, capital formation and current government expenditure) plus intermediate domestic demand[2] (IDD) plus additions to inventories[3] ($\Delta^{+}\mathrm{INV}$) of producers, wholesalers and retailers. Equation 11D.2 reflects this, where *i* is for provinces or territories and *x* stands for commodities.

Equation 11D.2

$$DD_{i,x} = MW_{i,x} + MP_{i,x} + PS_{i,x}$$

where

$$DD_{i,x} = FDD_{i,x} + IDD_{i,x} + {}_{i,x}$$

hence

$$FDD_{i,x} + IDD_{i,x} + {}_{i,x} = MW_{i,x} + MP_{i,x} + PS_{i,x}$$

11D.4 In each province and for each commodity, total domestic supply (DS) minus total domestic demand (DD) equals total exports (X = XW + XP) minus total imports (M = MW + MP). This yields a measure of net trade (NT) by province and by commodity. Equation 11D.3 reflects this, where *i* is for provinces or territories and *x* stands for commodities.

1. This is known as inventory withdrawals in the Input-Output Tables.
2. This would correspond to inputs into the production process.
3. This is known as inventory additions in the Input-Output Tables.

Equation 11D.3

$$DS_{i,x} - DD_{i,x} = NT_{i,x}$$

where

$$NT_{i,x} = (XW_{i,x} + XP_{i,x}) - (MW_{i,x} + MP_{i,x})$$

11D.5 For each commodity, the sum of international exports (XW) and imports (MW) by province are identical to their national counterparts. Equation 11D.4 and Equation 11D.5 reflect this, where *i* is for provinces or territories and *x* stands for commodities.

Equation 11D.4

$$\sum_{i=1}^{\iota} XW_x = XW_{x,can}$$

Equation 11D.5

$$\sum_{i=1}^{\iota} MW_x = MW_{x,can}$$

11D.6 For each commodity, interprovincial exports (XP) and imports (MP) are identical when summed over all provinces since one province's exports are another province's imports. Equation 11D.6 reflects this, where *i* is for provinces or territories and *x* stands for commodities.

Equation 11D.6

$$\sum_{i=1}^{\iota} XP_x = \sum_{i=1}^{\iota} MP_x$$

11D.7 Goods purchased outside Canada and re-exported to the rest of the world are not part of the provincial identities. They are recorded as a separate element, a trade flow from the rest of world to outside Canada.[4]

11D.8 Collectively, those identities form an accounting framework for adjusting source data, for filling data gaps and for analyzing the quality and consistency of the information used in the derivation of trade flow estimates. These identities are respected for each commodity, for each year at the lowest detail possible (about 725 commodities that are latter aggregated to 679 commodities).

4. While re-exports are excluded from the international imports and exports as part of the international and interprovincial trade flows program, they are included in the comparable estimates in the provincial expenditure-based gross domestic product program.

Chapter 12 Data quality

National Income and Expenditure Accounts

Description

12.1 The Income and Expenditure Accounts are the centre of macroeconomic analysis and policy-making in Canada. They are used in a broad assortment of applications by a wide range of persons and groups in society. They are a means by which Canadians can view and assess the performance of the national economy. The accounts provide both a planning framework for governments and a report card on the results of the plans that governments carry out.

12.2 At the core of the Income and Expenditure Accounts (IEA) is the concept of gross domestic product (GDP) and its components. It is a measure of aggregate economic activity that represents the unduplicated value of production in two ways: (i) incomes arising from production and (ii) final expenditures on production. The first is the sum of factor incomes generated by productive activity—that is, incomes representing the returns to the labour and capital employed. The second is the sum of all sales to final users (consumers, governments, business on capital account, exports less imports). The two measures of GDP may not be equal to each other, giving rise to a statistical discrepancy.

12.3 The Canadian System of National Accounts (CSNA) provides a conceptually integrated framework of statistics and analysis for studying the state and behaviour of the Canadian economy. The accounts are centered on the measurement of activities associated with production of goods and services, the sales of goods and services in final markets, the supporting financial transactions, and the resulting wealth positions.

Data sources and methodology

Target population

12.4 The Canadian economy (persons and unincorporated business, corporations, governments and non-residents).

Data sources

12.5 Data are extracted from administrative files and derived from Statistics Canada surveys and/or other sources.

12.6 The IEA measure of macroeconomic activity, on a quarterly basis, as represented by income and expenditure-based GDP, relies heavily on a wealth of information. A large amount of information from various survey divisions within Statistics Canada, along with other data, is compiled, integrated and analysed as part of the complex process of arriving at GDP and its component categories and underlying sector accounts.

12.7 Major suppliers of data within Statistics Canada include: Agriculture Division, Distributive Trades Division, Income Statistics Division, Industrial Organization and Finance Division, International Trade Division, Investment and Capital Stock Division, Labour Division, Manufacturing, Construction and Energy Division, Prices Division, Public Institutions Division, Service Industries Division, Tax Data Division and Transportation Division. Numerous external and administrative sources of data are also used.

Estimation

12.8 At the heart of the System of National Accounts is the concept of 'economic production'. Gross domestic product is designed explicitly to measure the value of the nation's total production of goods and services. But, in arriving at this total, the tables also provide a statistical picture of the structure and functioning of the economy - of the composition and use of the nation's production, and of the various types of income which are generated in the process. Going a stage further, the broad income and expenditure estimates are further broken down to show how

the various sectors of the economy (businesses, persons, governments and non-residents) interact in their transactions with one another to produce this output. In other words, beginning from the basic concept of production, it is possible to build up a major system of statistics which traces the flow of all income and expenditure transactions underlying the production and the distribution of the nation's total output. In the present system, both the 'national' and 'domestic' concepts are in use. The gross national product measures the earnings of all Canadian factors of production regardless of where located. The gross domestic product measures only the production originating within the geographic boundaries of Canada, whether the factors of production are owned by Canadians or non-residents.

12.9 The National Income and Expenditure Accounts measure the unduplicated value of production in two separate ways. The first simply sums all of the factor incomes (wages and salaries, and profits) generated by this productive activity—incomes representing the returns to the labour and capital employed. The second approach sums all sales which firms have made to final users—to consumers, to governments, to business on capital account, or in export markets. This approach also provides an unduplicated value of total production. Imports, of course, have to be deducted from this summation since they are implicitly included in these final sales and should not be counted as a part of Canadian production—they represent part of the production of a foreign country. Sales from one firm to another (intermediate production) are not counted since to do so would involve double counting, all intermediate production being embodied in final output sold to users. This 'sales to final users' (or 'sum of expenditures') approach yields the same value of production as the 'sum of incomes' approach. After the initial estimates income and expenditure—side GDP are produced, the discrepancy is assessed.

12.10 Real GDP is only calculated in terms of expenditure as the components of the income-based GDP cannot be split between a quantity value and a price value. Therefore, there is no indicator enabling us to remove the effect of inflation to calculate real values for the income-based GDP components. This is why only the components that are part of the GDP by expenditure are calculated in real terms.

Quality evaluation

12.11 Data are analysed for time series consistency, links to current economic events, issues arising from the source data, and with respect to coherence. As well, the discrepancy between the estimates of income and expenditure-based GDP is assessed.

