

**Canada: Report on the Observance of Standards and Codes—Data Module,  
Response by the Authorities, and Detailed Assessments Using Data Quality  
Assessment Framework**

This Report on the Observance of Standards and Codes on Data Module for **Canada** was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on **October 14, 2003**. The views expressed in this document are those of the staff team and do not necessarily reflect the views of the government of **Canada** or the Executive Board of the IMF.

The response by the Authorities on this report, and the Detailed Assessment Using the Data Quality Assessment Framework (DQAF) are also included.

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CANADA

**Report on the Observance of Standards and Codes (ROSC)—Data Module**

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Contents	Page
Acronyms .....	2
Executive Summary .....	3
I. Introduction .....	4
II. Data Dissemination Practices and the Special Data Dissemination Standard .....	4
Data dimension: coverage, periodicity, and timeliness .....	5
Access dimension.....	5
Integrity dimension .....	7
Quality dimension.....	7
Monitoring of data dissemination .....	7
III. Summary Assessment of Data Quality .....	7
Prerequisites of quality .....	8
Integrity.....	9
Methodological soundness.....	10
Accuracy and reliability .....	13
Serviceability .....	15
Accessibility.....	17
IV. Staff's Recommendations.....	18
Text Tables	
1. Overview of Current Practices Regarding Coverage, Periodicity, and Timeliness of Data Compared to the SDDS.....	6
2. DQAF—Summary Presentation of Results .....	22

## ACRONYMS

<i>1993 SNA</i>	<i>System of National Accounts 1993</i>
BoC	Bank of Canada
<i>BPM5</i>	<i>Balance of Payments Manual</i> , fifth edition
CANSIM	Canadian Socio-Economic Information Management System
CDIC	Canada Deposit Insurance Corporation
COFOG	Classification of the Functions of Government
CPI	Consumer Price Index
CSNA	Canadian System of National Accounts
DQAF	Data Quality Assessment Framework
DRD	Data Resources Division (BoC)
DSBB	Dissemination Standards Bulletin Board
GDP	Gross domestic product
<i>GFSM</i>	<i>Government Finance Statistics Manual (2001)</i>
IEAD	Income and Expenditure Accounts Division (StatCan)
IIP	International investment position
IPPI	Industrial product price index
IMDB	Integrated Metadata Base
IMF	International Monetary Fund
I-O	Input-output
IOFD	Industrial Organisation and Finance Division (StatCan)
ISIC	International Standard Industrial Classification of All Economic Activities
<i>MFMS</i>	<i>Monetary and Financial Statistics Manual (2000)</i>
NAICS	North American Industrial Classification System
OECD	Organisation for Economic Co-operation and Development
OSFI	Office of the Superintendent of Financial Institutions
PID	Public Institutions Division (StatCan)
PPI	Producer Price Index
RMPI	Raw Materials Price Index
ROSC	Report on the Observance of Standards and Codes
SDDS	Special Data Dissemination Standard
SHS	Survey of Household Spending
StatCan	Statistics Canada

## EXECUTIVE SUMMARY

This Report on the Observance of Standards and Codes data module provides a review of Canada's data dissemination practices against the International Monetary Fund's (IMF) Special Data Dissemination Standard (SDDS), complemented by the in-depth assessment of the quality of six key sets of macroeconomic statistics: national accounts, consumer price index, producer price index, government finance statistics, balance of payments, and monetary statistics. Statistics Canada compiles the first five of these sets and has joint responsibility with the Bank of Canada for the sixth. The assessment was carried out by a mission from the IMF's Statistics Department that visited Ottawa during January 22-February 5, 2003.

The mission concluded that Canada is in observance of the SDDS. In addition, the mission reached the following main conclusions with respect to the assessment of the quality of the six sets of macro-economic statistics:

- **Prerequisites of quality:** Statistics Canada, which is at the heart of the statistical system, and the Bank of Canada demonstrate awareness of quality as the cornerstone of statistical work. Statistics Canada's *Quality Assurance Framework* now anchors the management of quality across all programs and at all levels. It is a commendably complete and effective example of quality assurance practice. Both agencies have adequate resources for their statistical programs. Both have legal and institutional frameworks that protect confidentiality and ensure statistical reporting. Cooperation between the two agencies is close. However, it would be useful to articulate the roles of the two agencies in producing statistics on the financial sector and explore more data sharing between them to better serve their shared statistical mission.
- **Integrity:** Both agencies provide assurance of professionalism; the public trusts their statistics to be objective. They are transparent in their policies and practices, and they provide guidelines on ethical conduct for their staff.
- **Methodological soundness:** The national accounts, the consumer and producer price indices, government finance statistics, and balance of payments generally follow internationally accepted guidelines on concepts and definitions, scope, classification and sectorization, basis of recording, and valuation. Statistics on the financial sector could be expected to include additional time series reflecting the classification and valuation recommended in the guidelines.
- **Accuracy and reliability:** All macroeconomic datasets get high marks for accuracy and reliability. Source data are adequate, statistical techniques are sound, and assessment and validation of source data and outputs are thorough. In several datasets, some fine tuning could be done by conducting more regular and/or thorough studies of revisions and using them to improve the statistical output.
- **Serviceability:** Canadian macroeconomic statistics are relevant and available on a timely basis with good frequency. They are notable for the consistent framework—the Canadian System of National Accounts—within which the national accounts,

balance of payments, and government finance statistics are disseminated. Useful work could be done to develop a more integrated set of statistics for the financial sector consistent with other macroeconomic data.

- **Accessibility:** All datasets are readily available to the public. Some users expressed the view that more data should be available as a public good. Documentation on methodology and deviations from internationally accepted standards accompany most datasets, but some fine tuning in the database that Statistics Canada is developing as a repository for that documentation would be useful. Support service for users is excellent for all datasets.

## I. INTRODUCTION

1. The data dissemination module of this Report on the Observance of Standards and Codes (ROSC) provides a summary of Canada's dissemination practices for SDDS data categories. It is complemented by a detailed assessment of the quality of key macroeconomic datasets using the Data Quality Assessment Framework (DQAF) developed by the IMF's Statistics Department. This report is based on information provided prior to and during a staff mission from January 22-February 5, 2003,<sup>1</sup> as well as publicly available information.
2. Section II includes an overview of the SDDS and an assessment of Canada's data dissemination practices against this standard. Section III presents a summary assessment of the quality of the principal macroeconomic datasets, following the dataset-specific assessment frameworks underlying the DQAF. Finally, Section IV sets out recommendations to achieve further improvements in Canada's statistics. The accompanying Detailed Assessments volume describes Canadian practices and the country context.

## II. DATA DISSEMINATION PRACTICES AND THE SPECIAL DATA DISSEMINATION STANDARD

3. Canada subscribed to the SDDS on April 20, 1996 and started posting its metadata on the Dissemination Standards Bulletin Board (DSBB) on September 19, 1996. (See Appendix I of the Detailed Assessments volume for a summary of the SDDS.) Canada is in observance of the SDDS, having met the specifications for the coverage, periodicity, and timeliness of the data and for the dissemination of advance release calendars on February 19, 1999. The Data Template on International Reserves and Foreign Currency Liquidity was hyperlinked to the DSBB on September 17, 1999. The National Summary Data Page was hyperlinked to the DSBB on April 24, 1997.

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<sup>1</sup> The mission team was headed by Carol S. Carson and included Betty Gruber, Gérard G. Raymond, Eduardo Valdivia-Velarde, and Kimberly Zieschang (all Statistics Department), Derek Blades (expert), and Lidia Tokuda (Senior Administrative Assistant, Statistics Department).

4. Three official institutions are responsible for the compilation and dissemination of the SDDS prescribed data categories:

- Statistics Canada (StatCan): national accounts, production index, labor market, price indices, general government operations, merchandise trade, balance of payments, international investment position, and population.
- The Bank of Canada (BoC): analytical accounts of the banking sector, interest and exchange rates, and gross international reserves.
- Department of Finance: central government operations, central government debt, and template on international reserves and foreign currency liquidity.

The Toronto Stock Exchange compiles the share price index, which is redisseminated on the BoC website as a service to the public. These data can be accessed in publications and on the following Internet websites:

Statistics Canada website (<http://www.statcan.ca/>)

Bank of Canada website (<http://www.bank-banque-canada.ca/>)

Department of Finance website (<http://www.fin.gc.ca/>)

#### **Data dimension: coverage, periodicity, and timeliness**

5. Canada meets the SDDS specifications for the data dimension for all data categories (see Table 1). Canada uses flexibility options for the timeliness of the data on central government operations and for the timeliness of the production index. The latter, for Canada, is the monthly gross domestic product (GDP) measured from the production approach; StatCan believes that users are better served by this more comprehensive, albeit somewhat less timely, measure of production.

#### **Access dimension**

6. Canada meets the SDDS requirements for access to data by the public. Advance release calendars that meet the SDDS requirements are disseminated both in hard copy as well as on the three agencies' websites. These advance release calendars are supplemented by a quarter-ahead presentation of release dates on the DSBB. The mission encourages Canada to provide the calendars to the IMF. In meeting SDDS requirements, Canada avails itself of the two available flexibility options for the week-ahead identification of specific release dates for the data on central government operations and debt from the Department of Finance.

7. Data are released simultaneously to all interested parties, generally on the agencies' websites and on Canada's National Summary Data Page. The page is maintained by StatCan at <http://www.statcan.ca/english/Pgdb/dsbccan.htm>.

Table 1. Canada: Overview of Current Practices Regarding Coverage, Periodicity, and Timeliness of Data Compared to the Special Data Dissemination Standard (SDDS)

SDDS Data Category	Coverage (meets SDDS requirement)	Periodicity		Timeliness		Comments
		SDDS	Canada	SDDS	Canada	
<b>Real Sector</b>						
National accounts	Yes	Q	Q	1Q	60D	Timeliness exceeds SDDS requirements.
Production index/indices	Yes	M	M	6W (M encouraged)	60D	Flexibility option used for timeliness of the data.
Employment	Yes	Q	M	1Q	10D	Periodicity and timeliness exceed SDDS requirements.
Unemployment	Yes	Q	M	1Q	10D	
Wages/earnings	Yes	Q	M	1Q	60D	
Consumer price index	Yes	M	M	1M	10-16D	Timeliness exceeds SDDS requirements.
Producer price index	Yes	M	M	1M	1M	
<b>Fiscal Sector</b>						
General government operations	Yes	A	Q	2Q	60D	Periodicity and timeliness exceed SDDS requirements.
Central government operations	Yes	M	M	1M	7W	Flexibility option used for timeliness of the data.
Central government debt	Yes	Q	M	1Q	7W	Periodicity and timeliness exceed SDDS requirements.
<b>Financial Sector</b>						
Analytical accounts of the banking sector	Yes	M	M	1M	1M	
Analytical accounts of the central bank	Yes	M (W recommended)	W	2W (W encouraged)	2D	Periodicity and timeliness exceed SDDS requirements.
Interest rates	Yes	D	D	<sup>1/</sup>	D	
Stock market	Yes	D	D	<sup>1/</sup>	D	
<b>External Sector</b>						
Balance of payments	Yes	Q	Q	Q	60D	Timeliness exceeds SDDS requirements.
International reserves	Yes	M (W recommended)	W	1W	1D/3D for end-of-month	Periodicity and timeliness exceed SDDS requirements.
Reserves template	Yes	M	M	1M	1W	Timeliness exceeds SDDS requirements.
Merchandise trade	Yes	M	M	8W (4-6W encouraged)	6W	Timeliness exceeds SDDS requirements.
International investment position	Yes	A (Q recommended)	A	2Q (Q encouraged)	75D	Timeliness exceeds SDDS requirements.
External debt	...	Q	...	Q	...	Transition period ends March 31, 2003; SDDS requirements did not have to be met at the time of the mission.
Exchange rates	Yes	D	D	<sup>1/</sup>	D	
<b>Addendum: Population</b>	Yes	A	Q	...	Q	

**Note:** Periodicity and timeliness: (D) daily; (W) weekly or with a lag of no more than one week from the reference data or the closing of the reference week; (M) monthly or with a lag of no more than one month; (Q) quarterly or with a lag of no more than one quarter; (A) annually; and (...) not applicable.

<sup>1/</sup> Given that the data are broadly disseminated by private means, the timeliness with which official data are disseminated is not time critical.

### **Integrity dimension**

8. The SDDS-required disclosure of information on terms and conditions that govern the collection, compilation, and dissemination of data, including the confidentiality of the data collected, is available in English and French, Canada's official languages.

9. Procedures on internal government access to the data prior to public release are disseminated on the DSBB for the data categories to which they apply. According to these metadata, internal government access to data for eight SDDS categories is provided prior to public release under strict embargo to a small number of government staff for preparation of ministerial briefings, usually on the afternoon before official release. The eight categories are quarterly national accounts, production index, employment, unemployment, consumer price index, general government operations, balance of payments, and merchandise trade.

10. Data released by the Canadian agencies producing the SDDS data categories are not accompanied by ministerial commentary.

### **Quality dimension**

11. The last of the summary methodology statements was provided to the IMF and posted on the DSBB in January 2003. In addition, methodological information is disseminated by StatCan, the Department of Finance, and the BoC.

12. Canadian data suppliers also disseminate component detail and additional data series that make possible cross checks and checks of reasonableness for all data categories.

### **Monitoring of data dissemination**

13. The IMF staff began monitoring subscribers' performance under the SDDS in July 2000. Monitoring is carried out against the release dates stated in the advance release calendars and the metadata, i.e., to verify not only that the data are released according to the calendar, but also that the data disseminated correspond to the metadata posted on the DSBB. Canada's dissemination practices were in observance of the SDDS.

## **III. SUMMARY ASSESSMENT OF DATA QUALITY**

14. ROSC data modules typically assess the quality of six datasets—national accounts, consumer price index, producer price index, government finance statistics, balance of payments statistics, and monetary statistics. Several features of the Canadian statistical system shaped the selection of the specific datasets and the presentation of the assessments using the DQAF.<sup>2</sup> First, StatCan, which is at the heart of the Canadian statistical system,

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<sup>2</sup> The DQAF comprises a generic framework (see Appendix II of the Detailed Assessments volume) and a set of data-set specific frameworks. The frameworks cover five dimensions of quality—integrity, methodological soundness, accuracy and reliability, serviceability, and

(continued)

disseminates comprehensive macroeconomic data. More specifically, the national accounts, government finance, and balance of payments all are part of the Canadian System of National Accounts (CSNA), a conceptually and statistically integrated framework of stocks and flows designed to show the state and behavior of the Canadian economy. In this context, for government finance statistics, StatCan's data (rather than the Department of Finance accounting aggregates) were assessed. For statistics usually defined as "monetary statistics," StatCan shares responsibility with the BoC, and thus the relevant work in both StatCan and the BoC was assessed. Second, StatCan has a strong organizational culture and a well articulated and vigorously implemented set of operating principles. Thus, both to bring out this feature and to avoid repetition, the assessment of StatCan for the institutionally oriented dimensions of the DQAF is shown as shared by the five datasets for which it has sole responsibility.

15. Information resulting from the application of the DQAF to the Canadian statistical system is presented below, following the structure of the DQAF. Conclusions are supported by the accompanying Detailed Assessments volume. Conclusions are also presented in the form of standardized summary tables in which the assessment of data practices is made on a qualitative basis, using a four-part scale (Table 2 and, in the Detailed Assessments volume, tables 2, 5-9, and 14-15).

**16. In summary, Canada's macroeconomic statistics are of high quality. They are comprehensive, timely, and accurate and thus are adequate to conduct effective surveillance of economic and financial policies.**

### **Prerequisites of quality**

*This category in the DQAF identifies conditions within the agency in charge of producing statistics that have an impact on data quality. The elements within the category refer to the legal and institutional environment, resources, and quality awareness.*

17. For the datasets assessed in this report, **StatCan** is responsible for national accounts, the consumer price index, producer price indices, government finance statistics, the balance of payments, and part of the statistics for financial institutions that underlie monetary statistics. The Statistics Act (Revised Statutes of Canada, 1985, c. 5-19), building on earlier legislation that created a central statistical office, provides a strong legal and institutional framework. It clearly sets out the responsibility for the relevant statistical work, provides for data sharing and coordination, calls for protecting confidentiality of individual responses, gives wide access to records, and provides authority for mandatory reporting. The procedures to protect confidentiality are particularly strong (see page 6 of the Detailed Assessments volume). Resources are adequate in a tight budget environment. Staff are well trained and

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accessibility—and a set of prerequisites. Further information on data quality can be found at the IMF's "Data Quality Reference Site" (<http://dsbb.imf.org/dqrsindex.htm>).

motivated, and the number is adequate for the program. Hardware and software, in an increasingly distributed computing environment, meet needs. Working in a matrix organization, management provides strong direction for programs to use resources efficiently and plan for changing needs. Quality awareness is high. A focus on quality pervades the organization, as shown, for example, by the extensive feedback mechanisms and structured biennial and quadrennial program reviews. StatCan's *Quality Assurance Framework* sets out the interrelated and overlapping management processes that deal with quality considerations and guide planning. (For more information on this good practice, see the Detailed Assessments volume, page 12.)

18. The **BoC** engages in statistical work under its legislative authority to gather data from financial institutions for the purpose of conducting monetary policy. The Bank of Canada Act, which provides the legal and institutional framework, does not mandate publication of statistics. The BoC has a tradition of doing so as a public service. The BoC is also a supplier of statistics to StatCan. Data sharing and coordination among the BoC, the Office of the Superintendent of Financial Institutions (OSFI), and Canada Deposit Insurance Corporation (CDIC) are exemplary, and the laws governing these three institutions call for protecting confidentiality of individual responses and provide authority for mandatory reporting. The BoC also uses statistics for financial institutions compiled by StatCan to derive monetary statistics. Although cooperation between the BoC and StatCan is close, it would be useful to articulate the roles of the two agencies, for the information of all concerned, and explore more data sharing. It should be noted that cross-agency cooperation in some areas is currently constrained by legislation. Adequate staff and computer resources are available. Staff are well trained and motivated, and the BoC fosters an atmosphere where team spirit flourishes. Management provides strong direction for programs to use resources efficiently and plan for changing needs. The BoC recognizes the importance of quality awareness at every level. The annual work plan of the Data Resources Division (DRD) includes a section on quality assurance and improvement.

### **Integrity**

*Integrity identifies features that support firm adherence to objectivity in the collection, compilation, and dissemination of statistics so as to maintain users' confidence. Elements refer to the professionalism and ethical standards that should guide policies and practices, which should be reinforced by their transparency.*

19. In the Canadian context, several features provide assurances of **StatCan's professionalism**. The Chief Statistician, appointed by the Governor in Council and serving at pleasure, is recognized as serving in a position that requires professional competence. By tradition, the Minister to whom the Chief Statistician reports has maintained an arm's length relationship. By established practice, the Chief Statistician has full authority for setting priorities for StatCan's program within a single overall budget. Staff are appointed under the Public Service Employment Act, and the Chief Statistician can move staff within the agency as needed to meet program objectives. Publication of survey results and other statistical work in a timely manner is required under the Statistics Act. Procedures are in place to safeguard

objectivity in analytical output. All evidence shows that the agency is viewed as preserving objectivity in its work. Statistical considerations guide the choices of sources and statistical methods. Comment on erroneous statements in the media is an explicit part of StatCan communication strategy. As well, StatCan promotes statistical literacy widely, as evidenced by material aimed at students and teachers on its website.

20. StatCan's statistical policy and practice promote transparency, among other ways, by the wide availability of information about the terms and conditions under which StatCan works. In particular, the requirement that StatCan protect the confidentiality of individual responses is widely known. The fact that a few government officials have access to some sets of economic statistics before release could usefully be acknowledged more openly. StatCan's products all carry its logo; "brand name recognition" is wide. Advance notice of major changes in methodology is given for widely used datasets by notices in *The Daily*, StatCan's official release vehicle; by discussion in advisory and data-supplier groups; and other means. (These good practices are documented in the Detailed Assessments volume, page 19.) Government-wide and StatCan-specific policies and guidelines set ethical standards for staff. These cover, among other topics, conflict of interest, preserving objectivity, protecting confidentiality, and aiming to build and preserve confidence in statistics.

21. The DRD staff of the **BoC** evidence professionalism, for example by participating in conferences and by authoring related papers. The choice of sources and statistical techniques is based solely on timeliness and other statistical considerations that are explained in methodological notes/footnotes to data tables. The DRD staff seek to prevent misinterpretation or misuse of statistics by providing explanatory materials to external users. The BoC's policies and practices promote transparency. The terms and conditions under which monetary statistics are prepared by the BoC, as embodied in the Bank of Canada Act and the Bank Act, are available to the public on the website of the Justice Department. Internal government access to monetary statistics is only to the BoC's two partners in the Tri-Agency Database System. The fact that all three institutions have access to data prior to release is known to, and implicitly agreed to by, the reporting commercial banks. The BoC statistical products are clearly identified. Advance notice is given of major changes in methodology, source data, and statistical techniques in BoC publications. BoC-specific and some government-wide policies and guidelines set ethical standards for BoC staff. These cover conflict of interest, information security, protecting confidentiality, and safeguarding confidence in the institution and its output, including statistics on the financial sector.

### **Methodological soundness**

*Methodological soundness refers to the application of international standards, guidelines, and agreed practices. Application of such standards, which are specific to the dataset, is indicative of the soundness of the data and fosters international comparability. Elements refer to the basic building blocks of concepts and definitions, scope, classification and sectorization, and basis for recording.*

22. The **national accounts** generally follow the concepts and definitions of the *System of National Accounts 1993 (1993 SNA)*. Consistency with the *1993 SNA* was achieved in two stages between 1997 and 2002. Most of the remaining differences are quantitatively unimportant for the levels and growth rates of the GDP. The scope of the national accounts includes, in addition to the range of the recommended quarterly and annual national accounts tables, monthly GDP by kind of activity, input-output (I-O) tables, flow of funds, and balance sheets, all of which are integrated within the CSNA. (See a further description of this good practice in the Detailed Assessment volume, page 23.) The classification/sectorization are in accord with international standards, except for a national purpose classification for government expenditures that is not consistent with (but can be bridged annually to) the Classification of the Functions of Government (COFOG). The basis for recording is consistent with international recommendations, except that consumption of fixed capital for the nonfarm business sector is valued at historic costs rather than replacement costs as called for by the *1993 SNA*.

23. The **consumer price index (CPI)** follows the concepts and definitions and the basis for recording of international good practice. They are consistent with national accounts concepts for household consumption expenditure. The scope of the CPI covers the consumption expenditures that noninstitutionalized resident households make on their own behalf. It includes imputed expenditures for the housing services owners consume from their dwellings. Expenditures follow a national classification whose detail maps to the commodity classes used for GDP volume estimates.

24. The **producer price indices (PPIs)** follow the concepts and definitions and the basis for recording principles of the national accounts. The scope of the PPIs is all resident market enterprises, and covers the output of farm products, manufactured goods, electric power generation to nonresidential customers, building and electric utility construction, and five business services. Their coverage of output is identical with the national accounts for the covered products. The classification of establishments follows the North American Industrial Classification System (NAICS), whose ultimate classes map to the 2-digit International Standard Industrial Classification of All Economic Activities (ISIC), Revision 3. The national classification of products is based on the international Harmonized System of Commodity Description and Coding used for Canada's international trade, and the international Central Product Classification for services.

25. For **government finance statistics**, the concepts and definitions are consistent with those of the general government sector defined in the *Government Finance Statistics Manual (GFSM) 1986*. Plans have been made and work begun to migrate to the analytical framework of the *GFSM 2001*. The scope covers all public sector activities. Data are disseminated within the umbrella of CSNA. Information is available on revenue by economic type, expenditure (by function for general government and by economic type for the public sector), financing, financial assets, and liabilities. The classifications used are national classifications that have been developed in consultation with users. These classifications are broadly consistent with the recommendations of the *GFSM 1986*, and can be bridged to the *GFSM 1986* classifications to meet international reporting requirements. The basis for

recording is regarded as modified cash; the source data are on a mixture of cash, accrual, and modified cash bases. Financing and debt are valued and classified in accordance with international standards.

26. **Balance of payments** statistics closely follow the concepts and definitions set out in the *Balance of Payments Manual*, fifth edition, (*BPM5*). The scope is consistent with the standards and is kept under review. Some transactions, such as financial derivatives and “e-commerce,” are only partially covered, yet they are thought to have become more important in recent years. The classification of transactions is largely in line with international standards, as a result of a comprehensive project in 1994-97 to implement *BPM5*, although there are some departures mainly due to limitations in source data or the need to protect respondents’ confidentiality. These departures affect the classification of goods, several services, income, financial derivatives, and some other financial transactions. The institutional sector breakdown for portfolio and other investment transactions does not follow international standards. In most cases, the basis for recording approximates accruals. Transactions are generally valued at the price agreed on by the transactors. Thus they may not always be at market price, as recommended by standards, especially as a substantial portion of Canada’s transactions is carried out by foreign affiliates. Assets and liabilities positions data in the International Investment Position (IIP) are valued at the book value of the entities on which investments are made rather than at market value. (Migration to market value by mid-2004 is planned.)

27. Both the BoC and StatCan compile **monetary statistics**—that is, statistics on the monetary authorities, commercial banks, and other banking institutions.<sup>3</sup> Statistics reflect concepts and definitions that are consistent with Generally Accepted Accounting Principles of the Canadian Institute of Chartered Accountants but differ in several instances from guidelines in the *Monetary and Financial Statistics Manual (MFSM)*. Monthly credit and monetary aggregates derived from daily average stocks are compiled in a consolidated framework, but consolidated balance sheets of (1) the BoC and the Exchange Fund Account, (2) other depository corporations, and (3) depository corporations are not compiled either by the BoC or by StatCan. The scope of the BoC and StatCan data is generally consistent with *MFSM* recommendations. However, the classification of instruments deviates in several ways: financial derivatives and repurchase agreements, which are identified separately on reporting forms by individual commercial banks, are not separately identified in the statistics disseminated by BoC and StatCan; and accrued interest is not allocated to the relevant instruments but is included in other assets. The sectorization of institutional units, which is based on NAICS, is generally consistent with *MFSM* guidelines. The basis for recording

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<sup>3</sup> Three StatCan divisions are involved in the process: The Industrial Organisation and Finance Division (IOFD), the Public Institutions Division (PID), and the Income and Expenditure Accounts Division (IEAD). As the work of the IEAD and the PID is covered in detail in the sections on national accounts and government finance statistics, the section on monetary statistics will only cover the situation at the BoC and StatCan’s IOFD.

flows and stocks is broadly consistent with internationally accepted standards. However, most assets and liabilities are recorded at book value and some financial stocks are shown on a net basis. (In StatCan, conversion to market prices is planned for spring 2004.)

### **Accuracy and reliability**

*Accuracy and reliability identifies features that contribute to the goal that data portray reality. Elements refer to identified features of the source data, statistical techniques, and supporting assessments and validation.*

28. The source data for **national accounts** come mainly from payroll and other tax statistics, and from a wide range of enterprise and household surveys. The enterprise surveys are based on a comprehensive and carefully maintained business register. The main household surveys, the Labour Force Survey and the Survey of Household Spending, are based on an area frame samples that are updated every ten years from the decennial population census. No recent study, such as many industrial countries have undertaken, is available on the exhaustiveness of the national accounts. Sound statistical techniques are used. GDP is estimated independently from the production, income, and expenditure sides, and, after a delay of two-and-three-quarters years, these separate estimates are benchmarked on detailed annual I-O tables. Regular assessment and validation of both source data and national accounts estimates are facilitated by the existence of three independent estimates of GDP and use of an I-O framework. Regular revisions studies are made and are used to identify problems with basic sources and statistical techniques.

29. StatCan obtains the weights and prices source data for the **CPI** from comprehensive surveys. Beginning with 1997 data, the annual Survey of Household Spending (SHS) replaced the quadrennial Family Expenditure Survey, whose last collection was for 1996. The 2001 weights enter the index with data for January 2003, replacing the 1996 weights in the index since 1998. There are no plans at present to increase the approximately quadrennial frequency of updating the weights with the newly available annual expenditure information. The monthly price survey comprises about 45,000 prices per month, collected in 18 cities and other localities, in all provinces and territories. Holidays and weather conditions in Canada make annual expenditures on a number of commodities highly seasonal, and the CPI takes this into account by collecting prices for them during in-season periods only. Collections are also less frequent than monthly for items such as utility rates and university tuition fees that change infrequently. The statistical techniques used in calculating the index are sound. Prices are imputed when products are off-season or temporarily unavailable. The method used for a number of items may cause noticeable changes in the index, however, as off-season items come into season. The assessment and validation of the outlet and price samples are careful and effective. The prices in the CPI are not revised; revision studies on the effects of introducing new weights are adequate.

30. The products and weights of most of the **PPIs** are updated with the issue of final supply and use tables every five years. StatCan introduced 1997 weights into the Industrial Product Price Index (IPPI) in September 2001, along with revised historical price indices

from January 1997. The revised figures updated indices previously published with 1992 weights. The published indices also were renormalized to 1997=100 back to 1992. The delay of over three-and-a-half years in updating the weights mainly reflects the time needed to produce final estimates of the supply and use tables. Although annual weight updates are available, there are no plans to shorten the five-year interval between updates. The source data for the prices and weights are comprehensive, principally survey source information, although administrative data are used wherever possible to reduce respondent burden. The annual surveys of establishments underlying the weights and the establishment sample for the monthly price survey both use a stratified randomized design. The samples of elementary items on which StatCan collects prices, however, are cutoff samples of establishments' volume sellers. The IPPI price sample for goods comprises about 9,000 quotes per month from about 3,000 reporters. The collections for the other producer price indices for electric power generation, building construction, and business services are smaller. Statistical techniques are sound, although the method of imputation used may cause noticeable changes as off-season and temporarily unavailable items come back into the indices. The assessment and validation of the establishment and price samples are careful and effective. Both prices and weights are revised in the PPIs. Prices in the IPPI are subject to revision for six months after release, and there are historical revisions of the index when the index is reweighted. Revision studies are adequate.

31. Principal source data for **government finance statistics** are available annually from the published financial reports of governments and government business enterprises, supplemented by budget and other estimates, survey data, especially for local government, and other information until audited data are available. Public accounts data are available for the federal government six months after the reference year, after six to ten months for provincial and territorial governments, and after two years for local governments. Quarterly surveys are conducted to obtain data for the quarterly CSNA. Statistical techniques are sound. Assessment and validation of source data are routinely made and reconciliations to the public accounts are published for the federal, provincial, and territorial governments. Revision studies are routinely conducted.

32. For **balance of payments**, source data are broadly sufficient and are kept under continuous review to ensure that the data collection program remains comprehensive. The main data sources are surveys and administrative records. Surveys—some 30 in all—have a high response rate. In general, source data are timely. Statistical techniques are sound. A comprehensive and powerful security-by-security database captures all relevant features of Canadian bonds. Other Canadian portfolio investment instruments are close to being integrated into the system. Large ad hoc adjustments are made for undercoverage in customs documents of exports to countries other than the United States using several techniques, including certain inter-country data reconciliations for important trade partners. Assessments and validation of data are comprehensive and lead to statistical improvements. Annual current account data have been reconciled between Canada and the United States since 1970 and appropriate revisions are made to published data. Revision studies are conducted to identify problems with basic data sources and statistical techniques to improve data compilation.

33. For **monetary statistics**, the source data for commercial banks are monthly questionnaires collected by the BoC and StatCan. The total assets for the monetary authorities and commercial banks represent over 80 percent of the depository corporations sector. The BoC is satisfied that these data together with quarterly data from StatCan give a reasonable picture of the Canadian financial system. Quarterly financial statements for commercial banks, trust and mortgage loan companies, local and central credit unions and caisses populaires, mutual funds, life insurers and segregated funds, and nondepository credit intermediation institutions, are collected by the IOFD. Both the BoC and the IOFD use sound statistical techniques. Electronic reporting and data processing, automated validation procedures, and documentation of data compilation practices contribute to the production of accurate and timely monetary statistics. Regular assessments and validations of source and intermediate data as well as statistical outputs are undertaken. Consistency between the BoC and StatCan statistical series from depository corporations sector is not assured due to different methodological approaches. Confidentiality of the source information has precluded reconciliation between the two organizations. Revision studies are not carried out routinely to investigate the sources of errors, however, they are carried out on an ad hoc basis.

### **Serviceability**

*Serviceability focuses on practical aspects of how well a dataset meets users' needs. Elements refer to the extent to which data are relevant, are disseminated in a timely fashion with appropriate periodicity, are consistent internally and with other datasets, and follow a predictable revisions policy.*

34. The relevance of **national accounts** products is assured by formal arrangements to consult with a wide range of users both outside and within the government. The timeliness is good: quarterly and annual national accounts are released two months after the end of the reference period. This meets the SDDS requirements. Preliminary I-O tables are available with a delay of two-and-a-half years, and final results are released one year later. Consistent time series are available from 1961, although with reduced detail for the earlier years. The national accounts statistics are consistent with the balance of payments and are reconcilable with data on government operations. Although the revision policy is well known to regular users, it is not explained and could be a problem for new and occasional users. Except in some tables in *The Daily*, preliminary and revised data are not identified.

35. The **CPI** appears to meet users' needs. The **PPIs** meet the needs of users interested in farm product and manufactured goods prices, but their frequency and/or timeliness is not as good for power generation, construction (except new housing), and services. StatCan takes care to produce PPIs using concepts fully consistent with the CSNA. The wide variety of indices StatCan produces are not organized together, however, making their relationship to the overall system of economic statistics less transparent than it might be. Some of the minor series are easily overlooked given the current index-by-index treatment. The PPIs are in need of a single portal on the StatCan website organized into sections for output and intermediate consumption. Broader aggregates may be useful as the frequency and timeliness of the

nonmanufacturing series improve. StatCan monitors the relevance and consistency of its price indices for users through a variety of forums, and through quadrennial user surveys conducted as part of routine program reviews. The first of these reviews for prices will come due in 2005. The timeliness and periodicity of the CPI and the manufactured goods producer price index meet SDDS requirements. The revision policy is disseminated and known to users.

36. The relevance of **government finance statistics** in meeting the needs of users is monitored by StatCan's consultation and feedback mechanisms. Users appear to be satisfied. With respect to timeliness and periodicity, general government operations data, as drawn from the national accounts, are available quarterly and exceed SDDS requirements. Annual GFS, on a consistent and comparable basis, are available within three months of the end of the reference year. Public sector statistics are consistent internally and over time, and they are reconciled to the public accounts of the federal, provincial, and territorial governments. Financing data, within the CSNA, are not reconciled to financing data released by the Department of Finance, but both series are sourced from the public accounts. The revision policy follows the national accounts revisions policy, with revisions being applied routinely to the last four years and to earlier periods only when the national accounts historical series are opened for revisions.

37. **Balance of payments** statistics have maintained their relevance by a comprehensive and well established consultation process with government agencies, private firms, business associations, and academia. Active participation of staff in international initiatives to address methodological and compilation issues also helps them stay current. Timeliness and periodicity either meet or exceed SDDS requirements. As to consistency, consistent time series are available from 1983 onwards. The balance of payments are fully integrated with the national accounts. In general terms, the balance of payments transactions are consistent with IIP data. Revision policy follows a predetermined cycle that is well established and reflects the availability of data. Preliminary data are clearly identified. Analyses of major revisions, such as improvements in measuring services transactions, are published.

38. The relevance of existing **monetary statistics** is not regularly reviewed by external users. However, the BoC reports that users within the BoC are satisfied. Timeliness and periodicity meet the requirements of the SDDS for the accounts of the commercial banks disseminated by the BoC; data are available on a weekly "encouraged" basis for the accounts of the central bank. (The periodicity of StatCan data for financial institutions is quarterly. Quarterly data are released by StatCan approximately eight weeks after the quarter reference period end for quarters 2, 3, and 4, and approximately nine weeks for quarter 1.) Quality control procedures help ensure internal consistency of the data as well as their consistency over time. Consistency between BoC and StatCan data on the financial sector is not assured because there is no reconciliation between the two sets of data. In addition, there are potential inconsistencies in coverage and classification as checks with other macroeconomic statistics are not routinely undertaken. The BoC revision policy follows a well-established schedule. Users of monetary statistics are informed that the published data are subject to revision. The BoC preliminary or estimated data are identified, as are all revisions, regardless of the reason

or magnitude. Significant revisions are explained in publications and on websites. Recent revisions of StatCan's quarterly financial statistics, such as the treatment of investment and holding companies, were well covered in StatCan publications.

### **Accessibility**

*Accessibility deals with the availability of information to users. Elements refer to the extent to which data and metadata are clear and easily available and to which assistance to the users is adequate to help them find and use the data.*

39. The **national accounts** are readily accessible. The publications present the statistics in a clear manner, and text, charts, and tables are disseminated with the data to facilitate analysis. The statistics are published in hard copy and electronic form, including through Canadian Socio-Economic Information Management System (CANSIM). Data are available to all users at the same time on a pre-announced schedule. The summary metadata supplied in the StatCan Integrated Metadata Base (IMDB) are uneven across datasets, but detailed and clear methodological reports are available in printed and electronic form for most national accounts datasets. Some of these have not been updated following recent conceptual changes to bring the accounts closer to the *1993 SNA*. StatCan's assistance to users is excellent. Users reported that phone calls are returned promptly and that the staff are knowledgeable and courteous.

40. The **CPI and PPI for manufactured goods** are released on a preannounced schedule. StatCan makes top-level indices accessible to all users at the same time, but timely access to detailed series is on a fee basis. The monthly publications provide good detail on the indices. The Statistical Methods pages on the website as well as various paper and electronic publications disseminate metadata to users. The web-based IMDB has a consistent survey-oriented topical structure. The structure has not been applied consistently, however, in documenting the sources and methods of the various series. The web descriptions are detailed for the major price indices—the CPI and the IPPI/Raw Materials Price Index (RMPI)—but can be quite terse for other series and incomplete in identifying current documentation, administrative sources (if any), revision policy, and the like. Assistance to users on price statistics is prompt, focused, and well appreciated by the agency's clients.

41. Data accessibility for **government finance statistics** is very good in most respects. Data are released annually on the website within three months of the end of the reference year to a preannounced schedule. Text, charts, and tables are disseminated with the data to facilitate analysis. The annual publication is released some six months after the data release. Metadata are available with each annual release, and a comprehensive operations manual for the Financial Management System of Government Statistics is available on the StatCan website. Documentation is not available on the concepts and the quarterly methodology for compilation of data for the quarterly CSNA. Assistance to users is provided through catalogues, the StatCan website, and contact information on releases. Users reported that prompt, knowledgeable, and courteous assistance is always provided.

42. Data accessibility for **balance of payments** statistics is readily provided through the StatCan website: quarterly series are available on CANSIM and in hard copy publications. The statistics are presented in a clear manner, and text, charts, and tables are disseminated with the data to facilitate analysis. Data are released to all users at the same time and according to a preannounced schedule. Quarterly releases both in hard copy and online provide data at both aggregated and very detailed levels, including seasonally adjusted current account data. Analysis of current developments in the form of highlights is included in the quarterly data releases. Concerning metadata accessibility, the information posted in the IMDB is incomplete and could be presented more clearly. Nevertheless, the IMDB is linked to updated documentation from quarterly data releases, as well as a detailed publication of data sources, methodology, and statistical techniques available without charge in the StatCan website. Assistance to users is provided through knowledgeable and responsive staff by phone, fax, and e-mail, and a comprehensive catalogue of products and services is available, including information on charges. Contact point for each subject field is clearly publicized.

43. Access to monetary and financial statistics is easily achieved through the BoC and StatCan websites, regular publications, and CANSIM. The BoC does not currently disseminate more than ten years of data; for longer time series, users are instructed to access data through CANSIM. Advance release calendars are published by both the BoC and StatCan. Data are released simultaneously to all other interested parties. Metadata access is through the BoC and StatCan publications and websites, as well as the OSFI website for federally supervised financial institutions. Assistance to users is prompt and knowledgeable. A catalogue of publications, documents, and other services is available from the BoC and StatCan hard copy publication and websites. All BoC statistical releases identify individuals who may be contacted. The StatCan publications and website list a contact point.

#### IV. STAFF'S RECOMMENDATIONS

44. Based on the results of the data quality assessment, discussions with the Canadian authorities in the statistics-compiling agencies, and discussions with data users (see Appendix III of the Detailed Assessments volume), the mission has formulated a set of recommendations. They are designed to increase further Canada's adherence to international statistical standards and would, in the mission's view, enhance the analytical usefulness of Canada's macroeconomic statistics. The recommendations labeled "priority" stem from comments in the summary assessment tables. Those labeled "fine tuning" are, as their title suggests, refinements to an already strong set of statistics. Several of the recommendations are to "continue" or "follow through"; the intent is to note, in line with taking a snapshot of the data disseminated at the time of the mission, that an area would be the subject of recommendation but also that work is already underway in StatCan and the BoC.

45. Before turning to the recommendations, the mission must register that many of the data users with whom it spoke expressed the view that more data from StatCan should be available as a public good. Specifically, the high fees for series from CANSIM were at issue. StatCan notes that it implements the Canadian Government's policy on cost recovery. The

mission's observation is that the line that might be drawn between "free" and "for a fee" is blurring over time; the growing share of the public with access to computers may suggest that CANSIM could increasingly be of use to the public at large rather than being viewed as service for a special group for which cost recovery was deemed appropriate.

## **Cross-cutting Recommendations**

### ***Across agencies***

- Articulate the roles of BoC and StatCan in collecting, compiling, and disseminating statistics on the financial sector. Explore the possibilities of more data sharing between StatCan and BoC on monetary and financial statistics.
- Keep the descriptions of Canadian dissemination practices on the DSBB up to date.

### ***Fine tuning at the corporate level and across programs at StatCan***

- Mention in a place widely accessible to Canadians, such as on the website, that a few government officials have access to certain economic statistics on the afternoon before their release for ministerial briefing.
- Consider a review of the terms of reference and operations of the 15 professional advisory groups, to help ensure the continued effectiveness of these important mechanisms.
- Consolidate the many government-wide and agency-specific guidelines on ethical conduct into a one-stop shopping site.
- Carry out revision studies more regularly and formally. For example, now that major methodological changes for national accounts and balance of payments are in place, resume analysis of measures such as bias and dispersion. For the consumer price index, as another example, monitor revisions to the seasonal factors and the relationship between seasonally adjusted and unadjusted series. Make such studies available to the public more fully as part of the information on accuracy.
- Extend the work on documentation of methodology and quality, especially on, referenced on, or linked to the IMDB. Consider adapting the template so that it more readily fits datasets such as national accounts, government finance, and balance of payments statistics.

## **National Accounts**

### ***Priority***

- Estimate consumption of fixed capital at replacement cost instead of the historic cost estimates now used for the corporate sector.

### ***Fine Tuning***

- Complete the updated review of the "exhaustiveness" of the GDP estimate. Consider use of the framework for such studies recently prepared by an international group and published by the Organisation for Economic Co-Operation and Development (OECD).
- Adopt COFOG for classifying government expenditure in order to enhance international comparability and to permit measurement of consumption by "who consumes" as well as "who pays."

- Review the range of methodological publications on national accounts in order to ensure that all datasets are covered and that they reflect the changes consequent on closer alignment of the CSNA with the *1993 SNA*.
- Provide a general note in statistical publications on the revision cycle of each national accounts dataset.

## **Consumer Price Index**

### ***Fine Tuning***

- Follow through on plans to develop tracking series for alternative treatments of owner-occupied housing; suggest extending it to producing a superlative tracking CPI with annual SHS data, which are available from 1997 onward.
- Follow through on plans to implement checklists in the second phase of the CPI Sample Diversification Project.
- Review procedures to minimize use of the method of imputing the last observed price in price imputation methods for seasonally and temporarily unavailable items.
- Provide more detailed documentation on how the areas and retail establishments are selected.
- Provide more detailed documentation describing how StatCan has optimized the CPI sample regarding seasonal shopping patterns.
- Compile and release indices on the Classification of Individual Consumption by Purpose.

## **Producer Price Index**

### ***Fine Tuning***

- Follow through on plans to extend the PPI's coverage of the service industries and continue to scan for ways to accelerate improvements in coverage of services.
- Develop a summary index of the various output PPIs. Include crude materials coming from mining at basic price valuations in the IPPI as well as the RMPI.
- Review procedures to minimize use of the method of imputing the last observed price for seasonally and temporarily unavailable items.
- Continue efforts to update and keep current the content of PPI metadata and develop a portal for PPI series on the StatCan website.

## **Government Finance Statistics**

### ***Priority***

- Disseminate information on the sources and methods used in compiling quarterly public sector statistics for the quarterly CSNA.
- Expand on the information about the main concepts used in compiling government finance statistics in the manual for the Financial Management System.

### ***Fine Tuning***

- Continue to implement the plan for migration to *GFSM 2001*, including the plan to implement quarterly Financial Management System estimates. Disseminate, in advance, information on the changes in concepts and methodology.
- Disseminate reconciliations of the annual statistics with the quarterly sum of the four quarters in the CSNA for the general government sector.

## **Balance of Payments Statistics**

### ***Priority***

- Reclassify transactions that are not recorded in line with the *BPM5*. These reclassifications include (a) identifying financial derivatives in a separate functional category, (b) recording foreign money market instruments in portfolio investment, and (c) recording various services in their specific categories as part of the ongoing process of improving the quality of services data.
- Adopt international standards for classifying goods, breaking them into merchandise, goods for processing, repairs on goods, goods procured in ports by carriers, and nonmonetary gold.
- Classify portfolio investment and other investment transactions in accordance with the institutional sector classification of *BPM5*. (This would be in line with the institutional sector classification prescribed by the SDDS for the external debt category, soon to be implemented by Canada.)

### ***Fine Tuning***

- Improve the coverage of financial derivatives and “e-commerce” transactions.
- Pursue plans to publish IIP data at market value as recommended by *BPM5* by mid-2004.
- Continue efforts to identify mechanisms and implement specific measures to improve the coverage of goods exports to countries other than the United States not fully recorded in customs documents.
- Continue work to improve the recording of portfolio investment transactions, based on the results from the Coordinated Portfolio Investment Survey.

## **Monetary Statistics**

### ***Priority***

- Conduct surveys of users of statistics on the financial sector to enhance understanding of how the data are used and how they might be further developed.
- Develop a plan for the implementation of the *MFSM*, especially with respect to the following:
  - Compilation of consolidated balance sheets for the financial corporations sector;
  - Classification of transactions, including financial derivatives, repurchase agreements, income trusts, and accrued interest;
  - Valuation of financial assets and liabilities according to market value.
- Reconcile monetary statistics compiled by the BoC with statistics on the financial sector compiled by StatCan. Undertake consistency checks with other macroeconomic statistics (national accounts, government finance, and balance of payments) to eliminate or reduce potential inconsistencies in coverage and classification.

Table 2. Canada : Data Quality Assessment Framework—Summary Presentation of Results

For dimensions 0 and 1, the assessments across national accounts, CPI, PPI, government finance statistics, and balance of payments are for Statistics Canada and the assessments for monetary statistics are for the Bank of Canada.