12.12 It is not possible to produce an equivalent to the income or expenditure accounts except at the aggregate level. At the level of GDP, the unduplicated value of production can also be measured by taking the gross value of production of each firm and subtracting each firm's intermediate inputs in the form of its purchases from other firms (including imports) to yield the `net value added' to production by the firm. Estimates of this type are produced in the annual Input-Output Tables, as well as in the monthly industry-based estimates of GDP. Real GDP estimates can then be compared with the results of the monthly GDP by industry program. Annually, the income and expenditure data are benchmarked to the Input-Output Accounts.

12.13 Certain components of income and expenditure-based GDP can be obtained from survey divisions, but typically the data are not directly comparable. For example, the variable corporate profits is published in the Quarterly Financial Statistics release, but it differs from the income-based GDP measure due to certain national accounts concept adjustments.

Disclosure control

12.14 Statistics Canada is prohibited by law from releasing any data that would divulge information obtained under the Statistics Act that relates to any identifiable person, business or organization without the prior knowledge or the consent in writing of that person, business or organization. Various confidentiality rules are applied to all data that are released or published to prevent the publication or disclosure of any information deemed confidential. If necessary, data are suppressed to prevent direct or residual disclosure of identifiable data.

Revisions and seasonal adjustment

12.15 Revisions: Data are released within 60 days after the reference period. Estimates for each quarter are revised when those for subsequent quarters of the same year are published. At the time of the first quarter of each year, revisions are made back four years. They are not normally revised again except when historical revisions are carried out, usually once per decade. Statistical revisions are carried out in order to incorporate the most recent information from quarterly and annual surveys, taxation statistics, public accounts, censuses, etc., as well as from the annual benchmarking process of the Input-Output Accounts.

12.16 Seasonal adjustment: Almost all series of the quarterly IEA are seasonally adjusted. Seasonal adjustment is generally made at the lowest level of aggregation, and seasonally adjusted aggregates are obtained by summation. Statistics Canada's X-11 ARIMA is used to seasonally adjust series.

Data accuracy

12.17 The accounts are designed as a double-entry system in which the income- and expenditure-based GDP totals should, in principle, be identical. In fact, a difference virtually always arises between them due to errors in the source data, imperfect estimation techniques, differing seasonal adjustment methods and discrepancies in the time at which the incomes and expenditures are recorded.

12.18 The size of the discrepancy, which stems from the estimation procedure, is one gauge of the system's overall reliability. However, it is a partial and quite insufficient gauge. Another quality measure is how well real expenditure-side GDP compares to the real GDP by industry measure.

12.19 No direct measures of the margin of error in the estimates can be calculated. The quality of the estimates can be inferred from analysis of revisions and from a subjective assessment of the data sources and methodology used in the preparation of the estimates.

Documentation

12.20 Information on developments in the National Income and Expenditure Accounts are available in *Latest developments in the Canadian economic accounts*. The side bar menu of that electronic publication includes: chronology of events, conceptual changes, classifications changes, and data revisions.

Provincial Economic Accounts

Description

12.21 The *Provincial Economic Accounts* program produces annual estimates of selected aggregates of the Income and Expenditure Accounts by province and territory: gross domestic product, final domestic demand, personal income and government sector accounts.

12.22 The data are used in macroeconomic analysis and forecasting, for policy analysis and for econometric modelling and hypothesis testing by federal and provincial government officials, business people, academic economists and international organizations.

12.23 The Canadian System of National Accounts (CSNA) provides a conceptually integrated framework of statistics and analysis for studying the state and behaviour of the Canadian economy. The accounts are centered on the measurement of activities associated with production of goods and services, the sales of goods and services in final markets, the supporting financial transactions, and the resulting wealth positions.

12.24 Provincial and territorial accounts - The System of National Economic Accounts disseminates a wide variety of data at the provincial and territorial level on topics such as the environment, government finance, gross domestic product and its components, GDP by industry, tourism and labour productivity.

Data sources and methodology

Target population

12.25 The Canadian economy (persons and unincorporated business, corporations, governments and non-residents).

Data sources

12.26 Data are extracted from administrative files and derived from other Statistics Canada surveys and/or other sources.

12.27 The *Provincial Economic Accounts* (PEA) provide a measure of macroeconomic activity on an annual basis, as represented by income and expenditure-based GDP, and rely heavily on a wealth of information from various areas of Statistics Canada. A large amount of information from various survey divisions within the bureau, along with other data, is compiled, integrated and analysed as part of the complex process of arriving at provincial GDP's and their component categories and underlying sector accounts.

12.28 Major suppliers of data within Statistics Canada include: Agriculture Division, Distributive Trades Division, Income Statistics Division, Industrial Organization and Finance Division, International Trade Division, Investment and Capital Stock Division, Labour Division, Manufacturing, Construction and Energy Division, Prices Division, Public Institutions Division, Service Industries Division, Tax Data Division and Transportation Division. Numerous external and administrative sources of data are also used.

Estimation

12.29 The *Provincial Economic Accounts* measure the unduplicated value of production in two separate ways. The first simply sums all of the factor incomes (wages and salaries, and profits) generated by this productive activity—incomes representing the returns to the labour and capital employed. The second approach sums all sales which firms have made to final users—to consumers, to governments, to business on capital account, or in export markets. This approach also provides an unduplicated value of total production. Imports, of course, have to be deducted from this summation since they are implicitly included in these final sales and should not be counted as a part of indigenous production—they represent part of the exogenous production. Sales from one firm to another (intermediate production) are not counted since to do so would involve double counting, all intermediate production being embodied in final output sold to users. This 'sales to final users' (or sum of expenditures) approach yields the same value of production as the 'sum of incomes' approach. After the initial estimates income and expenditure—side GDP are produced, the discrepancy is assessed.

12.30 Real GDP is only calculated in terms of expenditure as the components of the income-based GDP cannot be split between a quantity value and a price value. Therefore, there is no indicator enabling us to remove the effect of inflation to calculate real values for the income-based GDP components. This is why only the components that are part of the GDP by expenditure are calculated in real terms.

Quality evaluation

12.31 Data are analysed for time series consistency, links to current economic events, issues arising from the source data, and with respect with coherence. As well, the discrepancy between the estimates of income and expenditure-side GDP is assessed.

12.32 It is not possible to produce an equivalent to *Provincial Economic Accounts*, as measured in terms of income and expenditures except at the aggregate level. At the level of GDP, the unduplicated value of production can also be measured by taking the gross value of production of each firm and subtracting each firm's intermediate inputs in the form of its purchases from other firms (including imports) to yield the 'net value added' to production by the firm. Estimates of this type are produced in the provincial Input-Output Tables, as well as in the industry-based

estimates of GDP by province. Real GDP estimates can then be compared with the results of the provincial GDP by industry program. Annually, the provincial income and expenditure data are benchmarked to the Input-Output Accounts.

12.33 Certain components of income and expenditure-based GDP can be obtained in survey divisions, but typically the data are not directly comparable. For example, the variable 'corporate profits' is published in the Quarterly Financial Statistics release, but it differs from the income-based GDP measure due to certain national accounts' concept adjustments. Also, the national estimates have to be allocated by province and by territory to reflect where the activity took place rather than where the head office is located.

Disclosure control

12.34 Statistics Canada is prohibited by law from releasing any data that would divulge information obtained under the Statistics Act that relates to any identifiable person, business or organization without the prior knowledge or the consent in writing of that person, business or organization. Various confidentiality rules are applied to all data that are released or published to prevent the publication or disclosure of any information deemed confidential. If necessary, data are suppressed to prevent direct or residual disclosure of identifiable data.

Revisions and seasonal adjustment

12.35 Revisions: Preliminary estimates are released in the spring following the end of the reference period, and revised in the fall of the same year. This latter release also comprises revisions to the three previous years. Estimates are not normally revised again except when historical revisions are carried out, usually once per decade. Statistical revisions are carried out in order to incorporate the most recent information from surveys, taxation statistics, public accounts, censuses, etc., as well as from the annual benchmarking process of the Input-Output Accounts.

12.36 Seasonal adjustment: Where quarterly PEA data are available, seasonal adjustment is generally made at the lowest level of aggregation, and seasonally adjusted aggregates are obtained by summation. Statistics Canada's X-11 ARIMA is used to seasonally adjust series.

Data accuracy

12.37 The accounts are designed as a double-entry system in which the income- and expenditure-based GDP totals should, in principle, be identical. In fact, a difference virtually always arises between them due to errors in the source data, imperfect estimation techniques, differing seasonal adjustment methods and discrepancies in the time at which the incomes and expenditures are recorded.

12.38 The size of the discrepancy, which stems from the estimation procedure, is one gauge of the system's overall reliability. However, it is a partial and quite insufficient gauge. Another quality measure is how well real expenditure-side GDP compares to the real GDP by industry measure.

12.39 No direct measures of the margin of error in the estimates can be calculated. The quality of the estimates can be inferred from analysis of revisions and from a subjective assessment of the data sources and methodology used in the preparation of the estimates.

Documentation

12.40 Information on developments in the *Provincial Economic Accounts* are available in *Latest developments in the Canadian economic accounts.* The side bar menu of that electronic publication includes: chronology of events, conceptual changes, classifications changes, and data revisions.

Chapter 13 Glossary

Accrued net income of farm operators from farm production. Net income received by farm operators from farm production plus the undistributed portion of earnings arising out of the operations of the Canadian Wheat Board and the adjustment made to shift agricultural subsidies from a cash to an accrual basis.

Associations of individuals. Non-profit institutions serving households, such as churches, labour unions and charitable organizations, plus credit unions, trusteed pension plans, life insurance companies, fraternal societies and mutual non-life insurance companies. They are treated as businesses with respect to their capital outlays and their intermediation activities, but as persons with respect to their current expenses.

Base period. Reference period from which prices are taken to calculate an index.

Basic prices. A basic price valuation includes the costs of **production factors** (labour and capital) and indirect taxes and subsidies on production factors. Income measures are estimated at basic prices or **market prices**.

Bonds. Marketable and non-marketable securities issued in Canadian or foreign currency with an original term to maturity in excess of one year. Includes:

Canada bonds. Direct bonds of the federal government (of which, Canada Savings Bonds) and guaranteed federal enterprise bonds.

Provincial bonds. Direct bonds of provincial governments (of which, provincial savings bonds) and guaranteed provincial enterprise bonds.

Municipal bonds. Direct bonds of municipalities and guaranteed municipal enterprise bonds.

Other bonds. Bonds issued by Canadian corporations, hospitals and non-profit institutions, as well as non-guaranteed bonds of government business enterprises. Also included are asset-backed securities.

Business gross fixed capital formation. This expression covers all expenditures on buildings, engineering construction and machinery and equipment by the **business sector**, both corporations and unincorporated businesses. Business gross fixed capital formation is divided into three major categories in production accounts**: residential structures, non-residential structures** and **machinery and equipment**.

Business investment in inventories. Business sector inventories consist of two categories: (a) **non-farm inventories** and (b) f**arm inventories** and **grain in commercial channels.** These two categories are presented in detailed tables in the Income and Expenditure Accounts. Business sector inventories are themselves subdivided into those of the persons and unincorporated businesses sector and those of the corporations and government business enterprises sector. These two estimates are shown in the respective sector accounts under the inventories heading.

Business sector. All transactors producing goods and services for sale at a price intended to cover costs of production, namely corporations, government business enterprises, unincorporated businesses and independent professional practitioners. Also includes owners occupying their own dwelling, treated as businesses renting to themselves, and associations of individuals, treated as businesses with respect to their capital outlays and their intermediation activities.

Canada and Quebec pension plans. The part of the government sector which consists of the operations of the Canada and Quebec pension plans, established in 1966.

Canadian residents. Institutional units, such as persons, corporations and non-profit institutions, which have a centre of economic interest (a dwelling, a business location) in the economic territory of Canada.

Capital and financial account. This account shows, for each major sector, a) the saving and acquisition of non-financial capital and the difference between them, called net lending; and b) transactions in financial assets, transactions in liabilities and the difference between them, called net financial investment. In theory, the two balancing items, net lending and net financial investment, are equal; in practice, imperfections in the statistics lead to a difference between the two, shown as a statistical discrepancy.

Capital consumption allowances. Allowances for the using up of capital in the productive process. They are calculated for business and government fixed assets as well as housing. They also include miscellaneous valuation adjustments bringing business accounting records into conformity with national accounts definitions, such as the addition of claims paid by insurance companies to compensate for fire and other losses.

Capital transfers. Transfers in cash or in kind, out of the wealth of the donor (**inheritances and migrants' funds**, transfer of ownership of an asset or cancellation of a liability), or transfers which the recipient is expected to use towards the acquisition of an asset. Capital transfers have no effect on the saving of the donor or recipient.

Chain Fisher price index. See **implicit price indexes**.

Chain Fisher volume index. A measure of change in volume from period to period. It is calculated as the geometric mean of a **chain Paasche volume index** and a **chain Laspeyres volume index**. In other words, it is the mean of two distinct measures of change in volume: one calculated as if prices were constant in the first of two consecutive periods (Laspeyres volume) and the other calculated as if prices were constant in the second of the two consecutive periods (Paasche volume).

Chain index. An index which is rebased on a period to period basis, accumulated multiplicatively from a **base period** value. For example, the **chain Fisher volume index** calculates the Fisher volume index in each pair of consecutive quarters, treating the earlier quarter as the base period.

Chain Laspeyres volume indexes. A measure of the change in volume from period to period. It is calculated as if prices were constant in the first of two consecutive periods. The indexes of each of the periods are linked together in a chain to for an index. Chain Laspeyres volume indexes are one of the components of the **chain Fisher volume indexes** that are the official measure of the Income and Expenditure Accounts.

Chain Paasche volume indexes. A measure of the change in volume from period to period. It is calculated as if prices were constant in the second of two consecutive periods. The indexes of each of the periods are linked together in a chain to form an index. The chain Paasche volume indexes are one of the components of the **chain Fisher volume indexes** that are the official measure of the Income and Expenditure Accounts.