Element	National Accounts	Consumer Price Index	Producer Price Index	Government Finance Statistics	Balance of Payments Statistics	Monetary Statistics	Comments
<b>0. Prerequisites of quality</b>							
0.1 Legal and institutional environment			O			O	
0.2 Resources			O			O	
0.3 Quality awareness			O			O	
<b>1. Integrity</b>							
1.1 Professionalism			O			O	
1.2 Transparency			O			O	
1.3 Ethical standards			O			O	
<b>2. Methodological soundness</b>							
2.1 Concepts and definitions	O	O	O	O	O	LO	See paragraph 27.
2.2 Scope	O	O	O	O	O	O	
2.3 Classification/sectorization	O	O	O	O	LO	LO	See paragraphs 26 and 27.
2.4 Basis for recording	LO	O	O	O	O	LO	See paragraphs 22 and 27.
<b>3. Accuracy and reliability</b>							
3.1 Source data	O	O	O	O	O	O	
3.2 Statistical techniques	O	O	O	O	O	O	
3.3 Assessment and validation of source data	O	O	O	O	O	O	
3.4 Assessment and validation of intermediate data and statistical outputs	O	O	O	O	O	O	
3.5 Revision studies	O	NA	O	O	O	O	
<b>4. Serviceability</b>							
4.1 Relevance	O	O	O	O	O	O	
4.2 Timeliness and periodicity	O	O	O	O	O	O	
4.3 Consistency	O	O	O	O	O	LO	See paragraph 38.
4.4 Revision policy and practice	O	O	O	O	O	O	
<b>5. Accessibility</b>							
5.1 Data accessibility	O	O	O	O	O	O	
5.2 Metadata accessibility	O	O	O	LO	O	O	See paragraph 41.
5.3 Assistance to users	O	O	O	O	O	O	

Key to symbols: NA = Not Applicable; O = Practice Observed; LO = Practice Largely Observed; LNO = Practice Largely Not Observed; NO = Practice Not Observed.

INTERNATIONAL MONETARY FUND

CANADA

**Report on the Observance of Standards and Codes (ROSC)-Data Module  
Response by the Authorities**

October 14, 2003

Contents

A. Cross-cutting Recommendations .....	- 2 -
B. National Accounts .....	- 5 -
C. Consumer Price Index .....	- 6 -
D. Producer Price Index .....	- 8 -
E. Government Finance Statistics .....	- 9 -
F. Balance of Payments Statistics .....	- 9 -
G. Monetary and Financial Statistics .....	- 12 -

## A. Cross-cutting Recommendations

### Across agencies

- *Articulate the roles of Bank of Canada and Statistics Canada in collecting, compiling, and disseminating statistics on the financial sector. Explore the possibilities of more data sharing between Statistics Canada and Bank of Canada on monetary and financial statistics.*

The Bank of Canada and Statistics Canada agree it is important to review and clarify the roles and responsibilities for financial and monetary statistics. The two agencies have a long history of cooperation but as with all such collaborations, from time to time the roles and *modus operandi* should be reassessed.

Early in 2003, a Task Force on the Roles and Responsibilities of Statistics Canada and the Bank of Canada for the Collection, Compilation and Dissemination of Data was created to examine current practices and to develop guiding principles with respect to roles and responsibilities. The Task Force set up a working group that has already made an initial report to the steering committee.

The Task Force will produce a document recommending a clearer division of responsibilities. It has also been charged with exploring the possibility of more data sharing between the two agencies.

- *Keep the descriptions of Canadian dissemination practices on the DSBB up to date.*

Canada recognizes the value of this source for metadata for international users and the importance of keeping these metadata as up to date as possible.

### Fine tuning at the corporate level and across programs at Statistics Canada

- *Mention in a place widely accessible to Canadians, such as on the website, that a few government officials have access to certain economic statistics on the afternoon before their release for ministerial briefing.*

Statistics Canada has accepted this recommendation and now has the following text on its website under the heading "About the Daily":

#### Release times

“The Daily is released at 8:30 a.m. Eastern time each working day with the exception of data from the Labour Force Survey and the Consumer Price Index,

which are available at 7 a.m. The Daily has been published since 1932 and posted on the Web since June 1995.

Given that Ministers' comments on information released by Statistics Canada can have repercussions on financial markets, it has been deemed essential that a few key federal officials have advance access to a small number of economic statistics on the afternoon before their release."

- *Consider a review of the terms of reference and operations of the 15 professional advisory groups, to help ensure the continued effectiveness of these important mechanisms.*

Statistics Canada believes it is receiving valuable advice on both program priorities and professional and technical issues from its professional advisory committees. Periodically it reviews the operations of these committees to ensure that each is operating effectively and that they share good practices in the way they are run. The Agency will seriously consider another such review in conjunction with an overall assessment of any coverage and overlap issues among the committees.

- *Consolidate the many government-wide and agency-specific guidelines on ethical conduct into a one-stop shopping site.*

While information on topics such as conflict of interest, preserving objectivity, confidentiality, privacy and security is already available on Statistics Canada's Intranet site (employee access), Statistics Canada agrees that it would be beneficial to consolidate access to this information. Such a consolidation would make the information more visible and serve as an ongoing educational tool for employees.

- *Carry out revision studies more regularly and formally. For example, now that major methodological changes for national accounts and balance of payments are in place, resume analysis of measures such as bias and dispersion. For the consumer price index, as another example, monitor revisions to the seasonal factors and the relationship between seasonally adjusted and unadjusted series. Make such studies available to the public more fully as part of the information on accuracy.*

Statistics Canada has re-established its previous revision study process after a hiatus related to implementation of SNA 93. Every year Statistics Canada revises the national accounts estimates for the previous four years and at the same time it publishes an article discussing the size and nature of the revisions. This serves largely as an information vehicle for explaining the nature and size of revisions to users. In addition, the SNA has currently embarked on a study of revisions focussing on the process, the integration since the implementation of SNA 93 and a large improvement to the survey taking infrastructure at Statistics Canada. This study will focus on the performance of the

projection system relative to the newly developed annual surveys which feed the benchmark I-O tables.

Statistics Canada has a policy of not revising the CPI. Thus the official unadjusted CPI data are published without subsequent revision. The seasonally adjusted data in contrast are produced using the X-11 ARIMA program and are subject to revision as actual subsequent data observations change the seasonal factors initially estimated by the X-11 model based on projected data. Thus changes to seasonally adjusted factors are not "revisions" in the same sense as revisions to unadjusted time series data. Unadjusted time series data are usually revised due to more complete information about the reference period becoming available, such as late reports from respondents or other relevant data series. These types of revisions do not apply to the unadjusted CPI data.

As part of its internal production processes, Statistics Canada already regularly reviews revisions to the seasonal factors and the relationship between seasonally adjusted and unadjusted series. In fact, the Agency made adjustments effective January 2003 to the specifications in the X-11 ARIMA model as applied to CPI data based on this monitoring. The Agency will consider making publicly available occasional analyses of revisions to seasonal factors and the relationship between seasonally adjusted and unadjusted series. Such studies might provide a useful quality indicator to users of the seasonally adjusted data series and could help indicate whether further fine-tuning of the specifications in the X-11 ARIMA model is required. However no significant demand from either the academic or user communities has been identified to date for such studies and information. The Agency intends to consult users on this matter.

- *Extend the work on documentation of methodology and quality, especially on, referenced on, or linked to the IMDB. Consider adapting the template so that it more readily fits datasets such as national accounts, government finance, and balance of payments statistics.*

The documentation of methodology and quality in the IMDB continues to be a priority for all statistical programs. Documentation for all business statistics programs (over 200 records) has been reviewed and upgraded as part of a special project. Discussions have started to establish similar special projects for national accounts, government finance and balance of payments statistics. Elements of the collection template that are not suitable for these programs are being identified and more appropriate guidelines will be developed in conjunction with these program areas. Processes to maintain the level of quality achieved through these special projects are in place, as are mechanisms to measure the quality of the documentation in the IMDB on an on-going basis. Linkages to this documentation from various locations on the Statistics Canada website have been improved and will be extended.

## B. National Accounts

### Priority

- *Estimate consumption of fixed capital at replacement cost instead of the historic cost estimates now used for the corporate sector.*

Statistics Canada has a highly developed capital stock program which produces replacement cost estimates of Capital Consumption Allowance. Currently, however, for the “business” sector of the national accounts the CCA is recorded at “Book Value” coming directly from companies’ fiscal records. This choice was made because other elements of the income statement and balance sheet are also being recorded at “Book Value”. Now that the Balance Sheet program is being converted to Market Value, it is an opportune time to change the CCA estimates. We are currently studying the various options (linear versus geometric depreciation and estimated shapes of depreciation functions versus surveyed expected asset lives). In a year, we expect to publish these new estimates as alternative data and do a complete conversion the next time we revise back beyond our normal four year revision period – the timing of which is yet to be determined.

### Fine Tuning

- *Complete the updated review of the “exhaustiveness” of the GDP estimate. Consider use of the framework for such studies recently prepared by an international group and published by the Organisation for Economic Co-Operation and Development (OECD).*

Statistics Canada is in the process finalizing a study on the non-observed economy. We have used the framework proposed by the OECD: *Measuring the Non-Observed Economy: A Handbook*. The report will update a 1994 Statistics Canada study: *The Size of the Underground Economy in Canada*, (Cat. 13-603E, No. 2).

- *Adopt COFOG for classifying government expenditure in order to enhance international comparability and to permit measurement of consumption by “who consumes” as well as “who pays.”*

Currently, government expenditures by function are being developed as part of a larger project to build GFS data for the public sector. These will be the basis for National Accounts estimates.

- *Review the range of methodological publications on national accounts in order to ensure that all datasets are covered and that they reflect the changes consequent on closer alignment of the CSNA with the 1993 SNA.*

We have released several national accounts methodological documents over the last few years and are in the process of preparing others. Among those released:

- Gross Domestic Product by Industry: Sources and Methods, released November 2002
- A Guide to Deflating the Input Output Accounts, Sources and Methods, released February 2001
- Canada's Balance of Payments and International Investment Position, Concepts, Sources, Methods and Products, released July 2000
- Guide to the National Tourism Indicators, Sources and Methods, released February 2001
- Productivity Growth in Canada: Appendix 1 Statistics Canada's Productivity Program, Concepts and Methods released January 2001,
- Concepts, sources and methods of the Canadian System of Environmental and Resource Accounts (Econnections: linking the environment and the economy), (Cat 16-505-GPE).

We plan to release, before the end of the year, a Guide to the Income and Expenditure Accounts as well as detailed methodologies underlying the estimates of Gross Domestic Product by industry. Plans are also under way to update the sources and methods used to construct Canada's Input Output tables.

- *Provide a general note in statistical publications on the revision cycle of each national accounts dataset.*

We have included in our published products a general note on the revision cycle of the national accounts dataset. The description of the revision cycle was highlighted in an electronic publication called "[The Canadian Economic Accounts Quarterly Review](#)" which encompasses all elements of the "National Accounts" data set for Statistics Canada.

## **C. Consumer Price Index**

### **Fine tuning**

- *Follow through on plans to develop tracking series for alternative treatments of owner-occupied housing; suggest extending it to producing a superlative tracking CPI with annual SHS data, which are available from 1997 onward.*

The latest periodic analysis of the impact of alternative treatments of owner-occupied housing in the Canadian CPI was released in March 2003. Statistics Canada expects to

produce the data based on alternative treatments of housing in the CPI on an annual basis by 2004.

Statistics Canada currently has no plans to produce a superlative index using annual household expenditure data. The Agency will consider producing an experimental superlative index as a possible research project subject to budgetary considerations.

- *Follow through on plans to implement checklists in the second phase of the CPI Sample Diversification Project.*

Checklists are used selectively in the CPI. The current data processing infrastructure is restrictive in extending the use of checklists. The present phase of renewal of this processing infrastructure does not address requirements to permit extending the use of these checklists. Those requirements will be considered in a future phase of development, subject to budgetary considerations.

- *Review procedures to minimize use of the method of imputing the last observed price in price imputation methods for seasonally and temporarily unavailable items.*

The CPI process renewal project is reviewing procedures such that carrying forward the last observed price in imputation will be minimized. This aspect of the project is expected to be fully implemented by 2005.

- *Provide more detailed documentation on how the areas and retail establishments are selected.*

Statistics Canada has made extensive documentation on CPI concepts, definitions and methods available on its website and in detail in CPI reference manuals. More detailed documentation on how area samples and retail establishment samples are drawn will be included in future updates to documentation on the CPI.

- *Provide more detailed documentation describing how Statistics Canada has optimized the CPI sample regarding seasonal shopping patterns.*

Statistics Canada will make available more detailed information on how the CPI deals with seasonal shopping patterns in its methodology in future updates to documentation on the CPI.

- *Compile and release indices on the Classification of Individual Consumption by Purpose.*

Statistics Canada has examined the relationship of the COICOP classification to the Canadian CPI classification. The Agency intends to compile a supplementary series based on COICOP for analytical purposes, subject to budgetary considerations.

## **D. Producer Price Index**

### **Fine Tuning**

- *Follow through on plans to extend the PPI's coverage of the service industries and continue to scan for ways to accelerate improvements in coverage of services.*

Statistics Canada is developing more detailed plans on how it could extend the number of producer price indexes for service industries. These more detailed plans will be used in requests for funding an enlarged program of services price indexes.

- *Develop a summary index of the various output PPIs. Include crude materials coming from mining at basic price valuations in the IPPI as well as the RMPI.*

A summary index of output PPIs can be considered but is not a current priority since there has not been demand for such an index to date. Users will be consulted and if demand warrants, the development of such a summary index will be considered, subject to budgetary considerations.

- *Review procedures to minimize use of the method of imputing the last observed price for seasonally and temporarily unavailable items.*

In order to minimize response burden, most PPIs do not contact all respondents every month. The frequency of contact is based on prior information provided by respondents on the normal timing and frequency of their price changes. Thus for many price quotes, it is appropriate to impute for uncollected prices using the last observed price, as no change in price is a reasonable assumption in these circumstances.

Statistics Canada agrees with the goal of minimizing the use of last observed price imputation for cases such as seasonally or temporarily unavailable items and will further research appropriate methods, subject to budgetary considerations.

- *Continue efforts to update and keep current the content of PPI metadata and develop a portal for PPI series on the Statistics Canada website.*

Statistics Canada recently expanded significantly the amount of PPI metadata available on the Statistics Canada website. Statistics Canada will update these metadata periodically and examine the implementation of a portal for PPI series on the Statistics Canada website.

## **E. Government Finance Statistics**

### **Priority**

- *Disseminate information on the sources and methods used in compiling quarterly public sector statistics for the quarterly CSNA.*

Statistics Canada is currently putting together **general** documentation for dissemination concerning sources and methods used in compiling statistics for all sectors for the quarterly CSNA. Documentation for public sector statistics will be part of this.

- *Expand on the information about the main concepts used in compiling government finance statistics in the manual for the Financial Management System.*

The Financial Management System (FMS) manual is updated annually. We will ensure that in future editions passages describing the main concepts are included.

### **Fine Tuning**

- *Continue to implement the plan for migration to GFSM 2001, including the plan to implement quarterly Financial Management System estimates. Disseminate, in advance, information on the changes in concepts and methodology.*

The fundamentals of the methodology for producing GFSM 2001 data have been established and much of the necessary historical data has been assembled. Since we plan to replace the FMS with the GFSM 2001 in our published output, we intend to launch a user-education campaign in advance to facilitate the transition.

- *Disseminate reconciliations of the annual statistics with the quarterly sum of the four quarters in the CSNA for the general government sector.*

We will begin to produce and disseminate such reconciliations once the GFSM 2001 has been implemented.

## **F. Balance of Payments Statistics**

### **Priority**

- *Reclassify transactions that are not recorded in line with the BPM5. These reclassifications include (a) identifying financial derivatives in a separate functional category, (b) recording foreign money market instruments in portfolio investment, and (c) recording various services in their specific categories as part of the ongoing process of improving the quality of services data.*

Canada recognises the usefulness and validity of these classification recommendations. However, to address a number of these issues will require redesigns of one or more survey questionnaires and associated systems. A general review of many of the questionnaires used in the BoP program is about to be initiated and these recommendations will be fully considered in this review. In the case of derivative financial instruments, survey redesigns will be coordinated across Statistics Canada and the Bank of Canada.

Work is well under way to address the reclassification of foreign money market instruments and it is expected this classification change will be made in 2004. Canada is reviewing the treatment of insurance services for both the SNA and the BoP but will await the decisions of the international working party before implementing any change.

- *Adopt international standards for classifying goods, breaking them into merchandise, goods for processing, repairs on goods, goods procured in ports by carriers, and nonmonetary gold.*

While recognizing the utility of moving to these standards in terms of international comparability, there has not been a strong national demand for these classes. As the survey redesigns mentioned above go forward opportunities will be sought to move toward these standards.

- *Classify portfolio investment and other investment transactions in accordance with the institutional sector classification of BPM5. (This would be in line with the institutional sector classification prescribed by the SDDS for the external debt category, soon to be implemented by Canada.)*

Gross Canadian external debt by institutional sector will be published for the first time in September 2003. Following this, additional work will be required to classify the full range of Balance of Payments and International Investment Position data by the institutional sector classification of BPM5.

### **Fine Tuning**

- *Improve the coverage of financial derivatives and "e-commerce" transactions.*

It is accepted that both phenomena have been increasing steadily over time and deserve additional attention. Improvements in the coverage of derivatives will require redesign of collection activities. As mentioned earlier, such work is about to be initiated. The latest figures show that e-commerce represented only about 0.3% of total personal expenditures in Canada (reference year 2001) and roughly 0.6% of total operating revenues of Canadian businesses (reference year 2002). Overall, Statistics Canada would like to improve coverage of these activities; however, significant resources will be required and these demands must be weighed against other priorities.

- *Pursue plans to publish IIP data at market value as recommended by BPM5 by mid-2004.*

Canada has under way a project to move the IIP to a market value basis but due to resource constraints the exact timing is uncertain. Results will be released over the next year or two as they become available, and eventually the complete IIP will be made available at market value.

- *Continue efforts to identify mechanisms and implement specific measures to improve the coverage of goods exports to countries other than the United States not fully recorded in customs documents.*

The Chief Statistician has met the Commissioner of the Canada Customs and Revenue Agency (CCRA) on this key issue. Plans are under way both to increase coverage and to improve its measurement as it decreases.

There has been progress in solving the problem of Canadian export undercoverage, through promotion of the Canadian Automated Export Declaration (CAED). The number of participants has grown from about 2,500 to over 10,000 in fiscal year 2002. In addition, CCRA is currently negotiating MOUs with carriers that would implement a "no load" policy to ensure the appropriate export documents are filed.

Canada and the US are considering modifications to the existing Customs document sharing arrangement that will allow access by Statistics Canada to U.S. in-transit documents for the purpose of matching with Canadian export filings (a non-match may represent undercoverage). Analytical work drawing on documents held at the Canadian ports, in cooperation with CCRA, will also allow improved estimates.

- *Continue work to improve the recording of portfolio investment transactions, based on the results from the Coordinated Portfolio Investment Survey.*

Canada has played an active role in the preparation and the development of the IMF Coordinated Portfolio Investment Survey (CPIS) conducted for the first time in 1997. The survey has been conducted in Canada on an annual basis since that time and for Canadian assets is now an important data source for the ongoing program. The higher number of participating countries in the 2001 edition, the greater coverage achieved and the decision to conduct the survey on an annual basis at the international level makes this survey a precious vehicle to assess and improve the estimates currently gathered from Canada's Balance of Payments (BOP) surveys.

The CPIS results for other participating countries will be employed systematically in the production of the liability estimates for Canada's International Investment Position in the near future. The use of data sources such as the CPIS is crucial for Canada in order to preserve high-quality estimates and ensure international comparability.

## G. Monetary and Financial Statistics

### Priority

- *Conduct surveys of users of statistics on the financial sector to enhance understanding of how the data are used and how they might be further developed.*

Statistics Canada and the Bank of Canada employ a variety of means to ensure the data they provide are relevant and responsive to changing needs. User surveys are one of the tools used by Statistics Canada to assess user needs and satisfaction; whereas the Bank of Canada relies on user feedback provided directly to the Bank from its many regular contacts with major users. Both agencies recognise the need to keep the data on the financial sector up to date and relevant for current issues and pride themselves on being open to user input and value such input in setting priorities for data development.

- *Develop a plan for the implementation of the MFSM, especially with respect to the following:*
  - *Compilation of consolidated balance sheets for the financial corporations sector;*

The Statistics Canada – Bank of Canada Task Force on Roles and Responsibilities has been charged with exploring the rationale for developing consolidated balance sheets for the financial sector and its subcomponents and exploring the costs of such development. The Task Force will compile information on the views and practices of other national data producers and international organizations in the context of emerging data needs related to evolving financial markets.

Specific decisions on the Canadian response to this recommendation will be made following the completion of the Task Force's report.

- *Classification of transactions, including financial derivatives, repurchase agreements, income trusts, and accrued interest;*

The above-mentioned Task Force will also review the costs and benefits to Canada of implementing further improvements to our data through the use of these classifications. The Task Force will build on past research and current initiatives at the two agencies related to new financial instruments to define future initiatives responding to the international standards.

— *Valuation of financial assets and liabilities according to market value.*

Statistics Canada has initiated a project to develop market value estimates for the National Balance Sheet Accounts and the International Investment Position. Plans are also being developed to collect additional market value information as existing surveys come up for redesign.

Canadian financial institutions currently value financial assets held for trading purposes according to market value. Assets held for asset and liability management or for other purposes are typically valued according to amortized value. In Canada, the Accounting Standards Board (AcSB) is initiating a limited move towards fair value accounting with respect to financial instruments. These proposals are expected to be adopted for fiscal years commencing on or after October 1, 2004. This means that all financial assets other than those that are to be held to maturity, and loans and receivables that are not intended for trading or securitization, will be valued according to fair value.

- *Reconcile monetary statistics compiled by the Bank of Canada with statistics on the financial sector compiled by Statistics Canada. Undertake consistency checks with other macroeconomic statistics (national accounts, government finance, and balance of payments) to eliminate or reduce potential inconsistencies in coverage and classification.*

Reasons why data collected by Statistics Canada do not reconcile with data collected by the Bank of Canada are understood by both agencies and principal users of the data. The key reasons are:

- 1) Statistics Canada requires and collects data on a locational (booked in Canada only) basis and the Bank of Canada requires and collects data on a fully consolidated booked worldwide basis.
- 2) The Bank of Canada emphasizes daily average data rather than month-end data.
- 3) Industry totals cannot generally be compared because some financial institutions are classified differently under the North American Industrial Classification System (NAICS) used by Statistics Canada and the Banking regulations under which the Bank of Canada collects data. The differences in classification combined with the confidentiality provisions of the Statistics Act prevent detailed reconciliations between datasets.
- 4) Some of the concepts and definitions vary between the two agencies, for example those relating to consumer credit.

Nonetheless, analysts in both agencies regularly do use data from a wide range of sources and do communicate any inconsistencies in the results via various formal and informal communication mechanisms. The Task Force will examine ways in which this information could be made available to a wider community of users.

INTERNATIONAL MONETARY FUND

CANADA

**Detailed Assessments Using the Data Quality Assessment Framework (DQAF)**

Prepared by the Statistics Department

Approved by Carol S. Carson and Anoop Singh

October 14, 2003

This document contains a detailed assessment by dataset of the elements and indicators that underlie the data quality dimensions discussed in Canada's Report on the Observance of Standards and Codes (ROSC)—Data Module. It also includes as appendices the DQAF generic framework and the summary of discussions with users.

<b>Contents</b>	<b>Page</b>
Acronyms.....	3
O. Statistics Canada.....	4
I. National accounts.....	22
II. Price Statistics (Consumer Price Index).....	50
III. Price Statistics (Producer Price Index).....	64
IV. Government Finance Statistics.....	85
V. Balance of Payments Statistics.....	104
VI. Bank of Canada and Monetary Statistics.....	130
 <b>Text Tables</b>	
1. Staff at Statistics Canada: end-2002.....	10
2. DQAF—Summary Presentation of Results: Statistics Canada.....	21
3. Canada: Sources Currently Used for the Input-Output Tables: Extent of Coverage.....	30
4. Summary of Metadata available in the Integrated Metadata Base.....	47
5. DQAF—Summary of Results: National Accounts.....	49
6. DQAF—Summary of Results for Price Statistics (Consumer Price Index).....	63
7. DQAF—Summary of Results for Price Statistics (Producer Price Index).....	84
8. DQAF—Summary of Results: Government Finance Statistics.....	103
9. DQAF—Summary of Results: Balance of Payments Statistics.....	129
10. Selected Credits Measures and Monetary Aggregates Published by the BoC.....	141
11. Classification of Some Financial Instruments.....	145
12. Sources of Information for Statistics on the Financial Corporations Sector.....	149
13. Comparison of Statistics for the Financial Corporations Sector.....	160
14. DQAF—Summary of Results: Bank of Canada.....	167
15. DQAF—Summary of Results: Monetary Statistics.....	168
 <b>Boxes</b>	
1. Statistics Canada’s <i>Quality Assurance Framework: A Synopsis</i> .....	14
2. The Canadian System of National Accounts (CSNA).....	24
3. Meeting with Data Users: Agenda.....	177
 <b>Appendices</b>	
I. Summary of the Special Data Dissemination Standard (SDDS).....	169
II. Data Quality Assessment Framework—Generic Framework.....	171
III. Summary of Discussions with Users.....	176

## ACRONYMS

<i>1993 SNA</i>	<i>System of National Accounts 1993</i>
<i>BFS</i>	<i>Bank of Canada Banking and Financial Statistics</i>
BoC	Bank of Canada
BOPD	Balance of Payments Division (StatCan)
<i>BPM5</i>	<i>Balance of Payments Manual</i> , fifth edition
CANSIM	Canadian Socio-Economic Information Management System
CDIC	Canada Deposit Insurance Corporation
COFOG	Classification of the Functions of Government
CPC	Central Product Classification
CPI	Consumer Price Index
CSNA	Canadian System of National Accounts
DQAF	Data Quality Assessment Framework
DRD	Data Resources Division (BoC)
DSBB	Dissemination Standards Bulletin Board
DTI	Deposit-Taking Institutions
FMS	Financial Management System
GDP	Gross domestic product
<i>GFSM</i>	<i>Government Finance Statistics Manual (2001)</i>
GST	Goods and Services Tax
IEAD	Income and Expenditure Accounts Division (StatCan)
IIP	International investment position
IPPI	Industrial product price index
IMDB	Integrated Metadata Base
IMF	International Monetary Fund
I-O	Input-output
IOD	Input-Output Division (StatCan)
IOFD	Industrial Organisation and Finance Division (StatCan)
ISIC	International Standard Industrial Classification of All Economic Activities
ISWGNA	Inter-Secretariat Working Group on National Accounts
MFA	Monetary and Financial Analysis Department (BoC)
<i>MFSM</i>	<i>Monetary and Financial Statistics Manual (2000)</i>
NAICS	North American Industrial Classification System
OECD	Organisation for Economic Co-operation and Development
OID	Operations and Integration Division (StatCan)
OSFI	Office of the Superintendent of Financial Institutions
PID	Public Institutions Division (StatCan)
PPI	Producer Price Index
RMPI	Raw Materials Price Index
ROSC	Report on the Observance of Standards and Codes
SCG	Standard Classification of Goods
SDDS	Special Data Dissemination Standard
SHS	Survey of Household Spending
StatCan	Statistics Canada
TDS	Tri-Agency Database System
<i>WFS</i>	<i>Weekly Financial Statistics</i> (BoC)

## **DETAILED ASSESSMENT USING THE DATA QUALITY ASSESSMENT FRAMEWORK (DQAF)**

The following detailed information on indicators of statistical practices in the areas of the national accounts, prices, government finance statistics, balance of payments statistics, and monetary statistics was gathered from publicly available documents and information provided by the Canadian officials. This information, which is organized along the lines of the generic DQAF (see Appendix II), was used to prepare the summary assessment of data quality elements, based on a four-part scale of observance, shown in Canada's Report on the Observance of Standards and Codes (ROSC)—Data Module.

Statistics Canada (StatCan), which is at the heart of the Canadian statistical system, has a strong organizational culture and a well articulated and vigorously implemented set of operating principles. Thus, the assessments of the two institutionally oriented dimensions of the DQAF—Prerequisites of Quality and Integrity—would be essentially the same for each of the datasets for which StatCan is responsible. Both to bring out better this feature of the Canadian macroeconomic statistics and to avoid unnecessary repetition, the assessments of these dimensions for StatCan are presented just once in Section 0, immediately below. The assessments of the national accounts, prices, government finance statistics, and balance of payments, in Sections I-V, refer back to this section and then assess the other, more product oriented, dimensions of the DQAF. The assessment of the institutionally oriented dimensions of monetary statistics, focusing on the Bank of Canada (BoC), and the product-oriented dimensions are all in Section VI.

### **O. STATISTICS CANADA**

#### **0. Prerequisites of quality**

##### ***0.1 Legal and institutional environment***

###### ***0.1.1 The responsibility for collecting, processing, and disseminating statistics is clearly specified***

Statistics Canada (StatCan) has clearly mandated responsibility for collecting, processing, analyzing, and disseminating national accounts, prices, government finance statistics, balance of payments, and part of the statistics for financial institutions, which are the macroeconomic datasets being assessed in this report. The Statistics Act, in Subsection 3(a), assigns responsibility to StatCan for, and provides authority for, collecting, compiling, analyzing, abstracting, and publishing information on the economic, social, and general conditions of the country and its citizens. Without limiting the generality of this comprehensive mandate, Section 22 directs the Chief Statistician to produce statistics on a detailed list of matters, including government and business finance, prices and the cost of living, commerce with other countries, and manufacturing and other forms of production. Subsection 3(c) directs StatCan to take censuses of population and agriculture. In this setting, the great majority of Canada's official statistics originate from StatCan. Some are produced by other federal agencies as by-products of their primary activities and by provincial statistical offices.

Subsection 3(e) calls on StatCan to promote and develop integrated social and economic statistics and to coordinate plans for the integration of those statistics.

The duties assigned to StatCan are interpreted as requiring that it make known the availability of information as soon as the information is ready. (See StatCan “Policy on Publishing and Publications.”<sup>1</sup>) The release must follow StatCan procedures (see also 5.1.4 about release).

StatCan implements a comprehensive, dynamic program in line with this responsibility and the authority assigned to it.

#### *0.1.2 Data sharing and coordination among data producing agencies are adequate*

In addition to providing for StatCan to collect data directly, the Statistics Act places StatCan in a strong position with respect to data that others collect or hold. First, it provides for full access by StatCan to all records maintained by all levels of government, business, institutions (Subsection 10(c) and Section 13), including income tax records (Section 24 and 25). The relevant provisions allow StatCan to obtain administrative files, including federal income and excise tax records. Second, it provides authority to enter into data-sharing and work agreements with provincial and territorial statistical bodies (Section 11) and with other federal agencies (Section 12).

As to coordination, the Statistics Act provides StatCan with terms of reference for coordination both within the federal government and with provincial and territorial governments:

- collaborating with departments of government in the collection and publication of statistical information (Subsection 3(b));
- promoting the avoidance of duplication in the information collected (Subsection 3(d)); and
- generally, promoting and developing integrated economic and social statistics pertaining to the whole of Canada and to each of the provinces (Subsection 3(e)).

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<sup>1</sup> StatCan’s corporate policies, currently almost 50 in number, are collected in its *Policy Manual*. The *Manual*, which is on its internal Internet site, is often referred to by staff members with whom the mission met. Therefore, the policies are mentioned in this Detailed Assessments volume, because they are important operating principles under which StatCan functions.

StatCan interacts and consults with federal departments through a variety of means. For example, the Chief Statistician and the Governor of the Bank of Canada (BoC) meet at intervals of one to two years. At the senior staff level, there are annual bilateral meetings. Staff from the BoC sit on StatCan's national accounts and prices advisory committees, on particular research issues, the communication goes both ways. Senior staff of both StatCan and the BoC speak of good communication. The relationship with the Canada Customs and Revenue Agency is particularly important because that agency is a major supplier of data. A Memorandum of Understanding sets out the relationship, for which counterparts at the level of an Assistant Chief Statistician provide oversight; staff of the two agencies are in contact weekly if not daily.

StatCan meets at least once a year, usually for two days, with provincial agencies through the Federal-Provincial Consultative Council on Statistical Policy. StatCan reports that, at these meetings, information requirements and outputs are reviewed to promote continuing relevance, to identify changes in priorities, to avoid duplication by data sharing, to make arrangements for data sharing, and to harmonize definitions, standards, and practices. A number of committees discuss and review technical subject-matter aspects of federal-provincial statistical activity.

While the Statistics Act does not specifically designate StatCan to be the main point of contact about statistical issues with international organizations, such a specific provision has never been necessary as Subsection 3(e) directs the agency to promote and develop integrated social and economic statistics pertaining to the whole of Canada. This gives the mandate to the agency to become the focal point for discussions with international organizations.

### *0.1.3 Respondents' data are to be kept confidential and used for statistical purposes only*

The Statistics Act sets out a formal commitment about confidentiality (Subsection 17(1)) and identifies the Chief Statistician, not the Minister to which he/she reports, as responsible for the preservation of statistical confidentiality. The commitment, as paraphrased in "The Companion Guide to the Statistics Act," is as follows:

No person other than an employee of StatCan who has been sworn in can examine identifiable information collected under the authority of the Act, and such information may not be disclosed in a form that may identify a respondent.

The Statistics Act provides that all employees and contractors must take an oath that they will not, without due authority, disclose or make known information that comes to their knowledge by reason of their employment. Violations of the confidentiality provisions are a criminal offense; penalties are severe fines and/or jail for up to six months. The employees with whom the mission spoke about confidentiality were familiar with this commitment and believed that respect for it was part of the agency's culture.

Three kinds of exceptions to the confidentiality protection principle are provided for in the Statistics Act: (a) the sharing of information under agreements of the kind authorized by the Act (Section 11 and 12), (b) the communication of information for the purposes of prosecution under the Act (Section 18(1)), and (c) the disclosure under the order of the Chief Statistician of certain types of information specifically listed by the Act (Section 17(2)). These include, for example, information a person or organization consents in writing to disclose and information about names and addresses, products, and other specified items in the form of a list of individual establishments or firms. The “Discretionary Release Policy” sets out that StatCan will generally provide access to such information where the information is needed for statistical or analytical purposes, and when the information released does not disadvantage StatCan’s respondents or the relations between StatCan and its respondents and when it conforms to the provisions specified in Section 17(2). The review and approval process is documented.

Protecting confidentiality is one of StatCan’s six core values that guide the work of the employees and the decisions of the Chief Statistician. As stated in the “The Companion Guide to the Statistics Act,” a statute will not, of itself, protect confidentiality. StatCan implements a number of measures to keep the principle of confidentiality in the forefront of employees’ consciousness. These include emphasis on confidentiality in the introductory courses for new employees and measures controlling access to StatCan’s buildings. The “Policy on the Security of Sensitive Statistical Information” requires, among other things, the following:

- enhanced security checks for staff handling sensitive information;
- limitation of access to data holding on a “need-to-know” basis; and
- disposal of sensitive data under secure conditions.

StatCan takes special care to prevent published information from being used to derive information about an individual or a business. All final results are carefully screened before release to see if there is need to suppress a figure. Other methods include rounding, collapsing, micro-aggregation, and data swapping. A special unit established in 1996, the Disclosure Control Resource Centre, coordinates research into confidentiality and disclosure as well as provides support to survey programs.

Other policies—e.g., on electronic data processing security, on security practices, and on microdata release—prescribe other practices designed to provide confidentiality. For electronic data processing, a key feature is that StatCan maintains two physically separate computer networks. Information provided in confidence is processed and stored only on an internal, closed network—that is, one to which there are no outside connections. All microdata files are reviewed by a committee of experts before their release as public use files. The committee must ascertain that the files do not contain any information that could lead to the identification of a respondent.

StatCan has never had to prosecute an employee for a deliberate breach of the confidentiality provisions of the Statistics Act. While there have been some cases of an inadvertent disclosure of information, these have been dealt with by the agency in an open and transparent manner, ensuring that the affected respondents were informed.

Two other legislative authorities are also relevant. The federal Privacy Act protects the privacy of individuals with respect to their personal information held by government institutions and provides individuals with a right of access to such information. For a number of years StatCan has had in place internal policies that reflect basic principles found in the Privacy Act. These include the “Policy on Informing Survey Respondents” and the “Policy on Record Linkage.” The federal Access to Information Act establishes a general right of access to records held by federal government institutions, limited only by specific exceptions as set out in the Act. One provision sets out a mandatory exemption from disclosure of information protected by specific statutes, one of which is the Statistics Act. This allows StatCan to assure its respondents, particularly those in economic surveys, that their confidential data cannot be disclosed to anyone without their knowledge and consent.

The commitment to the principle of confidentiality is made widely known. For example, StatCan’s extensively used website, under the section “About Statistics Canada,” makes a clear statement that information given to the agency is confidential and that no other government institution has the right to see answers given in confidence to StatCan. The “Policy on Informing Survey Respondents” calls for all respondents to be provided with information about, among other things, confidentiality protection. The confidentiality provisions of the Statistics Act are to be explained and the key procedures to ensure confidentiality of individual returns are to be provided when requested.

*0.1.4 Statistical reporting is ensured through legal mandate and/or measures to encourage response*

The Statistics Act makes it mandatory for all respondents to provide the information requested unless an order (see below) is obtained to make response voluntary. Refusal to provide information or provision of false or misleading information is a criminal offense subject to penalties. (This obligation of respondents is not contained, however, in one clearly articulated provision in the law. It is based on a combination of sections, including those on the mandate to collect information, on matters about which it is to collect information, on requiring answers to forms and other collections, and on offenses for not furnishing information or providing false or misleading information.)

The Minister (see 1.1.1) can authorize surveys (except for the Census of Population and the Census of Agriculture) to be undertaken on a voluntary basis. Currently, all household surveys, except the Labour Force Survey, are voluntary; most business surveys are mandatory.

The policy and practices of StatCan emphasize explanation, courtesy, and effective respondent relations in eliciting response. Only in the Censuses of Population and Agriculture is the prosecution of nonrespondents generally pursued.

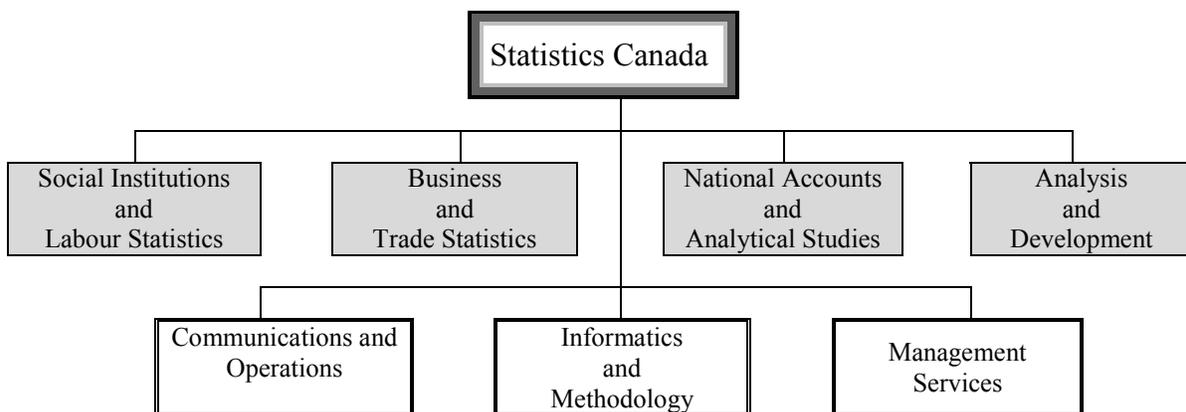
## 0.2 Resources

### 0.2.1 Staff, financial, and computing resources are commensurate with statistical programs

Overall, StatCan has access to resources commensurate with its statistical programs. Until the late 1990s, like most government agencies in Canada, it has been under pressure, over an extended period, to cut its budget. In the last five years, StatCan has grown substantially, as new work—especially on the Project to Improve Provincial Economic Statistics—brought new financial resources. Most of the agency’s funding is from parliamentary appropriations. Revenue from sales and census cost-sharing financed about 13 percent of its total gross expenditures in 2001–02; sales of publications and charges for the Canadian Socio-Economic Information Management System (CANSIM) brought in only a small part of that revenue.

StatCan is programmatically and administratively centralized, but geographically decentralized. The headquarters is in Ottawa; five regional and four satellite offices are spread across Canada. The Chief Statistician of Canada directs the program and staff, supported by seven Assistant Chief Statisticians. Reflecting StatCan’s choice of a matrix structure, four are responsible for program fields and three for technical and management operations in support of the operational programs. Management and subject-matter committees, with intersecting memberships, support the decision making processes (see Figure 1).

Figure 1. High-Level Structure of Statistics Canada



Of a total staff of 6,152 public servants at end-2002, 385 worked in regional offices and the rest worked at the three-building Ottawa headquarters.<sup>2</sup> The programs covered in this report—national accounts, public institutions, balance of payments, and prices—had a total strength of 509 persons (see Table 1).

Table 1. Staff at Statistics Canada: end-2002

Type of staff	National Accounts			Prices	Other programs	All programs	Computer and other support	Total
	Public Institutions	Balance of Payments	Other					
Professional (includes managers)	14	15	154	21	664	868	268	1,136
Research assistants	24	16	47	58	713	858	607	1,465
Computer staff	2	6	23	9	226	266	617	883
Clerical staff	9	3	13	15	382	422	731	1,153
All Others	1	3	28	7	192	231	1,284	1,515
New recruits on training assignments	7	4	15	15	225	266	-266	0
Total	57	47	280	125	2,402	2,911	3,241	6,152

StatCan’s stated human resource strategy is to hire only the very best of recruits with long-term potential and then to provide them with an attractive work environment along with a “no-lay-off” guarantee to retain them for a long-term career. Thus the agency devotes considerable attention to recruitment, training, and career development. A report of the Auditor General of Canada in December 2000 mentioned StatCan approvingly, noting that StatCan had made human resource planning a priority and including a summary of its recruitment practices. In 2001-02, over 30,000 days were spent in employee training, an average of almost five days per employee. The courses range from a mandatory one-day introductory course to, for example, optional multi-week survey skills development courses. The employee turnover rate had averaged about 5 percent in the three years ending in 2000-01, but rose to about 5.6 percent in 2001-02. In the 2002 Public Service Employee Survey, StatCan employees expressed a very high degree of satisfaction with their workplace. As one indicator, 91 percent of employees believe that StatCan is a good place to work, compared with 84 percent for the public service as a whole. Most recently, StatCan was the winner of the 2002 International Personnel Management Association—Canada “Gold Star Agency” Award. The agency was cited for having a comprehensive human

<sup>2</sup> In addition, there are 2,400 interviewers working out of regional offices who are not classified formally as public servants.

resources strategy that demonstrates tremendous vision and long-range planning, and for implementing innovative practices that have resulted in effective human resource management.

StatCan has made major investments in information technology equipment: mainframe, servers, workstations, and communications infrastructure. The replacement cycle is three-to-five years for most types of equipment. OS/390 (MVS), UNIX, and Windows are the operating environments. StatCan increasingly regards itself as a distributed computing environment in which all services are available to employees through workstations. There were about 11,000 workstations/servers installed and connected to networks within the agency as of March 2002. In addition, there are about 2,600 laptop computers used by survey interviewers.

StatCan's long-term planning process provides the framework for decisions about changes in the agency's work program. An annual strategic planning conference starts the process by identifying major corporate priorities to be addressed. Managers, drawing on their program reviews (see 0.2.2 immediately below), are invited, on the other hand, to submit initiatives to respond to user needs and business imperatives, especially in areas identified as corporate priorities; at the same time they are asked to identify program efficiencies for possible cuts. The efficiencies identified are then reinvested through the planning process to be made available for future program requirements. The proposals are reviewed through a sequence of levels, up to decisions by the Corporate Planning Committee.

#### *0.2.2 Measures to ensure efficient use of resources are implemented*

StatCan implements a range of measures designed to help make efficient use of resources. At the most general level, managers are seen, as evidenced by discussions with staff during the mission, as promoting a vision and a direction for StatCan as an efficient organization.

One way efficiencies are sought is by encouraging consistency in concepts and methodologies. The "Policy on Standards" specifically calls for the use of consistent definitions for populations, statistical units, concepts, variables, and classification systems. Examples can be drawn from across the economic programs:

- The Business Register provides a standard survey frame for business surveys.
- A uniform definition of the public sector is now used throughout the agency. The definition was developed and adopted at the time of implementation of the *System of National Accounts 1993 (1993 SNA)*.
- The X11-Arima model is the standard procedure for seasonal adjustment. A separate unit in the Business Survey Methods Division provides advice to other divisions on the use of the X11-Arima model and periodically reviews its application by the various program divisions. The specialized unit also advises on how to deal with

exceptional events affecting seasonality, notably the effects of the September 11, 2001 terrorist attack.

The matrix approach of management (see 0.2.1) is seen in StatCan as a source of efficiency gains.

Processes are in place to measure resource use. Financial management information systems provide information on expenditure and program efficiency and on costs by program, organizational units, and function.

Periodic reviews of work processes are undertaken. As the program is currently structured, every two years each program manager must review the program's performance and lay out its future direction and proposals for change. Every fourth year, each program manager must supplement the biennial report with a more strategic review of the program's relevance and direction, including the results of consultation with clients and stakeholders. StatCan's dimensions of quality (see 0.3.1 below) must be addressed and accuracy measures must be included. Both the biennial and quadrennial reports are reviewed by senior management; the quadrennial reports are discussed in the agency's Corporate Planning Committee. To date, only one quadrennial report has been completed in the programs most relevant to the mission. The managers and staff with whom the mission discussed the reviews reported that they were useful exercises, particularly because they led to feedback from the Chief Statistician. They were also seen as useful tools for communication with division staff.

### **0.3    *Quality awareness***

#### *0.3.1    Processes are in place to focus on quality*

The Chief Statistician's preface to StatCan's *Quality Guidelines* sets out the view that "the underlying concern for quality must pervade all our activities." The development of these *Guidelines*, beginning almost 20 years ago, evidences this focus. It consolidates a set of experiences and practices designed to help make sensible choices in the context of particular applications. It explicitly recognizes that choices must often be made among competing objectives such as relevance, timeliness, cost, and reporting burden.

The motivation—as set out, for example, in the *Quality Guidelines*—runs as follows: StatCan's product is information. The effectiveness of the organization depends on the relevance and credibility of that information. Credibility is based on the organization's reputation for reliable data. Because few can independently assess the reliability of the information, users must trust the agency. To maintain this trust, a concern for quality must permeate, and be seen to permeate, all that the agency does.

The *Quality Assurance Framework*, originally drafted in 1997 and revised in 2002, documents the processes in place to manage quality. These processes, which have evolved over time, are designed to support managerial judgments about the allocation of resources and technical judgments based on knowledge and expertise and ensure that the operations

that flow from these decisions are carried out with due regard for quality. Box 1 presents a synopsis and, in the last column, cross-references to the DQAF.

Some of the other management processes that make up the *Quality Assurance Framework* are discussed immediately below, in 0.3.2 and 0.3.3. Some others are mentioned in later sections, as identified in the right-hand column of Box 1.

Interviews at various levels within and outside StatCan confirmed that concern for quality permeates the agency.

It is relevant to note here that the Auditor General, in 1999, reported on three aspects of StatCan's management of quality: (1) the extent to which StatCan assesses the adequacy of its quality management systems to ensure that it has the information needed to manage quality, (2) the extent to which StatCan's self-assessments in four areas provided the agency with reasonable assurance of the quality of management systems, and (3) the extent to which StatCan provides information about methodology and data quality. Overall, the report found some unevenness in managing quality. An update in 2001 noted some good initial progress in implementing the Auditor General's recommendations, but urged StatCan to maintain momentum.

In particular, the 2001 update noted that a revised "Policy of Informing Users of Data Quality and Methodology" was approved within StatCan in March 2000. Under that policy, each statistical product is to be accompanied by, or make reference to, documentation on data quality (including accuracy measures or ratings) and methodology. See 5.2 for a discussion of the dissemination of metadata.

### *0.3.2 Processes are in place to monitor the quality of the collection, processing, and dissemination of statistics*

Over the years, StatCan has put in place a comprehensive set of feedback and consultation mechanisms that help alert it about quality issues.