Changing the base period. Changing the base period of a series involves redefining the **base period** on which the weightings are established.

Claims. Financial instrument comprising:

Corporate claims. Loans, advances and issues of debt between associated corporations; on the asset side, also includes investment in shares between associated corporations.

Government claims. Claims between governments, between related government business enterprises or between a parent government and its enterprises, in the form of shares, debt securities, loans and advances.

Consumer credit. Credit extended to persons for purchasing consumer goods and services.

Consumer goods. New goods acquired by households for their own consumption. Comprises three categories:

Durable goods, which can be used repeatedly or continuously for more than one year, such as motor vehicles and major appliances;

Semi-durable goods, which can be used on multiple occasions and have an expected lifetime of one year or somewhat more, such as clothing, footwear and linens;

Non-durable goods, which can be used only once, such as food, gasoline, alcoholic beverages and tobacco; in practice, the latter also include a few goods of little value used more than once, such as household supplies.

Consumer services. Services consumed by households, such as rent (including the rent imputed on owner-occupied housing), transportation, education, medical care, child care, food and accommodation services as well as travel expenditures of Canadians abroad, less travel expenditures of foreigners in Canada. Also includes the current (operating) expenses of associations of individuals and unincorporated businesses.

Contributions to percent changes. These estimates show the contribution of a sub-aggregate to the percent change in an aggregate. For example, if personal consumer spending increases 2% and the contribution to the percent change by motor vehicle purchases is 1%, then motor vehicle purchases would be said to have accounted for half of the increase in personal consumer spending.

Contributions to social insurance plans. Employer and employee contributions to employment insurance, the Canada and Quebec Pension Plans and workers' compensation.

Corporate and government business enterprise sector. All business transactors whose legal form of organization is the corporation, plus government business enterprises. This sector is divided into non-financial and financial enterprises. The latter are comprised of several sub-sectors (Bank of Canada, chartered banks, credit unions, life insurance companies, trusteed pension funds, mutual funds, etc.). The intermediation activities of credit unions, life insurance companies and trusteed pension funds shown as assets of these sub-sectors are balanced by claim liabilities which, in turn, are assets of the persons and unincorporated business sector.

Corporation profits before taxes. The net earnings from economic activity of privately-held corporations, measured after deduction of capital consumption allowances.

Currency and deposits. Financial instruments comprising:

Currency and bank deposits. Deposits denominated in Canadian dollars at chartered banks in Canada and at the Bank of Canada, plus Canadian currency and coin in circulation.

Other deposits. All deposits at other Canadian deposit-taking institutions, including shares in credit unions.

Foreign currency and deposits. Holdings of foreign currency and foreign currency denominated deposits at chartered banks in Canada, foreign branches and subsidiaries of Canadian chartered banks, foreign banks and other foreign deposit-taking institutions.

Current prices. A valuation at current prices is expressed at the prices prevailing during the period being referred to.

Current transactions with non-residents. Exports of goods and services less imports of goods and services, plus net investment income from non-residents and net current transfers from non-residents.

Current transfers. Transfers out of the income of the donor, reducing his saving and adding to that of the recipient.

Current transfers from corporations to persons. Charitable donations and other contributions.

Current transfers from government to business. Subsidies to the business sector.

Current transfers from government to non-residents. Pensions paid to non-residents, contributions to international organizations and economic and technical assistance as well as food aid provided by the Canadian International Development Assistance Agency and other governmental agencies.

Current transfers from government to persons. Payments such as the Child Tax Benefit/Credit, Employment Insurance benefits, old age security benefits, welfare payments, scholarships and research grants, workers' compensation benefits, grants to aboriginal peoples and their organizations, pensions paid under the Canada and Quebec Pension Plans, and veterans' allowances.

Current transfers from non-residents to government. Withholding taxes paid by non-residents to the Government of Canada.

Current transfers from non-residents to persons. Pensions paid by foreign governments to Canadian residents plus remittances by non-residents to Canadian residents.

Current transfers from persons and unincorporated businesses to government. Income taxes, contributions to social insurance plans and other current transfers.

Current transfers from persons to corporations. The transfer portion of interest on the consumer debt.

Current transfers from persons to non-residents. Remittances by Canadian residents (particularly religious and charitable organizations) to non-residents and withholding taxes paid abroad.

Deflation. Process of eliminating price change from a specific time series.

Disposable income. See **personal disposable income**.

Dividends. Income payable and receivable in respect of corporate equities (cash dividends) and further equity participation in corporate enterprises (stock dividends).

Economic territory. The economic territory of a country encompasses the geographic territory, plus the air space, territorial waters and continental shelf, as well as its territorial enclaves abroad (embassies, consulates, military bases, etc.).

Existing assets. See **net acquisition of existing assets.**

Exports and imports of goods and services. Current receipts and payments arising out of transactions in moveable goods and services between residents and non-residents. Services include travel, freight and shipping, business services, government transactions, financial intermediation and other services.

Factor cost. A valuation reflecting the cost of production factors (labour and capital). It corresponds to the value remaining after the deduction from **market prices** of all applicable taxes and subsidies.

Farm inventories. Farm output stored on farms; includes grains, tobacco, potatoes and livestock.

Final domestic demand. The sum of personal expenditure on consumer goods and services, net government current expenditure on goods and services, government gross fixed capital formation and business gross fixed capital formation.

Fisher index. Geometric mean of the **Laspeyres index** and the **Paasche index**.

Fisher volume index. Geometric mean of the **Laspeyres volume index** and the **Paasche volume index**.

Fixed capital. See **gross fixed capital formation**.

Fixed-weighted price indexes. Also known as “Laspeyres” indexes, these are price indexes where a fixed pattern of expenditure from some base period is used to aggregate the detailed price indexes in each period.

Foreign investments. All marketable financial instruments (bonds, short-term paper and shares) which are liabilities of the non-resident sector (foreign governments and corporations) and assets of domestic sectors.

Government business enterprise profits before taxes. Net earnings from the economic activity of **government business enterprises**, measures after deduction of **capial consumption allowances**.

Government business enterprises. Government enterprises and agencies which operate on a profit or cost recovery basis and whose motivation is similar to that of private enterprises. Their total profits (net of losses) are recorded in GDP, while only the profits remitted to government are recorded in the government income and outlay account, under government investment income. The difference between these two measures, retained earnings, forms part of business sector saving.

Government current expenditure on goods and services. All current outlays for goods and services by the government sector, including wages and salaries of government employees. It also includes expenditure on weapons for defence and an imputation for the depreciation of government fixed assets. It is recorded before deduction of revenues from sales of goods and services in the government income and outlay account, and after deduction of these revenues in GDP (net government current expenditure on goods and services).

Government gross fixed capital formation. This expression covers all expenditures on buildings, engineering construction and machinery and equipment. Government gross fixed capital formation includes spending on non-military defence buildings and equipment (airports, docks, roads, hospitals, transport aircraft, etc.). Abbreviated as **fixed capital** in the government capital and financial account.

Government investment in inventories. Government inventories include only uranium stocks, up to 1981, and those held by federal government commodity agencies, such as the Canadian Dairy Commission. Abbreviated as **inventories** in the government sector account.