- The National Statistics Council was established in 1985 as the apex of these mechanisms. Members are appointed by the Minister, but their duty is to advise the Chief Statistician. While there are rules for representation with respect to, among other things, topical and geographical areas, members serve in their individual capacity. They meet about twice a year for a day and a half; the agenda includes statements by members and a presentation on recent developments in StatCan by the Chief Statistician. StatCan finds the advice especially useful when new programs are being developed. As well, the Council is viewed as helpful in making the case against budget cuts and as potentially useful, if the need arises, as a bulwark in defense of objectivity and integrity.

Box 1. Statistics Canada's *Quality Assurance Framework*: A Synopsis

StatCan defines the quality of information in terms of fitness for use. Thus, quality is a multidimensional concept embracing relevance of information to users' needs and a set of characteristics that affect how information can be used. To make this concept operational, StatCan identifies six overlapping, interrelated dimensions of quality.

Because most of the agency's operations and functions have an impact on the quality of information, the management of quality is an integral part of the management of every program and an important component of corporate management. The *Quality Assurance Framework* consists of a wide variety of mechanisms, processes, and approaches, acting at various levels throughout the agency. The effectiveness of the framework is seen as depending not on any one measure, but on the collective effect of many interdependent measures.

Dimensions	Management Measures	Cross References to DQAF <sup>1/</sup>
<b>Relevance:</b> the degree to which the statistical information meets the real needs of clients.	Processes that lead to a determination of what information to produce and the level of resources to devote to it <ul style="list-style-type: none"> <li>• Client and stakeholder feedback mechanisms</li> <li>• Program review</li> <li>• Data analysis</li> <li>• Priority setting and planning</li> </ul>	0.3.2; 4.1.1 0.2.2 1.1.1; 5.1.1 0.3.3
<b>Accuracy:</b> the degree to which the information correctly describes the phenomena it was designed to measure.	Measures that build in, monitor, and assess accuracy <ul style="list-style-type: none"> <li>• Guidelines for program design</li> <li>• Implementation control and monitoring</li> <li>• Accuracy assessment</li> <li>• Independent review</li> </ul>	--- 0.3.2 3.3; 3.4 0.2.2
<b>Timeliness:</b> refers to the length of time between the reference point to which the information pertains and its availability.	Processes that set and monitor release time <ul style="list-style-type: none"> <li>• Setting preannounced release dates</li> <li>• Monitoring of release dates</li> <li>• Monitoring of revisions</li> </ul>	4.2.1 } 5.1.3 3.5.1; 4.4.3
<b>Accessibility:</b> refers to the ease with which the information can be obtained, including ease of knowing of its existence, suitability of medium, and cost.	Approaches that help users know of, locate, and access information products <ul style="list-style-type: none"> <li>• Product definition and design</li> <li>• Dissemination within agency's vehicles</li> <li>• Access for analytical purposes (e.g., microdata)</li> <li>• Providing search tools and advisory services</li> </ul>	--- 1.2.3 5.1.5 5.3
<b>Interpretability:</b> reflects the availability of supplementary information and metadata needed to interpret the information and use it correctly.	Processes that provide information users need to understand data <ul style="list-style-type: none"> <li>• Providing information (metadata) on concepts, classifications, methodology, and quality</li> <li>• Interpreting data as they are released</li> </ul>	5.2 5.1.1
<b>Coherence:</b> reflects the degree to which information can be brought together with other statistical information within a broad analytical framework and over time.	Approaches that deal with relations among data items <ul style="list-style-type: none"> <li>• Using standard frameworks, concepts, variables, and classifications</li> <li>• Using common frames, methodologies, and systems</li> <li>• Data comparison and integration</li> </ul>	2 (also 4.3) 0.2.2 (also 2) 4.3
<p>Several factors of the environment are critical to the success of managing quality.</p> <ul style="list-style-type: none"> <li>• Partnerships with suppliers, pursued through, e.g., respondent relations program, response burden management program, small business ombudsman, recognition of respondents in publications.</li> <li>• Recruitment and training, pursued through, e.g., entry level recruitment and development programs for major occupational groups, Statistics Canada Training Institute, development programs for managers.</li> <li>• Data analysis, research and development.</li> </ul>		

<sup>1/</sup> It must be kept in mind that the *Quality Assurance Framework* and the DQAF, although similar in coverage in many respects, have different purposes and contexts. The *Quality Assurance Framework* was designed to manage quality within a single organization. The DQAF was designed to assess quality in a wide range of settings.

- The Federal-Provincial Consultative Council on Statistical Policy, supported by its subcommittee structure, also provides advice on broad policy issues, priorities, data and user requirements, and output (see 0.1.2 about coordination).
- Fifteen professional advisory committees covering major subject areas provide an ongoing review of statistical output and methods and help set priorities within these areas. Some, such as on national accounts, are long standing; others, such as the one on nonprofit institutions, have been added to the list recently. The thirteen-member National Accounts Advisory Committee, for example, typically meets twice a year, for two days.

Further, a variety of bilateral and multilateral discussions provide additional information.

Monitoring product sales and requests identifies current product use and emerging demand. Such monitoring is part of the mandate of groups within Marketing and Information Services, but some program divisions also maintain logs of phone calls and data requests.

Within the agency, all programs are periodically reviewed to assess whether they are meeting user needs. As noted in 0.2.2, every fourth year the programs are required to document consultation with users. For the 2002 review by the Input-Output Division (IOD), the Market Research Section of the Marketing Research Division conducted a “Client Needs and Satisfaction Survey.” This survey addressed (1) the awareness of the IOD’s product; (2) the level of satisfaction concerning the quality of services provided, price, timeliness, accessibility, detail, and quality; and (3) the level of satisfaction with the IOD’s product relative to the business of the clients. Similar surveys will be conducted over the next year for the Balance of Payments, Public Institutions, Industry Measures and Analysis, and the Industrial Organisation and Finance Divisions.

The comprehensive set of feedback and consultation mechanisms have built up over time. Some have been put in place in recent years as new technology became available. Some additional professional advisory committees have been added as new topics became relevant. It is the mission’s understanding that no recent review has considered whether gaps and overlap among the mechanisms exist, whether technology may be available to make some of the mechanisms more effective, and whether some particular committees could be refocused or combined with others. In this setting, it may be useful to step back for a strategic overview, particularly of the 15 professional advisory groups, to help ensure the continued effectiveness of these important mechanisms.

### *0.3.3 Processes are in place to deal with quality considerations, including tradeoffs within quality, and to guide planning for existing and emerging needs*

As noted above, StatCan’s documentation clearly recognizes the tradeoffs among dimensions of quality. For example, the introduction to the *Quality Guidelines* specifically states that achieving an acceptable level of quality is the result of addressing, managing, and balancing

the various elements that constitute quality. Because the elements of quality have a complex relationship, an action to address or modify one aspect will tend to affect others.

As noted in the prior item, StatCan maintains a comprehensive set of feedback and consultation mechanisms.

## **1. Integrity**

### ***1.1 Professionalism***

#### *1.1.1 Statistics are compiled on an impartial basis*

In the Canadian context, several features about the position of the Chief Statistician, the way priorities are set, the basis on which StatCan staff are appointed and promoted, about the requirement to release information in a timely manner, and about analytic output provide assurance that statistics are compiled on an impartial basis.

The Statistics Act provides that the Governor in Council may appoint a Chief Statistician, who will have the rank of deputy minister and serve at pleasure. In Canada, by tradition, deputy ministers are nonpolitical appointees. Also by tradition, the Chief Statistician's position is regarded as one that requires special personal and professional competence, so that the Chief Statistician is not, like others at the rank of deputy ministers, moved among departments. The current Chief Statistician has been in the position since 1985 and thus has served under several governments, including after a change in party. By tradition, the Minister has maintained an arm's length relationship, and during the last 15 years that arm's-length relationship has been made an instruction from the Prime Minister to the Minister.<sup>3</sup> The Chief Statistician's view is that the other elements of the position, such as recognized public standing, provide ample powers to resist political pressure should it be necessary to do. As well, regular and direct involvement in the community of deputy ministers has important advantages not available to special appointments such as parliamentary appointment with a fixed term. These advantages include the ability to acquire a full appreciation of the evolving major issues and the ability to market StatCan's product line.

Under the Statistics Act, StatCan operates under the direction of a minister, at present the Minister of Industry. However, StatCan is a separate agency and is not part of the Department of Industry; it only shares the same minister. The formal authority of the Chief Statistician derives from the Statistics Act.

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<sup>3</sup> Ivan P. Fellegi, "Characteristics of an Effective Statistical System," *International Statistical Review*, Vol. 64, No. 2, August 1996.

For budget and priority setting, by established practice, the Chief Statistician has full authority for setting priorities for StatCan's program within a single overall budget authorized by Parliament based on the advice of the Treasury Board. In reality, given the size of the nondiscretionary items in the budget, his freedom is constrained, but at the margin it is important. This is especially so in the context of StatCan's strong emphasis on maintaining the relevance of its products.

All staff, including the Assistant Chief Statisticians, are appointed under the Public Service Employment Act. The Chief Statistician has the authority to, and does, move staff within the agency.

Publication or other release of information in a timely manner is interpreted as being required (see 0.1.1). This requirement is protection against the withholding of information, such as when it might be unfavorable to the government, or managing its timing, so as to benefit the government.

Analytic output is considered a key to highlighting the relevance of statistical information. In fact, the Chief Statistician considers an agency's ability to conduct analysis, and thus demonstrate that its output is relevant, is a critical factor in determining whether or not it thrives. In this situation, StatCan puts substantial effort into training staff to do analytical work. As well, procedures and processes are in place to maintain the agency's reputation for professionalism by formal peer review and institutional review to safeguard objectivity. In turn, objectivity is seen as exploring all sides of an issue, avoiding policy advocacy, stating assumptions, and highlighting major findings. The people from outside StatCan with whom the mission discussed this aspect of StatCan's work had no doubts about the agency's objectivity.

#### *1.1.2 Choices of sources and statistical techniques are informed solely by statistical considerations*

Although the Statistics Act makes no specific provision that the choice of source data and statistical techniques be based solely on statistical considerations, the fact that the Statistics Act provides that the Chief Statistician will direct the program serves the purpose. In StatCan's environment, these choices are made in line with its mandate and budget and with its core values of protecting confidentiality, sustaining professionalism and reliability, focusing on analysis, and reducing response burden. In particular, StatCan retains full control over survey content and questionnaire design, except in the case of censuses of population and agriculture (for which the Cabinet authorizes the content). This control exists even for client-sponsored and client-funded surveys.

Staff are encouraged to present their reasoning in documents that are made public. Further, under the "Policy on Author Credit," individuals that contribute to publications are acknowledged. For example, for studies of an interpretative, analytical, or methodological nature, the author(s) are acknowledged in the preface signed by the Chief Statistician and the name(s) appear on the front cover and the title page.

*1.1.3 The appropriate statistical entity is entitled to comment on erroneous interpretation and misuse of statistics*

The “Policy on Responses to Erroneous Statements in the Media” sets out that “Responses shall be made promptly to erroneous information about Statistics Canada, its products or services, misinterpretation of data or misleading statements in the ‘media’.” The Communications Division is charged with monitoring major print and electronic media and with providing a daily summary of references for all senior managers. All divisions are charged with bringing negative or erroneous comments that might not be caught by these regular mechanisms to the immediate attention of the Communications Division. One recent example of the application of this policy occurred when the surplus/deficit for the government of Alberta published by StatCan was significantly different from that published by the government of Alberta. The government of Alberta challenged the StatCan numbers. Both measures of the surplus/deficit were correct as the government of Alberta was presenting an accounting view of their financial results and StatCan a statistical view. StatCan, as well as answering media inquiries, made available to the media reconciliations of the statistical measure to the accounting measure that helped explain the differences. Also, StatCan maintains an active program of media relations, among other things to help avoid erroneous interpretation and misuse of statistics.

**1.2 Transparency**

*1.2.1 The terms and conditions under which statistics are collected, processed, and disseminated are available to the public*

The Statistics Act, the Privacy Act, and other key documents governing StatCan are widely referenced and available. For example, the two Acts are available through StatCan’s website. As noted above, the Statistics Act deals with key features of the terms and conditions under which statistics are produced, including the protection of confidentiality, key features of the Chief Statistician’s appointment and tenure, and the obligation to respond to StatCan’s surveys. As well, under the “Policy on Informing Survey Respondents,” respondents are to be informed that the collection is under the authority of the Statistics Act.

*1.2.2 Internal governmental access to statistics prior to their release is publicly identified*

Internal governmental access is provided prior to the release of the quarterly national economic and financial accounts, monthly gross domestic product (GDP), the Labour Force Survey, the consumer price index, balance of payments, and exports and imports. The information in these press releases is provided, under strict embargo, to a small number of staff of the Department of Finance, the Privy Council Office, and the BoC for preparation of ministerial briefings on the afternoon before official release. A small number of staff at the BoC receive the GDP release. This procedure, which is noted in the “Policy on Statistics Canada’s Daily (Official Release),” is an exception to usual procedures and must be approved by the Chief Statistician on the advice of the Clerk of the Privy Council. However,

outside StatCan, it is described only in vehicles aimed mainly at international, not domestic, readers. The Chief Statistician, on occasion, has confirmed this practice when asked about it.

### *1.2.3 Products of statistical agencies/units are clearly identified as such*

The “Communications Policy of the Government of Canada” (effective April 1, 2002) calls for StatCan (along with other government agencies) to identify clearly its products and services. Specifically, the policy calls for the display of the “Canada” wordmark, which is the global identifier of the Government of Canada. StatCan uses this wordmark, a Canadian flag beside the words “Statistics Canada” and “Statistique Canada,” and, unique to it, a stylized, boxed line graph. These identifiers appear on press releases, other publications, and the website, for example.

### *1.2.4 Advance notice is given of major changes in methodology, source data, and statistical techniques*

In most general terms, the long-term plans of StatCan are publicly available. The annual *Report on Plans and Priorities* identifies areas where change and development are planned. More specifically, information on changes in methodology is made available in discussion papers, meetings, and notices in *The Daily*.

- The 1997 introduction of most of the new features of the International Monetary Fund’s (IMF) *Balance of Payments Manual*, fifth edition, (*BPM5*) was announced in *The Daily* in May 1996. These new features included changes in the classification of transactions as well as reassessing data sources, surveys, and statistical techniques.
- The “roll out” of the Fisher chain volume index formula as the official measure of real GDP took place over several years. In the final stage before quarterly and annual Fisher chain volume indices were introduced on May 31, 2001, users were made aware in several ways:
  - documentation was posted on the website in January 2001;
  - communiqué was published in CANSIM on February 6 announcing future change and referring to website documentation;
  - seminars in February 2001 were held in Ottawa, Toronto, Vancouver, and Montreal for business and government users;
  - e-mail messages were sent in early May to over a hundred known users describing the change and referring to material on the website;
  - announcements were made in *The Daily* in February, early May, and on release.
- Plans for moving from book value to market value for the international investment position by mid-2004 have been discussed in advisory committees as well as with main users, such as the BoC and the Department of Finance. Considering the time

frame for its implementation, a widespread announcement to users has not yet been made.

### **1.3 Ethical standards**

#### *1.3.1 Guidelines for staff behavior are in place and are well known to the staff*

Guidance to StatCan's employees covers a number of topics related to ethical considerations. The main topics are listed below. Except for the first, there is a cross-reference to the section of this assessment where StatCan's guidance is documented.

- Minimizing the possibility of conflicts of interest. All employees must sign a document certifying that they have read and understood the Public Service Conflict of Interest and Post-employment Code. They are required to review their obligations under the Code at least once a year.
- Maintaining objectivity in representing statistical findings (e.g., in 1.1.1, about objectivity in analytical output).
- Protecting confidentiality (especially in 0.1.3, about the range of measures to protect confidentiality).
- Providing information to permit methods, procedures, and techniques to be assessed (in 0.3.1 and 5.2, about making available information about methodology and quality).
- Guarding against misinterpretations of data and, when they occur, responding to them (in 1.1.3, about responding to erroneous interpretation and media education).
- Being aware of the intrusive potential of some data collection and, to the extent possible, collecting data on the basis of informed consent (in 0.1.4, especially about preference for voluntary surveys for households and for use of encouragement to respond rather than punitive measures).
- Aiming to preserve confidence in data without exaggerating the accuracy or explanatory power of their data (especially in 0.3.1 and 5.2 about presenting measures of data quality and 1.1.1 about assurances of objectivity).

As one staff person put it, the culture of StatCan, built-up over time, reminds staff in a thousand subtle ways of their responsibilities within a statistical agency. However, the guidance, while easily accessible (most of it is on StatCan's internal website), is not brought together in one place for ease of reference. StatCan may find it useful, as one of the ways to renew awareness of these topics, to have a staff group consider whether something like the ISI Declaration of Professional Ethics or a home-grown equivalent would be a useful consolidation of their existing documentation.

Table 2. Canada: Data Quality Assessment Framework—Summary of Results:  
 Statistics Canada<sup>1/</sup>—Dimensions 0-1

Element	National Accounts	Consumer Price Index	Producer Price Index	Government Finance Statistics	Balance of Payments Statistics	Monetary and Financial Statistics	Comments
<b>0. Prerequisites of quality</b>							
0.1 Legal and institutional environment			O				
0.2 Resources			O				
0.3 Quality awareness			O				
<b>1. Integrity</b>							
1.1 Professionalism			O				
1.2 Transparency			O				
1.3 Ethical standards			O				

Key to symbols: NA = Not Applicable; O = Practice Observed; LO = Practice Largely Observed; LNO = Practice Largely Not Observed; NO = Practice Not Observed

<sup>1/</sup> Statistics Canada compiles statistics in all six datasets.

## I. NATIONAL ACCOUNTS

**For assessments of the Prerequisites of quality (O.) and Integrity (1.) dimensions, see Section O for Statistics Canada.**

### 2. Methodological Soundness

#### 2.1 *Concepts and definitions*

2.1.1 *The overall structure in terms of concepts and definitions follows internationally accepted standards, guidelines, or good practices*

The *System of National Accounts 1993 (1993 SNA)* is taken as the general framework for compiling the national accounts statistics, although there are several deviations as noted in 2.3 and 2.4 below. Most of these are minor and do not affect the level or growth rates of gross domestic product (GDP) to a significant extent, but some of the deviations do have an impact on international comparability. Documents on the StatCan website explain what the differences are and why they have arisen. They discuss the issues in detail and state whether it is intended to remove these deviations and if so when this will take place. The most recent publication is *The 2001 Revision of the Canadian System of National Accounts: Record of Revisited Issues*.

#### 2.2 *Scope*

2.2.1 *The scope is broadly consistent with internationally accepted standards, guidelines, or good practices*

The Inter-Secretariat Working Group on National Accounts (ISWGNA) determined that the following tables and accounts of the *1993 SNA* should be compiled on an annual basis as a ***minimum requirement***:

- value added by kind of activity and GDP at current and constant prices;
- expenditure on the GDP at current and constant prices;
- sequence of accounts for the total economy (up to financial accounts); and
- rest-of-the-world accounts (up to net lending).

The ISWGNA *recommended* that the following tables and accounts of the *1993 SNA* should also be compiled:

- own-account production of goods for fixed-capital formation;
- mineral exploration;
- value added by kind of activity and GDP at current and constant prices on a quarterly basis;
- expenditure on the GDP at current and constant prices on a quarterly basis; and
- supply and use tables on an annual basis.

The Canadian System of National Accounts (CSNA) is the name given to StatCan's framework of statistics for studying the state and behavior of the Canadian economy (see Box 2). The CSNA includes almost all of the accounts and tables listed above, and it extends well beyond this dataset. Although it does not include quarterly value added by kind of activity at current prices and there are no production accounts for institutional sectors as defined in the *1993 SNA*, it does include the following at the national level:

- monthly value added by kind of activity and GDP in volume terms;
- quarterly income and outlay accounts by institutional sector;
- quarterly capital accumulation by sector;
- quarterly flow of funds;
- annual input-output (I-O) tables at current and constant prices;
- annual balance sheets (scheduled to become quarterly from June 2003); and
- annual value added by kind of activity and GDP in current prices and in volume terms.

In addition, there are satellite accounts for tourism and environment. (A satellite account for nonprofit institutions is under construction.)

### **Box 2. The Canadian System of National Accounts (CSNA)**

The CSNA is a comprehensive, integrated system of flows and stocks that has been built up over several decades and is still evolving. In early 2003, the core of CSNA was made up of the following components:

- National Economic and Financial Accounts, comprising the Income and Expenditure Accounts (quarterly), the Financial Flow Accounts (quarterly), the National Balance Sheet (annual).
- Balance of International Payments (quarterly), the International Investment Position (annual), International Transactions in Securities (monthly), International Transactions in Services (annual); and Labour Productivity (quarterly).
- Provincial Economic Accounts (annual).
- The Input-Output Accounts (annual), Estimates of Gross Domestic Product by Industry at Constant Prices (monthly), the Provincial Input-Output Accounts (annual), the Aggregate Productivity Measures (annual), and Labour Productivity (quarterly).
- Government Finance Statistics (annual).

These components are integrated in three ways. First, they are all based on a single, unified set of concepts, definitions, and classifications. Terms such as “Gross Domestic Product,” “exports,” and “saving” have an identical meaning in all parts of the system. Substantial effort is made to carry back revisions—including those stemming from changes in concepts, definitions, and classifications—in the interest of consistency over time. Second, and closely related to the first, the key statistical aggregates are equal throughout the system. This means, for example, that there is only one estimate for GDP at Market Prices. This identity of statistical estimates was put in place in 1986 for the basic components. (At present, direct comparisons among the parts of the system that use the establishment as the basic unit, such as the input-output group of components, and those that use the enterprise, such as the National Economic and Financial Accounts, can be carried out only at highly aggregated levels.) Third, the components that are available quarterly are all released on the same schedule to facilitate analysis across both nonfinancial and financial developments.

In its broad outline, the CSNA bears a close relationship to the international standards. In mid-1990, the decision was taken to implement the *1993 SNA*, and at the same time implement the *Balance of Payments Manual*, fifth edition, and harmonize public sector statistics. Major steps were completed as the CSNA Historical Revision of 1997. In June 2003, StatCan intends to begin releasing quarterly national balance sheets and international investment position statements. This step will bring the CSNA close to being a fully integrated set of quarterly accounts for Canada’s sectors.

Main source: Various StatCan publications.

The definition of the constituent units of the economy is in accordance with the *1993 SNA*. In particular the following are included as part of the economy:

- Canadian embassies in the rest of the world,
- bonded warehouses, and
- workers who work part of the year in another country.

The production boundary is broadly in accordance with the *1993 SNA*. In particular, the following items are included in gross output:

- own-account production of goods for own consumption,
- own-account production of goods for fixed-capital formation,
- mineral exploration,
- production of entertainment, literary and artistic originals,
- patented entities, and
- leases and other transferable contracts.

However, contrary to the recommendations of the *1993 SNA*, gross output does not include the following:

- the value of research and development on own account, and
- gross output of illegal goods and services exchanged between willing buyers and sellers.

In most important respects, the asset boundary of the CSNA is in accordance with the *1993 SNA*. In particular it includes the following:

- defense related assets that could be used for civilian purposes;
- mineral exploration, and
- computer software.

However, contrary to the recommendations of the *1993 SNA*, the CSNA asset boundary does not include the following items:

- valuables,
- historical monuments,
- agricultural work in progress,
- entertainment, literary and artistic originals, and
- patented entities.

The deviations from the *1993 SNA* production and asset boundaries noted above are common to many other countries, including several other Organisations for Economic Co-operation and Development (OECD) member countries, and can be expected to have a very small effect on the GDP. As noted above, all deviations between the CSNA and the *1993 SNA* are publicized by StatCan on their website.

### **2.3 Classification/sectorization**

#### *2.3.1 Classification/sectorization systems used are broadly consistent with internationally accepted standards, guidelines, or good practices*

The classifications used in the CSNA are those recommended by the *1993 SNA* with two exceptions:

- The North American Industrial Classification System (NAICS) is used for kinds of activities instead of the International Standard Industrial Classification of All Economic Activities, (ISIC) Revision 3, as recommended in the *1993 SNA*. StatCan uses the NAICS both because it wishes to maintain strict comparability with the industry classification used by the United States and because it believes that it is more appropriate for its industrial structure than the ISIC. The NAICS corresponds exactly with the ISIC at the two-digit level but not at lower levels.
- Government expenditures are classified by a national classification (embedded in the *Financial Management System—FMS*) instead of the Classification of the Functions of Government (COFOG), as recommended in the *1993 SNA*. The national classification can only be approximately converted to COFOG.

The institutional sectoring used in the CSNA is generally consistent with the *1993 SNA* with the following exceptions:

- in tables and accounts showing expenditure on the GDP, nonprofit institutions serving households are combined with households;

- in the production accounts, nonfinancial corporations, financial corporations, and unincorporated enterprises are not shown separately as required by the *1993 SNA*, but are combined into the “business sector”; and
- the *1993 SNA* is followed to classify transactions and other flows.

## **2.4 Basis for recording**

### *2.4.1 Market prices are used to value flows and stocks*

The *1993 SNA* valuation principles are generally followed. In particular:

- market output is valued at basic prices in deriving value added by kind of activity,
- output for own consumption is valued at equivalent market prices,
- final expenditures are valued at market prices,
- Goods and Services Tax (GST) are included in the valuation of intermediate consumption excluding the deductible part of the GST,
- information on insurance and freight for merchandise imports is available and total imports and exports are valued on an f.o.b. basis, and
- transactions in foreign currency are converted using the mid-point exchange rate prevailing in the market at the time they take place.

However, the CSNA does not follow the *1993 SNA* valuation rules in five respects:

- Except for housing, unincorporated farms, and general government, consumption of fixed capital is taken from company accounts and so it is valued at historic costs. (This is done because of doubts about the accuracy of the service lives used in the StatCan Perpetual Inventory Model.) The *1993 SNA* requires that consumption of fixed capital be valued at current replacement costs. Note that GDP is not affected by the use of historic cost depreciation—only the split between net operating surplus and consumption of fixed capital.
- Own-account capital formation—mainly renovations and extensions to dwellings is valued at the market prices of materials used and excludes the imputed values of own labor inputs and operating surplus.
- Gross output in the I-O tables is valued at “modified basic prices.” These are lower than basic prices by the amounts of subsidies on products. Subsidies on products relate only to agricultural production and public transport services and are relatively insignificant.

- In the balance sheets, financial assets are valued at a mixture of historic, book, and market prices. (Conversion to current market values is scheduled to be completed by Spring 2004.)
- No system is in place to detect and correct for transfer pricing, which may be significant in some sectors. (International flows of merchandise may be adjusted in the I-O tables to achieve commodity balances and some of these adjustments may implicitly correct for transfer prices.)

#### *2.4.2 Recording is done on an accrual basis*

Recording is done on an accrual basis and in particular:

- work in progress is recorded in the period it is produced,
- intermediate consumption is recorded at the time the goods or services are used in production, and
- taxes and subsidies on products, government expenditures, and revenues are recorded on an accruals basis.

#### *2.4.3 Grossing/netting procedures are broadly consistent with internationally accepted standards, guidelines, or good practices*

Transactions between establishments within the same enterprise are recorded on a gross basis.

### **3. Accuracy and Reliability**

#### **3.1 Source data**

##### *3.1.1 Source data are collected from comprehensive data collection programs that take into account country-specific conditions*

The Business Register used by StatCan is based on information from the Canada Customs and Revenue Agency. All businesses and individuals who pay one or more of the following taxes is assigned a single Business Number by the Canada Customs and Revenue Agency: payroll tax; corporation tax; GST; import/export duties; tax paid by incorporated enterprises on the T1 form. StatCan gets a monthly listing from the Canada Customs and Revenue Agency of all businesses and individuals having an active Business Number with indications of changes from the previous month.

Because the GST is a value-added tax and can be partially passed on to their customers, business that have a Business Number have an incentive to avoid transactions with any business that does not have one. It can therefore be expected that most businesses that have

dealings with other businesses will pay taxes in order to acquire a Business Number. Employees have an incentive to ensure their employers deduct taxes on their behalf so that they can qualify for the pension plan and unemployment insurance. StatCan believes, therefore, that their Business Register is relatively comprehensive.

When it allocates a Business Number, the Canada Customs and Revenue Agency collects information on the number of employees and on the types of commodities produced. This information is used to classify enterprises at the six-digit level of the NAICS. The Canada Customs and Revenue Agency does not collect information on the number of establishments in each enterprise and StatCan obtains this information through “profiling” the larger enterprises. This is done in face-to-face interviews for the largest 600 enterprises and by telephone and mail questionnaires for others. The Business Register currently contains about 2.2 million businesses of which 120,000 are multi-establishment and so have had to be profiled.

New businesses (births) are entered in the Business Register each month. Businesses that have stopped trading (deaths) are eliminated from the Business Register when the Canada Customs and Revenue Agency reports no tax payments for twelve consecutive months. Depending on the type of tax involved, this means that deaths are recorded with a delay of between 12 to 24 months. Information from enterprise surveys is also used to update the Business Register—as regards both deaths and changes in commodities produced.

The Business Register is used for 91 surveys at the present time, including all the major surveys underlying the CSNA.

Table 3 shows the extent to which the basic data sources used for the annual I-O tables cover the inputs and outputs relevant for each activity. The I-O tables provide the benchmark for the GDP estimates made from the production, income, and expenditure sides. The coverage of economic activities through regular establishment surveys is 80 percent or more for most activities defined at the “S” level of the NAICS. There is also high coverage of information on inputs and outputs in most cases. Tax data are used to provide control totals both to check survey data or as a substitute when the sector is not covered by a survey. In the latter case, other sources must be used to estimate the commodity composition of inputs and outputs since this is not available from tax sources. The “other sources” used in these cases are mostly government agencies and regulatory bodies such as those dealing with financial markets, bank supervision, and housing markets.

The main surveys used for the I-O tables—for agriculture, mining, manufacturing, retail and wholesale trade, construction and services—are scientific random samples. Grossing-up factors are based on sample design and proper imputation methods are used to handle nonresponse.

Table 3. Canada: Sources Currently Used for the Input-Output Tables: Extent of Coverage  
H: 80 percent or more; M: 50—79 percent; L: under 50 percent; X: yes; —: no

Industries defined at the most aggregated (S) level		Cover- age of source used	Type of Source Used							Com- modity balance
			Survey			Tax data	Other sources			
			Output, inputs, labor income	Commodity detail		Output, inputs, labor income	Relevant aggre- gate	Commodity detail		
				output	input			output	input	
1A	Crop and Animal Production	H	X	H	H	—	X	—	—	—
1B	Forestry and Logging	M	X	M	M	X	—	—	—	X
1C	Fishing, Hunting and Trapping	H	—	—	—	—	X	H	—	—
1D	Support Activities for Agriculture and Forestry	L	X	L	L	X	—	—	—	X
21	Mining and Oil and Gas Extraction	H	X	H	H	—	—	—	—	—
22	Utilities	H	X	H	H	X	—	—	—	—
23	Construction	H	X	H	—	—	X	L	L	X
3A	Manufacturing	H	X	H	H	—	—	—	—	—
41	Wholesale Trade	H	X	H	M	—	—	—	—	—
4A	Retail Trade	H	X	H	M	—	—	—	—	—
4B	Transportation and Warehousing	H	X	H	H	X	—	—	—	—
51	Information and Cultural Industries	H	X	H	H	X	—	—	—	—
5A	Finance, Insurance, Leasing Real Estate and Renting	H	X	L	L	X	X	H	H	—
54	Scientific, Research and Technical Services	H	X	H	H	X	—	—	—	—
56	Administrative and Support Services for Waste Management and Remediation.	L	X	L	L	X	—	—	—	—
61	Education Services	H	X	H	H	—	—	—	—	—
62	Health Care and Social Assistance	M	—	—	—	—	X	H	H	—
71	Arts, Entertainment, Recreation	H	X	H	H	—	—	—	—	—
72	Accommodation and Food Services	H	X	H	H	—	—	—	—	—
81	Other Services (except Public Administration)	M	X	M	M	X	—	—	—	X
91	Public Administration	H	—	—	—	—	X	H	H	—

There are three main household surveys—the monthly Labour Force Survey, the annual Survey of Household Spending (SHS), and the annual Homeowner Repair and Renovation Survey. These are random sample surveys. Proper imputation methods are used to handle nonresponse and the grossing-up factors are based on the sample design.

The SHS collects information on about 130 items covering durable and nondurable goods and services. Purchases of valuables are recorded but these are classified as consumption goods and not as gross capital formation. Agriculture surveys provide estimates of production of crops and livestock for own consumption. The Homeowners Survey of Repairs and Renovation provides information on materials purchased for own-account fixed capital formation by households, and industry surveys collect information on own-account gross fixed capital formation by enterprises.

For government, comprehensive statistics are available on consumption and capital expenditures by the federal and the provincial and local governments, but no information is available on expenditures by the administrative authorities in areas designated as “First Nations.” A Perpetual Inventory Model is used to estimate capital stocks of federal and of provincial and local governments at replacement costs and capital consumption estimates are taken from the same source.

Overall there are adequate sources of basic data for quarterly estimates of GDP from the income and expenditure sides as well as for monthly estimates of GDP by kind of activity. The main sources are as follows:

- a monthly Labour Force Survey and a monthly Survey of Employment, Payrolls and Hours based on a combination of a monthly establishment survey and information supplied by the Canada Customs and Revenue Agency on payroll deduction—the PD 7 forms;
- monthly surveys of manufacturing, retail and wholesale trade, and hotels and restaurants;
- monthly data on housing starts and completions;
- quarterly surveys of energy production and construction; and
- a Quarterly Financial Survey of corporate income statements and balance sheets.

When necessary, ad hoc surveys are carried out to supplement regular surveys. For example, an ad hoc survey was carried out to check the merchandise export statistics when it was suspected that exporters were underreporting trade with countries other than the United States. Export statistics have been revised upwards as a result.

### *3.1.2 Source data reasonably approximate the definitions, scope, classifications, valuation, and time of recording required*

Most of the surveys used for the national accounts have been specifically designed to meet CSNA definitions, the appropriate reference periods, and valuation principles. Sample surveys based on the Business Register provide an industry breakdown consistent with NAICS at the six-digit level. Data are adjusted to meet CSNA standards when they are found to be deficient. For example, adjustments have been made to industry surveys to reclassify software expenditures from intermediate consumption to gross fixed capital formation.

### *3.1.3 Source data are timely*

Efforts are being made to improve the timeliness of annual surveys and results are now starting to become available between 12 and 15 months after the reference period. Results from quarterly and monthly surveys consistently meet their preannounced publication schedules and are sufficiently timely for the sub-annual accounts.

The timeliness of price statistics is good as explained in the next section of this report and is adequate for both annual and sub-annual accounts.

## **3.2 Statistical techniques**

### *3.2.1 Data compilation employs sound statistical techniques*

#### Production approach procedures

Estimates of gross output and intermediate consumption are compiled in the I-O tables for 300 industries (kinds of activities) and for 727 commodities. I-O estimates are both the benchmark and the starting point for current period estimates of the GDP by industry.

In the I-O tables, fixed ratios to determine the relationship between gross output and value added are only used to a limited extent. For medium and large enterprises in agriculture, forestry, fishing, mining, manufacturing, construction, electricity, gas and water, trade, transport, and most services, basic data of at least annual frequency are available on both gross output and intermediate consumption. For some service activities—entertainment, legal, accountancy—for small enterprises in some other industries and for exports and imports of services, surveys are carried out less frequently so that fixed ratios from previous year have to be used. These fixed ratios, however, are adjusted in the process of balancing the I-O tables. In general the use of fixed ratios is very limited and the ratios used are less than three years old.

The monthly and annual estimates of the GDP by kind of activity use fixed ratios for the current period until they are benchmarked on the latest I-O table. At that time they are implicitly updated to the same (updated) ratios as are used for the I-O tables.

Double indicator methods are necessarily used to obtain constant price for all kinds of activities in the I-O tables. In general, both gross output and intermediate consumption are obtained at constant prices by using price deflators, but limited use is also made of volume extrapolators.

Price indices for the commodities distinguished in the I-O tables are mainly taken from the following StatCan price indices:

- Industrial Producer Price Index,
- Consumer Price Index,
- Farm Product Price Index,
- Machinery and Equipment Price Index,
- New Housing Price Index,
- Apartment Building Construction Price Index,
- Electric Power Selling Price Index for Non-Residential Customers, and
- Five special price indices for services purchased by producers (accounting services, consulting engineering services, informatics professional services, telecommunications services, and traveler accommodation services).

In some cases, prices from the consumer price index (CPI) are used for intermediate consumption, but they are first converted to a producer price basis by adjusting for product taxes and trade and transport margins. Price data from private sector sources is also used to a limited extent—for example commercial and dwelling rents and advertising rates.

Imports and exports are mainly deflated using producer price index prices although some use is made of unit value indices, and of price indices used by trade partners adjusted for exchange rates. Volume extrapolators are used for gross output of some services, particularly in transport.

The monthly and annual estimates of the GDP by kind of activity at constant prices are based on a mixture of single indicators, such as deflated output or sales, and volume extrapolation, but when they are subsequently benchmarked to the I-O tables they are implicitly converted to double deflation.

Volume measures of taxes and subsidies on products are obtained by applying base-year rates to the value of sales. Trade margins at constant prices are obtained either as residuals from the I-O tables or, more commonly, by applying the average margins of the base and current years.

The constant price I-O tables are based on Laspeyres price indices with the base-year updated every five years. The annual estimates of the GDP use Fisher indices for years for which final I-O tables are available and Laspeyres indices based on the year of the latest final I-O table for years since then.

### **Specific issues of GDP compilation**

Rents for dwellings are estimated from data on the stock of dwellings and average space rents actually paid. The stock data distinguish owner-occupied dwellings from rented accommodation. Imputed rents of owner occupiers are assumed to be 1.6 times higher than average market rents because of quality differences.

Work-in-progress includes livestock reared for slaughter, large construction projects and large manufactured goods such as ships, but excludes growing crops, standing timber and stocks of fish as recommended by the *1993 SNA*.

Data on inventories reported by enterprises are adjusted for holding gains by revaluing the opening and closing stock values to average prices of the period.

Within StatCan, consumption of fixed capital is calculated by a Perpetual Inventory Model, but these data are currently only used in the CSNA for housing, unincorporated farms, and the government sector. Because of doubts about the service lives used in the model, the national income and expenditure accounts for other institutional sector use depreciation estimates from company accounts, which are mostly based on historic costs. The *1993 SNA* attaches considerable importance to the correct valuation of consumption of fixed capital because it is a cost of production and if it is not correctly measured it will be impossible to derive reliable measures of net value added and net operating surplus.

So far as possible data are recorded on an accruals basis. Government revenue and expenditures are initially reported on a cash basis, but are converted to an accruals basis for the CSNA.

### Procedures for compiling volume measures of GDP

As noted above under Production approach procedures, detailed price indices are used and these are generally consistent with the variables being deflated in terms of price concept, coverage, and reference period.

Double indicator methods are used for the annual I-O tables at a very detailed industry and commodity level. Single indicators are used for the monthly GDP estimates by industry.

Quarterly and annual Fisher chain indices are used to measure volume changes in GDP estimated from the expenditure side. As noted above, for GDP by kind of activity, Fisher chain indices are used for years for which final I-O tables are available and Laspeyres base-

weighted indices for years since then. The I-O tables are Laspeyres fixed-weight indices with the base year updated at five-year intervals. The use of alternative volume measures is consistent with the recommendations of the *1993 SNA*.

#### Expenditure approach procedures

All components of final expenditure are estimated independently, none are derived residually.

Household consumption expenditure is estimated for 140 goods and services and the classification is broadly consistent with Classification of Individual Consumption of Households by Purpose. These estimates are mainly based on two types of retail trade statistics—a monthly survey that gives total sales by type of outlet and a retail commodity survey that collects information from outlets on sales of approximately 140 types of commodities. Government final consumption expenditure is classified according to a national classification embedded in the *FMS*. The *FMS* can be approximately converted to COFOG for reporting to international organizations, but the conversion is not detailed enough to allow the precise derivation of actual final individual consumption of households, which is one of the innovative features of the *1993 SNA*.

Gross fixed capital formation is estimated by type of asset and by two sectors—general government and business. The breakdown by type of asset distinguishes three types of residential buildings and major repairs and extensions; nonresidential construction is broken down by engineering construction and other buildings; ten kinds of machinery and equipment are distinguished.

Changes in inventories are separately estimated for farm and nonfarm. Farm inventories are further classified by types of crops and livestock; nonfarm inventories are classified into raw materials, finished goods, goods for resale and work-in-progress; they are estimated separately for mining, manufacturing, retail and wholesale, and other industries.

Detailed price indices taken from the CPI are used to deflate household consumption expenditures; government final consumption expenditure is deflated using wage indices for the labor component and prices from the CPI and Producer Price Index (PPI) for nonwage expenditures using weights from the latest I-O tables.

Incidental sales by government, which have been rising sharply in recent years, are deducted from government consumption expenditure.

Net purchases abroad by residents are included in household consumption expenditure. These estimates are based on counts of persons entering and leaving Canada provided by the Canada Customs and Revenue Agency and an international travel survey conducted by StatCan.

### Specific quarterly compilation techniques

The quarterly accounts are benchmarked on the annual estimates using a quadratic minimization procedure.

The quarterly estimates are initially derived from raw—not seasonally-adjusted—basic data. Seasonal adjustment is done using the X11-Arima model developed by StatCan. A special unit in StatCan provides advice on seasonal adjustment to ensure that standard procedures are used in all subject areas.

#### *3.2.2 Other statistical procedures (e.g., data adjustments and transformations, and statistical analysis) employ sound statistical techniques*

Source data are adjusted to conform to national accounts concepts and classifications as necessary. This mainly concerns the use of company income statements and balance sheets. Adjustments are made to reported profits to approximate operating surplus more closely and to eliminate holding gains from inventory changes.

Comprehensive coverage of all economic activities—“exhaustiveness”—is recognized as an important objective by CSNA staff. Three issues are involved here—the “underground” or “hidden” economy, illegal activities, and coverage of the First Nations.

The underground/hidden economy usually refers to activities that are legal in themselves but are carried out in a clandestine fashion to avoid paying taxes. A study was published in 1994, *Assessing the size of the Underground Economy: The Statistics Canada Perspective* and a shorter version of this study was also published in Technical Series Number 28, May 1994. The study concluded that the underground economy that could be missing from the GDP was less than 3 percent in the mid-1990s. No further studies have been published since then. At the present time StatCan includes estimates for some underground activities obtained by comparing expenditures reported in the SHS and the Homeowners Survey of Repairs and Renovations with labor incomes reported by the Canada Customs and Revenue Agency. These estimates cover activities such as renovations and repairs to dwellings and child care. The value added by these activities is less than 1 percent of GDP.

Illegal activities that involve transactions between willing buyers and sellers are included in the production boundary of the *1993 SNA*. Studies in member states of the European Union suggest that illegal activities—such as prostitution, narcotics, smuggling, and trade in stolen vehicles—may amount to 2 percent of legal GDP at the most. No similar studies have been published for StatCan. At the present time, the only illegal activity explicitly included in GDP is cigarette smuggling, although some income from other illegal activity may be included in the GDP either as household consumption expenditure or as income reported for unidentified services.

There are about 600 First Nations in Canada with a total population of about one million. Economic activity in the First Nations will be captured in the national accounts if First

Nations businesses are on the Business Register. Businesses operating in the First Nations do not have to pay GST so there is less incentive for them to obtain a Business Number than for those operating elsewhere. On the other hand, there is an incentive for employees to insist that payroll tax deductions be made on their behalf so that they can participate in pension and unemployment insurance plans. It is likely, therefore, that many First Nations businesses will be included in the Business Register and therefore covered by StatCan surveys, but the extent of coverage is presently unknown.

In 2002, the OECD issued a *Measuring the Non-Observed Economy: A Handbook* as a joint publication of the OECD, the IMF, the International Labour Organisation, and the Interstate Statistical Committee of the Commonwealth of Independent States. The *Handbook* provides a framework for assessing the degree to which the national accounts is exhaustive with respect to underground, illegal and informal economic activities. This framework is suitable for assessing the extent of gaps in the CSNA because of the three problems listed above. The team was informed that such a project is already underway at StatCan and that results are expected to be published in mid-2003.

### **3.3 Assessment and validation of source data**

#### *3.3.1 Source data—including censuses, sample surveys and administrative records—are routinely assessed, e.g., for coverage, sample error, response error, and nonsampling error; the results of the assessments are monitored and made available to guide planning*

Meetings are held at least once per year between CSNA staff and the managers of each of the approximately 20 surveys that supply basic data for the national accounts. These SNA Bilateral Meetings are used to raise queries and solve problems about survey data. For example, CSNA staff recently noted growing discrepancies between commodity flow estimates of gross-fixed capital formation and capital expenditures reported from the Private and Public Capital Expenditure Survey. It was agreed that this was probably because businesses were not always capitalizing small value assets and survey procedures were revised to correct this.

“Key Provider Managers” have recently been appointed to serve as contact points with important data providers, such as the large automakers. This was done largely to manage respondent relations and response burden and to improve data quality. For example, the Key Provider Managers investigated the exchange rates being used to convert transactions in U.S. currency to Canadian dollars and concluded that inappropriate rates had been used.

Government budgetary data are reviewed on a continuous basis by the Public Institutions Division. One problem here is the definition of the universe—what units belong in government as opposed to nonprofit institutions serving households. The CSNA staff ensure that when new agencies and quasi-governmental bodies are created, the 1993 SNA rules for sectorization are followed.

Sampling errors are routinely calculated by survey managers and are used to adjust sample sizes. The SNA Bilateral meetings referred to above are used to ensure that questionnaires use appropriate definitions, valuation principals, reference periods and classifications.

### ***3.4 Assessment and validation of intermediate data and statistical outputs***

#### *3.4.1 Main intermediate data are validated against other information where applicable*

The I-O tables provide the principle means of validating the national accounts aggregates and this can be done at a very detailed level. Other checks are made by comparing labor incomes reported by the Canada Customs and Revenue Agency with data from the Labour Force Survey and the SHS (which also includes questions on revenues).

#### *3.4.2 Statistical discrepancies in intermediate data are assessed and investigated*

Discrepancies in intermediate data are routinely investigated and measures are taken to remove them. A recent example is the discrepancy noted between gross fixed capital formation estimates obtained from commodity flows and gross fixed capital formation reported by enterprises. Investigations showed that this was partly because of a new practice of issuing asset-backed securities (a form of financial leasing), which had resulted in under-reporting of gross fixed capital formation by enterprises. Survey procedures were revised.

#### *3.4.3 Statistical discrepancies and other potential indicators of problems in statistical outputs are investigated*

As noted, the I-O tables are used as the integrating framework in which statistical discrepancies are investigated and, eventually, eliminated. Independent estimates of GDP made from the production, income, and expenditure sides are benchmarked to the final I-O results, i.e., they are each adjusted so that they agree exactly with the GDP estimates in the final I-O tables.

Until the I-O tables are published two- and three-quarter years after the reference period, the best estimate of GDP (the official estimate) is taken as the average of the GDP estimates from the income and expenditure sides. The discrepancy between this official estimate and the income and expenditure sides is shown (with opposite signs) in both estimates of GDP.

Between 1961 and 2000, published differences between estimates of the GDP from the income and expenditure sides have been well under 0.5 percent of GDP and have generally been declining over the period. Differences between the two initial estimates (i.e., before publication) are often much bigger, however, and large discrepancies provide the signal for CSNA staff to investigate those parts of the accounts that are based on weak data sources, unusual changes in aggregates, and areas of the accounts that previous experience has shown to be least reliable.

### **3.5 Revision studies**

#### *3.5.1 Studies and analyses of revisions are carried out routinely and used to inform statistical processes*

Revision studies are published in various issues of *Technical Series* (e.g., numbers 7, 15, 20, 24, 29, 33). They explain the reasons for the revisions and included tables showing changes to both the levels and growth rates of the main aggregates. Since 1997 a large number of revisions have been due to the progressive introduction of the 1993 SNA definitions and concepts as well as to changes in basic data sources. Documentation on these conceptual changes is available on the StatCan website, the most recent being *The 2002 Revision of the National Economic and Financial Accounts*.

These studies of revisions have been carried out both to inform users of the likely size of revisions to preliminary data and to alert those compiling the accounts to possible biases and other problems in the data sources used for the preliminary estimates. Aggregates that are subject to particularly large revisions are investigated with particular care during the compilation process.

## **4. Serviceability**

### **4.1 Relevance**

#### *4.1.1 The relevance and practical utility of existing statistics in meeting users' needs are monitored*

Established processes are in place to obtain users' views:

- The National Accounts Advisory Committee meets twice a year. This Committee includes up to a dozen users from academia and private research institutes, business economists, forecasters and staff of the Bank of Canada (BoC) and the Ministry of Finance. The Committee reviews the program and the quality of national accounts products, and it sometimes suggests new areas for development.
- The “Post Mortem Group” meets four times a year when the quarterly national accounts are released. It includes representatives of the Toronto Association of Business Economists, the BoC, and the Department of Finance. The group provides feedback to StatCan on the perceived quality and relevance of the national accounts products.
- Two interdepartmental meetings are held once a year with StatCan's main clients in the government—the BoC and the Department of Finance.
- Each Division in the National Accounts and Analytic Studies Directorate carries out a Quadrennial Program Review, which includes a user satisfaction survey. For

example, the Input-Output Division (IOD) carried out a survey of external clients as part of its 2002 Quadrennial Review collecting the views of 49 clients about their level of satisfaction with the quality of I-O products, their awareness of what is available, and its relevance to their business needs.

## **4.2 *Timeliness and periodicity***

### *4.2.1 Timeliness follows dissemination standards*

Quarterly and annual GDP estimates are disseminated 60 days after the end of the reference quarter. This is well within the timeliness requirements for the Special Data Dissemination Standard (SDDS).

### *4.2.2 Periodicity follows dissemination standards*

Periodicity meets the requirements for the SDDS.

## **4.3 *Consistency***

### *4.3.1 Statistics are consistent within the dataset*

The annual I-O tables provide the benchmark for estimates of GDP by kind of activity, by final expenditure, and by type of income. Once benchmarked, the three independent estimates are entirely consistent. In the current period—before benchmarking—the best estimate of GDP is taken as the average of the estimates from the income and expenditure sides. Statistical discrepancies (with opposite signs) are shown in both GDP estimates. The discrepancy is monitored and has been less than 0.5 percent of GDP for at least the last ten years.

All three GDP estimates give very similar growth rates and the rates are identical after benchmarking to the I-O tables.

GDP estimates at current prices, volume measures, and implicit price deflators are consistent with the *value = volume x price* framework.

Quarterly GDP estimates are fully consistent with the annual estimates since the latter are derived as the sum of the quarters.

### *4.3.2 Statistics are consistent or reconcilable over a reasonable period of time*

Consistent time series data are available back to 1961 although the level of detail falls off toward the beginning of the period. For example, the I-O tables have used four different industry classifications since 1961 so that only 100 “link industries” are consistent over the whole period. In general, StatCan’s time-series consistency is among the highest for OECD member countries.

Revisions arising from better data and conceptual changes are carried back as far as possible. For example, estimates for capital formation in software were introduced in 2002 and carried back to 1981, which is when investment in software became quantitatively important.

Detailed methodological notes identify and explain conceptual changes. The move toward adoption of the *1993 SNA* has been particularly well documented.

Unusual changes in economic trends are fully explained in the analytic text accompanying the data releases. Examples include the effect of the ice storm in 1998, which disrupted energy supplies, the introduction of the GST in 1991, and the effect on Canada of the September 11, 2001 terrorist attacks.

#### *4.3.3 Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks*

The national accounts are consistent with the balance of payments and can be reconciled with the government finance statistics. All three data sets are compiled within the same Directorate.

#### **4.4 Revision policy and practice**

##### *4.4.1 Revisions follow a regular, well-established, and transparent schedule*

The cycle of revisions follows well established procedures:

- For the income and expenditure accounts, the procedure is as follows. During the current year, the quarterly estimates are revised each time a new quarter is released. When the first quarter is published, the estimates for the last four years are revised. When the final I-O table is released all national accounts estimates for that year are benchmarked and no further revisions are made.
- For the I-O tables, preliminary estimates are released two- and three-quarter years after the reference year and final estimates are released one year later. No further revisions are made.

The team was informed that this is well known to users and national accounts staff do not recall queries or complaints from users. A brief description of the timing of revisions is given in methodological papers dealing with revisions (e.g., *The 2000 Revision of the National Economic and Financial Accounts*) but the information is not publicized in the regular hard-copy publications nor on the StatCan website. (The information is available on the DSBB.)

Since 1997 a large number of revisions have been due to the progressive introduction of the 1993 definitions and concepts as well as to changes in basic data sources. Documentation

on these conceptual changes is available on StatCan website, the most recent being *The 2002 Revision of the National Economic and Financial Accounts*.

#### 4.4.2 *Preliminary data are clearly identified*

*Canadian Economic Accounts Quarterly Review* (Catalogue No. 13-010-XIE) and *National Income and Expenditure Accounts* (Catalogue No. 13001-XPB) both give a list of symbols including:

- “p—preliminary figures”; and
- “r—revised figures.”

These symbols, however, are not used in the tables of either publication. The same symbols are given in *The Daily* and are used for some (not all) of the tables where the p/r symbols are shown in the column headings rather than being attached to individual cells.

The p/r symbols may no longer be appropriate since, under the present revision policy, revised numbers remain subject to further revision and, therefore, still preliminary for up to four years. An alternative approach that may be more helpful for users would be to provide a general note in all publications explaining the revision cycle.

#### 4.4.3 *Studies and analyses of revisions are made public*

Until StatCan started to implement the *1993 SNA*, most revisions were due to errors and omissions in, or improvements to, basic data sources. These revision studies were published in various issues of *Technical Series* (e.g., numbers 7, 15, 20, 24, 29, 33). They explained the reasons for the revisions and included tables showing changes to both the levels and growth rates of the main aggregates. However, *Technical Series Number 29* (published in 1994) differed by also including a statistical analysis of revisions. This covered the period 1985–1993 and examined the direction of biases in the revisions, how the size of revisions had changed over time, and how they were distributed around the mean.

Studies of this kind are particularly helpful for users because they show the likely size and direction of revisions. Since 1994 no statistical analysis of this kind has been published.

## 5. **Accessibility**

### 5.1 *Data accessibility*

#### 5.1.1 *Statistics are presented in a way that facilitates proper interpretation and meaningful comparisons (layout and clarity of text, tables, and charts)*

National accounts data are released in summary form in *The Daily* (see 5.1.4). Under the “Policy on Highlights of Publications,” each release is to include tables and charts (if

appropriate) as well as analysis of developments in the form of highlights. These highlights, to which StatCan has devoted considerable attention over the years, are required for all publications that present statistical information or analytical findings. These highlights are intended to convey significant findings, comparisons, and trends to assist the reader in understanding and using the publication.

Different members of CSNA staff take responsibility as principal drafters for the highlights for up to a year. It is seen as a training exercise because the drafters are forced to view the CSNA as a whole and relate developments in the macroeconomy with related indicators. Each quarter the main highlights are identified in discussions with senior CSNA staff and the text is drafted during the period when the accounts are being finalized to avoid delays to publication. CSNA staff report that the media frequently paraphrase or quote the highlights, often prefaced by “StatCan reports that...”

The summary tables are accompanied by more detailed tables, graphs, and a longer commentary in the *Canadian Economic Accounts Quarterly Review*, which is published on the website at the same time as *The Daily*. A paper publication, *National Income and Expenditure Accounts*, (Catalogue No. 13-001-XPB), gives the most detailed tables and a time series of up to 32 quarters (eight years). Relevant national accounts series are published in seasonally adjusted form.

#### 5.1.2 *Dissemination media and formats are adequate*

Data products are available in both English and French, simultaneously. In addition to the first release in *The Daily*, national accounts are available in several other media and formats:

- Paper publications are available for the income and expenditure accounts, financial flow accounts, estimates of labor income, and gross-domestic product by industry.
- All national accounts data are published in the Canadian Socio-Economic Information Management System (CANSIM).
- Six diskettes are also available for various components and time series of CSNA products, with prices ranging from Can\$25 to Can\$300 per issue. The diskettes can be purchased seven days after release at reduced prices.

#### 5.1.3 *Statistics are released on a preannounced schedule*

A schedule of release dates for **national accounts**, as well as for some 30 other of StatCan’s major economic indicators, is published for the coming calendar year at the end of November in *The Daily*, the Agency’s official release bulletin. These dates are also available on *The Daily* module of StatCan’s website. In addition, on the last working day of each month, *The Daily* publishes an entire set of release dates for these indicators for the coming month, as well as dates for other major releases. And each Friday, *The Daily* publishes a list of release dates for the coming week.

Overall, the record of meeting release dates is good. In 2002, all of the 30 products met their preannounced release date. The national accounts have been released on the preannounced dates each month and quarter for at least the last five years.

#### *5.1.4 Statistics are made available to all users at the same time*

*The Daily*, as outlined in the “Policy on Statistics Canada’s *Daily* (Official Release),” is the official release bulletin. Its purpose is to disseminate summary findings of statistical programs or major conclusions of analytical reports. In doing so, it provides a single, comprehensive source of information on the agency’s offerings. StatCan considers the vehicle as unique among the world’s statistical agencies. *The Daily* has been an Internet vehicle since 1995, and has been published in hard copy every working day since 1932. With two exceptions, release time is 8:30 a.m. Eastern time. The two exceptions are the Consumer Price Index and Labour Force Survey, both of which by tradition are released at 7:00 a.m. Eastern time.

Release in *The Daily* marks the passage of data, analysis, or products to the public domain. Until release in *The Daily*, data are considered “protected” and may not be disseminated outside StatCan, except in the following cases: (1) where validation by an external organization is necessary, (2) when sponsors of cost-recovery programs are granted access for a reasonable period prior to release, and (3) where sources of administrative data, and/or any other organization authorized by the source organization, are granted access to data developed from those files. These exceptions still require a formal release in *The Daily* within a relatively short delay.

National accounts data are available to journalists in a press lock-up at 7:00 a.m. Eastern time on the release date. The lock-ups are held in the Main Building in a secure media room with computer installations (provided by the journalists) and telecommunication lines. Journalists, on entry to the lock-up, are provided with a diskette containing *The Daily* formatted in ASCII text. The lock-up provides them with time to reformat the text in their own software. At release time precisely, a Media Relations officer flips a set of toggle switches allowing the journalists to file electronically. In most cases, their articles are transmitted directly on to their news wire.

#### *5.1.5 Nonpublished (but nonconfidential) subaggregates are made available upon request*

Unpublished national accounts series are released to the public provided that they are not confidential and that they meet StatCan quality standards. For example, some users want more product detail on household consumption expenditures. This is provided in electronic form for a fee.

## 5.2 *Metadata accessibility*

### 5.2.1 *Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical techniques is available, and differences from internationally accepted standards, guidelines, or good practices are annotated*

The introduction to the “Policy of Informing Users of Data Quality and Methodology” sets out a statistical agency’s responsibility to inform users of the concepts and methodology used in collecting, processing, and analyzing data, of the accuracy of those data, and of any other features that affect their “fitness for use.” The policy requires that all statistical products include or refer to documentation on data quality and methodology. The accompanying standards detail the requirements for documentation (and include examples for fictitious data sets as illustrative). Canada has made a commendable effort to have metadata on all of its major series available to its users online, in a standard format, and free of charge. The newly developed on-line IMDB, a corporate repository of information on each of StatCan’s 400 active surveys, is to serve as a tool to help meet the aim of the policy. The IMDB provides a standard template that is to be populated with pre-existing and new metadata. The IMDB represents a model dissemination practice, and StatCan is committed to its continuous improvement.

For national accounts, the implementation of the policy is still a work in progress in the public domain. Documentation, as statisticians around the world know well, is time consuming for expert staff and is often the residual claim on time after the numbers are out. (See also 0.3.1 about the Auditor General’s review of quality management and 5.3 below about assistance to users.)

The IMDB uses a template with a number of standard headings that should be completed for all datasets. Within the standard headings, managers select from a number of subheadings to provide methodological information pertinent to their particular type of data. The standard template is not well adapted to providing metadata on national accounts statistics and managers in this area have not always been able to use the system to provide useful information to users. Table 3 summarizes the information currently available in the IMDB for four national accounts data sets. The first column lists three (of the seven) standard IMDB headings that will be important to most data users. The next four columns summarize the information currently provided for the four datasets. The subheadings used under **Data sources and methodology** are given in italics—*Type of survey*, *Estimation*, etc. Some comments follow:

- The subheading “Type of survey” is not relevant to national accounts datasets as is shown by the information supplied.
- The information given under “Error detection” refers mainly to the revision schedule. While this is useful information, most readers would not look for it under this heading.

- Except for the “Provincial Gross Domestic Product” (final column), little useful information on estimation procedures is given under the subheading “Estimation.”
- The information given under “Quality evaluation” is largely irrelevant.
- Information under “Data accuracy” is not helpful in the two cases where it is provided.
- The heading “Documentation” could provide hyperlinks to the many other useful methodological reports available from StatCan, but this has not always been done. For example, under “Documentation” for Gross Domestic Product by Industry—Monthly, there is no link to *Gross Domestic Product by Industry, Sources and Methods* (Catalogue number 15-547-XIE).
- There are no headings or subheadings in the template for some types of information that is important for users of the CSNA. Examples include: seasonal adjustment methods, data verification (from alternative sources and independent estimates), and revision schedule.

For more detailed methodological information, StatCan published *A User Guide to the Canadian System of National Accounts (Catalogue 13–58)* in 1989, and *Guide to the Income and Expenditure Accounts: Income and Expenditure Accounts Sources and Methods Series* (Catalogue 13–603E, No.1 occasional) in 1990. However, neither of these publications can be used without taking account of the many conceptual changes following StatCan’s move toward adoption of the *1993 SNA*.

The critical comments above need to be put into context. StatCan has been careful to explain the changes consequent on the adoption of the *1993 SNA*—see for example *A Review of the Remaining Differences between the 1997 Historical Revision of the 1993 SNA*, *The 2002 Revisions of the National Economic and Financial Accounts*, and *Capitalisation of Software*, all of which are available on the StatCan website. StatCan has also issued, in 2002, an updated report on the sources and methods underlying the GDP estimates by industry, *Gross Domestic Product by Industry, Sources and Methods*. (Catalogue No. 15–547-XIE) and national accounts staff are now working on a revised version of the *Guide to the Income and Expenditure Accounts: Income and Expenditure Accounts Sources and Methods Series*, which is due for publication in 2003.

Table 4. Canada: Summary of Metadata available in the *Integrated Metadata Base* for Four National Accounts Products

Standard IMDB headings	National Income and Expenditure accounts	Input-Output Tables	Gross Domestic Product by Industry–Monthly	Provincial Gross Domestic Product
<b>Data sources and methodology</b>	<p><i>Type of survey.</i> “The survey is a sample survey; the survey is derived.”</p> <p><i>Estimation</i> Explanation of the revision timetable.</p> <p><i>Quality evaluation.</i> Gives a description of the three ways of estimating GDP.</p>	<p><i>Type of survey.</i> “The survey is derived.”</p> <p><i>Error detection</i> Explanation of the revision timetable.</p> <p><i>Disclosure control.</i> Reference to cell suppression to preserve confidentiality.</p>	<p><i>Type of Survey</i> “Administrative data sources are used. The survey is derived.”</p> <p><i>Error detection</i> Explanation of the revision timetable.</p> <p><i>Estimation</i> Gives a definition of production, explains the difference between gross and net product, gives the industry detail and says where data are published.</p>	<p><i>Type of survey</i> “The survey is derived.”</p> <p><i>Error detection</i> “Data for the most recent four years are preliminary.”</p> <p><i>Estimation</i> Useful summary description.</p> <p><i>Quality evaluation</i> Description of the level of detail, scope of provincial production and where data are published.</p>
<b>Data accuracy</b>	Accuracy can be assessed by the size of revisions and subjective assessment of the data sources and methodology.	Empty.	Warning that “fewer data are available to prepare the monthly estimates than to prepare the annual measures....” Adjustments for trading days and seasonality mentioned.	Empty.
<b>Documentation</b>	Hyperlink to the paper on the 2002 revisions.	Hyperlinks to two documents about NAICS.	Empty.	Empty.

### 5.2.2 Levels of detail are adapted to the needs of the intended audience

The IMDB appears designed to provide the first level of metadata for the general user but this is not fully satisfactory at the present time. Perhaps the main problem is that the template needs to be adapted to a derived data set such as national accounts.

More detailed information is available on the website and in paper publications, and they are of a high standard. They explain both the sources and methods used for the CSNA and

deviations between the Canadian system and the *1993 SNA*. As noted, some of these publications are out of date, but steps are being taken to update them.

### **5.3 *Assistance to users***

#### **5.3.1 *Contact person for each subject field is publicized***

The “Policy on Spokespersons and Media Relations” calls for data contacts to be provided for each *Daily* release. These contacts are professional staff who provide day-to-day explanation and interpretation. All of the major releases and data availability announcements that the mission reviewed provided these contacts. Users were very complimentary of the service they provided. The contacts were considered knowledgeable and responsive.

#### **5.3.2 *Catalogs of publications, documents, and other services, including information on any charges, are widely available***

StatCan maintains a comprehensive catalogue of the products and services, detailing how to obtain the product or service and its price if there is a charge. The website has been developed as a convenient, one-stop shopping center. Users are also advised in each publication of the national inquiries phone line and e-mail address. The StatCan Regional Reference Centre is also widely mentioned.

Table 5. Canada: Data Quality Assessment Framework—Summary of Results:  
National Accounts—Dimensions 2–5  
(Compiling Agency: Statistics Canada)

Key to symbols: NA = Not Applicable; O = Practice Observed; LO = Practice Largely Observed; LNO = Practice Largely Not Observed; NO = Practice Not Observed.						
Element	NA	Assessment				Comments
		O	LO	LNO	NO	
2.1 Concepts and definitions		X				Consumption of fixed capital for financial and nonfinancial corporations is at historic cost instead of current replacement costs as called for by 1993 SNA.
2.2 Scope		X				
2.3 Classification/sectorization		X				
2.4 Basis for recording			X			
<b>3. Accuracy and reliability</b>						
3.1 Source data		X				
3.2 Statistical techniques		X				
3.3 Assessment and validation of source data		X				
3.4 Assessment and validation of intermediate data and statistical outputs		X				
3.5 Revision studies		X				
<b>4. Serviceability</b>						
4.1 Relevance		X				
4.2 Timeliness and periodicity		X				
4.3 Consistency		X				
4.4 Revision policy and practice		X				
<b>5. Accessibility</b>						
5.1 Data accessibility		X				
5.2 Metadata accessibility		X				
5.3 Assistance to users		X				

Note: For assessments of dimensions O and 1, see Table 2 of the Detailed Assessments.

## II. PRICE STATISTICS (CONSUMER PRICE INDEX)

**For assessments of the Prerequisites of quality (O.) and Integrity (I.) dimensions, see Section O for Statistics Canada.**

### **2. Methodological Soundness**

#### **2.1 *Concepts and definitions***

*2.1.1 The overall structure in terms of concepts and definitions follows internationally accepted standards, guidelines, or good practices*

The prices and weights of the Canadian CPI broadly follow the Canadian System of National Accounts (CSNA) concepts for all covered household consumption expenditure. The standard for the CSNA is the *System of National Accounts 1993 (1993 SNA)*.

StatCan is a participant in developing international methodological guidance on price indices. It is a founding organization of the Ottawa Group on consumer price index methodology, and is among the organizations participating in an expert group authoring the international *Consumer Price Index Manual* now in preparation. It thus would consider the *Manual*, when issued, as a methodological reference for its CPI program. The Quality Assurance and Client Services Section of the Prices Division routinely reviews the concepts of the CPI and conducts research on how the Division can measure target statistical concepts better.

#### **2.2 *Scope***

*2.2.1 The scope is broadly consistent with internationally accepted standards, guidelines, or good practices*

The expenditure aggregate for the Canadian CPI covers a subset of CSNA household consumption expenditures comprising the monetary consumption expenditures households make directly, plus the imputed consumption value of owner-occupied housing. It does not include the consumption expenditures employers make on behalf of employees, or the expenditures nonprofit institutions serving households or government make in households' behalf. As a subaggregate of household consumption, it also excludes the capital formation households make in their net acquisitions of and major improvements in houses and apartments. The scope of expenditure of the Canadian CPI thus follows standard international practice for household consumption-oriented CPIs.<sup>4</sup>

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<sup>4</sup> In addition to household consumption-oriented CPIs, some countries adopt instead a household final monetary consumption expenditure orientation. The expenditure aggregate of these CPIs includes household monetary consumption expenditure; excludes the imputed

(continued)

## **2.3 Classification/sectorization**

### *2.3.1 Classification/sectorization systems used are broadly consistent with internationally accepted standards, guidelines, or good practices*

The CPI covers noninstitutionalized Canadian households, comprising an almost exhaustive subset of all households resident in Canada and, with that proviso, is consistent with the 1993 SNA household sector. The StatCan Prices Division classifies expenditures on commodities using a national system that can be mapped at its highest level of detail to the goods and services aggregates used for the volume estimates of household consumption in the national accounts. Neither the CPI nor the Survey of Household Spending (SHS) uses the international Classification of Individual Consumption by Purpose.

## **2.4 Basis for recording**

### *2.4.1 Market prices are used to value flows and stocks*

The prices in the CPI are market prices. StatCan records prices for the CPI at purchasers' values, including taxes on products households pay and excluding subsidies on products households receive.

The CPI collects transaction prices taking full account of sales and any rebates the Prices Division judges to represent what the majority of consumers are paying. Nonqualifying rebates and discounts are those considered to cover only a small fraction of the value of transactions. For example, the CPI does not use prices from liquidation sales because the number of items and the range of sizes (in the case of clothing) available are not important enough to be representative. It also excludes coupons from a flyer or that must be mailed to the manufacturer since the proportion of consumers benefiting is limited. On the other hand, the CPI would include a Can\$1,000 rebate on the purchase of a car to be mailed to the client from the manufacturer, since the rebate is automatically granted on purchase.

### *2.4.2 Recording is done on an accrual basis*

The CPI dates prices in the month transactions in consumption goods and services occur. The weights closely approximate the payments for which households become liable in the base year for the covered items. The Prices Division does not revise past prices in the CPI when sellers pay retroactive rebates on past consumption. This is consistent with the CPI's

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consumption value of owner-occupied housing, employer-provided benefits, and nonprofit institutions' consumption in behalf of households; but includes capital formation in dwellings. CPIs of countries following either orientation fit into the 1993 SNA conceptual framework.

nonrevision policy (see 4.4.1). Examples of post hoc rebates are the recent refunds of natural gas expenditures in Alberta and electricity expenditures in Ontario.

*2.4.3 Grossing/netting procedures are broadly consistent with internationally accepted standards, guidelines, or good practices*

The CPI used car weight is on a net acquisitions basis, following the standard national accounts treatment of durables other than housing as consumed when purchased and “negatively consumed” when sold. StatCan compiles other durables’ weights in the CPI as gross acquisitions, as households’ disposals (sales) of other durables are thought to be relatively unimportant.

### **3. Accuracy and Reliability**

#### **3.1 Source data**

*3.1.1 Source data are collected from comprehensive data collection programs that take into account country-specific conditions*

The CPI weights come principally from the SHS, an annual survey of household expenditures that recently replaced the quadrennial Family Expenditure Survey. The quinquennial Food Expenditure Survey, a two-week diary with sample spread throughout the survey year, supplies detailed weights for food items. The weights current at the time of the mission (January 22-February 5, 2003) are from the 1996 Family Expenditure survey. The release of January 2003 data in February 2003, however, will contain 2001 expenditure weights from the SHS. The quadrennial frequency of the Family Expenditure Survey set the update frequency of the CPI until the SHS. Even so, there were no plans to annually update the weights with the more frequent SHS data at the time of the mission. In fact, plans are to increase the weight update interval to five years.

The SHS uses a modern stratified randomized design with nonresponse adjustments that fully covers the Canadian non-institutionalized population. Response rates on household surveys have been secularly falling in Canada, however, and could engender data quality concerns should they get much lower than at present. Nonresponse on the SHS in 2001 was about 25 percent. The falling response rate on the SHS follows a general trend for household surveys across a number of advanced economies and does not reflect a lack of best practice in respondent relations and respondent turnaround.

The price survey design for goods and services other than housing is composed of a set of geographical strata exhaustively dividing Canada into pricing regions, a set of areas sampled within the geographical strata, a set of retail establishments (outlets) sampled within areas, and a set of elementary items that will be priced from each outlet. The Prices Division sets geographical strata first according to provincial boundaries, and second according to major population concentrations within the larger provinces. There were 17 strata at the time of the mission, at least one for each province and territory. British Columbia and Quebec each

comprise two strata, and Ontario four strata. With the release of the January 2003 index in February 2003, the index will comprise 18 geographical strata, separately identifying the Northwest Territories (other than Nunavut) and Nunavut, and adding Iqaluit to the list of covered cities. Within the geographical strata, the cities were sorted by population and the larger taken as eligible for inclusion in the index. The Prices Division selected 82 such cities in total. The Division then determined for each geographical stratum which of the roughly 650 ultimate expenditure classes was subject to low variability across the sample cities within the stratum and which was subject to relatively high local variations. The first set of expenditure classes was deemed to have regionally determined prices, and the second locally determined prices. Expenditure classes or item strata with the most regionally determined prices were priced only in the largest one or two cities, while those with the most locally determined prices were priced in all of the sample cities in the geographical stratum. Within a city for a given expenditure class, the largest outlets were selected for initiation into the sample. Within outlets, the volume selling elementary items were selected for monthly pricing in the CPI. The Canadian CPI price sample thus is a multi stage cutoff sample.

The selection process produced about 45,000 elementary items other than housing whose prices StatCan tracks for the CPI in producing indices for 650 elementary aggregates, 182 basic heading classes, 78 intermediate aggregates, 8 major classes, and the all items index, for each covered area. The sample size is adequate for the number of areas for which StatCan produces CPIs, the relevant statistical criterion.

For housing services, the CPI also tracks the rents of some 15,000 residential units every month. The rent survey is part of the monthly household Labour Force Survey. The Labour Force Survey follows a rotating panel sample design, in which households remain in the sample for six consecutive months. The total sample consists of six representative subsamples or panels, and each month a panel is replaced after completing its six-month stay in the survey. Outgoing households are replaced by households in the same or a similar area. This results in a five-sixths month-to-month sample overlap, which makes the design efficient for estimating month-to-month changes. The rotation after six months prevents undue respondent burden for households that are selected for the survey. Like the SHS, the Labour Force Survey fully covers the noninstitutionalized population of Canada. StatCan collects 80 percent of the rent survey via telephone interview, and 20 percent via personal visit.

Of the 15,000 rents collected from the survey, about 2,000 units are excluded because they are new entries into the rent sample, and about 4,000 because they are subsidized or partly used for business. The rent weight covers the subsidized units, however, as well as the unsubsidized units whose rents are in the CPI. The Prices Division explains the exclusion of subsidized units by saying they are unrepresentative. This appears to be a deviation from the purchasers' price valuation basis of the CPI regarding the unsubsidized units. The rent index, however, is used not only for the CPI rent weight, but also for deflating both the national accounts rent and homeowners' implicit rent aggregates. The subsidized units' rents are a smaller fraction and thus still less representative of this larger aggregate. Nevertheless, to the

extent that subsidized units' rents move differently from other units, their exclusion could use further explanation.

In addition to the process of arriving at a sample of products, the Prices Division also takes account of the periods each of the 650 or so kinds of products is available over the year. StatCan only undertakes price collection within a city/product stratum during the months the elementary items in that stratum normally are available. This is important in maintaining the efficiency of survey operations, as weather makes a number of items highly seasonal in Canada.

### *3.1.2 Source data reasonably approximate the definitions, scope, classifications, valuation, and time of recording required*

The household survey sources for the CPI weights are designed with the CPI in mind and incorporate scope of household coverage, expenditure classification, purchaser price valuations, and recall or diary reporting of expenditure in the month it actually was made. StatCan custom designed the CPI price survey to incorporate likely points of purchase and types of elementary items households actually purchase.

### *3.1.3 Source data are timely*

The weights from the SHS are available within one year of the survey reference year and incorporated when available. The price survey supports calculation of the CPI within one month of the end of the reference month of the index.

## **3.2 Statistical techniques**

### *3.2.1 Data compilation employs sound statistical techniques*

The 650 elementary aggregate and 182 basic heading aggregate indices from the Canadian CPI are sufficient to use as deflators in estimating volume measures for household consumption expenditure and certain other deflation uses in the national accounts. The basic heading indices seem to satisfy public user needs for detailed goods and services series.

The CPI expenditure aggregate is a standard subset of the *1993 SNA* household consumption expenditure aggregate (see 2.2.1). The CPI includes homeowners' consumption of the housing services they produce for themselves at an estimated user cost of housing capital rather than the estimated equivalent rent of the dwelling. The National Income and Expenditure Division uses the latter in the national accounts. Other durable goods are valued at the full purchase price and not with payments to retire any consumer loans incurred for such purchases.

StatCan uses the geometric mean elementary aggregator formula to produce the 500 elementary aggregate indices from the elementary item price quotes in each of the 650 ultimate product classes. Some of the 650 ultimate classes are combined to form elementary

aggregates. All such aggregations equally weight price quotes. There are weights for about 75 percent of the elementary items for combining them into the basic heading indices. The higher level aggregates are Laspeyres aggregates of these elementary aggregate indices.

StatCan imputes prices missing because a good or service is seasonally unavailable, or temporarily unavailable for other reasons including nonresponse. Imputation based on the area/item stratum index computed with reported prices is used for certain classes of commodities. If an area/item stratum has no elementary item prices in a given month—seasonal items, for example—the last month’s index is multiplied by the month-to-month index of an “adjacent” or similar stratum, or simply by the monthly relative of the next higher level index. Imputations arising from seasonal collections are done routinely for nursery stock and seeds for sowing, other horticultural goods, metal and other nonupholstered furniture, gas barbeques, and most apparel strata. Imputations usually are made by repeating the last price of out of stock items and infrequently purchased items.

The Prices Division replaces elementary items if prices are missing for about two in-season months. The division routinely quality adjusts for changes in the product specifications available because of replacements of discontinued items. Such adjustment is made either through an assessment of the value of the difference in features between the discontinued and replacement item, or by linking in the new item after recording two months of price data.

### *3.2.2 Other statistical procedures (e.g., data adjustments and transformations, and statistical analysis) employ sound statistical techniques*

The proportion of the target population of households the CPI does not cover is very small, much less than 10 percent.

Seasonally adjusted data are produced for the CPI using the X11-Arima algorithm developed at StatCan. The CPI all items index will be seasonally adjusted directly beginning with January 2003, rather than computed as a weighted index of eight seasonally adjusted component indices. The seasonally adjusted CPI series is subject to annual revisions as monthly seasonal factors are recalculated to take account of each year of additional data. The revised factors are examined for unusual changes and are fully vetted prior to release.

## **3.3 Assessment and validation of source data**

### *3.3.1 Source data—including censuses, sample surveys and administrative records—are routinely assessed, e.g., for coverage, sample error, response error, and nonsampling error; the results of the assessments are monitored and made available to guide planning*

The CPI uses a nonrandom survey design and this forecloses calculation of conceptually sound statistical variances for the sample. Sample allocations are made considering heuristic variances directly computed from past sample data. The Prices Division monitors the quality of the survey by the number of allocated elementary items for which they can still obtain

prices. As a rule, the division controls sample attrition and heuristic variance by replacing elementary items for which it cannot collect in-season prices in two consecutive months. The weights come from the SHS, which has a randomized design. Variances can be computed for them, but the covariances between the weights and prices are important for calculating the total variance of the index. There is little basis on which these covariances can be computed, however. The total variance of the index would be difficult for most countries to compile under the best of circumstances, and it again is foreclosed by the design of the price survey.

### **3.4 *Assessment and validation of intermediate data and statistical outputs***

#### **3.4.1 *Main intermediate data are validated against other information where applicable***

The Price Division routinely compares the CPI with the other price indices it produces.

#### **3.4.2 *Statistical discrepancies in intermediate data are assessed and investigated***

The CPI is consistent in aggregation by product and by province and produces no statistical discrepancies.

#### **3.4.3 *Statistical discrepancies and other potential indicators of problems in statistical outputs are investigated***

Not applicable (see 3.4.2).

### **3.5 *Revision studies***

#### **3.5.1 *Studies and analyses of revisions are carried out routinely and used to inform statistical processes***

The CPI is not revised, but weight revisions are linked into the series as revised weights become available (see 3.3.1). The Prices Division reviews the impact of new weights on the index to ensure the accuracy of data that it intends to introduce into the official series. See 3.2.2 regarding periodic revision of seasonal factors in the seasonally adjusted data.

## **4. *Serviceability***

### **4.1 *Relevance***

#### **4.1.1 *The relevance and practical utility of existing statistics in meeting users' needs are monitored***

The Prices Division consults the following entities and forums on the relevance of its consumer price statistics to users:

- An annual meeting with the BoC, including discussion of price statistics;

- The Business and Trade Statistics forum in the annual Federal-Provincial Meetings;
- The Price Measurement Advisory Committee comprising academics, financial market analysts, consultants, and the BoC;
- User inquiries, requests, and orders for special tabulations directed to the division's own Client Services Unit and the StatCan Advisory Services Division;
- A users' survey conducted for the division's Quadrennial Program Report (the next such survey will be in 2004 for the 2005 Report);
- Direct bilateral contact with trade associations, as issues arise, generally on collection methodology and publication detail; and
- The National Statistics Council through the Chief Statistician, as issues arise.

## **4.2 *Timeliness and periodicity***

### *4.2.1 Timeliness follows dissemination standards*

The December 2002 CPI was released on Wednesday, January 22, 2003, within one month of the reference month, satisfying SDDS requirements. The CPI has never missed a release date.

### *4.2.2 Periodicity follows dissemination standards*

The CPI is monthly and meets SDDS periodicity requirements.

## **4.3 *Consistency***

### *4.3.1 Statistics are consistent within the dataset*

All CPI aggregate indices are algebraically consistent functions of the detailed indices.

### *4.3.2 Statistics are consistent or reconcilable over a reasonable period of time*

The CPI is reweighted every four or five years and linked to the old series to form a long-term series. All links over the history of the index through 1992 were documented in a series of three articles in the monthly release during September and October 1993 and January 1994. The Prices Division intends to produce a sequel sometime after the introduction of the version of the index with 2001 weights in February 2003.

*4.3.3 Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks*

The CPI expenditure aggregate is a subaggregate of household consumption expenditure in the national accounts. The national accounts are compiled with detailed CPI indices consistent with detailed goods and services aggregates in final expenditure and certain other locations in the supply and use table.

**4.4 Revision policy and practice**

*4.4.1 Revisions follow a regular, well-established, and transparent schedule*

The monthly CPI is not revised after first publication. The weights and item structure have been revised about every four years following completion of the SHS. In the future, StatCan plans to do a weight revision every five years. StatCan publicizes the revision schedule and gives users about six months advance notice.

*4.4.2 Preliminary data are clearly identified*

The official CPI series is not revised once published. Seasonal factors in the seasonally adjusted series are periodically revised but are not viewed as preliminary data and thus not identified as such.

*4.4.3 Studies and analyses of revisions are made public*

StatCan publishes the weights used in currently published data and makes them available for free download on its website. No analysis of how the weights affect estimates of price change, however, is released to the public.

**5. Accessibility**

**5.1 Data accessibility**

*5.1.1 Statistics are presented in a way that facilitates proper interpretation and meaningful comparisons (layout and clarity of text, tables, and charts)*

CPI data are released in summary form in *The Daily* (see 5.1.4). Under the “Policy on Highlights of Publications,” each release is to include tables and charts (if appropriate) as well as analysis of developments in the form of highlights. These highlights, to which StatCan has devoted considerable attention over the years, are required for all publications that present statistical information or analytical findings. They are intended to convey significant findings, comparisons, and trends to assist the reader in understanding and using the publication.

CPI data are published in a clear manner; charts and tables are disseminated with the data to facilitate the analysis in *The Daily* and the monthly publication. Datasets are published with various levels of product and area aggregation in *The Daily* release, the monthly publication, and on CANSIM. Analysis of current-period developments appears in *The Daily* and the monthly publication. Estimates are disseminated at a detailed level both in the monthly publication and on CANSIM. Time series are available for the all items index in the monthly publication, with longer series at higher levels of commodity and geographical detail available on CANSIM. Seasonally adjusted CPI data are included in all modes of release.

### 5.1.2 *Dissemination media and formats are adequate*

Data products are available in both English and French, simultaneously. In addition to the first release in *The Daily*, CPIs are available in several other media and formats.

- The *Consumer Price Index*, monthly publication:
  - Paper—Catalogue 62-001-XPB, Can\$11 per issue, Can\$103 annual subscription.
  - Internet download—Catalogue 62-001-XIB, Can\$8 per issue, Can\$77 annual subscription.
- CANSIM Internet download:
  - Table 326-0001—CPI, 1996 basket content, monthly (Index, 1992=100 unless otherwise noted). National, provincial, and major city breakdowns available. Series may be selected by table or individually. Example charge for the content of the typical detailed statistical bulletin: All 293 national monthly series by expenditure component for the 11 years from 1992–2002 costs Can\$897.
  - Table 326-0002—CPI, 1996 basket content, annual (Index, 1992=100 unless otherwise noted). National, provincial, and major city breakdowns available. Series may be selected by table or individually. Example charge for the content of the typical detailed statistical bulletin: All 293 national monthly series by expenditure component for the 11 years from 1992-2002 costs Can\$897.
  - Table 326-0003—CPI, seasonally adjusted, 1996 basket content, monthly (Index, 1992=100). National only. Series may be selected by table or individually. Example charge for the content of the typical statistical bulletin: All 12 national monthly series by expenditure component for the 11 years from 1992-2002 costs Can\$36.

- Table 326-0004—CPI movement, seasonally adjusted 1996 basket content, monthly (percent change (1992=100)). National only. Series may be selected by table or individually. Example charge for the content of the typical statistical bulletin: All 12 national monthly series by expenditure component for the 11 years from 1992–2002 costs Can\$36.
- Table 326-0010—CPI, three-month seasonally adjusted cumulative movement compounded to an annual rate, 1996 basket content, monthly (Index, 1992=100). National only. Series may be selected by table or individually. Example charge for the content of the typical statistical bulletin: All 12 national monthly series by expenditure component for the 11 years from 1992-2002 costs Can\$36.
- Analytical series - Prices Division, occasional:
  - Paper—Catalogue 62F0014MPB, Can\$10 per issue.
  - Internet download—Catalogue 62F0014MIE, free.

There is no charge for shipping paper publications within Canada. There are a Can\$6 per issue shipping charge to the United States, and a Can\$11 per issue shipping charge elsewhere.

Most users with whom the mission spoke were critical of the cost of many of StatCan's products, especially time series on CANSIM.

### *5.1.3 Statistics are released on a preannounced schedule*

A schedule of release dates for the CPI, as well as for 29 other of StatCan's major economic indicators, is published for the coming calendar year at the end of November in *The Daily*, the agency's official release bulletin. These dates are also available on *The Daily* module of StatCan's website. In addition, on the last working day of each month, *The Daily* publishes an entire set of release dates for these indicators for the coming month, as well as dates for other major releases. Each Friday, *The Daily* publishes a list of release dates for the coming week.

Overall, the record of meeting release dates is good. In 2002, all of the 30 products met their preannounced release date. The CPI has never missed a pre-announced release date.

### *5.1.4 Statistics are made available to all users at the same time*

*The Daily*, as outlined in the "Policy on Statistics Canada's *Daily* (Official Release)," is the official release bulletin. Its purpose is to disseminate summary findings of statistical programs or major conclusions of analytical products. In doing so, it provides a single,

comprehensive source of information on the agency's offerings. StatCan considers the vehicle as unique among the world's statistical agencies. *The Daily* has been an Internet vehicle since 1995, and has been published in hardcopy since 1932, each working day. With two exceptions, release time is 8:30 a.m. Eastern time. The two exceptions are the CPI and Labour Force Survey, both of which by tradition are released at 7:00 a.m. Eastern time.

Release in *The Daily* marks the passage of data, analysis, or products to the public domain. Until release in *The Daily*, data are considered "protected," and may not be disseminated outside StatCan except in the following cases: (1) where validation by an external organization is necessary, (2) when sponsors of cost-recovery programs are granted access for a reasonable period prior to release, and (3) where sources of administrative data, and/or any other organization authorized by the source organization, are granted access to data developed from those files. These exceptions still require a formal release in *The Daily* within a relatively short delay.

For the CPI (and also for data from the Labour Force Survey), data are available to journalists in a press lockup at 6:30 a.m. Eastern time. The lock-ups are held in the Main Building in a secure media room with computer installations (provided by the journalists) and telecommunication lines. Journalists, on entry to the lock-up, are provided with a diskette containing *The Daily* formatted in ASCII text. The lock-up provides them with time to re-format the text in their own software. At release time precisely, a Media Relations officer flips a set of toggle switches allowing the journalists to file electronically. In most cases, their articles are transmitted directly on to their news wire.

#### *5.1.5 Nonpublished (but nonconfidential) subaggregates are made available upon request*

The Prices Division selects the detail of CPI published series on confidentiality and quality criteria. It will produce tables based on confidentiality criteria alone for user specified aggregates on request at a charge recovering the cost of the time staff use to fill the request. The cost recovery formula is a basic charge of Can\$40 or the cost of staff time, whichever is greater.

## **5.2 Metadata accessibility**

### *5.2.1 Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical techniques is available, and differences from internationally accepted standards, guidelines, or good practices are annotated*

The introduction to the "Policy of Informing Users of Data Quality and Methodology" sets out a statistical agency's responsibility to inform users of the concepts and methodology used in collecting, processing, and analyzing data, of the accuracy of those data, and of any other features that affect their "fitness for use." The policy requires that all statistical products include or refer to documentation on data quality and methodology. The accompanying standards detail the requirements for documentation (and include examples for fictitious datasets as illustrative). Canada has made a commendable effort to have metadata on all of its

major series available to its users online, in a standard format, and free of charge. The newly developed on-line IMDB, a corporate repository of information on each of StatCan's 400 active surveys, is to serve as a tool to help meet the aim of the policy. The IMDB provides a standard template that is to be populated with pre-existing and new metadata. The IMDB represents a model dissemination practice, and StatCan is committed to its continuous improvement.

For the CPI, the implementation of the policy is still a work in progress. Documentation, as statisticians around the world know well, is time consuming for expert staff and is often the residual claim on their time after the numbers are out. The IMDB appears to be designed for the presentation of information about surveys and thus well adapted to describing the CPI. (See also 0.3.1 about the Auditor General's review of quality management and 5.3 below about assistance to users.) The principal metadata on the CPI is the *CPI Reference Paper*, which appears to be the source for the content of the CPI statistical methods page on the Metadata Base. The material presented there is reasonably comprehensive but seems to be a forced fit into the Metadata Base structure. Some close editing should help to correct the perception.

#### *5.2.2 Levels of detail are adapted to the needs of the intended audience*

CPI levels of detail include the top level aggregates released in *The Daily*, the detailed aggregates by commodity and area appearing in the monthly publication, with more detail in long time series, both seasonally adjusted and unadjusted, available on CANSIM. These tables should serve a broad spectrum of user needs.

### **5.3 Assistance to users**

#### *5.3.1 Contact person for each subject field is publicized*

The "Policy on Spokespersons and Media Relations" calls for data contacts to be provided for each of *The Daily* releases. These contacts are professional staff that provide day-to-day explanation and interpretation. All of the major releases and data availability announcements that the mission reviewed provided these contacts. Users were very complimentary of the service they provided. The contacts were considered knowledgeable and responsive.

#### *5.3.2 Catalogs of publications, documents, and other services, including information on any charges, are widely available*

StatCan maintains a comprehensive catalogue of the products and services, detailing how to obtain the product or service and its price if there is a charge. The website has been developed as a convenient, one-stop shopping center. Users are also advised in each publication of the national inquiries phone line and e-mail address. The Statistics Canada Regional Reference Centre is also widely mentioned.

Table 6. Canada: Data Quality Assessment Framework—Summary of Results for Price Statistics (Consumer Price Index)  
(Compiling Agency: Statistics Canada)

Key to symbols: NA = Not Applicable; O = Practice Observed; LO = Practice Largely Observed; LNO = Practice Largely Not Observed; NO = Practice Not Observed.						
Element	NA	Assessment				Comments
		O	LO	LNO	NO	
<b>2. Methodological soundness</b>						
2.1 Concepts and definitions		X				
2.2 Scope		X				
2.3 Classification/sectorization		X				
2.4 Basis for recording		X				
<b>3. Accuracy and reliability</b>						
3.1 Source data		X				
3.2 Statistical techniques		X				
3.3 Assessment and validation of source data		X				
3.4 Assessment and validation of intermediate data and statistical outputs		X				
3.5 Revision studies	X					
<b>4. Serviceability</b>						
4.1 Relevance		X				
4.2 Timeliness and periodicity		X				
4.3 Consistency		X				
4.4 Revision policy and practice		X				
<b>5. Accessibility</b>						
5.1 Data accessibility		X				
5.2 Metadata accessibility		X				
5.3 Assistance to users		X				

Note: For assessments of dimensions O and 1, see Table 2 of the Detailed Assessments.

### III. PRICE STATISTICS (PRODUCER PRICE INDEX)

**For assessments of the Prerequisites of quality (O.) and Integrity (I.) dimensions, see Section O for Statistics Canada.**

## **2. Methodological Soundness**

### **2.1 Concepts and definitions**

*2.1.1 The overall structure in terms of concepts and definitions follows internationally accepted standards, guidelines, or good practices*

The prices and weights of the Canadian PPIs follow Canadian System of National Accounts (CSNA) production account concepts for all covered industries and products. Stage of processing aggregates follow the general format of the uses table of the CSNA input output system. The standard for the CSNA production account is the *System of National Accounts 1993 (1993 SNA)*.

StatCan is a participant in developing international methodological guidance on price indices. It sends representatives to the Voorburg Group meetings on service sector statistics and the PPI. It is among the organizations participating in an expert group authoring the international *Producer Price Index Manual* now in preparation. It thus would consider the Manual, when issued, as a methodological reference for its PPI program. The Quality and Client Relations Section of the Prices Division routinely reviews the concepts of PPI indices produced in the Division and conducts research on how the Division can better measure target statistical concepts.

### **2.2 Scope**

*2.2.1 The scope is broadly consistent with internationally accepted standards, guidelines, or good practices*

The principal Canadian PPI for the output of resident establishments is the Industrial Product Price Index (IPPI) covering manufactured goods (monthly).

StatCan produces an array of other PPIs for output, comprising the

- Farm Product Price Index (monthly, 1935-);
- New Housing Price Index (monthly, 1969-);
- Apartment Building Construction Price Indexes (quarterly, 1981-);

- Non-Residential Building Construction Price Indexes (quarterly, 1972-);
- Electric Utility Construction Price Index (annual, 1956-);
- Electric Power Selling Price Index for nonresidential customers (monthly with release three times per year, 1981-);
- Accounting Services Price Index, (annual, 2000-);
- Consulting Engineering Services Price Index (annual, 1989-);
- Informatics Professional Services Price Index (annual, 1993-);
- Telecommunication Services Price Index (annual, 1996-); and
- Traveller Accommodation Services Price Index (monthly with quarterly release, 2001-).