Government investment income. In GDP, includes interest income of public service pension plans, other interest and dividend income of governments and royalties. In the government income and outlay account, it also includes the profits of government business enterprises remitted to government. See **government business enterprises.**

Government sales of goods and services. Revenues from the sale of goods and services, such as water charges, landing fees and charges for government documents.

Government sector. All departments, agencies, and funds (budgetary and non-budgetary) of the federal, provincial and local levels of government, as well as crown corporations which receive more than 50% of their revenues in grants from their parent governments. Also included are school boards, universities, non-profit colleges, hospitals, non-profit residential care facilities, as well as the Canada and Quebec Pension Plans.

Grain in commercial channels. Grain in the hands of the Canadian Wheat Board or private grain dealers.

Gross domestic product. The total unduplicated value of the goods and services produced in the economic territory of a country or region during a given period. GDP can be measured three ways: as total incomes earned in current production (income approach), as total final sales of current production (expenditure approach), or as total net values added in current production (value added approach). It can be valued either at base price or at market prices. In the Income and Expenditure Accounts, Gross Domestic Product is measured by the income and expenditure approach.

Gross fixed capital formation. This expression covers all expenditures on buildings, engineering construction and machinery and equipment. Gross capital formation in machinery and equipment includes imports of used machinery and equipment since the latter constitute additions to domestic capital stock. Gross fixed capital

formation in buildings includes transfer costs on the sale of existing fixed assets (e.g., real estate commissions). Abbreviated as **fixed capital** in the capital and financial account. Synonym of **investment in fixed capital**.

Gross fixed capital formation, corporations and government business enterprises sector. This expression covers all expenditures on buildings, engineering construction and machinery and equipment in the **corporations and government business enterprises sector**. It includes a large portion of the gross fixed capital formation in non-residential structures and machinery and equipment of the business sector. Abbreviated as **fixed capital** in the corporations and government business enterprises sector account.

Gross fixed capital formation, persons and unincorporated businesses sector. This expression covers all expenditures on buildings, engineering construction and machinery and equipment in the **persons and unincorporated businesses sector**. It includes mainly the gross fixed capital formation in residential structures but also includes a small portion of non-residential structures and machinery and equipment. Abbreviated as **fixed capital** in the persons and unincorporated businesses sector account.

Gross national product. A measure of income equal to the **Gross domestic product at market prices**, plus **investment income received from non-residents**, less **investment income paid to non-residents**.

Gross saving. Net saving plus capital consumption allowances.

Holding gains and losses. Additions to or subtractions from income which result from selling an asset for more or less than its purchase price. As holding gains and losses are not related to current production, they are excluded from GDP through the **inventory valuation adjustment**.

Households. A group of persons who share the same living accommodation, pool some, or all of their income and wealth and consume certain goods and services collectively. They may engage in any other kind of economic activity.

Implicit price indexes. These price indexes are a by-product of the **deflation** procedure, obtained by dividing an expenditure series expressed at current prices by the corresponding series expressed in real terms. For all volume aggregates published in the Income and Expenditure Accounts, the implicit price indexes are the chain Fisher prices indexes.

Imports of goods and services. See **exports and imports of goods and services**.

Income and outlay account. This account shows, for each major sector, all sources of current income (production, receipts of property income and other transfers) and all current outlays (expenditure on goods and services, payments of property income and other transfers), as well as **saving**, equal to a sector's income less its outlay.

Inheritances and migrants' funds. Capital brought to Canada by immigrants at the time of arrival or transferred outside Canada by emigrants at time of departure, or intended to be transferred at a later date, plus bequests to Canadian residents from non-residents or vice-versa.

Interest and miscellaneous investment income. Investment income of persons, except dividends, plus government investment income, less net investment income of persons and governments received from non-residents, less the transfer portion of interest on the consumer debt, less the interest on the public debt.

Interest, dividends and miscellaneous investment income of persons. Includes income of persons and unincorporated businesses as owners of financial or tangible non-produced assets in return for putting the assets at the disposal of another institutional unit. Interest includes interest on Canadian bonds, mortgage interest paid to persons and interest on deposits. Miscellaneous investment income includes accrued interest in pension plans, life insurance funds and interest on investments made by other "associations of individuals".

Interest on the consumer debt. Interest paid by persons on account of liabilities incurred to finance personal expenditure on consumer goods and services. Consists of two parts: the administrative expenses, representing the cost of rendering services to borrowers, and the remaining “transfer portion”.

Interest on the public debt. Interest payments on liabilities of the government sector.

Inventories. See **investment in inventories**.

Inventory valuation adjustment. The difference between the change in inventory book values and the value of physical change in inventories, which is a measure of the net holding gain or loss realized by business as a result of price changes. Holding gains and losses on inventories are present in corporation profits and other income aggregates, and must be removed in order to measure the value of current production.

Investment in fixed capital. Synonym of **gross fixed capital formation**.

Investment in inventories. Change in the physical volume of business and government inventories, valued at the average market prices of the period.

Investment in inventories, corporations and government business enterprises. Consists of most of the investment in inventories of the business sector except for a portion of non-farm inventories held by unincorporated farm businesses. Abbreviated as **inventories** in the corporations and government business enterprises sector account.

Investment in inventories, persons and unincorporated businesses sector. Consists mainly of farm inventories held by unincorporated farm businesses. Abbreviated as inventories in the persons and unincorporated businesses sector account.

Investment income of persons. Interest on deposits, bonds, mortgages, etc., and royalties paid by corporations, governments and non-residents to persons, plus investment income accumulating on their behalf in trusteed pension plans and life insurance funds, or on behalf of other associations of individuals. Excludes dividends.

Investment income paid to non-residents. Investment income payments on Canadian liabilities to non-residents, inclusive of any applicable withholding taxes. Includes interest, dividends and other payments such as net expenses of Canadian banks from foreign currency transactions and net revenues of foreign insurance companies from insurance operations in Canada.

Investment income received from non-residents. Investment income earned by Canadian residents on their assets abroad, inclusive of any applicable withholding taxes. Includes interest, dividends and other receipts such as net earnings of Canadian banks from foreign currency transactions and net revenues of Canadian insurance companies from insurance operations abroad.

Labour income. The sum of wages and salaries plus supplementary labour income.

Laspeyres index. Index calculated by using prices or volumes from a predetermined **base year** as weights.

Life insurance and pensions. Liability of life insurance companies and trusteed pension plans to policyholders or beneficiaries and federal government liability with respect to annuities sold under the Annuities Act, as well as government employer-sponsored pension plans. Asset of policy holders or beneficiaries.

Loans. Financial instrument comprising **bank loans** and **other loans**. Negotiated loans made by chartered banks and other financial institutions.

Machinery and equipment. Capital expenditures on durable, tangible goods with an expected service life of one year or more, such as furniture, motor vehicles, office machines and equipment not permanently installed (permanently built-in equipment belongs to non-residential construction). Includes installation and delivery costs.

Market prices. A valuation expressed in terms of the prices actually paid by the purchaser, that is, after all applicable taxes and subsidies. See **factor cost.**

Military pay and allowances. The part of labour income consisting of payments to members of the Armed Forces serving in Canada or abroad. Includes military pay, allowances and the employer's social contributions. Excludes veterans' allowances, treated as transfer payments.