StatCan does not publish an overall aggregation of these indices as a single Producer Price Index. Relevance (see 4.1 and 4.2) and resources appear to be the principal drivers of this decision. In view of the annual frequency of the services indices and their publication lags, an overall index could only be published annually, more than two years after the reference year. A monthly series of farm, manufacturing, and electric power output (to nonresidential customers) could be produced but could only be released three times per year because of the release schedule of the electric power series.<sup>5</sup> A reasonably timely quarterly aggregate of farm, manufacturing, and construction output would be possible if there were user interest in the indicator.

Even if these broader indices were produced, user interest often focuses on the stage of processing analytical aggregates, and particularly on the final stage of processing, rather than the all items index. On the other hand, there is substantial Canadian public interest in improved productivity statistics, which would require the broader aggregate PPIs to estimate broader output aggregates for the Canadian economy. These broad output aggregates are the numerators of the national productivity statistics such a program might produce.

The service industries account for about 70 percent of Canadian GDP. The Prices Division plans to add another five business service indices to its current inventory of five over the next

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<sup>5</sup> This release schedule of the electric power price index probably could be changed to quarterly, however, with little disruption in response or index compilation.

five years.<sup>6</sup> The ten will still fall short of the list of service industry price indices the national accounts divisions need to improve the GDP volume and productivity measures.

Canadian PPIs for the inputs used by resident establishments are the

- Raw Materials Price Indexes (RMPIs) (monthly, 1981-) covering intermediate purchases of mineral fuels, vegetable products, animals and animal products, wood, ferrous metals, nonferrous metals, and nonmetallic materials; and
- Machinery and Equipment Price Indexes (quarterly, 1971-), covering capital formation expenditures on equipment.

Both indices use purchasers' prices. They recombine information from the IPPI adjusted for taxes on products. The Machinery and Equipment Price Index also indexes the prices of uses of imported equipment with PPIs from major trading partners adjusted for exchange rate conversion to the Canadian dollar and customs tariffs.

A special grouping of indices for capital formation expenditure comprises the

- Machinery and Equipment Price Indexes,
- New Housing Price Index,
- Apartment Building Construction Price Indexes,
- Non-Residential Building Construction Price Indexes, and
- Electric Utility Construction Price Index.

The construction indices are produced using basic price valuations, as appropriate for output. For example, the Non-Residential Building Construction Price Index excludes land, design, and real estate fees. In the case of the Machinery and Equipment Price Indexes, however, the valuation basis is purchasers' prices and the weights are uses by industry and product.

Canada reports only the IPPI and RMPI in its SDDS PPI metadata, but these two indices satisfy SDDS coverage requirements.

Production for own consumption is part of the national accounts output and intermediate consumption concepts underlying the weights for Canadian PPIs.

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<sup>6</sup> The Prices Division has project funding for developing the five new indices. See the last five indices listed in 2.2.1 for the service price indices already published at the time of the mission.

## **2.3 Classification/sectorization**

### **2.3.1 Classification/sectorization systems used are broadly consistent with internationally accepted standards, guidelines, or good practices**

StatCan designs the Producer Price Indices to cover all resident establishments in the target product classes and, by implication, the population of institutional units that own them. The PPIs thus cover 1993 SNA enterprises (institutional units engaged in production) for those products. There is no detail by 1993 SNA institutional sector, however.

StatCan classifies goods using the Principal Commodity Group Aggregates (PCGAs) that define the rows of the Supply and Use Table (SUT) of the national accounts. The PCGAs are in turn based on the Standard Classification of Goods (SCG). The SCG stems from the International Harmonized System of Commodity Coding and Classification (HS, 1996 version) the customs administration uses for international trade. StatCan updated the SCG during 2001 for data from 2000, incorporating changes from the Customs Tariff and the Canadian Export Classification of the Canada Customs and Revenue Agency (see @StatCan Special Issue 2002, 34, 44). (The World Customs Organization issued the latest version of HS in 2001, and will issue an updated version in 2006.) The newest service product and industry output price indices follow North American Industrial Classification System (NAICS), with attention given to the international Central Product Classification (CPC) and forthcoming North American Product Classification definitions for services.

StatCan groups establishments using the 1997 NAICS, which defines the activity columns of the SUT and the aggregates of the Industry Price Indexes. The Canada-Mexico-United States industry and product classification consortium updated NAICS in 2002. The update establishes standard activity classes for Construction and improves the Information and Cultural Industries classification. Canada, the United States, and the European Union have developed a proposal for bringing NAICS and the European industry classification, the Nomenclature générale des activités économiques dans les Communautés européennes or NACE, closer together (see @StatCan Special Issue 2002, 34). The six-digit NAICS maps to the two-digit ISIC, Revision 3.

## **2.4 Basis for recording**

### **2.4.1 Market prices are used to value flows and stocks**

The prices in the PPIs are transaction prices, which are market prices except as noted immediately below. StatCan records prices for the output PPIs at basic values, excluding taxes on products the producer pays and including subsidies on products the producer receives. These prices also exclude separately invoiced transport and distribution charges. It records prices for the input PPIs—the RMPs—at purchasers' values. Purchasers' prices include the taxes on products as well as transport and distribution charges the establishment pays, and exclude any subsidies on products the establishment receives.

Some enterprises record transactions between the establishments they own at so-called transfer prices. These prices may differ significantly from the market value of the good or service changing hands. The parent enterprise sets them to take advantage of different tax rules across jurisdictions, or simply fails to take account of market developments in valuing internal transactions. Because foreign-owned establishments and international trade are important in the Canadian economy, transfer pricing is a potentially important measurement issue. Transfer values embed both the weights and the price reports for the PPIs, because they are in both establishment financial accounts and their price reports. They have an impact not only on the PPI, but also the national accounts supply and use statistics and the balance of payments. This is a difficult measurement problem for statistical agencies to overcome. The institutions regulating enterprise accounts are accounting standards boards and revenue authorities not only in Canada, but in the home countries of foreign enterprises owning Canadian establishments. StatCan is taking the measures available to it to address the transfer price problem. The agency asks respondents whether any price reported for the PPIs is a transfer price and records the result in its database. Statistics Canada's Concepts Committee also has let a contract for research to look into the issue further.<sup>7</sup>

#### *2.4.2 Recording is done on an accrual basis*

All prices recorded during the normal collection process accurately refer to the months of the associated transactions. The Prices Division takes no account of post hoc price adjustments such as rebates on transactions made in earlier months not known to buyers and sellers on the date of transaction. Besides manufactured goods in the IPPI, the producer price indices cover new buildings, but do not cover the output of other goods taking a long time to produce such as ships and aircraft. StatCan prepares estimates for the price and volume change of work in progress on goods with long production periods in preparing the national accounts capital formation volume estimates rather than the producer price indices.

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<sup>7</sup> Transfer prices are not true microeconomic values for the associated transactions and thus do not influence the producer's behavior like market prices do. They affect the accuracy of weights and may also affect the detailed price relatives, which are ratios of current period to past period prices for elementary items. The effect on the relatives will not be serious if transfer prices adjust with market prices. Otherwise, the measured transfer price relatives will be distorted measures of price change. To give only one example, distortion could arise when a producer previously reported a transfer price and switches to reporting a market price in the current period, or conversely. Compilers could correct it by substituting a market price for the transfer price of the same good or service in the previous period. Without also adjusting the associated output or use aggregate to market value in the previous period, however, this would move the distortion from the price index to the implicit volume index. National accounts compilers using the PPI to produce volume measures then would have a problem. Handling transfer prices is among the areas where close coordination between price and national accounts compilers is essential.

*2.4.3 Grossing/netting procedures are broadly consistent with internationally accepted standards, guidelines, or good practices*

There is no netting in any of the primary or analytical aggregates for the PPIs. The primary aggregates for the Canadian PPIs are the total outputs of covered products and industries. Although StatCan produces analytical aggregates for the PPI by stage of processing, it forms them by weighting prices by the associated product's use in industries it classifies in primary, intermediate, and final activities. It does not weight products by netting out inter-establishment transactions within the primary, intermediate, and final aggregates.

### **3. Accuracy and Reliability**

#### **3.1 Source data**

*3.1.1 Source data are collected from comprehensive data collection programs that take into account country-specific conditions*

The source of the weights for the output PPIs is the make table and for the RMPI is the uses table of the national accounts supply and use system. See 3.1.1 of the national accounts detailed assessment of this report for the sources of data for the supply and use table.

StatCan's PPIs use a blend of administrative and survey data for prices, with more administrative information in some industries and products than others. StatCan prefers administrative sources wherever feasible to control respondent burden. The agency collects the IPPI price database almost entirely from survey sources, while it takes about 60 percent of the RMPI sample from administrative sources. Survey sources generally use stratified (by product) probability proportionate to size (turnover) sample designs to select establishments from a comprehensive and current Business Register. The IPPI and RMPI samples are a subset of the Annual Survey of Manufacturing sample, which StatCan has drawn in turn from the Business Register. See 3.1.1 of the national accounts detailed assessment of this report on the Business Register. The Farm Price Survey uses the Agricultural Census frame.

StatCan collects prices only from larger establishments and imputes the indices it calculates with them to the smaller establishments in the same product stratum. Small establishments account for 10 percent of output but 50 percent of the establishment population overall. Products within establishment are selected into cutoff samples, including from each respondent only the top fraction of elementary product items by turnover. In product strata where prices vary by location, there is a further stratification by geography. For example, the Ontario Hay and Straw component of the Farm Price Survey is further divided into geographical strata.

In most industry and product strata for which there is an index program, establishment coverage is about 90 percent of output because the survey frames and/or administrative sources are current and comprehensive and random survey designs afford each establishment

probability of inclusion proportional to its size. The remaining 10 percent are the small establishments excluded from eligibility for sampling elementary items and prices. Coverage of output by product is sufficient to assure the accuracy of price indices for both product and industry aggregations.

The cutoff samples of elementary items on which prices are recorded provide coverage of transactions in elementary items that varies depending on the sample allocations for each product stratum. The coverage of product and industry strata for which there are price indices, including the IPPI, falls well short of total market output, however. As a rough proxy, the goods industries covered in the IPPI comprise only 18 percent of GDP. Farms cover another 1.2 percent of GDP. Electric power is another 2.4 percent, and the five service indices cover about 5.5 percent. All together, GDP coverage of the industries in the producer price indices is about 26 percent. Canada's low coverage of services is comparable to that of other advanced economies. All countries need to add service industries to the PPI.

The Prices and Agriculture Divisions monitor the number of price quotes in each sample survey stratum to detect sample attrition from discontinued elementary items and disappearing establishments.

StatCan collects business, agricultural, and household censuses every five years. The Business Register covers household partnership and proprietorship enterprises as well as corporations. Once a survey is collected, nonrespondents' sample weight is allocated to that of similar respondents to minimize nonresponse bias in the establishment samples. Very small ad hoc surveys are used to test sample procedures and to check the survey frame but not to generate data for publication.

### *3.1.2 Source data reasonably approximate the definitions, scope, classifications, valuation, and time of recording required*

The source data for the covered industry and product strata closely approximate the definitions, scope, classification, valuation, and time of recording principles of the *1993 SNA*. PPI compilers are fully aware of areas where sources fall short (for example, valuations at transfer prices).

### *3.1.3 Source data are timely*

The source data for PPI weights are timely given the time the Input-Output Division (IOD) needs to prepare the annual supply and use tables from survey and administrative sources. The Prices Division incorporates them when they become available in final form between three and a half and four years after the source data have been collected. Price source data are

sufficiently timely to maintain the relevance of most PPI series, although there are lengthier delays in producing some of the quarterly and annual PPI series than the monthly series.<sup>8</sup>

## **3.2 Statistical techniques**

### *3.2.1 Data compilation employs sound statistical techniques*

The detail from Canadian PPIs appears good from the point of view of providing reasonably homogeneous ultimate sample strata. There are 23 NAICS 3 digit goods industry indices in the IPPI and RMPI, with about 700 “elemental indexes” on products produced from the IPPI and about 80 from the RMPI. The other PPI series are more narrowly focused and have correspondingly less internal detail.

The PPI output weights include work in progress and inventory change for the products and industries covered, following the concepts inherent in the supply and use table. The National Accounts Division prepares quarterly estimates of price and volume change for work in progress and inventory change as a derived statistic to produce quarterly GDP, using PPI equipment and construction series, among others.

The elementary aggregate (“elemental”) indices of the PPIs use a chain Laspeyres formula. The Prices Division computes the Laspeyres index as a weighted average of long-term price relatives whose weight reference period usually aligns with the base prices in the relatives. When samples are periodically reselected between major revisions on an as-needed basis, the elementary item (quote) weights (turnover) are updated with the reporting establishments and the new, revised elementary aggregate indices linked to the old.

The higher level index aggregation of all indices except the Farm Product Price Index of the Agriculture Division uses the Laspeyres formula. The Prices Division normalizes the elementary aggregate indices to equal 100 during the reference period of the weights. For the IPPI and RMPI the weight period currently is 1997. For the Electric Power Selling Price Index the weight period is 1992.

For the Farm Product Price Index, the Agriculture Division sets the ‘annual’ weight reference period as a moving average of yearly cash receipts for crops and livestock items for the second through sixth years previous to the current year. The ‘annual’ weight base for this index thus currently is 1996–2000. In addition to annual weights, the index also has seasonal weights specific to each month of the year. The seasonal weighting pattern currently comes from the monthly sales of agricultural goods from 1994 to 1998. Unlike the annual pattern, the seasonal pattern remains fixed during periods between agricultural censuses or times

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<sup>8</sup> StatCan releases two of the monthly series—the Electric Power Selling Price Index and the Traveller Accommodation Services Price Index—at less than monthly frequency, making their timeliness inherently variable between releases (see also 2.2.1).

when the year to which the published index is set at 100 changes. The index price relatives compare the current month's level with the average during the annual weight base, 1996–2000. This formula is similar to that used for seasonal items in the Canadian CPI from 1961 to March 1973. The Prices Division discontinued the seasonal basket formula for the CPI in favor of an annual average base for both the weights and prices in April 1973, with price imputations during periods seasonal items are unavailable. The Prices Division granted the seasonal weight index provides good estimates of annual average price change based on an annual Laspeyres formula taking account of month effects. It argued, however, the seasonal weight index confounds price with quantity change in month to month comparisons.<sup>9</sup>

New weights are incorporated into the published index by linking the new series onto the old in a month sometime after the weight base of the revised index. The time it takes to prepare new weights and new samples, as required, sets the delay between the reference period of the new weights and the month the Prices Division introduces the reweighted index.

The Prices Division imputes the prices of unreported, seasonal, and temporarily unavailable elementary items by repeating the last observed price. Replacement products are sought if there are two missing months normally in-season for price collection.

### *3.2.2 Other statistical procedures (e.g., data adjustments and transformations, and statistical analysis) employ sound statistical techniques*

The Prices Division adjusts prices in the output PPIs to basic price valuations where necessary by excluding any value added tax (General Sales Tax) and other taxes on products payable by the producer, and including any subsidies on products receivable by the producer. It adjusts input prices in the RMPI to a purchasers' prices basis where necessary by including taxes on products payable by the producer and excluding subsidies on products receivable.

The Industry Measures and Analysis Division compiles price indices for output and intermediate consumption not covered by PPIs in the course of compiling the quarterly and annual accounts. Most of these uncovered flows are for services, and the plausibility of the estimates is not always high, since a number are based on extrapolation with input indicators such as labor hours worked.

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<sup>9</sup> *CPI Reference Paper*, Statistics Canada, Catalogue 62-553, 1995, p. 60.

### **3.3 *Assessment and validation of source data***

*3.3.1 Source data—including censuses, sample surveys and administrative records—are routinely assessed, e.g., for coverage, sample error, response error, and nonsampling error; the results of the assessments are monitored and made available to guide planning*

Outliers are trimmed or imputed if the Prices Division has been unable to contact the respondent before the publication cutoff date. The Division includes large price changes in the index when it confirms with the respondent the price is correct and is not the result of a change in product features. The entire impact of a large price change will not be taken if the change is a result of change in price determining features. The price either is linked into the index as a new item (all quality change) or the change is adjusted by an estimated cost of the change in features (part quality change). Division product officers make periodic audits of price survey responses and take remedial action when they discover collection and recording errors.

There are no statistical variances produced for the price surveys because even though establishment samples use random sampling, selections of elementary items are nonrandom. Reliability is assessed heuristically using simple standard errors, counts of price quotes within the ultimate strata, and simple coverage statistics of the quotes sampled.

Simple heuristic estimates of variability are used to set initial sample allocations for elementary items (price quotes). The Prices Division controls variability over time by monitoring sample attrition and replacing discontinued items and out of business establishments.

The Prices Division examines price quotes returned from the field for evidence of change in product specification, such as a notation from the respondent or an unusual price movement, to ensure temporal consistency in price collection.

The quality of the administrative information on prices used in the RMPI and Farm Product Price Index appears good.

### **3.4 *Assessment and validation of intermediate data and statistical outputs***

*3.4.1 Main intermediate data are validated against other information where applicable*

Compilers assess stage of processing series for primary, intermediate, and final output for reasonableness against one another and anecdotal information scanned from the press and other sources on economic events. They routinely compare the IPPI with the RMPI in the joint release of the two series in *The Daily* and in the monthly IPPI publication.

### *3.4.2 Statistical discrepancies in intermediate data are assessed and investigated*

The “highlights” included with releases of data on the PPIs in *The Daily* routinely identify the major sources of change in the overall indices.

### *3.4.3 Statistical discrepancies and other potential indicators of problems in statistical outputs are investigated*

There are no aggregation inconsistencies in the IPPI and RMPI between product and industry aggregations, nor for the consulting engineering services and the various construction indices between product and area aggregations. The other PPIs present no opportunity for inconsistencies of this type to arise as they are published on only one classification.

## **3.5 Revision studies**

### *3.5.1 Studies and analyses of revisions are carried out routinely and used to inform statistical processes*

Compilers do not routinely formally assess the revision variances of revisable PPI series, but they do monitor revisions over time and have a good impression of their size and lag characteristics. The estimates the Prices Division did some years ago for certain series in the IPPI and RMPI suggest the quantitative impact of revision is small and concentrated within one month after release. The Prices Division routinely assesses changes in structure when it updates the index weights.

## **4. Serviceability**

### **4.1 Relevance**

#### *4.1.1 The relevance and practical utility of existing statistics in meeting users' needs are monitored*

The Prices Division consults the following entities and forums on the relevance of its producer price statistics to users:

- The divisions of the StatCan National Accounts and Analytic Studies Branch on national accounts requirements for producer price statistics;
- An annual meeting with the BoC including discussion of price statistics;
- Annual interdepartmental meetings with Agriculture Canada, Industry Canada, Natural Resources Canada, and Transport Canada;
- The Business and Trade Statistics forum in the annual Federal-Provincial Meetings;

- The Price Statistics Advisory Committee comprising academics, financial market analysts, consultants, and the BoC;
- User inquiries, requests, and orders for special tabulations directed to the Division's own Quality and Client Services unit and the StatCan Advisory Services Division;
- A users' survey conducted for the Price Division's Quadrennial Program Report (the next such survey will be in 2004 for the 2005 Report);
- Direct bilateral contact with trade associations, as issues arise, generally on collection methodology and publication detail; and
- The National Statistics Council through the Chief Statistician, as issues arise.

#### **4.2 *Timeliness and periodicity***

##### *4.2.1 Timeliness follows dissemination standards*

The producer price indices Canada reports for the SDDS are the

- Industrial Product Price Index (IPPI) (1981-); and
- Raw Materials Price Index (RMPI) (1981-).

The timeliness of the November 2002 release in *The Daily* was January 3, 2003, or one month and two days, allowing for the Christmas and New Year's holidays. Other monthly releases have occurred within one month following the reference month. The November exception is noted on Canada's SDDS metadata page for the IPPI and RMPI. The two indices satisfy SDDS requirements.

The recent timeliness of StatCan's other PPIs is listed below in descending order of periodicity.

##### Monthly

- Farm Product Price Index (1935-): October 2002 released on January 9, 2003;
- New Housing Price Index (1969-): November 2002 released January 10, 2003;
- Electric Power Selling Price Index for nonresidential customers (released three times per year, 1981-): May-August 2002 released September 27, 2002; and
- Traveller Accommodation Services Price Index (quarterly release, 2001-): July-September 2002 released October 25, 2002.

#### Quarterly

- Machinery and Equipment Price Indexes (1971-): Quarter 2, 2002 released November 19, 2002;
- Apartment Building Construction Price Indexes (1981-): Quarter 3, 2002 released November 15, 2002; and
- Non-Residential Building Construction Price Indexes (1972-): Quarter 3, 2002 released November 13, 2002.

#### Annual

- Accounting Services Price Index, (2000-): 2000 released April 5, 2002;
- Consulting Engineering Services Price Index (1989-): 2000 released October 9, 2002;
- Informatics Professional Services Price Index (1993-): 2000 released December 11, 2002;
- Telecommunication Services Price Index (annual, 1996-): 1999 released June 27, 2001; and
- Electric Utility Construction Price Index (annual, 1966-): 2001 released September 25, 2002.

#### 4.2.2 *Periodicity follows dissemination standards*

The producer price indices Canada reports for the SDDS are the

- Industrial Product Price Index (IPPI) (1981-); and
- Raw Materials Price Index (RMPI) (1981-).

Their periodicity is monthly and satisfies SDDS requirements. See 4.2.1 for the periodicities as well as timeliness of StatCan's other PPIs.

### 4.3 **Consistency**

#### 4.3.1 *Statistics are consistent within the dataset*

All of Canada's PPIs fit within the appropriate make or use table concepts of the national accounts supply and use framework and thus are fully consistent with one another.

#### *4.3.2 Statistics are consistent or reconcilable over a reasonable period of time*

StatCan's PPI series have been on a consistent supply and use conceptual basis from January 1981. The IPPI has been on an output basis since 1956. However, the length of some of the series is still very short, limiting analyses requiring long time series to the IPPI, RMPI, electric power, farm product, and construction indices. When the Prices Division introduced NAICS in November 2001, it provided reclassified monthly industry price indices back to January 1992, maintaining reasonably long and consistently classified time series for users of the industry-classified data. Users also thus have access to industry series classified with both the old SIC and the new NAICS from January 1992 to October 2001. The industry reclassification had no effect on the historical IPPI and RMPI all items indices, or the commodity aggregates for these indices.

#### *4.3.3 Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks*

StatCan's PPI series are fully consistent with the 1993 SNA supply and use framework. Their reference aggregates can be fully reconciled with other statistical frameworks such as the balance of payments.

### **4.4 Revision policy and practice**

#### *4.4.1 Revisions follow a regular, well-established, and transparent schedule*

Each monthly release of the IPPI and RMPI may be revised for six months before becoming final. The statistical methods webpages for both indices state the revision policy under the Description and Imputation headings for prices and under the Estimation heading for weights. The IPPI *Reference Paper* also states the policy. Documentation of the 1997 reweighting and conversion to NAICS was announced in the IPPI monthly publication as a Note to Users during August-October prior to its implementation in November 2001 and on the StatCan website in a *Communiqué* on November 22, 2001. The monthly publication is a priced item and notice apparently was not otherwise available to users without a specific inquiry. The Prices Division also consulted with IPPI respondents on its apparel price survey regarding the relevance of published CPI item detail before dropping the detail from the CPI.<sup>10</sup>

Each monthly release of the Farm Product Price Index publishes revisions for the current and previous calendar year. Revisions to the previous two years are released in May. Revisions to

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<sup>10</sup> The new and more frequent SHS replacing the quadrennial Family Expenditure Survey as source for the CPI weights contains less expenditure detail than its predecessor. Producers of apparel found the published detail unsuitable to their needs anyway and StatCan decided to drop the detailed apparel series.

the previous three years are released in November. The statistical methods webpage states the revision policy under the Error detection heading. The policy also appears in the monthly release, available at no charge from the website. The monthly release contains a good explanation of the annual reweighting policy and states there is a historical revision every five years using the results of new agricultural censuses.<sup>11</sup>

Each monthly release of the Electric Power Selling Price Index for nonresidential customers publishes revisions for the previous two years. The statistical methods webpage states the revision policy under the Quality evaluation heading. The most recent weight update for this index was to incorporate 1997 data. Documentation to the public does not mention a policy on weight updates on this index specifically, but StatCan includes the index in the IPPI monthly publication, and states its most recent weight update there. The monthly publication is a priced item.

Each quarterly release of the Non-Residential Building Construction Price Index and Apartment Building Construction Price Index are subject to revision one quarter after dissemination. The statistical methods webpage states the revision policy under the Estimation heading. Users normally are not warned of weight updates, as this is not a Major Release for which such notice is routinely given.

The statistical methods webpages for the Accounting Services Price Index and the Consulting Engineering Services Price Index state under the Imputation heading that late responses on prices are incorporated into revised releases of the indices. Neither of the webpages states the revision period. The Consulting Engineering index is, however, published in the Capital Expenditures Price Statistics monthly publication (62-007-XPB) and its revision policy is stated more precisely there: the preceding two years are subject to revision at each release. The Accounting Services Price Index also follows this revision policy. In the first case, the information on revisions is available only in a priced publication and appears not to be available in the second case without placing a specific inquiry. The Accounting Services Price Index is not a Major Release.

There is no revision policy stated for the New Housing Price Index, Informatics Professional Services Price Index, Telecommunication Services Price Index (no statistical methods webpage at the time of the mission), or Traveller Accommodation Services Price Index in either the statistical methods webpage or the release in *The Daily*. The New Housing Price Index monthly publication, available for a charge, states the index is not revised. The Apartment Building Price Index derives from the same sources as the Non-Residential Building Construction Price Index and follows the same revision policy. The Telecommunication Services Price Index is a special compilation for the National Accounts and Analytic Studies Branch of StatCan, is not an officially registered series, and is not, of course, a Major Release. An Availability Notice was issued in *The Daily* on it, however. For

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<sup>11</sup> See also 3.2.1.

the IPPI, RMPI, and Farm Product Price Index, as well as most of the other indices, users are informed in advance of weight updates, or regular update schedules are included in statistical documentation.

#### *4.4.2 Preliminary data are clearly identified*

StatCan indicates preliminary data with the symbol “p” and revised data with the symbol “r” in all releases. It does not annotate revisable price index data for months subject to revision with “p,” unless it is aware in advance of significant late reporting or other events likely to cause large revisions. StatCan annotates the indices for months in which compilers revise data with “r.”

#### *4.4.3 Studies and analyses of revisions are made public*

Statistical methods webpages contain statements on the range of revisions to PPI series for the IPPI and RMPI. The Farm Product Price Index monthly publication provides a table of the sensitivity of the national and provincial grain indices to a Can\$10 per ton increase in wheat or barley prices and warns that revisions may be significant. There are no other statements on the revision experience of PPIs having revision policies. Studies of weight revisions made internally are not incorporated into a formal report and released to the public.

## **5. Accessibility**

### **5.1 Data accessibility**

#### *5.1.1 Statistics are presented in a way that facilitates proper interpretation and meaningful comparisons (layout and clarity of text, tables, and charts)*

PPI data are released in summary form in *The Daily* (see 5.1.4). Under the “Policy on Highlights of Publications,” each release is to include tables and charts (if appropriate) as well as analysis of developments in the form of highlights. These highlights, to which StatCan has devoted considerable attention over the years, are required for all publications that present statistical information or analytical findings. They are intended to convey significant findings, comparisons, and trends to assist the reader in understanding and using the publication.

PPI data are published in a clear manner; charts and tables are disseminated with the data to facilitate the analysis in *The Daily* and the monthly publication. Datasets are published with various levels of product and industry aggregation in *The Daily* release, the monthly publication, and on Canadian Socio-Economic Information Management System (CANSIM). Analysis of current-period developments is included in *The Daily* and the monthly publication. Estimates are disseminated at a detailed level both in the monthly publication and on CANSIM. Time series are available on CANSIM at all levels of detail for products and for industries over full history of the indices. PPI series are not seasonally adjusted.

### 5.1.2 Dissemination media and formats are adequate

Data products are available in both English and French, simultaneously. In addition to the first release in *The Daily*, PPIs are available in several other media and formats.

- *Industry Price Indexes*, monthly publication, Statistics Canada. Catalogue 62-011-XPB, paper only, Can\$22 per issue, Can\$217 annual subscription (IPPI, RMPI, Electric Power Selling Price Index for nonresidential customers).
- *Industrial Product Price Indexes, 1981=100, Concepts and Methods*, Statistics Canada, Catalogue 62-556-XPB, paper only, not available on electronic catalogue.
- *Industry Price Indexes, 1986=100: Users' Guide*, Statistics Canada, Catalogue 62-558-XPB, paper only, Can\$40.
- *Capital Expenditure Price Statistics*, quarterly publication, Statistics Canada, 62-007-XPB, paper only, Can\$24 per issue, Can\$79 annual subscription (New Housing Construction Price Index [also released monthly in *The Daily*, free], Apartment Building Construction Price Index, Non-residential Building Construction Price Index, Electric Utility Construction Price Index, Consulting Engineering Services Price Index), also available in *The Daily* for recent periods in summary form, free.
- *Farm Product Price Index*, Statistics Canada, Catalogue 21-007-XIB, internet download only, free.
- CANSIM: sample internet downloads
  - Table 002-0021: Farm product price index (FPPI), monthly (Index, 1997=100), 14 series, 1992-2002, costs Can\$42.
  - Table 326-0011: Telecommunication services price indexes, annual (Index, 1996=100), 1996-1999, costs Can\$3.
  - Table 326-0013 - Traveller accommodation services price index, monthly (Index, 2000=100), 5 series, 2000-2002, costs Can\$15.
  - Table 326-0014: Accounting services price index, annual (Index, 1999=100), 5 series, 1999-2000, costs Can\$15.
  - Table 327-0005: New housing price indexes, monthly (Index, 1992=100), 3 series, 1992-2002, costs Can\$9.
  - Table 327-0011: Electric utility construction price indexes (EUCPI), annual (Index, 1992=100), 95 series, 1992-2001 costs Can\$285.

- Table 327–0016: Machinery and equipment price indexes (MEPI), by industry of purchase, quarterly (Index, 1986=100); 142 series, 1992–2002, costs Can\$426.
- Table 327–0040: Price indexes of apartment and nonresidential building construction, by type of building and major sub-trade group, quarterly (Index, 1997=100), 7 major metropolitan area composite, 30 series, 1992-2002, costs Can\$18.
- Table 329–0014: Informatics professional services price indexes, annual (Index, 1997=100), 3 series, 1993-2000, costs Can\$9.
- Table 329–0038: Industry price indexes, by NAICS, monthly (Index, 1997=100), 238 series, 1992–2002, costs Can\$741.
- Table 329–0039: Industry price indexes, by major commodity aggregations and stage of processing, monthly (Index, 1997=100), 192 series, 1992–2002, costs Can\$576.
- Table 329–0050: Electric power selling price indexes (nonresidential), monthly (Index, 1997=100), 3 series, 1992–2002, costs Can\$9.
- Table 330–0006: Raw materials price indexes, monthly (Index, 1997=100), 111 series, 1992–2002, costs Can\$285.

Most users with whom the mission spoke were critical of the cost of many of StatCan's products, especially time series on CANSIM.

### *5.1.3 Statistics are released on a preannounced schedule*

A schedule of release dates for the IPPI/RMPI, as well as for 29 other of StatCan's major economic indicators, is published for the coming calendar year at the end of November in *The Daily*, the agency's official release bulletin. These dates are also available on *The Daily* module of StatCan's website. In addition, on the last working day of each month, *The Daily* publishes an entire set of release dates for these indicators for the coming month, as well as dates for other major releases. Each Friday, *The Daily* publishes a list of release dates for the coming week.

Overall, the record of meeting release dates is good. In 2002, all of the 30 products met their preannounced release date. The IPPI/RMPI series have never missed preannounced release dates. The remaining PPI series are not among these major releases and not subject to an advance release calendar.

#### *5.1.4 Statistics are made available to all users at the same time*

*The Daily*, as outlined in the “Policy on Statistics Canada’s *Daily* (Official Release),” is the official release bulletin. Its purpose is to disseminate summary findings of statistical programs or major conclusions of analytical products. In doing so, it provides a single, comprehensive source of information on the agency’s offerings. StatCan considers the vehicle as unique among the world’s statistical agencies. *The Daily* has been an Internet vehicle since 1995, and has been published in hardcopy since 1932, each working day. With two exceptions, release time is 8:30 a.m. Eastern time. The two exceptions are the Consumer Price Index and Labour Force Survey, both of which by tradition are released at 7:00 a.m. Eastern time.

Release in *The Daily* marks the passage of data, analysis, or products to the public domain. Until release in *The Daily*, data are considered “protected,” and may not be disseminated outside StatCan except in the following cases: (1) where validation by an external organization is necessary, (2) when sponsors of cost-recovery programs are granted access for a reasonable period prior to release, and (3) where sources of administrative data, and/or any other organization authorized by the source organization, are granted access to data developed from those files. These exceptions still require a formal release in *The Daily* within a relatively short delay.

StatCan provides for press lock-ups when it releases PPI series from 8:00 a.m. to 8:30 a.m. Eastern time on the day of release. See 5.1.4 of the CPI Detailed Assessment for a description of the lock-up.

#### *5.1.5 Nonpublished (but nonconfidential) subaggregates are made available upon request*

All nonconfidential detail is published in StatCan’s PPIs. Users can request indices for special unpublished aggregations that may pass disclosure criteria when the most detailed indices have to be suppressed on confidentiality grounds. The charge for these tabulations recovers the cost of the time the staff used to make them.

## **5.2 Metadata accessibility**

### *5.2.1 Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical techniques is available, and differences from internationally accepted standards, guidelines, or good practices are annotated*

The introduction to the “Policy of Informing Users of Data Quality and Methodology” sets out a statistical agency’s responsibility to inform users of the concepts and methodology used in collecting, processing, and analyzing data, of the accuracy of those data, and of any other features that affect their “fitness for use.” The policy requires that all statistical products include or refer to documentation on data quality and methodology. The accompanying standards detail the requirements for documentation (and include examples for factitious datasets as illustrative). Canada has made a commendable effort to have metadata on all of its

major series available to its users online, in a standard format, and free of charge. The newly developed on-line IMDB, a corporate repository of information on each of StatCan's 400 active surveys, is to serve as a tool to help meet the aim of the policy. The IMDB provides a standard template that is to be populated with pre-existing and new metadata. The IMDB represents a model dissemination practice, and StatCan is committed to its continuous improvement.

For the PPIs, the implementation of the policy is still a work in progress. Documentation, as statisticians around the world know well, is time consuming for expert staff and is often the residual claim on time after the numbers are out. As noted above in 4.4.1, the documentation available online inconsistently applies the framework of the IMDB and sometimes omits salient methodological facts only available in priced publications, if at all. (See also 0.3.1 about the Auditor General's review of quality management and 5.3 below about assistance to users.)

#### *5.2.2 Levels of detail are adapted to the needs of the intended audience*

PPI levels of detail include the top level aggregates released in *The Daily*, the detailed aggregates by commodity and area appearing in the IPPI/RMPI monthly publication or the quarterly Capital Expenditures Price Indices, and the same detail in long time series on CANSIM for all PPI series. These tables should serve a broad spectrum of user needs.

### **5.3 Assistance to users**

#### *5.3.1 Contact person for each subject field is publicized*

The "Policy on Spokespersons and Media Relations" calls for data contacts to be provided for each *Daily* release. These contacts are professional staff that provide day-to-day explanation and interpretation. All of the major releases and data availability announcements that the mission reviewed provided these contacts. Users were very complimentary of the service they provided. The contacts were considered knowledgeable and responsive.

#### *5.3.2 Catalogs of publications, documents, and other services, including information on any charges, are widely available*

StatCan maintains a comprehensive catalogue of the products and services, detailing how to obtain the product or service and its price if there is a charge. The website has been developed as a convenient, one-stop shopping center. Users are also advised in each publication of the national inquiries phone line and e-mail address. The Statistics Canada Regional Reference Centre is also widely mentioned.

Table 7. Canada: Data Quality Assessment Framework—Summary of Results for Price Statistics (Producer Price Index)  
(*Compiling Agency: Statistics Canada*)

to symbols: NA = Not Applicable; O = Practice Observed; LO = Practice Largely Observed; LNO = Practice Largely Not Observed; NO = Practice Not Observed.						
Element	NA	Assessment				Comments
		O	LO	LNO	NO	
<b>Methodological soundness</b>						
Concepts and definitions		X				
Scope		X				
Classification/sectorization		X				
Basis for recording		X				
<b>Accuracy and reliability</b>						
Source data		X				
Statistical techniques		X				
Assessment and validation of source data		X				
Assessment and validation of intermediate data and statistical outputs		X				
Revision studies		X				
<b>Serviceability</b>						
Relevance		X				
Timeliness and periodicity		X				
Consistency		X				
Revision policy and practice		X				
<b>Accessibility</b>						
Data accessibility		X				
Metadata accessibility		X				
Assistance to users		X				

Note: For assessments of dimensions O and 1, see Table 2 of the Detailed Assessments.

#### IV. GOVERNMENT FINANCE STATISTICS

**For assessments of the Prerequisites of quality (O.) and Integrity (I.) dimensions, see Section O for Statistics Canada.**

## 2. Methodological Soundness

### 2.1 *Concepts and definitions*

#### 2.1.1 *The overall structure in terms of concepts and definitions follows internationally accepted standards, guidelines, or good practices*

The Public Institutions Division (PID) of Statistics Canada (StatCan) is responsible for the compilation and dissemination of statistics for the public sector of Canada.<sup>12</sup> StatCan has developed an analytical framework, the Financial Management System (FMS), designed to produce statistical series for the public sector that are both consistent and comparable. The FMS has been developed in cooperation with representatives of all levels of government and the academic and business communities. It provides a standardized accounting of finances for all levels of government. The accounting systems used by individual governments reflect the accounting policies and structures of each government and usually are not comparable.

The FMS concepts and definitions are consistent with those recommended in the IMF's *A Manual on Government Finance Statistics (GFSM), 1986*. In 1997 StatCan implemented the *System of National Accounts 1993 (1993 SNA)* and undertook the *Historical Revision of the Canadian System of National Accounts*. As part of this implementation, the public sector universe and the classifications, of the FMS and the Canadian System of National Accounts (CSNA), were further harmonized to eliminate some differences and to facilitate reconciliation with international statistical standards. While there are a number of conceptual differences between the FMS and CSNA, the principal differences relate to the fact that the CSNA uses a modified accrual basis of accounting and the FMS a modified cash basis.<sup>13</sup> For example, in the CSNA capital expenditure is capitalized while it is expensed in the FMS.

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<sup>12</sup> The Statistics Act clearly sets out StatCan's responsibility for government finance statistics and gives StatCan authority to collect information by contacting respondents directly and by accessing administrative records.

<sup>13</sup> As the recording bases for FMS source data are cash, accrual, or a combination of both, some adjustments (see 2.4.2 for details) are made to the source data to bring the data to a common basis. Complete conversion to a single accounting basis is not possible. Therefore, the recording base for FMS is regarded as a modified cash basis. For the CSNA, the Income and Expenditure Accounts Division (IEAD) adjusts general government data to an accrual basis.

The PID reports public sector data under two classifications, the CSNA and the FMS. The FMS classifications are broadly consistent with the recommendations of the *GFSM 1986*. However, they are very detailed and are bridged to the *GFSM 1986* classifications to meet international reporting requirements.

PID has prepared a migration plan to move from *GFSM 1986* to *GFSM 2001*. Implementation has begun and the first milestone is to migrate the annual data by June 2004, then to compile quarterly FMS estimates<sup>14</sup> and expand the balance sheet to include nonfinancial assets. The production systems will be integrated and the CSNA and FMS data reconciled quarterly. The biggest challenge will be compiling data for capital stock on a functional basis. Data for capital stock will be obtained from a survey conducted by the Investment and Capital Stock Division, and PID will edit and classify the data by function. These stock data will be adjusted for the consumption of fixed capital used in the CSNA. Other challenges are the calculation of new measures (net operating balance, net lending/borrowing, and net worth), converting the FMS functional classification to Classification of the Functions of Government (COFOG), and valuation of assets at market prices. PID will move to the *GFSM 2001* presentation of data once the majority of source data are on an accrual basis.

## 2.2 *Scope*

### 2.2.1 *The scope is broadly consistent with internationally accepted standards, guidelines, or good practices*

In 1997 StatCan implemented the public sector universe in accordance with the *1993 SNA*. PID has the responsibility for the universe and its ongoing review. The universe covers the total public sector and is illustrated in Figure 2. It is divided into two main components: Government (termed general government in the *1993 SNA* and *GFSM 2001*) and Government Business Enterprises (termed public corporations in the *1993 SNA* and *GFSM 2001*).

StatCan took the decision, for analytical ease, to include all universities, both public and private, in the public sector. The impact of private sector universities on key aggregates is immaterial. All nonprofit public and private hospitals, mainly financed by government, are included in the public sector.

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<sup>14</sup> The compilation and dissemination of quarterly FMS estimates will provide users with timely quarterly general government estimates for the various levels of government on a consistent and comparable basis. There are no plans to prepare FMS estimates for the budget year and forward years.

Public sector data are published annually by PID in the following tables:

- Government revenue, expenditure, surplus/deficit (defined as revenue minus expenditure), assets (financial only), liabilities, and equity/net debt (defined as financial assets minus liabilities);
- Government Business Enterprise income, expenses, assets (financial and nonfinancial), liabilities, and net worth; and
- Employment and wages in the public sector.

Revenue is presented by economic type and expenditure by function. Data, on the *GFSM 1986* basis, for expenditure by economic type, financing, and general government debt (classified by residency of the counterparty), are compiled for reporting to the IMF and are available from PID on request. Residency of the counterparty is determined by the foreign currency of the debt.

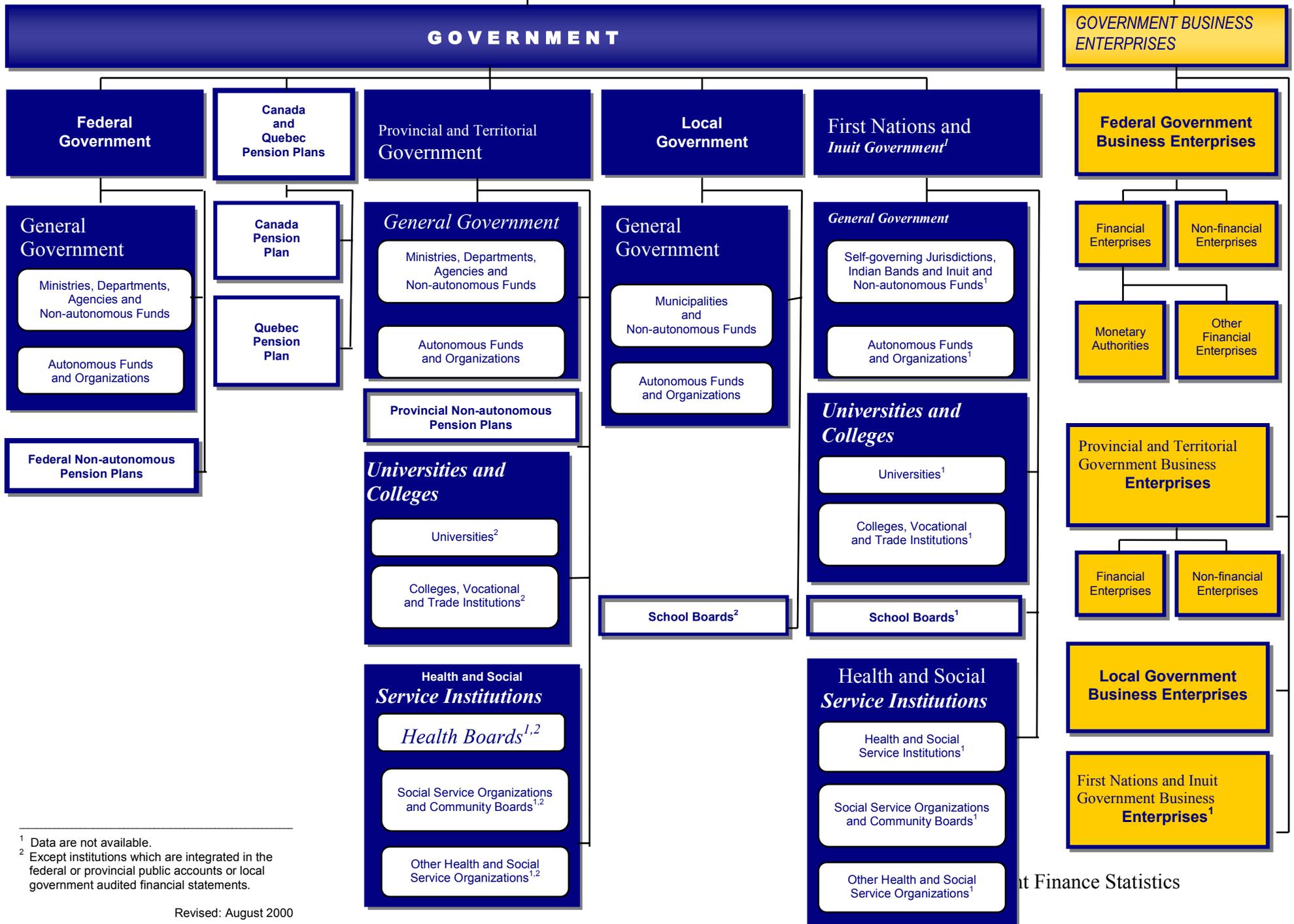
The data are available for the following:

- general government—federal government, each provincial and territorial government, and local governments by province;
- government business enterprises—federal government, provincial and territorial government, and local government; and
- consolidated general government—federal, provincial, territorial, and local government including the Canadian and Quebec Pension Plans; federal, provincial, territorial, and local government excluding the Canadian and Quebec Pension Plans; provincial, territorial, and local government, Canada total; and provincial and territorial government, Canada total.

The First Nation and Inuit governments are part of the general government sector. Data are not yet available for these governments as the operation of moving the First Nations to more independent forms of government is still in process. Data are not compiled or disseminated for the total public sector due to lack of demand.

In compiling consolidated data for general government, PID does not eliminate tax flows between governments and government contributions to all social insurance plans. These contributions are treated as flows firstly, from government to households, and secondly, from households to social insurance plans such as the Canadian Pension Plan and the Quebec Pension Plan.

**FIGURE 2. PUBLIC SECTOR DATA**



<sup>1</sup> Data are not available.

<sup>2</sup> Except institutions which are integrated in the federal or provincial public accounts or local government audited financial statements.

Public sector data are compiled quarterly, outside the *FMS*, for inclusion in the CSNA. The data include estimates, classified on a CSNA basis, of (a) government revenues and expenditures by economic type; (b) assets, liabilities, trading profits, inventories, and depreciation of government business enterprises; (c) employment and remuneration in the public sector; and (d) credit-market instruments, financial flows and local government short- and long-term debt. Each quarter, data are collected from the federal government and flows from provincial, territorial, local governments, and government business enterprises.

The Income and Expenditure Accounts Division (IEAD) publishes quarterly national income and expenditure accounts. Included in these releases are income and expenditure accounts for general government presented in an integrated framework generally consistent with the recommendations of the *GFSM 1986*, i.e., income and outlays by economic type and financing. Detailed data on financing flows by instrument and by debtholder are available from Canadian Socio-Economic Information Management System (CANSIM) under CSNA.

PID produces estimates of local government long-term debt on a monthly basis for provision to the Bank of Canada (BoC) for inclusion in its monthly review.

PID produces estimates when data are not available in order to ensure full coverage. Estimates are later replaced with actual data.

The Department of Finance releases *The Fiscal Monitor* monthly. This publication includes monthly and year-to-date information for the budgetary central government on budgetary revenues, expenditure, surplus/deficit, and the net financial requirement. The department also is responsible for the release of the *Annual Financial Report of the Government of Canada* and *Fiscal Reference Tables*. The latter provides annual data on the financial position of the federal and provincial governments presented on both a public account basis, sourced from the public accounts of these governments, and a national accounts basis, as prepared by StatCan and the Organisation for Economic Co-operation and Development (OECD). The Department of Public Works and Government Services releases the annual *Public Accounts of Canada*. All provinces and territories produce public accounts.

## **2.3 Classification/sectorization**

### *2.3.1 Classification/sectorization systems used are broadly consistent with internationally accepted standards, guidelines, or good practices*

Institutional sectors, as described in 2.2.1 above, are defined in accordance with the *1993 SNA*.

The first version of the *FMS* was developed 65 years ago. Since then, the *FMS* has been continually updated and improved as public sector activities and user requirements for public sector financial and employment data have changed. The *FMS* classifications are closely aligned with the *GFSM 1986* classifications and are bridged to CSNA classifications, to most of the classifications recommended in *GFSM 1986* (including the United Nations' COFOG),

and to OECD classifications. The *FMS* expenditure classification cannot be easily bridged to the *GFSM 1986* expenditure by economic type classification. Where there are concerns about the quality of economic type classification of source data, PID uses CSNA data to split FMS data for reporting solely to the IMF.

For financing, PID conducts quarterly surveys of federal, provincial, territorial, and local governments, and government business enterprises. These surveys are based on *GFSM 1986* classifications.

In the FMS, for governments, revenue, firstly, is classified by source and subsource, either as revenue a government derives from its own sources or as transfers from other governments, and, secondly, by type. Expenditures are classified by function, but not by type. Financial assets and liabilities are presented in accordance with the conventional accounting presentation in which the major categories are shown in descending order of liquidity. As PID follows *GFSM 1986*, expenditure on capital items is not capitalized.

Government business enterprises adhere closely to business accounting concepts, classifications and conventions. In the *FMS*, income of government business enterprises is broken down into four categories: sales of goods and services; investment income; subsidies; and other income. Expenses comprise five principal categories: cost of goods and services (includes salaries and wages, materials and other purchases, and insurance claims); debt charges; grants in lieu of taxes; provisions for depreciation and depletion; and other expenses. In addition to the accounting classifications for the balance sheet, PID has added: for assets, cash with provincial and territorial governments, accrued revenue, prepaid expenses, and inventories; for liabilities, savings deposits, accrued expenses, deferred credits, and minority interest; and for net worth, capital stock and surplus.

A description of the statistics published for each sector is included in 2.2.1.

## **2.4 Basis for recording**

### *2.4.1 Market prices are used to value flows and stocks*

In the FMS flows are recorded at the amount of cash paid or received and, as a result, are valued at market prices. Stocks are generally recorded at historical cost; debt stocks, held as assets, are recorded at issue price and liabilities at face value. In many instances, stock data are reported both at market value and historical cost. For the FMS, historical cost is used and, for CSNA, market value is used. Where data are available only on an historical cost basis, IEAD, Input-Output Division (IOD), and the Balance of Payments Division (BOPD) adjust the data to market value.

Amounts denominated in foreign currency are converted to Canadian dollars using the average monthly noon rate for transactions and the year end closing rate for stocks.

#### 2.4.2 *Recording is done on an accrual basis*

As the public sector statistics compiled using the FMS and published by the PID are sourced from financial data produced from nonstandardized accounting systems, some data are on a cash basis, some on an accrual basis, and some on a combination of these.<sup>15</sup> During the transition from a cash to an accrual basis of recording, PID generally accepts the data on the bases provided. Therefore, the data are regarded as being on a modified cash basis. Nontax revenue is usually on an accrual basis, expenditure on a cash basis with some year-end accrual adjustments, and capital items are expensed in the year of purchase. Local government data are on a cash basis and the provinces and territories are in the process of moving to accruals. In the cases of entities that use the accrual basis of recording, PID adjust the data to expense any identified capital expenditure. For example, as the government of Nova Scotia and the provincial and territorial autonomous funds are on an accrual basis, PID expenses their capital expenditure. In some provinces and territories, revenue is deferred (for example, health and equalization transfers), but PID recognizes the full amount in the first period, i.e., records it on a cash basis.

The IEAD and the IOD take PID government data on a modified cash basis and adjust them to a modified accrual basis for inclusion in the national accounts.

#### 2.4.3 *Grossing/netting procedures are broadly consistent with internationally accepted standards, guidelines, or good practices*

The gross convention is used in the *FMS*. Consistent with the recommendations of *GFSM 1986*, revenue refunds are netted against revenue and expenditure refunds against expenditure rather than including them in expenditure and revenue respectively. However, for refundable tax credits, revenue and expenditures are grossed up by the total amounts of the credit. *GFSM 1986* recommends that if tax credit exceeds the amount of tax previously paid in, only the excess should be classified as revenue or expenditure rather than as a correction to expenditure or revenue respectively. For reporting to the IMF and OECD, PID adjusts the data to follow the recommendations of *GFSM 1986*. Nonrefundable tax credits are not subject to the gross convention. Financing transactions are recorded on a net basis.

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<sup>15</sup> The Federal government currently follows a modified accrual basis (i.e., accrual accounting of all liabilities and financial assets, but excluding capital assets) of accounting. However, commencing with the 2003-04 budget, full accrual accounting is to be implemented.

### **3. Accuracy and Reliability**

#### **3.1 Source data**

##### *3.1.1 Source data are collected from comprehensive data collection programs that take into account country-specific conditions*

The principal sources of data for revenue, expenditure, assets, and liabilities of the government component are the published financial reports of the various governments. For the federal government, a common chart of accounts is used by all agencies and there is a good bridge to *FMS* classifications. Expenditure is shown by program and this information is used by PID to determine the function. Detailed data are available electronically for the federal government. Provincial and territorial government data are entered from hard copies by the Operations and Integration Division (OID) into appropriate computer system structures prepared by the PID.

Municipal data are obtained from the annual reports issued by provincial and territorial departments of education and municipal affairs. The municipal affairs' reports, which aggregate the financial data for all municipalities in a particular province or territory, are used in conjunction with the annual reports of the larger municipalities. Data for some entities are obtained electronically from other divisions of StatCan. For example, the data on revenues and expenditures of hospitals and residential care facilities are obtained from the Health Statistics Division, and for colleges and universities from Culture, Tourism and the Centre for Education Statistics. Further information required to complete the coverage of the public sector is obtained from the financial statements of the entities they report to or directly from the entities concerned.

The first estimates for the annual series on federal and provincial general government revenue and expenditure are based on budget estimates, speeches and documentation of the governments concerned. Estimates for the provincial institutions (such as universities, colleges, hospitals, etc.) are derived by using the *FMS* estimates of the provincial general government spending on education, health and social services, and by projecting previous observations. For local government, estimates are derived from surveys of municipalities. The surveys include all large municipal units and a representative sample of the remaining municipalities. The survey process is handled by the OID. Data for other components of the local universe, such as schools, and local boards and commissions, are estimated on the basis of information supplied by provincial government departments and other divisions within StatCan. Supplementary information is obtained from federal and provincial governments' budget speeches and estimates.

For government business enterprises, the data for federal, provincial, and territorial enterprises are obtained from their financial reports and entered by PID into a Unified Enterprise Survey form on an *FMS* basis. Additional information is obtained from the public accounts of the parent governments, from the departments through which the enterprises report to their legislature, and through direct communication with the enterprises. In the cases

where provincial and territorial government business enterprises are consolidated in the public accounts data, PID adjusts the data to separate the financial data for government business enterprises. For local government business enterprises, information on transport enterprises is obtained from admin data, and the telecommunication and energy enterprises are surveyed annually.

PID compiles the consolidations for consolidated federal, provincial, territorial and local general government, including and excluding the Canadian and Quebec Pension Plans; for consolidated provincial, territorial and local general government; and for consolidated provincial and territorial general government. Sufficient information is available in the public accounts and other source documents to enable the elimination of intra-government and inter-government transactions. When using these accounts, PID looks at both sides of a transaction and uses the best quality data when determining the eliminations rather than necessarily using a hierarchical approach. If both sides are of good quality and one is on a cash basis and the other on an accrual basis, the one on the cash basis is used.

Quarterly surveys are conducted for federal, provincial, territorial, and local governments, and government business enterprises to obtain data for the quarterly CSNA. The survey for federal government is a census, for provincial and territorial governments a threshold survey, and for local governments a stratified survey. For financing, PID calculates quarterly flows using stocks and flows data from the federal, provincial and territorial finance departments and stocks and valuation data from the local government surveys. These estimates are then reconciled with stocks and valuations data. Stocks data are collected and compiled annually in the *FMS*. Financing flows data are compiled for, and disseminated in, the national accounts. They are not published by the PID (see 2.2.1).

*3.1.2 Source data reasonably approximate the definitions, scope, classifications, valuation, and time of recording required*

The Public Sector Accounting Board of the Canadian Institute of Chartered Accountants provides recommendations and guidance on accounting in the public sector. Items recognized in financial statements are to be recorded on the accrual basis of accounting and the historical cost basis of measurement. However, there is little uniformity among governments on the items recorded on an accrual basis.

A common chart of accounts has been introduced for the federal government, but there is no uniformity of charts of accounts at the other levels of government. GFS codes are not incorporated into the charts of accounts. However, the federal government chart of accounts was developed in consultation with PID and is easily bridged to FMS classifications. Public accounts of the provincial and territorial governments are mapped to FMS classifications (see 3.1.1 above).

PID accepts the data on the bases provided and adjusts the classification of data to a consistent and compatible basis. No adjustment, however, is made to the accounting basis other than to expense any capital expenditure that had been included on balance sheet by

entities reporting on an accrual basis, and for intra-government transactions, to shift large transactions on an accrual basis to a cash basis.

The federal, provincial, and territorial governments report on a fiscal year basis. PID releases annual data on a fiscal year basis, i.e., year ending March 31, while local governments report on a calendar year. PID does not make any adjustments for the different reporting periods. The CSNA are on a calendar year basis. Data are collected and compiled quarterly for CSNA purposes. CSNA data are rebenchmarked when PID annual data are available. Some users have experienced confusion when comparing CSNA and FMS data. The two datasets not only differ in terms of reference periods, they are on different accounting bases.

The scope of government financial reports can be different to that used in the FMS and CSNA. PID makes adjustments for the differences in scope.

PID compilers are very experienced, have a very good understanding of the source data, and are aware of any differences between that data and GFS concepts.

### *3.1.3 Source data are timely*

As annual data are preliminary for the latest year for the federal government, latest two years for provincial and territorial governments, and the latest three years for local governments, budget estimates, and quarterly and annual survey information are used to prepare estimates for all levels of government until audited actuals data are available.

Federal public accounts audited data are available six months after the reference year; provincial and territorial data six-to-ten months after the reference year; and local government data two years after the reference year. The various departments of municipal affairs in the provinces and territories bring together all the local government data, by individual local government, for their province or territory and PID does the consolidations.

## **3.2 Statistical techniques**

### *3.2.1 Data compilation employs sound statistical techniques*

For the local government surveys, data from the sampled municipalities are inflated to population estimates using the inverse sampling ratio by stratum. This expansion is undertaken by the Business Survey Methods Division of StatCan.

PID estimates for missing cells or units (e.g., funds) in other collections. Before release, annual estimates made for each provincial and territorial government are provided to them for comment, along with an estimate of the impact on their surplus or deficit.

The raw data for hospitals and residential care facilities are supplied by the Health Statistics Division of StatCan to PID who undertakes the nonresponse estimation.

Estimation for nonresponse in the government business enterprises survey is undertaken using the StatCan survey methodology for private enterprises.

*3.2.2 Other statistical procedures (e.g., data adjustments and transformations, and statistical analysis) employ sound statistical techniques*

PID procedures for estimating for missing data are consistent with international practices, and appear to make effective use of the available data (see 3.1.1 above).

**3.3 Assessment and validation of source data**

*3.3.1 Source data—including censuses, sample surveys and administrative records—are routinely assessed, e.g., for coverage, sample error, response error, and nonsampling error; the results of the assessments are monitored and made available to guide planning*

There are no material gaps in coverage of the public sector units. PID is continually reviewing and updating the public sector universe and quarterly and annual data or estimates are available for all material units. The total impact of annual estimates for missing units is less than one percent of the total universe.

A concerted effort has been made to reduce nonsampling error by careful design of questionnaires and editing practices and by ongoing communication with respondents. Response rates are high.

Preliminary data are replaced with audited actuals data when they become available. The status of the data is notified in the public sector publications. However, preliminary data are not identified in tables available in *The Daily* and elsewhere on the website.

**3.4 Assessment and validation of intermediate data and statistical outputs**

*3.4.1 Main intermediate data are validated against other information where applicable*

The *FMS* data are reconciled to the public accounts, and reconciliations are published for federal, provincial and territorial governments.

*3.4.2 Statistical discrepancies in intermediate data are assessed and investigated*

Not applicable.

*3.4.3 Statistical discrepancies and other potential indicators of problems in statistical outputs are investigated*

When balancing items are derived, for example, revaluations when compiling financing data, the values not within expected ranges are identified and investigated.

### **3.5 Revision studies**

#### **3.5.1 Studies and analyses of revisions are carried out routinely and used to inform statistical processes**

A record of revisions is kept and monitored routinely, all large revisions are explained in production notes, and revisions are examined to obtain feedback to improve the compilation process.

## **4. Serviceability**

### **4.1 Relevance**

#### **4.1.1 The relevance and practical utility of existing statistics in meeting users' needs are monitored**

PID releases annual estimates for general government and public corporations and prepares quarterly estimates for inclusion in the national accounts. These data, along with the monthly and year-to-date data released by the Department of Finance, are used by analysts to determine/evaluate fiscal policy. The Department of Finance prepares and monitors the budget.

In 1999/2000, PID developed a methodology to produce current year FMS based revenue and expenditures for health and social services institutions, universities and colleges. This production of current year estimates, now for **all** components of governments, enabled PID to produce consolidated government (IMF's general government) estimates as well. As a result, in June 2001 (for the period 2000/01) PID produced and released comprehensive consolidated government estimates of revenue and expenditures.

For the past two years, consolidated government data have been released just under three months after the end of the reference year, i.e., in June. (It used to be 26 months.) This major advance in timeliness, due to this change in compilation methodology, has resulted in a leap in interest in the release on the part of the news media and others. (Requests for supplementary data have increased four fold.) There is some evidence that the June release date has come to be expected.

The conceptual framework is based on *GFSM 1986*, but the classifications and presentation are national ones developed in consultation with users. The *FMS* was developed to replace the diverse formats of government financial reports by establishing statistical series that are consistent and allow valid comparisons with the various governments' financial reports.

Formal feedback from users is required for the quadrennial program reports produced by all divisions of StatCan. PID has not undertaken a quadrennial review to date. However, PID regularly monitors the many established mechanisms to renew its awareness of user

preferences. The annual meeting of the Federal/Provincial/Territorial Committee on Public Sector Statistics (attended by the provincial/territorial focal points) is one such channel of communication as are the twice-yearly meetings of the National Accounts Advisory Committee. As a frequent consumer of PID's outputs, both standard and on demand, the federal Department of Finance maintains a network of contacts with PID through which their statistical requirements are communicated. As noted in 5.3.1 below, contact names and the name of the relevant division (including e-mail address) are included in every *FMS* data release write up in *The Daily* (over 20 per year) and contact positions and/or divisions are included in publications. The network of StatCan advisory services offices directs the inquiries that they receive to the appropriate PID officer.

Internet visits to the Government Statistics component of the *Canadian Statistics* module on the StatCan website are routinely monitored using web-tracking software. This has enabled PID to observe, among other things, the impact of the enhancements that it has been making to this component of the site. In a similar fashion, hits on each and every individual series on CANSIM are monitored and reported to PID by the Dissemination Division. Finally, the StatCan intranet (the Internal Communications Network) contains a searchable archive of news media articles relating to all of StatCan's outputs. This is supplemented by a news media monitoring service maintained by Communications Division which electronically forwards PID-relevant press clippings to PID as soon as they appear in the media.

In addition, within PID requests for supplementary data are monitored and analyzed and this in turn is influential as new data are chosen for inclusion in their standard products (e.g., CANSIM).

## **4.2 *Timeliness and periodicity***

### *4.2.1 Timeliness follows dissemination standards*

General government operations data<sup>16</sup> exceed the timeliness standard of the SDDS, as they are published, as part of the national accounts, within 60 days of the end of the year.

### *4.2.2 Periodicity follows dissemination standards*

The periodicity of the general government operations data meet or exceed the periodicity standard of the SDDS, as they are published quarterly and annually.

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<sup>16</sup> As central government operations data and central government debt data are accounting data disseminated by the Department of Finance, they are outside the scope of this Detailed Assessment.

### 4.3 Consistency

#### 4.3.1 Statistics are consistent within the dataset

Public sector statistics are internally consistent. Aggregates are consistent with their components, and balances are consistent with the aggregates. The sum of the data for the subsectors, after appropriate consolidation, is consistent with consolidated general government as any imbalances are included in other revenue, expenditure, receivables or payables. The quarterly national accounts are benchmarked to the annual public sector data but, as they are on a different accounting basis, the sum of the quarters for the government sector in the national accounts does not equal the annual FMS public sector aggregates. Revisions due to the annual benchmarking are within acceptable limits.

#### 4.3.2 Statistics are consistent or reconcilable over a reasonable period of time

The public sector statistics time series are consistent over time. StatCan can explain divergences from the expected trend. Breaks in the series due to methodological developments are explained in the releases.

#### 4.3.3 Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks

Reconciliations of FMS government data to the public accounts released by the federal, provincial, and territorial governments are published in the annual publication *Public Sector Statistics*. These reconciliations are available to users at the time of release of the FMS data, which facilitates the interpretation of the *FMS* estimates, enhances their credibility, and contributes to StatCan's (and PID's) reputation for transparency. No reconciliation of the CSNA data to FMS data is undertaken. As mentioned in 3.1.2 above, some users have experienced confusion when comparing CSNA and FMS data as they have different reference years (calendar and fiscal respectively) and different recording bases.

Financing data are published on an annual and quarterly basis in the CSNA. From an FMS point of view, financing data are compiled as per the public accounts information. They are not published by PID, but are available on request. PID do not reconcile these financing data with data released by the Department of Finance or with banking information. Financing data, on a *GFSM 1986* basis, are compiled for reporting to the IMF.

Municipal debt data, including foreign debt, are provided to the BOPD for inclusion in the balance of payments and international investment position. On request PID provides information on federal, provincial, and territorial government debt to BOPD. As PID and BOPD are using the same data, no reconciliation is undertaken.

#### **4.4 Revision policy and practice**

##### *4.4.1 Revisions follow a regular, well-established, and transparent schedule*

The revision policy is published in the annual *Public Sector Statistics* publication. It is the same as that for the national accounts, i.e., revisions are applied routinely only to the most recent four years and are applied to earlier periods only when the national accounts historical time series is opened for revisions. In the case of public sector statistics, four years is the maximum meaningful horizon since after four years, all of the public accounts and related source data have been audited and are not subject to further changes. Consequently, when the public sector and national accounts historical time series are opened for revisions, there are very few revisions to public sector data.

##### *4.4.2 Preliminary data are clearly identified*

The periods for which preliminary data are provided are identified in the publications. However, preliminary data are not identified in tables in *The Daily* and in tables available on StatCan website.

##### *4.4.3 Studies and analyses of revisions are made public*

No specific studies for revisions are undertaken. The monitoring of the magnitude and direction of revisions is integrated into the production processes of all PID outputs as an essential part of the real-time data quality assessment activities. This analysis is not, however, formally recorded and disseminated to the user community. Nevertheless, the information is readily at hand and is promptly provided on request.

### **5. Accessibility**

#### **5.1 Data accessibility**

##### *5.1.1 Statistics are presented in a way that facilitates proper interpretation and meaningful comparisons (layout and clarity of text, tables, and charts)*

Public sector data are first released in summary form in *The Daily* (see 5.1.4). Under the “Policy on Highlights of Publications,” each release is to include tables and charts (if appropriate) as well as analysis of developments in the form of highlights. These highlights, to which StatCan has devoted considerable attention over the years, are required for all publications that present statistical information or analytical findings. They are intended to convey significant findings, comparisons, and trends to assist the reader in understanding and using the publication.

The summary tables in the release include major aggregates and balancing items and are accompanied by more detail and longer time series in the annual publication. Data for the sectors and subsectors of the public sector, and a consolidation for general government at the

various levels of government, are published. The detail is published in a national presentation designed to meet users' requirements for use in the budget development and monitoring process. This presentation is not totally in line with *GFSM 1986* and not in accordance with *GFSM 2001*. A five-year time series is available in the annual publication and a longer time series is available on CANSIM and by request.

In addition to the "Major Release" of the comprehensive *FMS* results, there are over 20 additional but much more narrowly focused releases on specific topics. These are carried as "Other releases" in *The Daily* since the Communications Division does not wish to see the impact of the "Major Release" designation diluted.

#### *5.1.2 Dissemination media and formats are adequate*

Data products are available in both English and French, simultaneously. In addition to the *FMS* data releases in *The Daily*, summary public sector statistics are available without charge on the website (*Canadian Statistics* component), and for a charge in a dedicated annual public sector statistics publication (in electronic format on the website, and in hard copy on a print on demand basis), in "off-the-shelf" products (hard copy and Excel spreadsheets), and by way of special data services on request. The *FMS* manual is available without charge from the website and *The Guide to the Public Sector* is available from the website for a charge.

#### *5.1.3 Statistics are released on a preannounced schedule*

The *Public Sector Statistics* publication is not as yet included in StatCan's list of indicators for which release dates are announced. However, PID provides the provincial and territorial statistical focal points (see 4.1.1), with a list of releases and release dates for the next fiscal year. National accounts release dates are pre-announced and, as the general government operations data are sourced from the national accounts, the SDDS requirement for advance release calendars is met.

#### *5.1.4 Statistics are made available to all users at the same time*

*The Daily*, as outlined in the "Policy on Statistics Canada's *Daily* (Official Release)," is the official release bulletin. Its purpose is to disseminate summary findings of statistical programs or major conclusions of analytical products. In doing so, it provides a single, comprehensive source of information on the agency's offerings. StatCan considers the vehicle as unique among the world's statistical agencies. *The Daily* has been an Internet vehicle since 1995, and has been published in hard copy since 1932, each working day. With two exceptions, release time is 8:30 a.m. Eastern time. The two exceptions are the Consumer Price Index and Labour Force Survey, both of which by tradition are released at 7:00 a.m. Eastern time.

Release in *The Daily* marks the passage of data, analysis, or products to the public domain. Until release in *The Daily*, data are considered "protected," and may not be disseminated outside StatCan except in the following cases: (1) where validation by an external

organization (e.g., a respondent) is necessary, (2) when sponsors of cost-recovery programs are granted access for a reasonable period prior to release, and (3) where sources of administrative data, and/or any other organization (e.g., a respondent) authorized by the source organization, are granted access to data developed from those files. These exceptions still require a formal release in *The Daily* within a relatively short delay. Only (1) is applicable to public sector statistics.

*5.1.5 Nonpublished (but nonconfidential) subaggregates are made available upon request*

Nonpublished data (but nonconfidential) are made available on request for a charge. The availability and terms and conditions are published in the *Public Sector Statistics* publication.

**5.2 Metadata accessibility**

*5.2.1 Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical techniques is available, and differences from internationally accepted standards, guidelines, or good practices are annotated*

The introduction to the “Policy of Informing Users of Data Quality and Methodology” sets out a statistical agency’s responsibility to inform users of the concepts and methodology used in collecting, processing, and analyzing data, of the accuracy of those data, and of any other features that affect their “fitness for use.” The policy requires that all statistical products include or refer to documentation on data quality and methodology. The accompanying standards detail the requirements for documentation (and include examples for factitious datasets as illustrative). Canada has made a commendable effort to have metadata on all of its major series available to its users online, in a standard format, and free of charge. The newly developed on-line IMDB, a corporate repository of information on each of StatCan’s 400 active surveys, is to serve as a tool to help meet the aim of the policy. The IMDB provides a standard template that is to be populated with pre-existing and new metadata. The IMDB represents a model dissemination practice, and StatCan is committed to its continuous improvement.

For public sector statistics, the implementation of the policy is still a work in progress the FMS and the coverage of the public sector are documented in the *Financial Management System* and the *Guide to the Public Sector*, respectively. The former provides comprehensive information on the annual processing system for general government and the government business enterprises and some information on concepts. PID has not prepared documentation on the quarterly collection and compilation process it undertakes to produce public sector data for the quarterly CSNA. Differences between the FMS and *GFSM 1986* and the FMS and CSNA are not documented. Bridge tables showing the links between source data and FMS classifications, and between FMS classifications and *GFSM 1986* classifications are made available on request.

The newly developed on-line IMDB, a corporate repository of information on each of StatCan’s 400 active surveys, is to serve as a tool to help meet the aim of the above-

mentioned policy. The IMDB provides a standard template that is to be populated with pre-existing and new metadata. The IMDB appears to be designed more for the presentation of information about surveys than about derived data such as government finance statistics. (See also 0.3.1 about the Auditor General's review of quality management and 5.3 below about assistance to users.) Metadata will be entered in the UMDB once the templates are modified for nonsurvey based collections such as public sector statistics.

### *5.2.2 Levels of detail are adapted to the needs of the intended audience*

Less detailed concepts, sources and methods information is provided to general users in the *Public Sector Statistics*, to allow them to understand the basic framework under which the statistics are produced.

Detailed descriptions of the sources and methods, which are sufficient to allow expert users to assess the strengths and weaknesses of the public sector statistics, are published in the *FMS* manual.

## **5.3 Assistance to users**

### *5.3.1 Contact person for each subject field is publicized*

The "Policy on Spokespersons and Media Relations" calls for data contacts to be provided for each of *The Daily* releases. These contacts are professional staff that provide day-to-day explanation and interpretation. All of the major releases and data availability announcements that the mission reviewed provided these contacts. Users were very complimentary of the service they provided. The contacts were considered knowledgeable and responsive.

### *5.3.2 Catalogs of publications, documents, and other services, including information on any charges, are widely available*

StatCan maintains a comprehensive catalogue of the products and services, detailing how to obtain the product or service and its price if there is a charge. The website has been developed as a convenient, one-stop shopping center. Users are also advised in each publication of the national inquiries phone line and e-mail address. The Statistics Canada Regional Reference Centre is also widely mentioned.

Table 8. Canada: Data Quality Assessment Framework—Summary of Results:  
Government Finance Statistics—Dimensions 2–5  
(Compiling Agency: Statistics Canada)

Key to symbols: NA = Not Applicable; O = Practice Observed; LO = Practice Largely Observed; LNO = Practice Largely Not Observed; NO = Practice Not Observed.						
Element	NA	Assessment				Comments
		O	LO	LNO	NO	
<b>2. Methodological soundness</b>						
2.1 Concepts and definitions		X				
2.2 Scope		X				
2.3 Classification/sectorization		X				
2.4 Basis for recording		X				
<b>3. Accuracy and reliability</b>						
3.1 Source data		X				
3.2 Statistical techniques		X				
3.3 Assessment and validation of source data		X				
3.4 Assessment and validation of intermediate data and statistical outputs		X				
3.5 Revision studies		X				
<b>4. Serviceability</b>						
4.1 Relevance		X				
4.2 Timeliness and periodicity		X				
4.3 Consistency		X				
4.4 Revision policy and practice		X				
<b>5. Accessibility</b>						
5.1 Data accessibility		X				Divergences from <i>GFSM 1986</i> and concepts, sources, and methods for quarterly public sector statistics not documented. Documentation on concepts not separately available or complete.
5.2 Metadata accessibility			X			
5.3 Assistance to users		X				

Note: For assessments of dimensions 0 and 1, see Table 2 of the Detailed Assessments.

## V. BALANCE OF PAYMENTS STATISTICS

**For assessments of the Prerequisites of quality (O.) and Integrity (I.) dimensions, see Section O for Statistics Canada.**

### **2. Methodological Soundness**

#### **2.1 *Concepts and definitions***

*2.1.1 The overall structure in terms of concepts and definitions follows internationally accepted standards, guidelines, or good practices*

Canada's balance of payments statistics closely follows the concepts and definitions set out in the fifth edition of the *Balance of Payments Manual (BPM5)*. As of June 1997, Statistics Canada (StatCan) released revised statistics, implementing the new international standards. The new presentation format at summary level was extended as far back as 1927 for annual data and 1950 for quarterly data. Full detail data according to the new presentation format are available for quarterly data since 1983.

#### **2.2 *Scope***

*2.2.1 The scope is broadly consistent with internationally accepted standards, guidelines, or good practices*

In principle, Canada's balance of payments statistics cover all resident-nonresident transactions. Resident institutional units are defined in broad conformity with *BPM5*'s concepts of economic territory and center of economic interest. The data cover the whole economic territory of Canada.

Due to lack or limitations of data sources, some transactions with nonresidents, thought to have become more important in the recent years, are only partially covered. Among these are the following (a) financial derivatives, particularly in the liability side; and (b) e-commerce (electronic trade in services and securities), particularly conducted by individuals. Goods exports to countries other than the United States are not fully recorded in customs documents (significant adjustments are made for estimating undercoverage). Some transactions of lesser importance are not currently recorded in the balance of payments. These include (a) merchanting (that is, the buying and selling of goods that do not enter/leave the economy of the trader conducting business); (b) migrants' effects, which should be recorded in "goods" as well as in "capital transfers"; and (c) fees on foreign exchange transactions and on foreign correspondent banking, which should be recorded in "financial services." These departures are kept under review.

## 2.3 *Classification/sectorization*

### 2.3.1 *Classification/sectorization systems used are broadly consistent with internationally accepted standards, guidelines, or good practices*

The balance of payments statistics are largely in line with the classification recommended by *BPM5* as a result of a comprehensive project in 1994-97. Nevertheless, there are some departures that arise mainly from limitations in data sources or the need to protect confidentiality of respondents. These departures are identified in StatCan's publications, including metadata available on its website, and are kept under review. The main concepts, sources, and methodologies, as well as departures from international standards, are presented and discussed in StatCan's *Canada's Balance of International Payments and International Investment Position: Concepts, Sources, Methods, and Products* (July 2000).

Based on the available documentation and discussions with StatCan staff, the following departures from *BPM5*, some of them of minor importance in terms of value, can be identified:

- Goods are not broken down into the five categories recommended by *BPM5* (general merchandise, goods for processing, repairs on goods, goods procured on ports by carriers, and nonmonetary gold). Therefore, goods for processing (that is, goods that enter or leave Canada for processing without a change of ownership such as gold and, to a lesser degree, uranium, computer chips, and equipment assembly) are not identified separately within goods as recommended.<sup>17</sup>
- Some services transactions are not recorded in the service category recommended by *BPM5*. These include (a) certain goods crossing the Canadian border under construction service contracts that should be included in "construction services"; (b) part of charges of freight insurance that should be included in "insurance services"; (c) direct subscriptions to newspapers and periodicals should be included in "information services"; (d) cruise-related expenditures that are recorded in "transportation" instead of in "travel"; (e) some charters without crew that are included in "transportation services" rather than in "other business services"; (f) expenditures by seasonal and border workers that should be separately identified under "other business travel"; (g) certain expenditures related to health and education that are included in "personal travel" instead of in "health-related expenditures" and "education-related expenditures," respectively; and (h) sea transport and inland waterway transportation that are grouped under "water transportation" rather than as separate categories.

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<sup>17</sup> This would help improve international data reconciliation (about 45 countries are currently reporting statistics on goods for processing to the Statistics Department).

- The income account in the Canadian balance of payments is limited to investment income. Labor income transactions are recorded under services. These include remuneration of border and seasonal workers (such as, professional athletes, artists, etc.) as well as remuneration of local staff of Canadian embassies abroad and of foreign embassies located in Canada, among others.<sup>18</sup>
- Gross premiums and claims on insurance are included in “insurance services.”<sup>19</sup>
- Foreign money market instruments are included in “other investment,” rather than in “portfolio investment,” both in the current account and in the financial account.
- Real estate investment by persons both in Canada and abroad, is included in “other investment” rather than in “direct investment.”
- Other financial account transactions should be identified separately in their own functional category. Financial derivatives, which are not fully reflected in the statistics, are included in “other investment” rather than identified separately in “financial derivatives”; and reserve assets are presented as a separate item in “other investment” rather than in a separate “reserve assets” functional category.
- Assets and liabilities for “other investment” transactions (trade credits, loans, currency and deposits, and other assets and liabilities) are not divided into short and long term as recommended by *BPM5*.

*BPM5* recommends portfolio investment and other investment transactions be classified in four institutional sectors (monetary authorities, general government, banks, and other sectors). However, Canada’s balance of payment publications display no breakdown by institutional sector. A breakdown in six institutional sectors (federal government, federal government enterprises, provincial governments, provincial government enterprises, municipalities, and corporations) is provided for portfolio investment and other investment in publications on international investment position (IIP) and international transactions in securities. Nevertheless, this institutional breakdown does not identify transactions of monetary authorities and banks. Despite these differences from international standards in national publications, StatCan provides quarterly balance of payments data to the IMF’s

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<sup>18</sup> This could be part of BOPD’s ongoing efforts to improve the quality of service data.

<sup>19</sup> *BPM5* calls for a rearrangement into two components (a) the service charge (premiums earned less claims paid) that should be entered in “insurance services,” and (b) the difference between gross premiums and the service charge that should be recorded under “other investment” in the financial account (for life insurance) and under “current transfers” in the current account (for nonlife insurance).

Statistics Department in broad compliance with the institutional sector classification recommended by *BPM5*.

## **2.4 Basis for recording**

### *2.4.1 Market prices are used to value flows and stocks*

Canada's balance of payments statistics are expressed in Canadian dollars. Transactions in other currencies are converted into Canadian dollars at the exchange rate prevailing on the day of transaction. When the actual date of the transaction is not available, the average exchange rate for the reporting period is used. Exports of goods to the United States, which are based on U.S. customs documents, are converted into Canadian dollars at the average exchange rate for the relevant month. Some transactions are derived from end-of-period position statements; in that case, the data on stocks of assets and liabilities are converted using the exchange rate prevailing on the statement date.

Balance of payments transactions in Canada are generally valued at the price agreed on by the transactors. Thus, they may not always be at market prices, as recommended by *BPM5*, especially as a substantial portion of Canada's transactions is carried out with related foreign affiliates (over 60 percent for goods and 40 percent for services).<sup>20</sup>

In general, goods are valued according to *BPM5* on an f.o.b. basis. Goods are valued at the border of the exporting economy at the transaction value, including transportation costs to the border.

Canada's official IIP data are at book value rather than at market value as recommended by *BPM5*. Nevertheless, the market valuation of selected portfolio investment liabilities is currently provided as supplementary information to the official series, for example, foreign investment in Canadian bonds. According to the mission's counterpart, data from 1990 on the IIP would be disseminated, both in book value and in market value, in mid-2004.

### *2.4.2 Recording is done on an accrual basis*

In general, Canada's balance of payments data are compiled with the full recognition of the change of ownership criteria as specified in *BPM5* for the transaction to be recorded and their time of recording.

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<sup>20</sup> *BPM5* (paragraph 100) states that "for transactions between affiliated parties, the determination of values comparable to market values may be very difficult, and compilers may have no other choice than to accept valuations based on explicit costs incurred in production or any other values assigned by the enterprise."

However, as with other countries, merchandise trade statistics are recorded largely according to the time of clearance by customs, which may not be at the same time that the goods change ownership. Most services are recorded on an accrual basis; a major exception would be government services, which are recorded as reported mainly on a cash basis.<sup>21</sup> Interest income and expenses on commercial banks' assets and liabilities are recorded on an accrual basis, as well as interest income on reserve assets and government export credits. Interest expenses on portfolio bond liabilities are recorded on an accrual basis as well as some bank loans. Other accounts are a mixture of cash basis and derived income/expenses using an implicit rate of interest

*2.4.3 Grossing/netting procedures are broadly consistent with internationally accepted standards, guidelines, or good practices*

Grossing/netting procedures are broadly consistent with *BPM5*. Current and capital account transactions are recorded on a gross basis. Financial account transactions are recorded on a net basis, separately for the individual asset and liability components.

Several balance of payments transactions are published in a gross basis even though the source data is obtained in a net basis. The BOPD applies several grossing/netting procedures. For example, data on commercial services and investment income are collected net of withholding taxes, but published inclusive of withholding taxes.

### **3. Accuracy and Reliability**

#### **3.1 Source data**

*3.1.1 Source data are collected from comprehensive data collection programs that take into account country-specific conditions*

The data sources are broadly sufficient to compile major items of Canada's balance of payments statistics and are kept under continuous review to ensure that the data collection program remains comprehensive. The main data sources are surveys and administrative records, supplemented by benchmark and category-specific estimates. The financial press is closely monitored for information on international transactions, especially for financial account transactions such as direct investment and large portfolio investments. An events tracking system has been redesigned by the BOPD in mid-2002 to monitor international transactions on a weekly basis from a regular scanning of the business media. Tracked events are both company-specific and of a general background nature. The information is used for the editing and updating of balance of payments surveys coverage, as well as for contacting large transactors throughout the year so as to reflect significant transactions in the quarterly balance of payments estimates.

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<sup>21</sup> The government of Canada recording is moving to full accrual accounting.

The BOPD conducts 30 surveys (21 annual, 5 quarterly, and 4 monthly). Annual and monthly surveys are quasi census, while quarterly surveys have a sample coverage based on the largest relevant enterprises. Fourteen surveys are designed to obtain financial information on transactions with nonresidents and six surveys seek data on positions. Most surveys on financial transactions are applicable to all types of companies, while a few of them focus on specific types of companies. Industries covered by industry-specific surveys are: (a) financial institutions, (b) insurance companies and branches, (c) trust companies, (d) brokers, (e) transportation, (f) governments, and (g) banks.

In addition, the BOPD launched in 2000 a survey to screen companies that are identified from a variety of administrative sources and the financial press as potential balance of payments respondents. All respondents identified as having relevant balance of payments transactions are added into the BOPD mailing frame. The frame has a comprehensive coverage of transactor units engaged in balance of payments transactions (around 10,000 enterprises, including Canadian branches of foreign enterprises). Efforts are made to reconcile the mailing frame used by the BOPD surveys with StatCan's Business Register.

The BOPD is participating in the Key Provider Managers Program, which is conducted by StatCan's Enterprise Statistics Division at an institutional level in order to reduce the response burden on large firms through a customized approach to these respondents. At present, about 140 large firms with balance of payments transactions are included in the Key Provider Managers Program.

The BOPD obtains information from other divisions in StatCan, such as (a) the International Trade Division for goods data; (b) the Culture, Tourism, and Centre for Education Statistics Division for data on travel, passenger transportation, receipts and expenses on education- and health-related travel services; (c) the Service Industries Division and the Science, Innovation and Electronic Information Division, for some selected trade in services; (d) the Industrial Organisation and Finance Division (IOFD) for selected data on foreign direct investment income in Canada, and on-line access to a database that provides indicators of potential direct investment transactions with nonresidents; (e) the Transportation Division for several transportation services; and (f) the Demography Division for information on the number of migrants.

The BOPD also obtains data from administrative records mainly from (a) the Canada Customs and Revenue Agency for international transactions with foreign affiliates, on-line access to addresses from corporate income tax returns, Canadian withholdings taxes, and monthly records on travelers crossing the border; (b) the BoC, for international reserves data, Canadian bank loans, deposits, new issues by Canadian firms in foreign markets, and other financial instruments; (c) Citizenship and Immigration Canada, for information on Canadian immigrants and prospective migrants; and (d) other Canadian government sources, for government loans, government-financed export credits, official contributions to developing countries, debt forgiveness, estimates of immigrants' funds and emigrants' funds, etc.

Goods data are based on administrative records largely from Canadian customs documents. Since 1990, U.S. customs documents on imports from Canada are used by the International Trade Division to compile the data for Canadian exports to the United States. Canadian customs records are processed and published monthly by the International Trade Division. However, certain adjustments are made to align customs data series with balance of payments concepts.

Services data are mainly derived from quarterly sample surveys and annual surveys. About 60 percent of all services receipts and expenditures are based on surveys, mostly conducted by the BOPD. The remaining data are based directly or indirectly on Canadian administrative records, and U.S. sources.

- Transportation data sources include (a) for passenger transportation, administrative data, and average passenger fares estimated by the Culture, Tourism, and Centre for Education Statistics Division; (b) for inland transportation of goods, information based on services provided by resident truck operators beyond their country of residence obtained from the U.S. Bureau of Economic Analysis; and (c) for water, rail, and air transport, several industry-specific annual surveys conducted by the BOPD, supplemented with information obtained from the Transportation Division.
- Travel data sources are mainly (a) monthly Canada Customs and Revenue Agency administrative records on the number of travelers crossing the border; (b) quarterly sample surveys on expenditures of international travelers conducted by the Culture, Tourism, and Centre for Education Statistics Division; (c) estimates on the receipts and expenses of the education- and health-travel related series provided by the Culture, Tourism, and Centre for Education Statistics Division; and (d) U.S. sources for estimates on payments made by Canadians at major U.S. medical centers and by Canadian students in the United States.
- Commercial services<sup>22</sup> data (produced for 26 individual categories) are mainly compiled from a comprehensive annual survey on services transactions of some 3,000 firms in Canada, supplemented by government administrative records, and selected counterpart series from the U.S. Bureau of Economic Analysis. Three industry-specific annual surveys of some 250 insurance firms are also conducted.
- Government services data sources are mainly Canadian administrative sources. Data on spending in Canada by the U.S. government are provided by the U.S. Bureau of Economic Analysis. Insofar as official government records are used, the source data are mainly on a cash basis and, as such, are incorporated in the balance of payments.

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<sup>22</sup> Canadian publications define “commercial services” as all services but transportation, travel, and government services.

The income account in Canada's balance of payments is limited to investment income. Compensation of employees (labor income) estimates are recorded under other business services and based on administrative records and occasional studies. Estimates on investment income are obtained from survey results and ad hoc derivation procedures, such as applying reference interest market rates to outstanding positions. In general, quarterly data are estimated from preliminary data and superseded by more complete annual sources.

- Data on equity income of foreign direct investment in Canada are obtained from a quarterly sample survey provided by the IOFD, supplemented by two annual surveys conducted by the BOPD; one on financial transactions and the other on capital invested in Canada. Data on Canadian direct investment income are obtained from one quarterly sample survey and two annual surveys, except for banks, whose information are obtained from income statement data, with no discrimination between dividends and reinvested earnings.
- Data on portfolio investment income receipts (on equity and debt securities) are calculated based on yields applied to position data obtained from the Canadian version of the Coordinated Portfolio Investment Survey, which has been implemented as an ongoing annual survey since 1997.<sup>23</sup> Data on portfolio investment payments are calculated by the BOPD (a) for dividends, from quarterly and annual surveys of Canadian companies that are known to have nonresident portfolio holders; and (b) for interest payments on Canadian bonds, data are calculated based on a comprehensive database (BP2000) on a security-by-security basis that includes discount and premium interest and a change in interest payable. For interest payments on Canadian money market instruments, estimates are based on average yields applied to outstanding positions for the various instrument categories.
- Other investment data are calculated by the BOPD as follows: (a) for interest receipts on government-financed export credits and international reserves, information is obtained from official administrative records; (b) for interest received and paid by Canadian banks, information is obtained from a quarterly questionnaire; (c) for interest on deposits abroad held by the Canadian nonbank sector, data are derived using positions and relevant market yields; and (d) for interest on nonresident bank claims on and liabilities to nonbank Canadian residents, data are obtained from the U.S. Treasury, the Bank of England, and the Bank for International Settlements. For interest receipts on foreign money market instruments, estimates are based on average yields applied to outstanding positions for the various instrument categories.

Current transfers data sources comprise (a) for official payments to nonresidents and government contributions to international institutions, administrative data of the Canadian

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<sup>23</sup> The BOPD is developing a new approach to calculate income from Canadian portfolio investment abroad on a security-by-security basis as a medium-term plan.

government; (b) for private personal remittances sent abroad, data taken from the annual survey of household spending conducted by StatCan's Income Statistics Division; (c) for Canadian withholdings taxes, data from the Canada Customs and Revenue Administration; (d) for U.S. withholding taxes, data from the Internal Revenue Service; and (e) for official contributions to developing countries, data mainly from the Canadian International Development Agency.

Capital account data sources comprise: (a) for immigrants' funds, monthly administrative data from official immigration records; (b) for debt forgiveness, data from administrative records of the federal government; (c) for inheritances, estimates based on earlier studies; and (d) for intangible assets, estimates derived from surveys and media information.

Data sources for Canadian and foreign direct investment flows consist of quarterly sample surveys (337 of the most active firms in 2002) and annual surveys (4,309 firms in 2002) conducted by the BOPD, and administrative data supplemented by other sources such as the financial press. Direct investment data are obtained from the books of the companies that receive the investment. The BOPD's Foreign Affiliate Trade Statistics Survey launched for reference year 1998 goes far beyond the traditional balance of payments framework as it includes transactions between nonresidents.<sup>24</sup>

Data on Canada's cross-border transactions on securities (Canadian bonds, equities, and money market instruments, as well as foreign bonds and equities) are obtained from monthly surveys sent by the BOPD to investment dealers and direct holders such as banks, pension funds, mutual funds, money managers, and insurance companies. Portfolio investment assets positions have been surveyed annually since 1997, through a Canadian version of the Coordinated Portfolio Investment Survey (CPIS). Since the late 1990s, a major factor in portfolio equity transactions (both Canadian and foreign issued) was an acquisition strategy using shares, through which Canadian companies that acquired foreign companies or vice versa would issue treasury stock to the acquired company's shareholders. These developments are identified by the financial press and other published sources.

Financial derivatives transaction data are partially obtained from a quarterly sample survey conducted by the BOPD and from the above-mentioned monthly security survey of Canadian financial intermediaries, but data are misclassified under other investment.

Canada's other investment transactions data are obtained from surveys and administrative records:

- Data on loans provided by (a) the government of Canada and its enterprises are obtained from administrative data; (b) Canadian banks are obtained from

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<sup>24</sup> The purpose of this survey is to obtain a more encompassing measure of Canada's trade and a better understanding of Canada's direct investment abroad.

administrative data submitted by Canadian banks to the BoC; (c) corporations, including mortgage loans, are derived from a quarterly sample survey and two annual surveys. Data on (i) loan borrowings by Canadian corporations and government enterprises are obtained from annual surveys; (ii) foreign bank claims on Canada are provided by the U.S. Treasury, the Bank of England, and the Bank for International Settlements; and (iii) foreign short-term bank borrowings come from a combination of survey data and the monitoring of foreign banking data to detect large movements. Loans and borrowings under repurchase agreements (with securities used as collateral) are compiled from monthly surveys to financial intermediaries (Canadian dealers and brokers).

- Canadian banks' transactions of deposit assets and liabilities are derived from position data submitted by Canadian banks to the BoC, and from a monthly survey on gold and silver financial claims and liabilities transactions. Canadian nonbank deposit assets abroad are compiled from nonresident banking data obtained from the Bank for International Settlements. Foreign deposits from central banks at the BoC are derived from administrative data.
- Data on subscriptions to international agencies are obtained from administrative sources. Data on foreign money market instruments (that should be included in portfolio investment) are compiled from a mixture of administrative data obtained from the U.S. Treasury and the BoC, as well as monthly surveys conducted by the BOPD. Prospective migrants' assets and liabilities are derived from administrative data of Citizenship and Immigration Canada. Estimates on progress payments (on capital goods, such as airplanes) assets and liabilities are derived from information obtained from the financial press and several known respondents that are surveyed on an occasional basis. Government of Canada demand note liabilities are derived from administrative data. Trade credit and short-term receivables and payables are obtained from quarterly sample surveys and an annual survey.