Mortgages. Negotiated loans and agreements of sale secured by real property, mostly residential buildings. Includes first, second and third mortgages. Mortgages are characterized by blended repayments, usually monthly, of principal and interest.

Net acquisition of existing assets. A sector's purchases less sales of used fixed assets and land. Business purchases less sales of natural resources, resource rights and intangible assets are also included. Does not apply to the non-resident sector which, by definition, acquires only financial investments. Abbreviated as **existing assets** in the capital and financial account.

Net capital transfers. Capital transfers from other sectors less capital transfers to other sectors.

Net domestic product at basic prices. The sum of all incomes arising from production, or ownership of assets used in production, within the economic territory of a country or region. This income includes **labour income, profits before taxes, interest and miscellaneous investment income, accrued net income of farm operators from farm production, net income of non-farm unincorporated business including rent,** and the **inventory valuation adjustment**. **Taxes** and **subsidies on factors of production** are also included since the size of these components is directly linked to the production decisions of producers. Differs from GDP at basic prices in that it excludes capital consumption allowances.

Net financial investment. The net lending (or borrowing) of a sector can be measured either through incomes and expenditures or through financial transactions. Under the financial transactions approach, net lending is called net financial investment. It is equal to a sector's transactions in financial assets less its transactions in liabilities. See **net lending and capital and financial account**.

Net income of non-farm unincorporated business, including rent. Earnings of unincorporated proprietors, except farm operators, from their own business. Includes the net income of unincorporated businesses and self-employed individuals, as well as the net rental income of persons.

Net income of unincorporated business. The sum of **net accrued income received by farm operators from farm production** and **net income of non-farm unincorporated business, including rent.**

Net income received by farm operators from farm production. Gross proceeds from the sale of farm products, plus subsidies on a cash basis, plus the imputed value of farm output consumed by farming households, plus investment in farm inventories, less farm operating expenses and depreciation on farm buildings and equipment. Excludes other types of income, such as net rent or interest receipts, and profits of incorporated farms. See **accrued net income of farm operators from farm production.**

Net investment income from non-residents. Investment income received from, less investment income paid to, non-residents.

Net lending. The net lending (or borrowing) of a sector can be measured either through incomes and expenditures or through financial transactions. Under the income and expenditure approach, net lending is the difference between internally generated funds and outlays on non-financial capital. A sector's net lending equals its saving,

plus its capital consumption allowances and net capital transfers from non-residents, less its investment in fixed capital and inventories. Net lending (or borrowing) is also referred to as sector surplus (or deficit). See **net financial investment** and **capital and financial account.**

Net national income at basic prices. Net domestic product at basic prices plus **net investment income of non-residents**.

Net reinvested earnings on direct investment. Reinvested earnings (REI) are profits earned on, less dividends received from, direct foreign investment. From 1961, equity income from direct foreign investment is recorded on an accrual rather than cash basis in the Balance of International Payments. Net REI are defined as REI on foreign direct investment in Canada less REI on Canadian direct investment abroad. Net REI gives rise to an additional reconciliation item between the Canadian Balance of International Payments Accounts and the National Income and Expenditure Accounts, in which this change has not been incorporated.

Net rental income. Earnings of persons, after expenses, arising from the ownership of residential property, whether rented or owner-occupied, and from the rental of non-residential property.

Net saving. The current income of a sector, less its current expenditure. Includes current transfers but excludes capital consumption allowances and capital transfers. Synonym of **saving**.

Non-farm inventories. Inventories of raw materials, goods-in-process and finished products.

Non-financial capital acquisition. Includes the gross fixed capital formation of a sector (fixed capital), plus its investment in inventories (inventories) and its net acquisition of existing assets (existing assets). Does not apply to the non-resident sector which, by definition, can only engage in financial investment.

Non-resident sector. All transactors who do not have a centre of economic interest (a dwelling, a business location) in the economic territory of Canada. By definition, non-residents can only engage in financial investment. Any transactor making non-financial investment is deemed to be a resident.

Non-residential structures. Construction of industrial, commercial and institutional buildings, such as plants, warehouses, shopping centres, office buildings, schools and hospitals, plus construction of highways, bridges, railway tracks, canals, waterworks, sewage systems, dams, hydro or thermal generating plants, telephone lines, oil and gas facilities, etc. Includes new construction, conversions resulting in a structural change, major renovations, permanently built-in equipment and site preparation.

Non-residential structures and equipment. The sum of business investment in non-residential structures and in machinery and equipment.

Official reserves. The sum of a) official holdings of gold and foreign exchange (U.S. dollars and deposits in other convertible currencies), b) loans to or from the International Monetary Fund on general account, and c) special drawing rights.

Other current transfers from persons to government. Transfers not classified as direct taxes. Includes hospital and medical care premiums, various licences and permits, (hunting and fishing licenses, marriage licenses, etc.) fines and penalties, the personal portion of motor vehicle licenses and permits, as well as donations to entities within the government sector.

Other financial assets / Other liabilities. Various items not included under other financial instruments, such as accrued interest, interest receivable or payable and prepaid expenses.

Outside Canada. Embassies and other Canadian government offices abroad which are part of the territory of Canada.

Paasche index. Index calculated by using prices or volumes from the current period as weights.

Personal disposable income. Personal income less current transfers to government.

Personal expenditure on consumer goods and services. Household spending on new consumer goods and on consumer services, plus any mark-up on used goods. Operating expenses of associations of individuals serving households are also included, under consumer services.

Personal income. The sum of all incomes received by persons residing in Canada, whether factor earnings from current production or current transfers from other sectors, plus the investment income that associations of individuals accumulate on their own behalf or on behalf of persons.

Personal saving. Personal disposable income less personal expenditure on consumer goods and services, less current transfers from persons to corporations and to non-residents.

Personal sector. All persons, households and associations of individuals serving households.

Persons and unincorporated business sector. Transactors of the personal sector plus those of the unincorporated business sector. In the capital and financial account, transactions of these two sectors are consolidated. In addition, in this account, although credit unions, life insurance companies and trusteed pension plans appear as sub-sectors of the corporate and government business enterprise sector, their transactions in financial assets are balanced by liabilities which, in turn, are recorded as assets of the persons and unincorporated business sector.

Price index. Measure of the change in prices in index form. There are several methods of measuring indexes. See **Laspeyres index, Paasche index, Fisher index, chain index** and **implicit price indexes**.

Production factors. Transactors which, when combined, result in economic production. In general, there are two production factors: labour and capital.

Real. In the national accounts, real means the estimation of the aggregate in **volume**, possibly in the form of a **volume index** or an estimate in **real dollars**.

Real dollars. A dollar estimate of the **volume** of economic activity obtained by applying the growth in a volume index to the value of a specific series for a given **reference period**.

Rebase, to. See **changing the base period**.

Reference period. The period when the value of a series in constant dollars is equal to the value of the same series in current dollars. The current reference year is 1997 (current dollars are equal to constant dollars in 1997).

Residential structures. Construction of dwellings (includes single, semi-detached, row housing and apartments), garages, cottages and mobile homes. Includes new construction, conversions resulting in a structural change and major renovations (together referred to as “alterations and improvements”), permanently built-in equipment, site preparation and transfer costs such as real estate commissions.

Saving. See **net saving**.

Saving rate. The ratio between **net saving** of the persons and unincorporated businesses sector and **personal disposal income**, expressed in percentage.

Sector accounts. The quarterly national accounts include the full sector accounts. They record the income, outlay, saving, non-financial and financial investment, borrowing and net lending for the four main sectors: (a) persons and

unincorporated businesses; (b) corporations and government business enterprises; c) government; and d) non-residents. See **income and outlay account** and **capital and financial account.**

Semi-durable goods. See **consumer goods.**

Shares. Financial instrument consisting of common and preferred shares (including term preferred shares and mutual fund shares), plus contributed surplus. Stock issued by a government business enterprise to a parent government is classified to government claims.

Short-term paper. Marketable financial instrument comprising:

Government of Canada short-term paper. Treasury bills, which are notes of original term to maturity of less than one year, issued at a discount and sold at auction every week; also includes Canada bills issued in foreign currency.

Other short-term paper. Notes of original term to maturity of one year or less, issued at a discount by a variety of financial and non-financial institutions; includes provincial and municipal Treasury bills as well as asset-backed securities.

Statistical discrepancy. Double-entry bookkeeping is fundamental in national accounting and several aggregates, such as GDP and net lending, can be calculated in two or more ways. In principle, all the measures of an aggregate are equal. In practice, differences invariably arise between them due to imperfections in basic statistics and estimation techniques. This difference is called a statistical discrepancy and serves as the balancing item between two theoretically equal aggregates. It can be recorded as is, like the discrepancy between the two estimates of net lending or it can be divided in two, one half being subtracted from the higher estimate and the other, added to the lower one, like the discrepancy between income-based and expenditure-based GDP.

Subsidies. Transfers from government to the business sector toward current costs of production. These transfers represent additions to the income of producers from current production. Subsidies can be linked to production factors or products.

Subsidies on products. These subsidies are paid by unit of good or service. They can take the form of a specific monetary amount paid by unit quantity of good or service or can be calculated *ad valorem* as a specific percentage of their unit price. Examples of product subsidies are those paid for agricultural products, transportation services and energy.

Subsidies on factors of production. Production subsidies are subsidies received by a unit that are unrelated to the quantity or the value of goods produced or sold. They are primarily subsidies on wages and labour, pollution reduction subsidies and interest subsidies. Investment assistance is not included.

Supplementary labour income. Employers' social contributions, either compulsory or voluntary. Includes retirement allowances and contributions to employment insurance, the Canada and Quebec Pension Plans, other pension plans, workers' compensation, medicare, dental plans, short- and long-term disability insurance, etc.

Surplus or deficit on current account in the "Canadian Balance of International Payments". The surplus or deficit of Canada on **current transactions with non-residents** plus **net reinvested earnings on direct investment**.

Taxes less subsidies on factors of production. Difference between **taxes on factors of production** and **subsidies on factors of production**. These taxes and subsidies are payable (received) regardless of the quantity or value of the goods and services produced or sold.

Taxes less subsidies on products. Difference between **taxes on products** and **subsidies on products**. These taxes and subsidies are payable (received) based on the quantity or value of the goods and services produced or sold.

Taxes on factors of production. These are mandatory payments without consideration, in cash or in kind, collected by government. They apply to production and the import of goods and services, employment of labour and ownership or use of land, structures and other assets used for production purposes. They are payable regardless of the quantity or value of the goods and services produced or sold.

Taxes on products. These are mandatory payments without consideration, collected by government on the sale of goods and services. These taxes include sales taxes, fuel taxes, import duties and taxes, excise taxes on tobacco and alcohol.

Trade accounts receivable/payable. Short-term credit advanced or received in the ordinary course of business by suppliers or buyers of business goods and services.

Transactors. Economic agents who engage in transactions involving the purchase and sale of goods and services and the payment and receipt of factor incomes and transfers.

Transfers. Cash, good, service, or asset other than cash transferred by one transactor to another without counterpart, that is, without the donor receiving anything in return. See **current transfers** and **capital transfers.** Synonym of **transfer payments**.

Transfer payments. See **Transfers.**

Unincorporated business sector. All business transactors whose legal form of organization is not the corporation. Includes independent business operators, self-employed farmers, fishermen and professionals and unincorporated landlords (including those renting to themselves).

Volume. Volume consists of the changes in quantities and qualities.

Volume index. A measure of growth with the effects of price removed, presented in index form. There are several methods of measuring indexes. See **Laspeyres index, Paasche index, Fisher index, chain index**. The Income and Expenditure Accounts use the **chain Fisher volume index** to calculate the real GDP.

Wages and salaries. Total remuneration, in cash or in kind, paid to employees in return for work done. It is recorded on a gross basis, before any deduction for income taxes, pensions, unemployment insurance and other social insurance schemes. Also includes other forms of compensation, namely commissions, tips, bonuses, directors' fees and allowances such as those for holidays and sick leave, as well as military pay and allowances. Excludes employers' social contributions, which are treated as supplementary labour income.

Withholding taxes. Taxes withheld by the Government of Canada on selected income and service payments to non-residents, or withheld by foreign governments on selected income and service payments to Canadian residents.

Chapter 14 Surveys and statistical programs

Alphabetical list of surveys and statistical programs

A

2715: Aircraft Movement Statistics
2728: Annual Cable Television Survey
2433: Annual Retail and Wholesale Trade Survey
2422: Annual Retail Trade Survey
2437: Annual Survey of Advertising and Related Services
2420: Annual Survey of Architectural Services
2442: Annual Survey of Automotive Equipment Rental and Leasing
2434: Annual Survey of Consumer Goods Rental
2439: Annual Survey of Engineering Services
2107: Annual Survey of Forestry
2103: Annual Survey of Manufactures and Logging
2424: Annual Survey of Personal Services
4706: Annual Survey of Service Industries: Real Estate Agents, Brokers, Appraisers and Other Real Estate Activities
4705: Annual Survey of Service Industries: Real Estate Rental and Leasing and Property Management
4704: Annual Survey of Service Industries: Food Services and Drinking Places
2416: Annual Survey of Service Industries: Motion Picture Theatres
2410: Annual Survey of Software Development and Computer Services
2423: Annual Survey of Travel Arrangement Services
2418: Annual Survey of Traveller Accommodation
2330: Apartment Building Construction Price Indexes

B

2802: Building Permits Survey

C

2798: Canadian Passenger Bus and Urban Transit Industries
- Large Urban Transit Survey - Monthly

4440: Canadian Tobacco Use Monitoring Survey
2803: Capital and Repair Expenditures, Actual, Preliminary Actual and Intentions
- Survey on Capital and Repair Expenditures

3438: Census of Agriculture
3901: Census of Population
2147: Coal Monthly
2301: Consumer Price Index
1726: Control and Sale of Alcoholic Beverages in Canada

E

2194: Electricity Supply and Disposition - Annual

F

2510: Financial and Taxation Statistics for Enterprises
3121: Financial Information of Universities and Colleges Survey