Transactions in Canada's reserve assets cover official holdings of foreign exchange and other reserve assets of the Exchange Fund Account, the Minister of Finance, the Receiver General for Canada, and the BoC. The data on positions are obtained from administrative data of the government of Canada. The transactions are derived from compiling differences in monthly positions in original currencies.

### *3.1.2 Source data reasonably approximate the definitions, scope, classifications, valuation, and time of recording required*

The source data for Canada's balance of payments to a large extent use definitions, scope, classifications, valuation, and time of recording that are broadly in line with *BPM5*. The surveys conducted by the BOPD are designed to adhere to *BPM5* guidelines. Where applicable, adjustment procedures to source data are used to improve the coverage, classification, valuation, and timing of the information received by the BOPD from various data sources.

Several adjustments on goods data are made for coverage, classification, valuation, and timing. The largest adjustment on goods data comes for undercoverage of exports to countries other than the United States. For the period 1998–2001, export undercoverage was estimated at an average of Can\$11.4 billion per year, equivalent to almost 20 percent of total goods exported to non-U.S. destinations (see 3.2.2). Another important adjustment arises from including inland freight to the border for both exports and imports.

### *3.1.3 Source data are timely*

In general, source data for the compilation of quarterly balance of payment statistics are timely. Monthly merchandise trade statistics are available within six weeks after the reference month. Information based on monthly and quarterly surveys is included in the quarterly balance of payment statistics released 60 days after the reference period. The results from annual surveys are included in the first quarter release of the balance of payments about 17 months after the reference year.

Deadlines for surveys are clearly identified. Response to monthly surveys is requested within three weeks after the reference month; quarterly surveys within three weeks after the reference quarter, and annual surveys within ten weeks after the reference year. Survey respondents may send their responses by mail, fax, and electronically. If delays occur, StatCan applies well defined and structured follow-up procedures to ensure the timely receipt of respondents' data. Nevertheless, the mission's counterparts indicated that declining response rates to balance of payments surveys were unfortunately observed—like for most of StatCan surveys—in recent years.

## **3.2 Statistical techniques**

### *3.2.1 Data compilation employs sound statistical techniques*

Statistical techniques used to conduct surveys are based on sound methodologies. Surveys' results are reassessed at each exercise. Data compilation for all datasets is highly automated at all stages, from reporting to processing in StatCan. Several surveys also use electronic reporting. Queries are resolved with the respondent concerned. Large and new types of transactions are identified for follow up and checking.

In general, the reporting forms are clear, well designed, easy to complete, and appropriate for computer processing. Questionnaires are printed and addressed automatically and most of them are sent by mail to respondents. Almost all questionnaires may also be downloaded from the StatCan website. To reduce the response burden, questionnaires related to debt liabilities include preprinted data previously reported by the respondent for the last period survey.

Annual questionnaires (over 4,000 enterprises) are sent by the BOPD to StatCan's Operations and Integration Division for capturing and processing data. Extensive verification

is done before and after. All other questionnaires are fully processed by the BOPD. Verification mainly consists in comparison with previous data, historical tendency, among other practices. When there is nonresponse for quarterly surveys, the program inputs data based on previous periods responses adjusted for trends in the underlying series. Procedures to identify coding and other errors in source data and/or in processing are applied. The data undergo two kinds of editing: (a) code verification and total checks, and (b) assessing the survey results against other sources of information. Once all corrections are made, the microdata are aggregated and loaded into one of 4,000 balance of payments and IIP time series of a database, which is the basic source for all official releases of balance of payments data.

The BOPD uses a powerful tool to capture all relevant features of Canadian bonds. BP2000 is a comprehensive database implemented in 1997 (and historically relevant back to 1980) to provide a direct link between monthly flows and positions data on Canadian long-term bond liabilities on a security-by-security basis. Data are calculated from a detailed inventory; underlying amounts, rates, maturity date, and currency are obtained (monthly and quarterly) from issuers, brokers, and other sources, and further adjusted through annual surveys of Canadian borrowers. The system presents bonds divided into new issues, retirements, outstanding issues and interest accrued and payable. The mission's counterpart indicated that Canadian money market instruments are close to being integrated into the system. Domestic and foreign equities and foreign bonds are medium-term projects.

The BOPD prepares quarterly data on current account both seasonally and non-seasonally adjusted (see 5.1.2). Like most sub-annual economic time series, the balance of payments is influenced by systematic movements with more or less regular pattern that repeat every year (basically associated with the climate and institutional events). The seasonal component is removed from the current account quarterly data mainly using the X11-Arima seasonally adjusted methods. All major components of Canada's current account (goods, services, income, and current transfers) are subject to seasonality adjustments. Nevertheless, the capital and financial account of the balance of payments is not adjusted for seasonal events.

In general, the reporting forms are clear, well designed, easy to complete, and appropriate for computer processing.

### *3.2.2 Other statistical procedures (e.g., data adjustments and transformations, and statistical analysis) employ sound statistical techniques*

The International Trade Division—based on occasional studies conducted jointly with the Canada Customs and Revenue Agency, Canadian I-O tables, and certain inter-country data reconciliations—estimates undercoverage of exports to countries other than the United States. Canada values goods at the frontier of the exporting country; therefore, inland freight to the border is included with the value of goods. No estimates are made for smuggling activity, except an adjustment on imported cigarettes, very significant in the early 1990s but of minor importance currently. Another relatively minor adjustment is currently made for recording the purchase of U.S. satellite TV services.

For most data series, information for each current year is estimated from quarterly sample surveys of the largest relevant firms and superseded by data obtained from more complete annual sources (mainly annual surveys). Where regular follow ups do not produce sufficient data, amounts are imputed from past results, external information, and broader projections of annual information. Benchmark indicators are used to derive certain series for which direct measures are not available. A macro-adjustment, based on analysis of taxation records, is made to the quarterly flows to account for underreporting in surveys and operations too small to survey.

For direct investment estimates, two additional procedures are used to improve the quality of quarterly flows: (a) a system estimates flows for the nonsurveyed portion from the previous annual surveys and imputes for nonresponse until the results of annual questionnaires become available, and (b) the program also distributes the estimates by geographical area and by broad industrial grouping according to their respective importance. These estimates are based on past information as collected from annual questionnaires.

### **3.3 *Assessment and validation of source data***

*3.3.1 Source data—including censuses, sample surveys and administrative records—are routinely assessed, e.g., for coverage, sample error, response error, and nonsampling error; the results of the assessments are monitored and made available to guide planning*

In 2001, the BOPD mailed over 16,700 annual questionnaires to about 8,500 firms with an average response between 65 percent and 72 percent;<sup>25</sup> around 900 questionnaires every quarter with an average response of 75 percent; and 250 questionnaires every month with an average response of almost 100 percent.

The BOPD conducts periodic reviews in detail of all the balance of payments questionnaires in order to reevaluate the relevance of the information requested and to examine possible improvements.

Travel data released in the first quarter 2002 were based on a new survey methodology and sample adjustments made by the Culture, Tourism, and Centre for Education Statistics Division from 2000. As a result of a change in collection methods, there was a substantial increase in the overall airline travelers' response rate to the quarterly sample survey of expenditure characteristic, including their expenditures and main purpose of visit.

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<sup>25</sup> For annual questionnaires, nonrespondents represent mostly small firms that have little impact on balance of payments data.

Survey methodologies are kept under continuous review and special characteristics are studied periodically. For example, balance of payments data released in the first quarter of 2002 included a significant change in the stratification of services. The quarterly sample survey on commercial services was redesigned to improve the precision of estimation for certain categories of services. The sample was increased by 20 percent, and the new stratification went from 6 summary industry categories—where “other” was group predominant—to 28 categories of services (half for receipts and half for payments).

High-value transactions are always confirmed with respondents. Source data are analyzed in the context of revisions.

### ***3.4 Assessment and validation of intermediate data and statistical outputs***

#### ***3.4.1 Main intermediate data are validated against other information where applicable***

Survey data are extensively checked across a wide range of data sources, including administrative records from the tax authority, and several other government institutions. These include the following:

- Detailed financial information reported by banks to the BoC and insurance companies to Office of the Superintendent of Financial Institutions (OSFI). This information is used to assess direct investment data of Canadian banks, and to supplement direct investment series of branches of foreign insurance companies in Canada.
- Online access to the IOFD’s data on quarterly balance sheets and income statements to validate information received by surveys respondents.
- A list of companies having non-Canadian investments circulated monthly by Investment Canada (a branch of Industry Canada). The list is useful to complement the BOPD's mailing list.
- The Inter-Corporate Ownership Directory compiled by the IOFD is a reliable index of who owns whom in Canada.
- Survey results from other divisions of StatCan are used for data reconciliation of some specific services (computer services, research, and development services).

#### ***3.4.2 Statistical discrepancies in intermediate data are assessed and investigated***

The integration of balance of payments and national accounts statistical systems provides a well-defined framework for reconciling goods and services data through the I-O matrix.

The sources of information for flows and positions are generally independent and the results are reconciled on an ongoing basis. In the production of the IIP series, numerous spreadsheets on reconciliation between flows and positions are produced and analyzed. The

new initiative for compiling quarterly IIP data will allow to conduct ongoing reconciliation exercises between balance of payments flows and positions, as well as with other statistics, such as the national balance sheet accounts (also scheduled to be compiled on a quarterly basis).

For Canadian and foreign direct investment data, a reconciliation is conducted between year-to-year changes of positions data and the cross-border flow of information. These estimates are verified against administrative sources from time to time.

### *3.4.3 Statistical discrepancies and other potential indicators of problems in statistical outputs are investigated*

The BOPD monitors and assesses developments in the statistical discrepancy item (net errors and omissions) of Canada's balance of payments. This item has been equivalent on average to 1.1 percent of total goods' exports and imports in the past five years.

Since 1970, StatCan and the U.S. Bureau of Economic Analysis have conducted an annual reconciliation of the Canada/United States current account as a key tool in validating the data for both countries. The results are particularly relevant for Canada, whose transactions with the United States constitute about 80 percent of Canada's current account. Comparisons of detailed current account data categories and methodology are made in the course of the annual reconciliations, and appropriate revisions are made to the published data. Recent exercises have seen an expansion in the number of analyzed components, including an increasing amount of financial account items. According to the mission's counterparts, these annual reconciliations have contributed significantly to the assessment of quality and to identify strengths and weaknesses in methodologies. The results of the annual reconciliation are published by StatCan in the third quarter edition of *Canada's Balance of International Payments*, as well as by the U.S. Bureau of Economic Analysis.

## **3.5 Revision studies**

### *3.5.1 Studies and analyses of revisions are carried out routinely and used to inform statistical processes*

Analysis of the revisions for recent years is done to get a general impression of the direction and magnitude of revisions between preliminary and final data. The first quarter release of the balance of payments for each year includes a comparison between the new data and the previously published data for the previous four years. Records on the scope of the revisions and written explanations as to the reasons behind the major changes are kept current. However, a comprehensive study of revisions has not been carried out recently.

The results of investigations and adjustments made in the statistical processes are taken into account in compiling the data for the subsequent periods, as well as for revising the data for preceding periods. For example, the results of the new survey methodology on some components of travel for 2000 and 2001 were used to revise quarterly estimates from 1998.

## **4. Serviceability**

### **4.1 Relevance**

#### *4.1.1 The relevance and practical utility of existing statistics in meeting users' needs are monitored*

Canada's balance of payments statistics are closely monitored through a comprehensive and well-established process of consultations with a number of users, including representatives from the government, the private sector, and the academia. The National Statistics Council, headed by StatCan's Chief Statistician, provides advice on issues about the quality of statistics, including balance of payments statistics. There are three StatCan's advisory committees related to balance of payments statistics. The BOPD Director participates in the National Accounts Advisory Committee, which is made by experts in compiling national accounts, including a former Assistant Chief Statistician, a senior member of the U.S. Bureau of Economic Analysis, financial consultants, representatives from the academia, and key users from the government. The BOPD Director is one of the co-secretaries for the Advisory Committee on International Trade. The BOPD staff also participates in the Advisory Committee on Services Statistics. These committees meet at least once a year, and provide a good opportunity for the BOPD to identify the extent to which user's views are reflected in the ongoing work of balance of payments data development, compilation, and analysis. The committees also play a very important role in helping to prioritize developmental projects for balance of payments.

The BOPD Director also participates in the quarterly national accounts "post mortem" sessions, held one-to-two days after the quarterly release of balance of payments data. Representatives from 15 institutions are regular participants in these meetings (6 government institutions, 8 private sector financial and nonfinancial firms, and the United States Embassy). Consultations take place, when necessary, between the BOPD and other divisions of StatCan to evaluate the relevance and consistency of balance of payments statistics. Several meetings are held periodically by BOPD staff with user associations, such as the Toronto Association of Business Economics, several government agencies, and with specific users on demand.

External training is received periodically through seminars and staff exchanges, for example, the IMF Course on Balance of Payments, staff member being posted on a temporary basis to relevant statistical agencies and international institutions, etc. The BOPD staff participate and contribute with research papers at national economic conferences; for example, 6 of the 47 papers presented at StatCan's conference *Expanding Horizons, Canada in an International Context* (June 2000) were prepared by the BOPD staff. The BOPD staff have recently participated in the preparation of several international statistical manuals and guides, such as (a) the *Manual on Statistics of International Trade in Services*; (b) the second edition of *Survey Guide-Coordinated Portfolio Investment Survey*; (c) the *External Debt Statistics: Guide for Compilers and Users*; and (d) the *Report on the Survey of Implementation of*

*Methodological Standards for Direct Investment.* The BOPD staff participate in conducting training seminars on balance of payments compilation for government officials, both in Canada and abroad. The BOPD Director is a member of the IMF Committee on Balance of Payments Statistics.<sup>26</sup> Finally, the BOPD staff also participates regularly in meetings on statistical issues with international agencies (IMF, OECD, etc.) and with technical staff of other countries' statistical agencies.

No formal user's survey on balance of payments data has been conducted recently. However, the BOPD would conduct a user's survey in the near future, as established in StatCan's Quadrennial Program Report.

## **4.2 *Timeliness and periodicity***

### *4.2.1 Timeliness follows dissemination standards*

The data exceeds the timeliness standard of the SDDS, as follows:

- A quarterly balance of payments is disseminated by StatCan within 60 days after the end of the reference quarter, which is faster than the SDDS requirement of release with one quarter.
- An annual IIP is disseminated by StatCan about 75 days after the end of the reference period, which is faster than the SDDS requirement of release with two quarters.

### *4.2.2 Periodicity follows dissemination standards*

The data meet the periodicity standard of the SDDS, as follows:

- The balance of payments is compiled and disseminated according to the quarterly prescription of the SDDS.
- The IIP is compiled and disseminated according to the annual prescription of the SDDS.<sup>27</sup>

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<sup>26</sup> This committee was established in 1992 to (a) oversee the implementation of the recommendations contained in the reports of the IMF Working Parties that investigate the principal sources of discrepancy in global balance of payments statistics, (b) advise the Fund on methodological and compilation issues in the context of the balance of payments and IIP statistics, and (c) foster greater coordination of data collection among countries.

<sup>27</sup> On November 29, 2002, StatCan announced in *The Daily* that the IIP data, currently released on an annual basis, would start to be published quarterly in June 2003. At that time, quarterly time series for the IIP would be released going back to 1990. To facilitate moving

(continued)

### 4.3 Consistency

#### 4.3.1 Statistics are consistent within the dataset

Concepts, definitions, and classifications for producing quarterly balance of payments statistics are consistent both internally and with *BPM5*. In general, quarterly data are estimated from preliminary data and superseded by more complete annual sources.

Over the long run, the statistical discrepancy (net errors and omissions) of Canada's balance of payments has not been large and has been stable over time. It has averaged 1.1 percent during 1997–2001, ranging between -0.75 percent in 1997 and 1.6 percent in 1999 of total goods' exports and imports. On a quarterly basis, the statistical discrepancy has experienced larger fluctuations, from -6.1 percent to 6.3 percent, during the same five-year period. According to the mission's counterparts, these larger quarterly variations are mainly due to timing issues related to different data sources.

#### 4.3.2 Statistics are consistent or reconcilable over a reasonable period of time

When the BOPD introduces changes in source data, methodology, or techniques, historical series are reconstructed as far back as reasonably possible. Some examples are as follows:

- In May 1997, balance of payments was brought into full consistency with *BPM5*, and StatCan published detailed balance of payments time series for the period 1983 to 1996.
- In 1997, with the introduction of *BPM5*, the valuation of goods at the border rather than at the plant was introduced back to 1926.
- Data for 1998–2001 were revised based on the new methodology for estimating travel services introduced for reference year 2000.

The first balance of payments quarter release of each year identifies and explains the main data revisions made on previously published data for the previous four years. Any unusual changes in economic trends are explained in the analytical text included in the balance of payments publications.

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to quarterly data, 2002 annual data would be released in June 2003 rather than in mid-March 2003.

#### *4.3.3 Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks*

Canada's balance of payments data are broadly consistent with international merchandise trade data, national accounts, external debt, and IIP statistics. These datasets are produced by StatCan and the data benefit from internal consultations with all relevant divisions and reviews within the system of national accounts.

- The balance of payments statistics data on trade in goods are reconciled each month with the international merchandise trade data produced by the International Trade Division. Methodological differences are fully identified.
- The balance of payments data are fully integrated with national accounts statistics. Two minor differences were identified: (a) the FISIM,<sup>28</sup> which according to *BPM5* is not to be recorded in the balance of payments, and (b) undistributed profits, which are registered in the balance of payments according to *BPM5* but not registered in the national accounts as data are not available to distribute these earnings to the appropriate Canadian sectors and industries.
- Balance of payments data on cross-border transactions of banks are consistent with monetary statistics to the extent that BOPD uses bank data provided by the BoC.
- In general terms, balance of payments transactions are consistent with the IIP data to the extent that several flows and position data series are obtained by the BOPD from the same data source simultaneously. Detailed tables reconciling financial flows data with changes in the IIP data are disseminated on a regular basis.
- Finally, balance of payments components comprising external debt data are consistent, in general terms, with the correspondent external debt position data (which is a subset of the IIP liabilities data).

#### **4.4 Revision policy and practice**

##### *4.4.1 Revisions follow a regular, well-established, and transparent schedule*

The revisions policy is clearly stated in balance of payments quarterly publications, as well as for users accessing Canadian Socio-Economic Information Management System (CANSIM).<sup>29</sup> Under the revision policy, data for all quarters of the current year are subject to revision on an ongoing basis. Data for the previous four years are revised once a year with

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<sup>28</sup> Financial intermediation services indirectly measured.

<sup>29</sup> Canadian Socio-Economic Information Management System.

the first quarter release. Data for longer historical periods are revised about once every ten years. A technical note in the quarterly *Canada's Balance of International Payments* (Catalogue No. 67-001-xpb/xib) outlines the sources, scope, and size of the revisions. The revision policy is the same for all components of the Canadian System of National Accounts and it is documented in the various publications. The series for the most recent years are subject to more revisions since they are largely derived from quarterly sample surveys and estimations based on annual surveys or administrative records.

New source data are indicated in discussion papers, meetings, and on the StatCan website, as well as with the quarterly balance of payments data release.

#### *4.4.2 Preliminary data are clearly identified*

Preliminary data or first estimates are not individually identified for each data series of the balance of payments statistics, but users could refer to the revision policy stated in balance of payments publications and in the Dissemination Standards Bulletin Board. Users with direct access to CANSIM are also alerted on whether data is preliminary or revised.

The revised data are disseminated with the same level of detail as previously published for the preliminary data. For certain services series, more detail is available when the revised data are published.

#### *4.4.3 Studies and analyses of revisions are made public*

Major revisions are measured, assessed, and explained in the first quarter release of balance of payments statistics data. Studies of the effect of routine revisions are very limited and outdated. During the extended period of methodological changes, the BOPD has not conducted studies of preliminary versus revised data that would allow an assessment of the reliability of the preliminary data.

## **5. Accessibility**

### **5.1 Data accessibility**

#### *5.1.1 Statistics are presented in a way that facilitates proper interpretation and meaningful comparisons (layout and clarity of text, tables, and charts)*

Balance of payments data are released in summary form in *The Daily* (see 5.1.4). Under the "Policy on Highlights of Publications," each release is to include tables and charts (if appropriate) as well as analysis of developments in the form of highlights. These highlights, to which StatCan has devoted considerable attention over the years, are required for all publications that present statistical information or analytical findings. They are intended to convey significant findings, comparisons, and trends to assist the reader in understanding and using the publication.

Canada's balance of payments statistics are published in a clear manner; text, charts, and tables are disseminated with the data to facilitate analysis. Balance of payments publications also include a section with concepts, definitions, and data sources for the main accounts, as well as a final section where data quality assessment is made.

The data distinguish the current account, the capital and financial account, and the statistical discrepancy (net errors and omissions). Current account data are published both in seasonally adjusted and nonadjusted forms. The balance of payments statistics are not presented in the national publications according to the standard components format of *BPM5*. Nevertheless, the BOPD sends to the IMF quarterly balance of payments and annual IIP data according to *BPM5* presentation formats for their publication in the *Balance of Payments Statistics Yearbook* and *International Financial Statistics (IFS)*.

#### 5.1.2 Dissemination media and formats are adequate

Data products are available in both English and French, simultaneously. In addition to the first release in *The Daily*, balance of payments data are available in several other media and formats. Aggregate and detailed data are published in three publications available in print and in electronic format on the StatCan website:

- The quarterly publication *Canada's Balance of International Payments* (Catalogue No. 67-001-xpb/xib) provides a full set of details for the major balance of payments components with bilateral data for six major geographical areas. Every year, the first quarter issue contains the revisions for the latest four years, and the third quarter issue contains the results of the annual current account reconciliation with the United States.
- The monthly publication *Canada's International Transactions in Securities* (Catalogue No. 67-002-xie/xif) contains information on sales, purchases, and net transactions in foreign and Canadian bonds and stocks and in Canadian money market instruments. Supplementary tables include details on Repo loans and on positions for Canadian bonds and money market instruments.
- The annual publication *Canada's International Transactions in Services* (Catalogue No. 67-203-xpb/xib) provides a full breakdown of service transactions by category for three geographical areas. A full breakdown of commercial services is also presented according to the country of control, affiliates, and the industry-sector of the Canadian companies. The service categories are presented on the basis of *BPM5*.

The balance of payments quarterly release *Canada's Balance of International Payments* has 78 tables. There are four overview tables, two summary tables, 19 tables on the current account, 31 tables on the financial account, and 22 tables on balance of payments data by six geographical areas. The overview tables present quarterly data for the current year and the two previous years and annual data for the last three years; the other 74 tables present quarterly data for the current year and previous five years, and annual data for the last five

years. Relevant data are also published in a seasonally adjusted form. These are presented in eight tables, two summary current account tables, two tables for goods, two tables for services, one table for investment income, and one table for current transfers.

Virtually all balance of payments data series are available in CANSIM; including some additional series that are not available in the publications. Very few summary quarterly and annual summary balance of payments data series are disseminated without charge on the StatCan website. Most users with whom the mission spoke were critical of the cost of many StatCan's products, especially time series on CANSIM.

### *5.1.3 Statistics are released on a preannounced schedule*

A schedule of release dates for balance of payments data, as well as for 29 others of StatCan's major economic indicators, is published for the coming calendar year at the end of November in *The Daily*, the agency's official release bulletin. These dates are also available on *The Daily* module on the StatCan website. In addition, on the last working day of each month, *The Daily* publishes an entire set of release dates for these indicators for the coming month, as well as dates for other major releases. Each Friday, *The Daily* publishes a list of release dates for the coming week.

Overall, the record of meeting release dates is good. In 2002, all of the 30 products met their preannounced release date. Balance of payments statistics have been released on the preannounced dates each quarter for at least the past ten years.

### *5.1.4 Statistics are made available to all users at the same time*

*The Daily*, as outlined in the "Policy on Statistics Canada's *Daily* (Official Release)," is the official release bulletin. Its purpose is to disseminate summary findings of statistical programs or major conclusions of analytical products. In doing so, it provides a single, comprehensive source of information on the agency's offerings. StatCan considers the vehicle as unique among the world's statistical agencies. *The Daily* has been an Internet vehicle since 1995, and has been published in hard copy since 1932, each working day. With two exceptions, release time is 8:30 a.m. Eastern time. The two exceptions are the Consumer Price Index and Labour Force Survey, both of which by tradition are released at 7:00 a.m. Eastern time.

Release in *The Daily* marks the passage of data, analysis, or products to the public domain. Until its release in *The Daily*, data are considered "protected," and may not be disseminated outside StatCan except in the following cases: (1) where validation by an external organization is necessary, (2) when sponsors of cost-recovery programs are granted access for a reasonable period prior to release, and (3) where sources of administrative data, and/or any other organization authorized by the source organization, are granted access to data developed from those files. These exceptions still require a formal release in *The Daily* within a relatively short delay.

For the balance of payments, data are available to journalists in a press lock-up at 7:00 a.m. Eastern time on the release day. The lock-ups are held in the Main Building in a secure media room, with computer installations (provided by the journalists) and telecommunication lines. Journalists, on entry to the lock-up, are provided with a diskette containing *The Daily* formatted in ASCII text. The lock-up provides them with time to reformat the text in their own software. At release time precisely (8:30 a.m. Eastern time), a Media Relations officer flips a set of toggle switches allowing the journalists to file electronically. In most cases, their articles are transmitted directly on to their news wire.

#### *5.1.5 Nonpublished (but nonconfidential) subaggregates are made available upon request*

Available nonpublished balance of payments data series are released to the public upon demand provided that they meet StatCan quality standards. Unpublished (but nonconfidential) specialized balance of payments tabulations may also be provided on a cost-recovery basis. However, there is little potential for additional data to be released as almost all of the nonconfidential data are already released.

No specific reference is made in balance of payments publications (see 5.1.1) on the availability of nonpublished subaggregates and the terms and conditions at which they are made available. The only BOPD publication that identifies specific nonpublished subaggregates (19 tables), available on a cost-recovery basis is *Canada's International Investment Position*.

## **5.2 Metadata accessibility**

### *5.2.1 Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical techniques is available, and differences from internationally accepted standards, guidelines, or good practices are annotated*

The introduction to the “Policy of Informing Users of Data Quality and Methodology” sets out a statistical agency’s responsibility to inform users of the concepts and methodology used in collecting, processing, and analyzing data, of the accuracy of those data, and of any other features that affect their “fitness for use.” The policy requires that all statistical products include or refer to documentation on data quality and methodology. The accompanying standards detail the requirements for documentation (and include examples for factitious datasets as illustrative). Canada has made a commendable effort to have metadata on all of its major series available to its users online, in a standard format, and free of charge. The newly developed on-line IMDB, a corporate repository of information on each of StatCan’s 400 active surveys, is to serve as a tool to help meet the aim of the policy. The IMDB provides a standard template that is to be populated with pre-existing and new metadata. The IMDB represents a model dissemination practice, and StatCan is committed to its continuous improvement.

Documentation, as statisticians around the world know well, is time consuming for expert staff and is often the residual claim on time after the numbers are out. The IMDB appears to

be designed more for the presentation of information about surveys than about derived data such as balance of payments (See also 0.3.1 about the Auditor General's review of quality management and 5.3 below about assistance to users). A new presentation format that conforms to the existing design of the IMDB, but is more suitable for the presentation of balance of payments data sets, has been developed. The mission's counterpart indicated that metadata using this new format is almost complete and will be available once translated to meet the official languages policy of Canada.

Extensive documentation on Canada's balance of payments methodology, data sources, and statistical techniques is available on the StatCan website *Canada's Balance of Payments and International Investment Position* (Catalogue No. 67-506-xpe/xpf-xie/xif) released on July 2000. This publication is available for a fee as paper publication in both English and French and free of charge on the StatCan website. Periodic updates on concepts, sources, and methodology are included, as relevant, in the quarterly publication *Canada's Balance of International Payments* (Catalogue No. 67-001-xpb/xib). A four-page summary methodology is also available on the Dissemination Standards Bulletin Board since December 11, 2002. All three statements of methods note cases of deviations from international standards.

#### *5.2.2 Levels of detail are adapted to the needs of the intended audience*

The metadata mentioned in 5.2.1 allow users to obtain comprehensive and up-to-date information on balance of payments data sources, compilation methods, and techniques.

### **5.3 Assistance to users**

#### *5.3.1 Contact person for each subject field is publicized*

The "Policy on Spokespersons and Media Relations" calls for data contacts to be provided for each *Daily* release. These contacts are professional staff that provide day-to-day explanation and interpretation. All major releases and data availability announcements that the mission reviewed provided these contacts. Users were very complimentary of the service they provided. The contacts were considered knowledgeable and responsive.

StatCan staff are available to answer queries from users by telephone, fax, and e-mail, as is stated on the StatCan website and publications. Contact points (phone number, fax number, and e-mail addresses) are listed in the balance of payments publications and on the StatCan website. Prompt and knowledgeable service is available to users of balance of payments statistics. No periodic surveys of users are in place to monitor assistance to users.

#### *5.3.2 Catalogs of publications, documents, and other services, including information on any charges, are widely available*

StatCan maintains a comprehensive catalogue of the products and services, detailing how to obtain the product or service and its price if there is a charge. The website has been developed as a convenient, one-stop shopping center. Users are also advised in each

publication of the national inquiries phone line and e-mail address. The Statistics Canada Regional Reference Centre is also widely mentioned.

StatCan website lists the current and previous issues of the quarterly balance of payments release and related tabulations of longer time series. A complete catalogue of StatCan publications that lists all web and paper publications, including those that deal with balance of payments is available on the StatCan website. The StatCan website includes information on publication prices. More than 70 publications on balance of payments statistics are included in the catalogue, covering a wide range of subjects, such as current and historical data analysis, concepts and methodology, intercountry data reconciliation, and a list of research papers. The latter cover issues relevant to the current account, the financial account, and the IIP.

Table 9. Canada: Data Quality Assessment Framework—Summary of Results:  
Balance of Payments Statistics—Dimensions 2–5  
(Compiling Agency: Statistics Canada)

Key to symbols: NA = Not Applicable; O = Practice Observed; LO = Practice Largely Observed; LNO = Practice Largely Not Observed; NO = Practice Not Observed.						
Element	NA	Assessment				Comments
		O	LO	LNO	NO	
<b>2. Methodological soundness</b>						
2.1 Concepts and definitions		X				Classifications of transactions and institutional sectors depart from <i>BPM5</i> in a number of ways.
2.2 Scope		X				
2.3 Classification/sectorization			X			
2.4 Basis for recording		X				
<b>3. Accuracy and reliability</b>						
3.1 Source data		X				
3.2 Statistical techniques		X				
3.3 Assessment and validation of source data		X				
3.4 Assessment and validation of intermediate data and statistical outputs		X				
3.5 Revision studies		X				
<b>4. Serviceability</b>						
4.1 Relevance		X				
4.2 Timeliness and periodicity		X				
4.3 Consistency		X				
4.4 Revision policy and practice		X				
<b>5. Accessibility</b>						
5.1 Data accessibility		X				
5.2 Metadata accessibility		X				
5.3 Assistance to users		X				

Note: For assessments of dimensions O and 1, see Table 2 of the Detailed Assessments volume.

## VI. BANK OF CANADA AND MONETARY STATISTICS

**Dimensions O and 1, which relate mainly to institutions, concentrate on the Bank of Canada (see Section O for dimensions O and 1 for Statistics Canada). For dimensions 2 through 5, relevant aspects carried out by both the Bank of Canada and Statistics Canada are discussed in this section on monetary statistics.**

### 0. Prerequisites of quality

#### 0.1 *Legal and institutional environment*

##### 0.1.1 *The responsibility for collecting, processing, and disseminating statistics is clearly specified*

The responsibility for compiling and disseminating information on the Canadian financial sector is a shared responsibility between federal and provincial governments institutions (see 0.1.2). Within the federal government, the role for collecting, compiling, and disseminating monetary statistics by the Bank of Canada (BoC) is well known.<sup>30</sup>

The BoC engages in statistical work under its legislative authority to gather data from financial institutions for the purpose of conducting monetary policy. The Bank of Canada Act, which provides the legal and institutional framework for the BoC, does not mandate publication of statistics. The BoC has a tradition of doing so as a public service.

The BoC has a long established tradition of publishing monetary statistics since it began operation in March 1935.<sup>31</sup> Monthly statistics for commercial banks and for the BoC have been collected, compiled, and disseminated by the BoC since January 1926 and March 1935, respectively. The BoC has been disseminating quarterly statistics for trust and mortgage loan companies since the fourth quarter of 1960 and for credit unions and caisses populaires since the first quarter of 1967. The BoC provides data on its own operations to Statistics Canada (StatCan).

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<sup>30</sup> The terminology for the characterization and subsectorization of the financial corporations sector in this section are mostly the one used in Canada, which, in some instances, is not the same as used in the *MFSM*.

<sup>31</sup> Monetary statistics, as used in this report and in the *Monetary and Financial Statistics Manual*, consist of data on the assets and liabilities of an economy's financial corporations sector. Financial statistics consist of data on the financial assets and liabilities of all sectors of an economy.

The BoC's Corporate Services Department is responsible for preparing the BoC's and the Exchange Fund Account's balance sheets, which they provide to the Data Resources Division (DRD) in the Monetary and Financial Analysis Department (MFA). The DRD is the only unit at the BoC involved in the compilation and dissemination of monetary statistics for Canada.

The demarcation between monetary and financial statistics for most countries is clear. In the case of Canada, both the BoC and StatCan are involved in the collection and production of monetary statistics for the subsectors of the financial corporations sector. In addition, StatCan produces financial statistics for all sectors of the Canadian economy.<sup>32</sup>

#### *0.1.2 Data sharing and coordination among data producing agencies are adequate*

Canada has a federal government, and powers and jurisdiction are assigned to the federal or provincial and territorial or local governments according to the Canadian constitution or negotiated arrangements. The federal government has the sole jurisdiction for commercial banks while provincial governments largely regulate credit unions, caisses populaires, securities dealers, and mutual funds. Both levels of government regulate insurance and trust and loan companies. Accordingly, financial institutions are required to submit financial returns and information to federal and/or provincial agencies and might even have to submit returns to more than one federal institution, e.g., commercial banks have to submit information to satisfy supervisory requirements and to StatCan to satisfy the obligations of the Statistics Act.

In 1998, the BoC, in partnership with the Office of the Superintendent of Financial Institutions (OSFI) and the Canada Deposit Insurance Corporation (CDIC), developed a system to collect, validate, manage, and maintain financial returns from deposit-taking institutions. This system, known as the Tri-Agency Database System (TDS), is housed at the BoC but is jointly owned and operated by the three agencies. Each of the three agencies imports data from TDS into their own systems, which they use for monitoring, aggregation, and analysis. The BoC and the OSFI each publish specific data sets.

Data sharing and coordination among the BoC, OSFI, and CDIC are exemplary, and as noted in 0.1.3 and 0.1.4, the laws governing these three institutions call for protecting confidentiality of individual responses and provide authority for mandatory reporting. The BoC also uses statistics for financial institutions compiled by StatCan to derive monetary statistics. Although the cooperation between the BoC and StatCan is close, it would be useful to review and articulate the BoC and StatCan roles and data sharing for statistics on the financial sector for the information of all concerned. This would better serve the shared

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<sup>32</sup> Henceforth, from time to time, this report refers to both monetary and financial statistics to encompass both the statistics for the financial corporations sector and the broader coverage of financial statistics but only as they relate to financial institutions.

statistical mission of the two agencies. However, cross-agency cooperation in some areas is currently constrained by legislation. Data collected and compiled on financial institutions by StatCan are covered by the Statistics Act and, accordingly, the list of entities covered in each industry and individual returns are not now shared with the BoC to comply with the law's confidentiality requirement. The Financial Systems Database Project recently proposed by the BoC may be an opportunity to address this issue.

### *0.1.3 Respondents' data are to be kept confidential and used for statistical purposes only*

Respondents' data are kept confidential and used for statistical purposes only. Section 16 of the Bank of Canada Act requires that each officer and employee of the BoC swear an Oath of Secrecy. The Oath states that the person shall not communicate to any person not entitled to any confidential information relating to the business or affairs of the BoC. Statistics obtained from financial institutions would be considered to be protected information. Any staff member who breached the Oath of Secrecy could, under Section 33 of the Act, be liable on summary conviction to a fine of not more than Can\$300,000.00 or imprisonment for up to six months, or both. In addition, data from financial institutions must by law (Subsection 636(1) of the Bank of Canada Act) be kept confidential by the BoC. Employees of the BoC receive on-the-job training on how to protect the confidentiality of the data. Confidentiality of individual respondent's data is covered in Article 22 of the Office of the Superintendent of Financial Institutions Act and Article 45 of the Canada Deposit Insurance Corporation Act.

All employees of the BoC's four economic departments (about 300 people), some users outside the economics departments, and some IT support staff have access to the Economics Timeseries System (ETS) databases, which include individual bank data to compile aggregated data, but does not include all data reported by the banks. It includes most data routinely used for monetary policy purposes. The BoC's policy is that employees should be able to determine what they need in the course of doing their jobs. While it is not intended as a security measure, access to the individual bank data is relatively complicated, so most users outside of DRD would seek assistance from DRD staff. Based on this, the DRD is comfortable that those employees who actually do access this data are those who need it to do their work. Most aggregated data (i.e., total commercial banks) are available to all internal and external interested parties.

The OSFI's *Manual of Reporting Forms and Instructions for Deposit-Taking Institutions*, on its website, indicates the purpose of each return collected and if and where each will be published. It also states that data will be published only on a total-for-all institutions basis. Reporters are also reassured informally that the information they provide the BoC will not be disclosed.

There is one exception to the belief on the part of BoC that, because of the number of deposit-taking institutions in Canada and the diversity of their business, it is very unlikely that the BoC's limited dissemination could jeopardize individual information. For the geographical exposures that are reported to and subsequently published by the Bank for International Settlements, where data are collected for over 250 countries, the chance of

breaching confidentiality is much greater. Therefore, data are examined by the BoC each quarter before they are published and the Bank for International Settlements is advised which countries to mask in their publication.

Financial institutions send their TDS data over the Internet to a server in a firewall protected DMZ (demilitarized zone). The transmission is encrypted using SSL (secure socket layer) and all data stored on the server is encrypted with PGP (pretty good privacy). The data are only decrypted after they have been retrieved to a server on the internal network where they are accessed by CDIC and OSFI staff using VPN (virtual private network) and authentication technology similar to that used by teleworkers.

Internally, systems and data are password protected and users are advised of the sensitivity of the data when they access the shared timeseries database in the ETS. The internal network is protected by firewalls. Access from outside the BoC's premises (e.g., for telework) is carefully controlled using an encrypted VPN and authentication techniques.

All data made public through StatCan's Canadian Socio-Economic Information Management System (CANSIM), publications, or requested directly from StatCan clients services are tested for confidentiality using a computer application created by StatCan. Confidentiality rules followed are those generally accepted and used in StatCan for Business Surveys. Cells that are deemed confidential are not published (residual disclosure is also tested).

*0.1.4 Statistical reporting is ensured through legal mandate and/or measures to encourage response*

Subsection 24.1(2) of the Bank of Canada Act obligates federally regulated financial institutions (commercial banks and federally regulated trust companies, insurance companies, and credit union centrals) to provide the BoC with such information as it may require, at such times and in such form as the BoC may require. While there are no penalties, the BoC provides quarterly reports to the deposit-taking institutions on each individual institution's own filing record, i.e., the number of returns filed late or filed with errors, as well as the number of revisions to previously reported data that were filed in a given period.

The BoC obtains data from the OSFI, which is authorized by legislation to share with the BoC information that it obtains from federally-regulated financial institutions. The OSFI, which operates under the Office of the Superintendent of Financial Institutions Act, collects and disseminates information from commercial banks (the Bank Act), credit unions (the Cooperative Credit Associations Act), insurance companies (the Insurance Companies Act), and trust and loan companies (the Trust and Loan Companies Act).

## **0.2 Resources**

### *0.2.1 Staff, financial, and computing resources are commensurate with statistical programs*

Adequate staff and computer resources are available at the BoC. The main computer system components include (1) an Oracle Database on a Unix server (the TDS system) used to store the data as received, and (2) Fame time series databases, programs, and procedures to manipulate the data, also on a Unix server.

The BoC is organized into ten departments. Department chiefs are responsible for the operations in their own areas and for ensuring that the policies and values of the BoC are implemented. Each department chief establishes an annual agreement with a member of the Executive Management Committee that outlines overall objectives of the department.

The DRD has 19 staff members: one assistant department chief, two statisticians, two managers, two principal analysts, ten data resources analysts, and two systems development analysts. It develops and maintains the knowledge, systems, and procedures needed to produce high-quality financial data. The division manages production databases containing monetary and credit aggregates and their components, interest rates, and data on activities in the capital markets. Normal business includes evaluating data quality and communicating with data sources, manipulating data to construct and report on the various aggregates, providing estimations, and evaluating statistical and accounting methods and concepts. The division is also responsible for delivering timely and accurate data to government, international agencies, financial institutions, and the general public.

Staff are well trained and motivated and the BoC fosters an atmosphere where team spirit can flourish. The workplace environment is ideally suited to individual and collaborative work; the formal and informal space and the campus-like setting combine to support creative thinking. For example, the Library's dynamic staff go out of their way to meet the research needs of employees—providing access to a wide variety of information sources and doing literature searches for users.

DRD staff are aware of the importance of the data they collect, aggregate, estimate (where needed), and disseminate. They meet frequently to discuss issues and occasionally to discuss principles, and they are aware of escalation procedures when circumstances warrant it.

### *0.2.2 Measures have been implemented to ensure efficient use of resources.*

Management provides strong direction for programs to use resources efficiently and plan for changing needs. The BoC's Board is responsible for general oversight of the BoC and has specific duties related to finance, human resources, and overall administration. In 2001, the Board supported a change in the structure of BoC's senior management team with the creation of an Executive Management Committee to enhance the BoC's strategic management capabilities at the executive level.

Apart from annual planning exercises, resource usage is examined on an ad hoc rather than regular or systematic basis. For example, the BoC recently examined the number of staff years devoted to maintenance and support of the TDS system and data to ensure that anticipated improvements in efficiency had been realized.

### **0.3 *Quality awareness***

#### *0.3.1 Processes are in place to focus on quality*

The broad oversight responsibility of BoC's Board includes monitoring the effectiveness of the monetary policy formulation process, such as standards applied in gathering information, together with the quality of both the staff and the analysis they provide. The Board follows best governance practices appropriate to the BoC. There is recognition throughout the BoC that quality builds trust and is a cornerstone of statistical work. Quality is stressed. The annual work plan of the DRD includes a section on quality assurance and improvements.

#### *0.3.2 Processes are in place to monitor the quality of the collection, processing, and dissemination of statistics*

Both automated and manual processes have been established and are used by the BoC to monitor the quality of the data:

- (1) Financial institutions receive e-mail confirmation that each return transmitted has been received by TDS and whether it failed any mathematical validity checks (e.g., assets must equal liabilities plus shareholders' equity).
- (2) In addition to the mathematical validation checks, TDS also provides to the data analysts at BoC information on reported amounts that fail reasonableness rules testing. The analysts then decide if they should contact the financial institution to obtain confirmation of the data or possibly corrections to the data.
- (3) Once the data have been aggregated using Fame, the results are reviewed by analysts in the DRD as well as by economists in other divisions in the department, and questions that arise from these reviews result in drilling down back to source, at which time further discussion with the source entity may be required to facilitate judgment of data quality.

There is no body distinct from the BoC and StatCan that provides guidance on the quality of monetary statistics, and on strategies from improving data production. While there are no periodic users' surveys or other formal/systematic processes to obtain feedback from users on data quality issues, there is an informal network to ensure complaints and questions are funneled back to the supplying organization where they are addressed.

*0.3.3 Processes are in place to deal with quality considerations, including tradeoffs within quality, and to guide planning for existing and emerging needs*

Since there is a relatively short reporting lag for the commercial banks' Monthly Return of Average Assets and Liabilities (i.e., 11 business days), the data received could be of lesser quality than those prepared over a longer time span. An assessment of the trade offs between quality and accuracy was done when the reporting lag was set. The BoC discussed the issue with the commercial banks, who indicated that their internal management were also interested in receiving their own internal data in a short period of time and, therefore, the BoC staff believe that quality is also present even under short deadlines. In addition, many commercial banks use consolidated total banks data (compiled by the BoC and provided to the commercial banks) to calculate their market shares—another incentive for them to ensure quality. Finally, while the BoC's preference is for data to be perfect as initially reported, commercial banks are not discouraged from reporting occasional revisions if warranted, even for historical data, thus maintaining the integrity of the time series.

There is no advisory council or a technical committee within (or outside) the BoC that reviews the accuracy, timeliness, and comprehensiveness of monetary statistics, as well as their adherence to international statistical standards. However, a Data Committee in the MFA Department, which is composed of six staff members that usually meet twice a month, discusses data related issues and problems. For example, an issue was raised in 2002 on the capturing of income trust data in the BoC's Capital Markets Statistics System database resulted in the preparation of a detailed proposal for the capturing of a significant and growing segment of the Canadian capital markets.<sup>33</sup>

**1. Integrity**

**1.1 Professionalism**

*1.1.1 Statistics are compiled on an impartial basis*

Statistics are compiled by the BoC on an impartial basis. Professionalism of the staff involved with monetary statistics is sought through the recruitment and promotion processes as well as by the assignment structure. The recruitment process focuses on candidates with post-graduate qualifications or with acquired experience through “on-the-job training” in economics, statistics or accounting. The assignment structure encourages the staff to prepare research papers, attend training courses and seminars on monetary policy and statistics, as

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<sup>33</sup> Income trusts are financial vehicles structured so that near 100 percent of the income routinely generated from mature assets, such as oil and gas wells, is distributed to unit holders. This investment vehicle, which has attributes similar to both debt and equity, has been expanding in the nineties to other sectors. This has been a valid proposal for capturing a significant and growing segment of the Canadian capital markets.

well as to deliver lectures within and outside the BoC. The BoC has built an environment of trust and professionalism among its staff. Staff understand the need to produce reliable high-quality data.

In recent years, the MFA Department has taken several steps to increase the separation between DRD and economists responsible for policy advice and economic model building. DRD positions have been upgraded and two higher level positions added. Participation of economists outside DRD in the preparation of the data has been eliminated, though data issues are discussed both with the DRD staff and with other department members.

While there are no statutory provisions and/or other formal arrangements, neither senior management nor the MFA Department's chief participate in the preparation of monetary statistics.

Staffing of DRD is conducted in accordance with human resource policies. These policies cover a range of relevant areas such as bilingualism, relocation, and probation, as agreed under labor legislation including the Employment Equity Act, Canadian Human Rights Act, and Official Languages Act. As with all BoC staffing, the selection process is competency-based.

The professionalism of staff working on the monetary statistics is promoted through participation in professional conferences and workshops, as well as various training activities. For example, in 2002, a ten-week, two-hours per week economics seminar series was presented for those staff with no formal economics training. There were also several technical seminars provided to staff on items like float, the reporting instructions, and securitization. Staff are also encouraged to advance their learning through formal school programs.

Some staff in the DRD are familiar with both academic and policy uses of monetary data. Two forthcoming working papers by MFA staff illustrate well this type of work being carried out: (1) *The Construction of Continuity-Adjusted Monetary Aggregate Components*; and (2) *Dynamic Factor Analysis for Measuring Money*. Some staff are also familiar with the statistical framework of the System of National Accounts used at StatCan. There is active communication with BoC economists who use the data and they point out academic and practical questions of current concern.