Alphabetical list of surveys and statistical programs (continued)

G

2149: Gas Utilities/Transportation and Distribution Systems (Monthly)
- Natural Gas Distribution

H

3886: Homeowner Repair and Renovation Survey

I

2318: Industrial Product Price Index
2203: International Trade Price Indexes
3152: International Travel Survey: Mail-back Questionnaires and Air Exit Survey of Overseas Travellers
5014: Investment in Non-residential Building Construction

L

3701: Labour Force Survey
2745: Large Urban Transit Survey - Monthly
3460: Livestock Survey

M

2791: Marine International Freight Origin and Destination Survey
2150: Monthly Refined Petroleum Products
2419: Monthly Restaurants, Caterers and Taverns Survey
2408: Monthly Retail Trade Survey (Department Store Organizations)
2101: Monthly Survey of Manufacturing

N

2402: New Motor Vehicle Sales Survey

P

2142: Production and Disposition of Tobacco Products
1902: Provincial Economic Accounts

Q

2607: Quarterly Estimates of Trusteed Pension Funds
2008: Quarterly Retail Commodity Survey
- New Motor Vehicle Dealer Commodity Survey

2501: Quarterly Survey of Financial Statistics for Enterprises
- Quarterly Survey of Financial Statements - Central Credit Unions
- Quarterly Survey of Financial Statements - Life Insurers
- Quarterly Survey of Financial Statements - Local Credit Unions
- Quarterly Survey of Financial Statements - Property and Casualty Insurers
- Quarterly Survey of Financial Statements - Trust and Mortgage Companies

Alphabetical list of surveys and statistical programs (concluded)

2168: Quarterly Survey of the End-Use of Refined Petroleum Products
- End Use of Refined Petroleum Products

R

2736: Rail Commodity Origin and Destination Statistics
2734: Railway Transport Survey - Annual
2446: Retail Store Survey
2447: Retail Chain Survey
2406: Retail Trade Survey (Monthly)
- Survey of Sales and Inventory of Alcoholic Beverages

S

2612: Survey of Employment, Payrolls and Hours
2603: Survey of Employment, Payrolls and Man-hours
3504: Survey of Family Expenditures
3508: Survey of Household Spending
2425: Survey of Service Industries: Amusement and Recreation
- Annual Survey of Arts, Entertainment and Recreation

4707: Survey of the Taxi and Limousine Services Industry

T

2721: Telecommunications Statistics - Quarterly
- Quarterly Survey of Telecommunications

3810: Travel Survey of Residents of Canada
2741: Trucking Commodity Origin and Destination Survey

U

2307: Union Wage Rate Indexes for Major Construction Trades, 20-City Composite

W

5061: Wholesale Trade Commodity Survey by Origin and Destination
2401: Wholesale Trade Survey (Monthly)

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Chapter 16 Acronyms and initialisms

A

ABCPI	Apartment Building Construction Price Index
ANIFO	Accrued net income of farm operators from farm production
ARTS	Annual Retail Trade Survey
AWE	Average Weekly Earnings

B

BEA	Bureau of Economic Analysis
BGE	Government Business Enterprises
BLS	Bureau of Labor Statistics
BOP	Balance of Payments
BPD	Balance of Payments Division
BPM5	Balance of Payments Manual 5

C

CA	Capital Accounts
CBSA	Canada Border Services Agency
CCA	Capital Consumption Allowances
CDC	Canadian Dairy Commission
CES	Capital Expenditure Survey
CIHI	Canadian Institute for Health Information
CLHI	Canadian Life and Health Insurance
CMHC	Canada Mortgage and Housing Corporation
COFOG	Classification of the functions of government
COICOP	Classification of individual consumption by purpose
CPC	Central Product Classification
CPI	Consumer Price Index
CRA	Canada Revenue Agency
CSNA	Canadian System of National Accounts
CTUMS	Canadian Tobacco Use Monitoring Survey
CVMA	Canadian Vehicle Manufacturers' Association
CWB	Canadian Wheat Board

D

DS	Domestic supply

F

FAMEX	Survey of Family Expenditures
FDD	Final Domestic Demand
FFA	Financial Flow Accounts
FIFO	First In First Out
FMS	Financial Management System
FOB	Free on board
FSIM	Financial Services Indirectly Measured
FV	Non-Chained Fisher Index

Chapter 16 Acronyms and initialisms (continued)

G

GDP	Gross Domestic Product
GFME	Gross Fixed Capital Formation in Machinery and Equipment
GNI	Gross National Income
GNP	Gross National Product
GO	Gross Output
GST	Goods and Services Tax

H

HRRS	Homeowner Repair and Renovation Survey
HS	Harmonized Commodity Description and Coding System
HST	Harmonized Sales Tax

I

IAD	Industry Accounts Division
ICSD	Investment and Capital Stock Division
IEA	Income and Expenditure Accounts
IEAD	Income and Expenditure Accounts Division
II	International Imports
IMF	International Monetary Fund
IOA	Income and Outlay Accounts
IOFD	Industrial Organization and Finance Division
IOT	Input-Output Tables
IPI	Industry Price Indexes
IPPI	Industrial Product Price Index
ITD	International Trade Division
ITS	International Travel Survey
IX	International Exports

L

LFS	Labour Force Survey
LIFO	Last In First Out

M

MCED	Manufacturing, Construction and Energy Division
MLS	Multiple Listing Service
MRTS	Monthly Retail Trade Survey
MSM	Monthly Survey of Manufacturing
MSRP	Manufacturer's Suggested Retail Price
MVMA	Motor Vehicle Manufacturers Association

N

NAICS	North American Industry Classification System
NBSA	National Balance Sheet Accounts
NIEA	National Income and Expenditure Accounts
NIPA	National Income and Product Accounts
NIPO	Non-Profit Organization

Chapter 16 Acronyms and initialisms (concluded)

NMVDCS	New Motor Vehicle Dealer Commodity Survey
NMVSS	New Motor Vehicle Sales Survey
NNP	Net Domestic Product
NPI	Non-Profit Institutions
NPISH	Non-Profit Institutions Serving Households

O

OECD	Organisation for Economic Cooperation and Development
OSFI	Office of the Superintendent of Financial Institutions
OSFI	Office of the Superintendent of Financial Institutions Canada

P

PEA	Provincial Economic Accounts
PID	Public Institutions Division
PSG	Personal Spending
PSG	Personal Spending Groups
PST	Provincial Sales Taxes
PTEA	Provincial and Territorial Economic Accounts
PWGSC	Public Works and Government Services Canada

Q

QFS	Quarterly Survey of Financial Statistics for Enterprises
QRCS	Quarterly Retail Commodity Survey

R

RCMP	Royal Canadian Mounted Police

S

SDR	Special drawing rights
SEPH	Survey of Employment, Payroll and Hours
SHS	Survey of Household Spending
SNA	System of National Accounts
SNA 1993	System of National Accounts 1993

T

TSRC	Travel Survey of Residents of Canada

U

U.K.	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organization

V

VAT	Value Added Taxes
VDI	Value of Depletion of Inventories
VP	Value of Production
VPC	Value of Physical Change

W

WPIP	Work Put In Place