#### *1.1.2 Choices of sources and statistical techniques are informed solely by statistical considerations*

The choice of sources and statistical techniques is based solely on timeliness and statistical consideration that are explained in methodological notes/footnotes to data tables (see discussion in 0.3.3).

*1.1.3 The appropriate statistical entity is entitled to comment on erroneous interpretation and misuse of statistics*

The BoC staff seeks to prevent misinterpretation or misuse of statistics by providing explanatory materials to external users. The BoC is entitled to comment on erroneous interpretation and misuse of statistics. A recent example involves a report in the media that exaggerated the size of U.S. dollar bank accounts held by Canadians. Shortly after this report, the BoC issued a comprehensive report that correctly explained the size of U.S. dollar denominated bank accounts.

A clipping service has existed for staff at the BoC for several years and the financial press is followed closely by analysts to ensure BoC data are used properly, among other things.

**1.2 Transparency**

*1.2.1 The terms and conditions under which statistics are collected, processed, and disseminated are available to the public*

The Bank of Canada Act and the Bank Act, which set the terms and conditions under which statistics (on commercial banks and credit and monetary aggregates) are compiled and protect confidentiality of individual responses, are available to the public in both French and English on the Justice Department's website.

*1.2.2 Internal governmental access to statistics prior to their release is publicly identified*

Internal government access to monetary statistics is only to the BoC's two partners in the TDS. The fact that all three institutions have access to data prior to release is known to, and implicitly agreed to by, the reporting commercial banks. No other government agencies have prior access.

Only analysts and economists in the MFA, including senior officers in the department, have access to monetary statistics data before they are released.

*1.2.3 Products of statistical agencies/units are clearly identified as such*

BoC's publications such as the *Weekly Financial Statistics (WFS)* and the *Bank of Canada Banking and Financial Statistics (BFS)* are clearly identified with the BoC's logo. The same applies to the website.

*1.2.4 Advance notice is given of major changes in methodology, source data, and statistical techniques*

Major changes to methodology, source data, and statistical techniques are rare but when they occur a "Note To Users" is included in prior issues of the publication. Breaks in series caused

by methodological or institutional change are documented in the annual *Notes to the Bank of Canada Banking and Financial Statistics*.

### **1.3 Ethical standards**

#### *1.3.1 Guidelines for staff behavior are in place and are well known to the staff*

BoC-specific and some government-wide policies and guidelines set ethical standards for BoC staff. A “New Employee Kit,” which contains the detail of BoC’s policies on conflict of interest, information security, protecting confidentiality, electronic networks, harassment, bilingualism, and safeguarding confidence in the institution and its output, including statistics on the financial corporations sector, is provided by the Human Resources Department. In addition, The New Employee Handbook is provided to the new employee. Periodically, staff are reminded of these guidelines. There are no cases in which these guidelines were violated.

The BoC’s Conflict of Interest Policy sets out the general principle that staff must not profit, nor enable others to profit, from information that they have obtained through their employment at the BoC and which is not available to the public. Moreover, certain staff are explicitly prohibited from directly owning securities issued by financial institutions; trading in futures, options or other leveraged derivatives of currency or interest rate instruments. All staff must avoid engaging in activities outside of the BoC that will affect their capacity to perform their duties impartially and objectively.

## **2. Methodological Soundness**

### **2.1 Concepts and definitions**

#### *2.1.1 The overall structure in terms of concepts and definitions follows internationally accepted standards, guidelines, or good practices*

Both the BoC and StatCan compile components for monetary statistics—that is, statistics on the monetary authorities, commercial banks, and other banking institutions—as defined by the *Monetary and Financial Statistics Manual (MFSM)*. One BoC division (DRD) and two StatCan divisions are involved in this process. At StatCan, the Industrial Organisation and Finance Division (IOFD) and Public Institutions Division (PID) collect and compile financial statistics for private and public financial institutions, respectively. In addition, the Income Expenditure Accounts Division (IEAD) uses the output from IOFD and PID along with information from other sources to compile and disseminate a national balance sheet of all sectors of the Canadian economy.<sup>34</sup>

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<sup>34</sup> As the work of the IEAD and the PID is covered in detail in the sections on national accounts (see section I), and government finance statistics (see Section IV), respectively, this section will concentrate on the BoC and StatCan’s IOFD.

The BoC disseminates credit and monetary aggregates, which rely on data from commercial banks, nonbank financial institutions, and securities issued by nonfinancial businesses. Commercial bank data are based on the individual monthly reports of the reporting institutions. They relate to monthly average of Wednesdays until January 1994 and monthly average of days thereafter. Data for nonbank financial institutions, which are from StatCan, are available quarterly; for months between quarter-ends, and following the latest quarterly data available, monthly data are estimated.

The methodological framework used by DRD to compile statistics listed in Table 10 reflects concepts and principles that follow the recommendations of the Canadian Generally Accepted Accounting Principles that are considered to be good practices and are largely consistent with the *MFSM*, including only booked-in-Canada assets and liabilities and the residency criteria according to the fifth edition of the *Balance of Payments Manual (BPM5)*. These aggregates are not consolidated in an analytical framework in which the broad money liabilities of the depository corporations, the claims of these corporations on the resident and nonresident sectors of the economy, and other balance sheets categories are separately identified. In addition, there are several departures from the *MFSM* for the individual balance sheets of the financial corporations.

The building blocks exist from the BoC and StatCan databases to construct consolidated balance sheets in which the respective claims and liabilities within the depository corporations sector are identified to allow for a full consolidation. These sectoral balance sheets would cover the following:

- the central bank (consolidation of the accounts of the BoC and the Exchange Fund Account),
- the other depository corporations, and
- the depository corporations (consolidation of the sectoral balance sheets of the central bank and the other depository institutions).

Table 10. Canada: Selected Credits Measures and Monetary Aggregates Published by the BoC

<b>Selected credits measures</b>	<b>Monetary aggregates</b>
Household credits broken down by (1) commercial banks; (2) trust and mortgage loan companies; (3) credit unions and caisses populaires; (4) life insurance companies; (5) nondepository credit intermediation and other institutions; and (6) special purpose corporations (securization).	Gross M1 consists of currency outside banks plus personal checking accounts plus current accounts (other demand deposits) plus adjustments to M1 (continuity adjustments as well as adjustments for demand deposits of other commercial banks).
Residential mortgage credits broken down by (1) commercial banks; (2) trust and mortgage loan companies; (3) credit unions and caisses populaires; (4) life insurance companies; (5) pension funds; (6) nondepository credit intermediation and other institutions; (7) National Housing Authority mortgage-backed securities; and (8) special purpose corporations (securization).	Total M1 consists of currency outside banks plus commercial banks' demand deposits plus adjustments to M1.
Short-term business credit broken down into (1) Canadian dollars (a) by commercial banks; (b) nondepository credit intermediation; and (c) other institutions; (2) commercial banks foreign currency loans to residents; (3) special purpose corporations (securization); (4) bankers acceptances; and (5) commercial papers issued by nonfinancial corporations.	M2 consists of total M1 plus commercial banks' nonpersonal notice deposits plus commercial banks' personal savings deposits plus adjustments to M2 (continuity adjustments as well as notice deposits of other commercial banks).
Other business credits broken down into (1) nonresidential mortgages by (a) commercial banks; (b) trust and mortgage loan companies; (c) credit unions and caisses populaires; (d) life insurance companies; and (e) nondepository credit intermediation and other institutions; (2) leasing receivables by (a) commercial banks; (b) trust and mortgage loan companies; and (c) nondepository credit intermediation institutions; (3) special purpose corporation (securization); (4) bonds and debentures; and equity and warrants.	M3 consists of M2 plus commercial banks' nonpersonal term deposits plus foreign currency deposits of residents plus adjustments to M3 (continuity adjustments as well as term deposits of other commercial banks).
	M2+ consists of M2 plus trust and mortgage loan companies' total deposits plus credit unions and caisses populaires' total deposits plus life insurance company individual annuities plus personal deposits at government owned savings institutions plus money market mutual funds plus adjustments to M2+ (continuity adjustments as well as credit union and caisses populaires share capital, less the sum of Receiver General deposits at trust and mortgage loan companies, trust and mortgage loan company holdings of currency and demand and notice deposits with other deposit-taking institutions, and credit union and caisses populaires holdings of currency and demand and notice deposits with other deposit-taking institutions (other than provincial centrals and federations)).
	M2++ consists of M2+ plus Canada Savings Bonds plus nonmoney market mutual funds.
	M1+ consists of Gross M1 plus checkable notice deposits held at commercial banks plus all checkable deposits at trust and mortgage loan companies, credit unions and caisses populaires (excluding deposits of these institutions) plus continuity adjustments.
	M1++ consists of M1+ plus noncheckable notice deposits held at commercial banks, trust and mortgage loan companies, credit unions and caisses populaires less interbank noncheckable notice deposits plus continuity adjustments.

The BoC's staff reported that the monthly consolidation of the accounts of the central bank and the consolidated accounts of commercial banks and the quarterly consolidation of the accounts of depository corporations have not been seen as a high priority by the BoC.<sup>35</sup>

IOFD's quarterly financial statistics are consistent with the Generally Accepted Accounting Principles of the Canadian Institute of Chartered Accountants. These data are subsequently adjusted by the IEAD to line up with national accounting concepts. The IEAD produces a financial account (financial flow accounts) and a balance sheet account (national balance sheet accounts)<sup>36</sup> as part of the Income and Expenditure Accounts Program under the umbrella of the Canadian System of National Accounts (CSNA), following the *System of National Accounts 1993 (1993 SNA)*. To the significant extent that the *MFSM* follows the *1993 SNA*, macroeconomic financial statistics produced in IEAD also follow *MFSM*.

The quarterly financial statistics are produced according to the North American Industrial Classification System (NAICS) of 1997.

## **2.2 Scope**

### *2.2.1 The scope is broadly consistent with internationally accepted standards, guidelines, or good practices*

The scope of monetary statistics is broadly consistent with guidelines outlined in the *MFSM*. The Canadian financial corporations sector is made up of the BoC, the Foreign Exchange Account, commercial banks, trust and loan companies, credit unions, caisses populaires, life and health insurance companies, property and casualty insurance companies, securities

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<sup>35</sup> There are institutional arrangements with the Bank for International Settlements and the IMF to provide data, which they disseminate. Monetary statistics in *International Financial Statistics* include monthly booked-in-Canada assets and liabilities data for monetary authorities, deposit money banks, and a monetary survey and quarterly data for other banking institutions, a banking survey, and nonblank financial institutions. The importance of the depository corporations other than the monetary authorities and commercial banks is a very small portion of the data used in monetary aggregates, but it is a less trivial portion of monetary and financial statistics as defined in the *MFSM*—trust and mortgage loan companies and credit unions and caisses populaires account for approximately 10 percent of total assets of the depository corporations sector.

<sup>36</sup> The Financial Account and Balance Sheet Account of the SNA cast financial statistics in a consistent and comprehensive framework and produce institutional sector statistics, with substantial asset and liability detail. The accounts are currently available on an annual basis since 1961. Quarterly national balance sheets for 1989–2002 are scheduled to be disseminated in June 2003.

dealers and exchanges, mutual fund companies and distributors, and finance and leasing companies, as well as independent financial advisors, pension fund managers and independent insurance agents, and brokers.<sup>37</sup>

Canada's definition of broad money (M2+ and M2++) is fundamental in the determination of the financial institutions to be classified as depository corporations in Canada. Financial institutions that issue deposit liabilities are to be included in other depository corporations.

BoC disseminates separate balance sheet data for the BoC, the Exchange Fund Account, commercial banks, trust and mortgage loan companies (excluding bank trust and mortgage subsidiaries), local credit unions and caisses populaires, and nondepository intermediation institutions in the monthly *BFS*.<sup>38</sup> In addition to the balance sheet data, it disseminates selected credit measures and monetary aggregates. Data on (1) Canadian dollar bankers' acceptances; (2) Canadian financial corporations' bonds and common and preferred stocks placed in Canada and abroad; (3) money and bond market trading of commercial banks, trust and mortgage loan company paper; (4) commercial banks' trading of government of Canada treasury bills and bonds; and (5) three-month bankers' acceptances futures are also disseminated in the *BFS*.

The BoC effects transactions for the Exchange Fund Account and maintains records, as required to provide reasonable assurance regarding the reliability of the financial statements. The Exchange Fund Account's annual balance sheet is not included with the BoC's balance sheet but is separately reported in one issue of the monthly *BFS*. The annual financial statement is also disseminated in the Department of Finance's website.<sup>39</sup>

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<sup>37</sup> Commercial banks play a key role in Canada's financial system and economic development. As of July 2002 the banking industry included 14 domestic banks, 33 foreign bank subsidiaries, and 20 foreign bank branches operating in Canada. In total, these institutions managed over Can\$1.7 trillion in assets and account for over 80 percent of the total assets of the Canadian depository corporations sector, with the six largest domestic banks accounting for over 90 percent of the assets of the commercial bank subsector.

<sup>38</sup> On a weekly and monthly basis (end of period and average of Wednesday) for the BoC, on a monthly basis (end of period and monthly average) for commercial banks, on a quarterly basis (end of period only) for trust and mortgage loan companies, excluding bank trust and mortgage subsidiaries, local credit unions and caisses populaires, and nondepository intermediation institutions, and on yearly basis for the Exchange Fund Account.

<sup>39</sup> Data on total Gross Official International Reserves held by the government of Canada and the BoC are disseminated on the BoC's website in millions of U.S. dollars, and cover foreign exchange, gold, SDRs, and the reserve position in the IMF. Since the early 1970s, with the creation of the Special Drawing Right (SDR), gold has been valued in the international reserves data at 35 SDRs per fine ounce, which approximates its historical cost. In June 1999,

(continued)

The scope of StatCan's financial statistics is broadly consistent with guidelines outlined in the *MFSM*. IOFD covers the activities of all corporations in Canada, excluding government controlled and not-for-profits corporations while PID covers government controlled corporations.

### **2.3 Classification/sectorization**

#### *2.3.1 Classification/sectorization systems used are broadly consistent with internationally accepted standards, guidelines, or good practices*

For both the BoC and StatCan, classification of financial instruments, which is based primarily on the liquidity of the asset and the legal characteristics that describe the form of the underlying creditor/debtor relationship, deviates in several ways from international standards. Financial derivatives and repurchase agreements are not separately identified; and accrued interest is not allocated to the relevant instruments but is included in other assets.

The BoC and StatCan use different categories to classify financial instruments but they are both consistent with the *MFSM*. The BoC uses the following categories to classify financial instruments: (1) currency, (2) deposits, (3) loans, (4) shares, and (5) securities other than shares. StatCan's IOFD uses the following main categories in its quarterly financial statistics for classifying financial instruments: (1) portfolio investments, (2) investments and accounts with affiliates, (3) debt, and (4) equity.

The BoC statistics for "other depository corporations" show approximately 7 percent of total assets under the "other assets" and approximately 17 percent of total liabilities under the "other liabilities" category. The comparable data from the IOFD quarterly financial statistics program shows "other depository corporations"—namely commercial banks—as having roughly 10 percent of total assets under the "other assets" category and 21 percent of total liabilities under the "other liabilities" category.

Substantial detail is also available for the financial and balance sheet accounts of the CSNA. The classification of some financial instruments in the monthly balance sheet of the BoC and commercial banks and the quarterly balance sheet of financial institutions other than banks collected by StatCan is as follows:

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the Department of Finance started to disseminate the reserves template data on a monthly basis.

Table 11. Canada: Classification of Some Financial Instruments

	Monthly data for BoC (BoC)	Monthly data for commercial banks (BoC and StatCan)	Quarterly data for financial institutions (StatCan)
Repurchase agreements	Other assets/other liabilities.	Other assets/other liabilities.*	Nonmortgage loans <sup>40</sup> /Other liabilities.
Financial derivatives	Not recorded as they all net to zero because the BoC does not maintain a position.	Off-balance sheet items (at BoC) and other assets/other liabilities (at StatCan).	Other assets/Other liabilities.
Overdrafts	Not applicable for the BoC.	Other.	Debt (usually bank debt).
Deposits of credit institutions in the process of liquidation	Not applicable for the BoC.	Regular deposits.	Regular deposits.
Accrued interest	Other assets.	Other assets/other liabilities.	Other assets/other liabilities.

\*Repurchase agreements and financial derivatives are identified separately on reporting forms by individual commercial banks but are not separately identified in the statistics disseminated by BoC and StatCan.

The IEAD's financial and balance sheet accounts provides separate information for the following subsectors of the financial corporation sector:

- Monetary authorities
  - Bank of Canada
  - Exchange Fund Account
  - Other monetary authorities
- Chartered banks and near-banks
  - Chartered banks
  - Near-banks
    - Credit unions and caisses populaires
    - Trust and mortgage loan companies

<sup>40</sup> The financial flow and balance sheet accounts reclassify the assets to "other assets" for consistency.

- Life insurance and pensions
  - Life insurance
  - Segregated funds of life insurance
  - Trusteed pension plans
- Other private financial institutions
  - Investment dealers
  - Mutual funds
  - Property and casualty insurance
  - Sales finance and consumer loan companies
  - Finance leasing
  - Issuers of asset-backed securities
  - Other financial institutions, n.e.i.
- Financial government business enterprises
  - Federal financial government business enterprises
  - Provincial financial government business enterprises

NAICS 1997 is used to classify institutions into economic sectors for IOFD's quarterly financial statistics and IEAD's financial and balance sheet accounts. Nonresident units are excluded, only the investment income from them is reported in the data collected. The resident/nonresident qualifier is based on whether there is activity in Canada, if there is, the activity is surveyed. The sectorization of institutional units based on NAICS is generally consistent with *MFSM* guidelines.

## **2.4 Basis for recording**

### *2.4.1 Market prices are used to value flows and stocks*

For BoC and StatCan data, the basis for recording flows and stocks is broadly consistent with internationally accepted standards, except that most assets and liabilities are recorded at cost and shown in the financial statement at book value. (In StatCan-SNA, conversion to market

prices is planned for Spring 2004.) Investments and fixed assets are amortized. A note to commercial banks' financial statements shows the market value of Canadian investments.

With respect to the BoC's balance sheet, gains and losses resulting from foreign currency translation are included in the Statement of Revenue and Expense. Investments are recorded at the lowest of cost and market value. If market value is lower than the cost, a mark-down would be recorded in the Statement of Revenue and Expense.

Assets and liabilities in foreign currencies are translated by reporting institutions into Canadian dollars using current exchange rates as supplied by the BoC at the date of the balance sheet. Where rates are not supplied by the BoC, reporting institutions obtain a market rate for converting currencies into U.S. dollars and use the BoC U.S. dollar exchange rate to translate these amounts to Canadian dollars. Investment income is translated at the rate in effect at the date of the transaction.

In the IOFD's quarterly financial statistics and the SNA financial and balance sheet accounts, book values (historical costs less amortization and write-downs) are used for most industries. The timing of recording transactions is when the ownership of the financial asset has changed. The financial flow and balance sheet accounts are preparing to also produce data for marketable securities and direct investment assets and liabilities by market value, at a considerably less detailed sector breakdown than shown in 2.1 above.

#### *2.4.2 Recording is done on an accrual basis*

The BoC, with respect to its own and commercial banks' balance sheets, uses accrual accounting. Accrued interest is not broken down with its underlying instrument, as recommended by the *MFSM*, but is included in other assets. However, accrued interest is recorded in the chart of account under separate accounts (on Canadian investments, on advances, and on Bank for International Settlements' deposits). Securities other than shares are recorded at their amortized cost and are recorded under seven different accounts (Canada T-Bills, Government of Canada Bonds under three years, Government of Canada Bonds under three to five years, Government of Canada Bonds under five to ten years, Government of Canada Bonds over 10 years, other bills, and Bank for International Settlements' capital stock).

In conformity with *MFSM* guidelines, StatCan records financial transactions on an accrual basis. Arrears on interest and other charges recorded in the IOFD's quarterly financial statistics are recorded as "accounts payable" in the balance sheet.

IOFD's quarterly financial statistics only show the interest payable in one account for all debits, as part of a nontrade account. Loan losses are separately reported for commercial banks and trust and loan mortgage companies.

*2.4.3 Grossing/netting procedures are broadly consistent with internationally accepted standards, guidelines, or good practices*

In conformity with *MFSM* guidelines, BoC records most financial transactions on gross basis. However, commercial banks' assets on the balance sheet are recorded net of any loan loss provisions. These amounts are included in the various asset categories. Assets are recorded when ownership of the assets has changed.

With respect to the BoC's balance sheet, claims are not netted against liabilities, except for derivatives that are shown on a net basis.

In IOFD's quarterly financial survey, enterprise assets and liabilities are recorded on a consolidated basis. Data are collected with the subsidiary of a Canadian parent already consolidated by the parent on a line-by-line Canadian operations basis. Balance sheet valuation adjustments are reported as a negative item in other assets category.

### **3. Accuracy and Reliability**

#### **3.1 Source data**

##### *3.1.1 Source data are collected from comprehensive data collection programs that take into account country-specific conditions*

The source information for monetary and financial statistics are summarized in Table 12. The source data for commercial banks are monthly questionnaires collected by the BoC. The total assets for the monetary authorities and commercial banks are over 80 percent of the depository corporations sector. The BoC is satisfied that these data, together with quarterly data collected by IOFD (that are used to compile comprehensive credit and monetary aggregates) give a reasonable picture of the Canadian financial system. Quarterly financial statements for commercial banks, trust and mortgage loan companies, local and central credit unions and caisses populaires, mutual funds, life insurers and segregated funds, and nondepository credit intermediation institutions, are collected by the IOFD. Some missing data are estimated using other sources, such as telephone contacts with depository corporations.

Commercial banks' data, which are transmitted by electronic means, are reported on a fully consolidated basis, with separate information on the booked-in-Canada assets and liabilities. Commercial banks report monthly and quarterly data to the BoC and StatCan, respectively. Reports are prepared in accordance with Generally Accepted Accounting Principles. All offices (i.e., branches and subsidiaries) that are within the scope of the consolidated institution are reported on a consolidated basis.

To accommodate the diversity in financial reporting across industries, sixteen different questionnaires are utilized in IOFD's quarterly survey. The majority of items on the questionnaires have remained unchanged for several years. Commercial banks' and other

depository corporations' report forms are available at OSFI's and StatCan's websites, respectively.

IOFD's quarterly financial survey data, which are collected from the head office of companies, cover the entire domestic activities of the enterprise, i.e., all branches in Canada. Most questionnaires are transmitted by hard copy. Information on commercial banks is provided by hard copy spreadsheet or modem using the OSFI format.

Table 12. Canada: Sources of Information for Statistics on the Financial Corporations Sector

	Monetary Statistics			Financial Statistics
	BoC Credit measures and monetary aggregates	BoC Full balance sheet approach	StatCan IOFD/PID	StatCan IEAD
Central bank (provided by BoC)	n.a.	Weekly & Monthly (end of period)	Quarterly	Annual/quarterly
Exchange Fund Account (provided by BoC)	n.a.	Monthly (end of period)	Quarterly	Annual/quarterly
Commercial banks	Monthly average(through BoC questionnaires)	Monthly (end of period) (through BoC questionnaires)	Quarterly (through OSFI questionnaires)	Annual/quarterly (through OSFI questionnaires)
Trust and loan mortgage companies (through StatCan questionnaires)	Monthly estimation from quarterly data	Quarterly (end of quarter)	Quarterly	Annual/quarterly
Credit unions and caisses populaires (through StatCan questionnaires)	Monthly estimation from quarterly data	Quarterly (end of quarter)	Quarterly	Annual/quarterly
Nondepository credit intermediation institutions (through StatCan questionnaires)	Monthly estimation from quarterly data	Quarterly (end of quarter)	Quarterly	Annual/quarterly
Life insurers and segregated funds (through StatCan questionnaires)	Monthly estimation from quarterly data	Quarterly (end of quarter)	Quarterly	Annual/quarterly
Mutual Funds (through StatCan questionnaires)	Monthly data	Quarterly (end of quarter)	Quarterly	Annual/quarterly

Data collected from commercial banks and credit unions by IOFD are censuses. The data for commercial banks use the same format as the OSFI questionnaires. Credit unions data are obtained from the CDIC as well as 16 provincial Credit Union Centrals (some provinces having more than one central). Information pertaining to business and consumer financing intermediaries are collected on a sample basis. While the response rates tend to be low for the preliminary estimates, they are much higher for the final estimates. The response rates are published each quarter in IOFD's quarterly financial survey publication.

The IOFD collects comprehensive quarterly financial information from commercial banks, trust and mortgage loan companies, credit unions and caisses populaires, and nondepository credit intermediation institutions. The questionnaire, which comprises a balance sheet, an income statement, and a statement of changes in financial position, is an enterprise-based survey that draws its sample from the Business Register. The overall estimates are derived from two different components. A sample survey is conducted for larger businesses above a prescribed size threshold using the mailed questionnaire. Sample results are multiplied by a weighting factor to represent the universe from which the sample was drawn. For businesses below the size threshold, the (take-none or nonsurveyed population) estimate is derived by applying a regression technique to annual data compiled from financial statements filed with Reserve Canada as part of income tax declarations. The model projects the value of the take-none portion of the population for each of the 164 categories of the Level III aggregation using estimates from the surveyed population and other parameters. The proportion of each of the two components of the final estimate (survey estimates and take-none model) varies significantly between industry aggregations. The proportion represented by the surveyed component ranges from 5 percent to 100 percent of the population for both revenue and assets at the Level III aggregation.

The quarterly survey program uses income statement and retained earnings statement data (to derive changes in financial position). Respondents complete a variety of other schedules as well (reported through regulatory institutions such as OSFI and the CDIC). Balance sheet related schedules are (1) allowance for impairment; (2) capital continuity report; (3) mortgage loans report; (4) securities report; (5) nonmortgage loans; (6) assets by institutional sector; and (7) deposit liabilities by institutional sector.

*3.1.2 Source data reasonably approximate the definitions, scope, classifications, valuation, and time of recording required*

The concepts and definitions are based on the Canadian Institute of Chartered Accountant's guidelines and usually follow practices and definitions determined by the regulators. These practices are usually similar to the Generally Accepted Accounting Principles of the Canadian Institute of Chartered Accountants.

*3.1.3 Source data are timely*

The BoC's balance sheet is prepared weekly as at Wednesday and monthly as at month-end. It is made available to compilers of monetary statistics within two business days of the reference date.

Commercial banks' monthly return of average and end-of-month assets and liabilities are reported within 11 business days of the month end. These are the main data used to construct monetary aggregates. All commercial banks report electronically. The recent introduction of the Report on Late and Erroneous returns, which the BoC sends to deposit-taking institutions

on a quarterly basis, has greatly improved the timing of data submissions, e.g., approximately 98 percent of returns are currently filed on time and error-free.

IOFD's quarterly survey data are due 30 days after period end.

### **3.2 *Statistical techniques***

#### *3.2.1 Data compilation employs sound statistical techniques*

Both the BoC and the IOFD use sound statistical techniques. Electronic reporting and data processing, automated validation procedures, and documentation of data compilation practices contribute to the production of accurate and timely monetary statistics. IOFD staff compare current quarter data with responses from previous quarters and with other respondents within the same industry group; all items must add and reconcile.

Seasonal adjustment for BoC data is calculated by means of StatCan's X-11 Arima Seasonal Adjustment Program, which employs a ratio-to-moving-average technique on an observed data series, which may be augmented by one year of Arima forecasted and backcasted data. Seasonal adjustment is only done at aggregated levels and completely missing observations have not been a problem. When data from one or a group of institutions are missing then they are estimated by some fairly simple method. (Serious problems of this nature are extremely rare.) Continuity adjustments, for events like bank takeovers of other financial institutions, are a more serious concern. With respect to seasonal adjustment, procedures for dealing with this have been considered reasonable although somewhat ad hoc. This is currently being modified, but was motivated more by having better continuity adjusted data than by seasonal adjustment concerns.

Seasonal adjustment for IOFD is done with the X-II Arima Seasonal Adjustment Program using ratio-to-moving-average method in widespread use at StatCan. It is based on the U.S. Bureau of the Census Method II, but has some additional features. Beginning with the first quarter of 1999, IOFD quarterly Financial Statistics series uses "end-point" seasonal adjustment, which recalculates seasonal factors each quarter as more recent data becomes available. For a more complete description of these features, refer to "X-11 Arima v. 2000—Seasonal Adjustment Method Foundations and User's Manual." Series containing no significant seasonality have not been seasonally adjusted. In these cases, the unadjusted series are used in the place of seasonally adjusted data.

With the introduction of methodological or industry classification system changes, breaks have occurred in the time series. To correct for the breaks, some series have been back-cast. Users are warned that the quality of the back cast series, and the resulting seasonal adjustment, may not be as reliable as that of statistics derived from actual survey results conducted on a NAICS Canada 1997 basis commencing with the first quarter of 1999.

#### *3.2.2 Other statistical procedures (e.g., data adjustments and transformations, and statistical analysis) employ sound statistical techniques*

For StatCan's quarterly financial survey:

(1) Units that do not respond in the current period are imputed (their financial statements are estimated). Units are imputed by applying a growth factor to previously reported data when available. The growth factor is estimated using the survey responses for the units that are most similar to the unit being imputed.

(2) When partial survey data covering three key variables (total assets, operating revenue, operating profit) are received, the imputation factors are calculated at the unit level using these partial data. For records without historical information, a donor imputation system is used. Information on the size of the nonrespondent is obtained and a similar sized respondent is found. The size information consists of the three key variables. If this information is not available, the Business Register revenue and asset values are used. In the former situation, the donor record is used to calculate the distribution of the detailed values around the three key variables. In the latter case, the donor's values are directly copied over to the nonrespondent. In the case where donor imputation is required for two or more consecutive quarters, a new donor is not reselected. Rather, the imputation factor is applied to the previously imputed data.

(3) The response values for sampled units are multiplied by a sampling weight in order to estimate for the entire surveyed population. The sampling weight is calculated using a number of factors, including the probability of the unit being selected in the sample.

The quarterly survey program is subject to regular review, and program operations are integrated with other StatCan programs with responsibility to set, develop and maintain statistical standards and systems. Thus, classification systems that provide the context for survey operations are the responsibility of the Standards Division. The survey universe, which determines coverage, is maintained by the Business Register Division in conjunction with IOFD's Frame Improvement Team, which scrutinizes and updates relevant information pertaining to the survey population. IOFD and Operations and Integration Division staff and management review and verify data from all data sources (administrative, survey, imputation). They are responsible for introducing new processes that will enhance survey control, data collection, review, verification, estimation and imputation of data.

### **3.3 Assessment and validation of source data**

*3.3.1 Source data—including censuses, sample surveys and administrative records—are routinely assessed, e.g., for coverage, sample error, response error, and nonsampling error; the results of the assessments are monitored and made available to guide planning*

Regular assessments and validations of source are undertaken by the BoC. Several automatic consistency/reasonableness checks are done and analysts review the data for reasonableness. Data are aggregated using Fame programs and several reports are produced. These are

inspected carefully by analysts and economists. Commercial banks are often contacted for follow-up information if the data seem unusual. Consistency between the BoC and StatCan databases has not been assured; however, confidentiality of the source information has been an impediment in the reconciliation between the two sources by the BoC.

Data collected from commercial banks by the BoC are validated using a rules-based engine, which is part of the TDS system. The Rule language is based on formulas that are user-specified and relatively easy to change. The rules-based engine has provided the ability to create applicable rule formulas to validate the data using flexible start and end dates, various rule formula functions, arithmetic and relational operators, etc.

In all cases where data are reported to BoC on more than one return, there are cross-checks in place to verify accuracy. When the data do not match exactly but are conceptually the same (for example, when comparing month-end data to monthly average of days), Fame programs are used to display the data and make a judgment as to whether the data reported are reasonable.

Monthly, quarterly, and annual growth rates are calculated, and manually compared to prior periods for plausibility. Several automatic consistency/reasonableness checks are done. Errors of a mathematical nature are caught by the system and the reporting institution is informed electronically (via email) that a specific error has occurred. The following five different types of rules are applied by the BoC:

- (1) Domain rules are used to check that reported amounts are of a certain amount or within a certain range.
- (2) Intra-Return rules are most often used to verify that the reported amounts add to subtotals and totals within the return. Intra-return rules also check that two variables are either both reported (mutually inclusive) or both not reported (mutually exclusive).
- (3) Cross-Return rules can reference more than one Return Definition. They are designed to compare reported amounts on one return with reported amounts on a different return for the same period. They are also written to confirm that reported amounts of the current period equal variable amounts from a previous period(s) that is applicable for checking flow data and validating opening and closing balances.
- (4) Cross-Country rules are a special type of intra-return rule used on geographical return data to check that the sum of individual country, currency, variable combinations add to reported totals.
- (5) Reasonableness rules, which are optional, are most often used to compare variables on a return with a previous period(s) or flag amounts going to or from zero providing warning signals when there are large data changes/fluctuations.

Rules are automatically executed on all reported returns filed and analysts have the option to manually test rules on any given return at any time.

Nonbank data are received from StatCan (IOFD) and incorporated into databases. Questions that arise from unusual fluctuations are raised with StatCan. This exercise is generally a less intensive than for commercial bank data, due to the size of the banking sector in Canada.<sup>41</sup>

Financial ratios and growth rates are calculated, and manually compared to prior periods and with other sectors. As well statistical errors are considered arising from frame problems, weighting problems, or processing errors. Sample design is predicated on limiting CV's to no more than 10 percent of 164 industry aggregations by country.

For quarterly data compiled at StatCan, the following assessment and validation processes are in place:

(1) Project management teams consisting of statisticians, methodologists, computer programmers, economists, and managers meet weekly to discuss all aspects of the survey process: frame maintenance (survey universe), statistical methodology, collection, computer systems, data processing, analysis, and dissemination. Studies and review are routine—and debriefing is undertaken every cycle to review plan and respond to the needs of data users, changes in operating environment, and to improve and develop all aspects of the statistical program.

(2) The most recent operations research employed was to review and improve the mathematical modeling of the take-none segment of the survey universe (financing intermediaries that are below the inclusion asset and revenue thresholds). This led to the adoption of a regression model based on how the aggregate of smaller companies move historically to the sample portion of the survey universe.

(3) Computerized edit checks and procedures to minimize processing errors (editing systems check for arithmetic-balancing errors, consistency, and logic) are in place in StatCan's quarterly questionnaires. Both warning and critical edits are applied at a micro and macro level. Items that are flagged are followed up by data editors and secondary data sources can be checked or respondents are contacted. These systems and processes are documented.

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<sup>41</sup> The British influence was reflected in the Canadian preference for a limited number of banks with multiple branches. In the years leading up to the Canadian Constitution (1867), small rural settlements spread over an extended area made branch banking a practical approach. The branch bank network was sufficient to the nation's needs for almost a century. In 1933, a royal commission studied the organization and working of Canada banking and monetary system. A week after the report of the royal commission, Canada's central bank, the Bank of Canada, was established.

(4) Quarterly questionnaires are tested and subject to review by StatCan's Questionnaire Design Resource Centre. In addition, StatCan's analysts in contact with survey respondents are an important part of the feedback mechanism to ensure clarity, consistency, and compliance in reporting.

### **3.4 *Assessment and validation of intermediate data and statistical outputs***

#### *3.4.1 Main intermediate data are validated against other information where applicable*

At StatCan, internal program review of data is conducted each quarter to see how financial data moves with activities in other sectors of the economy. In addition, analysts attend StatCan release theme panels where outputs from many different programs are presented and discussed. Further checks and analysis are conducted when source data arrive in the CSNA, and fit into an economy-wide framework.

#### *3.4.2 Statistical discrepancies in intermediate data are assessed and investigated*

BoC's analysts are assigned a portfolio of banks and establish contacts at the working level, i.e., with the people who prepare the filings. Errors of a mathematical nature are caught by the system and the reporting institution is informed electronically (via email) that a specific error has occurred. The reporting institution then sends in the revised data. In cases where there is no mathematical error but the BoC analyst considers the data to be questionable, they call, email, or fax the relevant question and data to their contacts who then investigate the data and confirm or correct it as appropriate. If the data are confirmed but are still suspicious or very unusual, the analyst will also press for an explanation to provide to BoC senior departmental management. In some cases, senior departmental staff get involved in the discussions with the reporting institutions as well. BoC has developed good relationships with the major commercial banks, including face-to-face visits, and enjoys cooperation in almost all instances of data quality questions.

#### *3.4.3 Statistical discrepancies and other potential indicators of problems in statistical outputs are investigated*

The BoC sends quarterly reports to the reporting commercial banks, which detail late and/or erroneous returns, as well as revisions to previously reported returns.

### **3.5 *Revision studies***

#### *3.5.1 Studies and analyses of revisions are carried out routinely and used to inform statistical processes*

At BoC, revision studies are triggered by a variety of events, e.g., evolution of technology, new data requirements identified, a perception/suspicion that an error detected may just be

one of several that are being systematically missed, and certain data are no longer perceived as useful.

Periodically, situations arise necessitating the modification of questionnaires. These changes are proposed through a review committee and are field tested with respondents and data users to ensure that the changes are reasonable and sustainable. The final version of the revised questionnaires is prepared by Data Dissemination Division and the revision date of the form is updated.

The BoC attempts to track market changes, both instruments and institutions. If these changes become important then, where possible, BoC measures and reports them. Changes are not always incorporated into monetary aggregates because of continuity issues.

#### **4. Serviceability**

##### **4.1 Relevance**

###### *4.1.1 The relevance and practical utility of existing statistics in meeting users' needs are monitored*

The relevance of existing monetary statistics in meeting the needs of the main users outside the BoC is not regularly reviewed. However, users of monetary and financial statistics have not reported any dissatisfaction to the BoC. In addition, the BoC reports that users within the BoC are satisfied. Other divisions in the MFA Department and BoC's other economic departments are consulted by the DRD when changes in the compilation of monetary statistics are anticipated. Only limited coordination is necessary between the BoC's Corporate Services Department and the DRD for the BoC's own data because the raw data sets are independent. In addition to the TDS partnerships between the BoC, OSFI, and CDIC, StatCan is consulted on some data collected by the BoC and are a key user of the data set on geographic assets and liabilities.

DRD has regular meetings and telephone communication with internal users, other depository corporations users, and external users. The BoC also has regular contact with academics and other professionals through conferences and seminars. The BoC also has an active research program, which requires relevant data.

The BoC attempts to track market changes, both instruments and institutions. If these changes become important, then, where possible, the BoC measures and reports them. Changes are not always incorporated into monetary aggregates because of continuity issues.

For StatCan's CSNA (including the financial accounts), emphasis is put on the needs of users. A "Post-mortem" is held, with an identified set of public and private sector users, in the days following release of the integrated quarterly accounts in order to discuss the quarter in more detail as well as to address statistical and other issues particular to that quarter. In addition, presentations are made to various groups, such as the Toronto Association of

Business Economists. Typically, they stay in contact with users and field numerous calls on a daily basis.

## **4.2 Timeliness and periodicity**

### *4.2.1 Timeliness follows dissemination standards*

Timeliness meets the requirements of the SDDS for the accounts of the BoC and commercial banks. Weekly data (as of Wednesday night) on the BoC are disseminated two days after the reference period. Monthly data on commercial banks are disseminated within one month of the end of the reference month. Annual survey data are targeted for release 15 months after the reference period year-end. Because of an extensive redesign, this target was not met for 2000 data. However, it is anticipated that this target will be met for 2001 data. Quarterly data are released approximately eight weeks after the quarter reference period end for quarters 2, 3, and 4, and approximately nine weeks for quarter 1.

StatCan disseminates the annual Balance Sheet Account of the CSNA within 90 days of the reference period. It is anticipated that quarterly data for the first quarter 2003 release will be disseminated about 75 days after the reference period.

### *4.2.2 Periodicity follows dissemination standards*

Periodicity meets the requirements of the SDDS for the accounts of the BoC and commercial banks. The periodicity of the statistics for the BoC and commercial banks is monthly while the periodicity for other depository corporations' data is quarterly. However, the periodicity for credit and monetary aggregates for other depository corporations is monthly.

StatCan disseminates the Balance Sheet Account of the CSNA annually but will convert to quarterly at the time of the first quarter 2003 release in June 2003.

## **4.3 Consistency**

### *4.3.1 Statistics are consistent within the dataset*

The BoC's and commercial banks' records for claims on, and liabilities to, are consistent with each other. Other internal consistency checks, including reconciliation of available stock and flow data, are developed and maintained to ensure accuracy of the information used in the compilation of monetary statistics for the BoC and commercial banks.

Credits/liabilities to financial institutions other than commercial banks in the BoC and commercial banks' balance sheets are consistent with liabilities/credits to the BoC and commercial banks in the financial institutions other than commercial banks' balance sheet.

Because commercial banks report to the BoC and nonbank other depository corporations report to StatCan, an important consistency issue arises when commercial banks take over

nonbank other depository corporations. A forthcoming paper by a BoC staff member explains many of the issues related to continuity adjustments for components of monetary aggregates. Other continuity concerns relate to financial innovations such as securitization.

In the CSNA, the focus is on time series and internal consistency is important in the financial account and the balance sheet account. The financial account and balance sheet account (like all of the CSNA component accounts) are also consistent over time. The consistency of stock-flow estimates is achieved by the use of an implicit “Other Changes in Assets Account.” There are plans to start publishing the Other Changes in Assets Account in 2004–05.

#### *4.3.2 Statistics are consistent or reconcilable over a reasonable period of time*

BoC’s consistent time series data are available for an adequate period of time. Monthly statistics for commercial banks and the BoC are available since January 1926 and March 1935, respectively. Quarterly statistics for trust and mortgage loan companies are also available at least since the fourth quarter of 1960 and for credit unions and caisses populaires since the first quarter of 1967.

When changes in source data, methodology, and statistical techniques are introduced, historical series are reconstructed as far back as reasonably possible. Detailed methodological notes identify and explain the main breaks and discontinuities in time series, their causes, as well as adjustments made to maintain consistency over time. Any unusual changes in economic trends are explained in the analytical text included in the publication and in the database accessible to users. The BoC includes notes to these effects in its *WFS* and its annual *Notes to the Bank of Canada Banking and Financial Statistics*. Similarly, StatCan includes notes to these effects in the *Quarterly Financial Statistics for Enterprises* (Catalogue No. 61-008-XIE), *System of National Accounts Balance Sheet Accounts* (Catalogue No. 13-214-PPB) and *System of National Accounts Financial Flow Accounts* (Catalogue No. 61-008-XIE).

Statistical innovations are also an important potential source of discontinuity. The following note appeared with StatCan’s release of quarterly financial data: “Beginning with the first quarter of 1999, significant changes have been made to the quarterly survey of financial statistics for enterprises that affect the comparability and the historical continuity of these financial statistics. Data analysts are advised that the statistics are now collected and compiled on the basis of NAICS Canada 1997 that differs markedly from the 1980 Standard Industrial Classification for Companies and Enterprises (SIC-C) previously in use. In addition, changes have been made to certain methodological aspects of the survey. These changes have improved the quality and reliability of the statistics. They nonetheless affect the user’s ability to relate and compare the data to those previously produced on the SIC-C basis under the old methodology.”

#### *4.3.3 Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks.*

Quarterly monetary and credit aggregates are consistent or reconcilable with the aggregates of monetary instruments held by money holding sectors in the flow of funds accounts as the same sources of information are being used.

A comparison of the information used by the IOFD with information from the BoC/OSFI/CDIC database, BoC's *BFS*, and IAED (see Table 13) highlights the need to review the consistency of the source data used to compile statistics for the financial sector.

OSFI regulates and supervises more than 130 deposit-taking institutions in Canada, including domestic banks, foreign bank subsidiaries, foreign bank branches (both full service and lending branches), trust companies, loan companies and cooperative credit unions. The framework is based on several principles, including that supervision of Canadian financial institutions is conducted on a consolidated basis, using information from other regulators as appropriate. It includes an assessment of all material entities (subsidiaries, branches, or joint ventures) both in Canada and internationally. Communication of findings and recommendations to institutions is timely. However, as the TDS database is not comprehensive, StatCan's database is used for financial institutions other than commercial banks.

Consistency between BoC and StatCan data on the financial sector is not assured since the purpose of the two data sets differ. As a result there are conceptual differences in the underpinnings of each. In addition, there are potential inconsistencies in coverage and classification. The lack of a reconciliation between the two sets of data can create confusion for users. Checks with other macroeconomic statistics are not routinely undertaken.

A partial reconciliation was undertaken by the IOFD during the mission. The IOF data indicate that there were 28 trust and mortgage loan companies whereas the BoC identifies 57 trust and mortgage loan companies. According to the BoC/OSFI/CDIC database, there are 63 trust and mortgage loan companies (39 trust companies and 24 loan companies), including eight companies in liquidation, which leaves 55 companies. Twenty seven of the 57 trust and mortgage loan companies are actually commercial bank subsidiaries, which are included in the consolidated chartered bank industry for both StatCan and the BoC, which leaves a count of 30 for the BoC/OSFI/CDIC database.

StatCan reports 45 commercial banks while the BoC/OSFI/CDIC database has the following count that sums to 70 companies: 16 domestic banks, 33 foreign banks (including eight that are in liquidation), 17 foreign bank branches-full service, and four foreign bank branches-lending. It leaves a count of 62 active commercial banks and leaves an amount of 17 to reconcile. The difference of 17 is largely due to StatCan not including the new foreign branches in the survey. Most of them started operations in 2001 and 2002. Values for the branches will be added in retroactive to 2001 when the annual revisions of the prior two years is done after 4Q-2002 is completed. This will add approximately one percent to the

Table 13. Canada: Comparison of Statistics for the Financial Corporations Sector

	Number of institutions		Total assets as of December 31, 2001 (in millions of dollars)			
	BoC/OSFI/CDIC database	StatCan	BoC's <i>BFS</i>	BoC/OSFI/CDIC database	StatCan	
		IOFD			IOFD	IAED
<b>Monetary authorities<sup>1</sup></b>						<b>96,557</b>
Central bank			<b>41,804</b>			43,400
Exchange Fund Account			<b>48,611</b>			48,590
Other monetary authorities						4,567
<b>Depository Corporations</b>			<b>1,850,022</b>	<b>1,922,515</b>	<b>1,308,497</b>	<b>1,249,055</b>
Commercial banks <sup>2</sup>	70 <sup>3</sup>	45	1,710,396	1,711,437 <sup>3</sup>	1,147,542	1,094,876
Trusts and loan mortgage companies	63 <sup>3</sup>	28	10,763	199,112 <sup>3</sup>	9,648	9,640
Credit unions and caisses populaires	7	2,487	128,863	11,966	151,311	144,539
<b>Nondepository Credit Intermediation</b>	<b>8,574</b>	<b>8,574</b>	<b>90,775</b>		<b>90,775</b>	<b>73,863</b>
<b>Life insurers and segregated funds</b>	<b>319</b>	<b>...</b>	<b>89,733</b>	<b>234,244</b>	<b>268,467</b>	<b>272,371</b>
<b>Mutual funds</b>		<b>2,028</b>	<b>395,895<sup>4</sup></b>		<b>420,555</b>	<b>420,468</b>

1/ Data for the BoC and the Exchange Fund Account are collected and compiled by PID and are not covered by the BoC/OSFI/CDIC database.

2/ StatCan collects booked-in-Canada assets and liabilities only, whereas the BoC values are a world wide consolidation (i.e., all wholly and majority owned subsidiaries of the commercial banks.) The BoC values are higher by the value of all the assets and liabilities carried on the books of foreign subsidiaries. However, data provided by the BoC for *IFS* only cover booked-in-Canada assets and liabilities.

3/ Data for banks and trusts for BoC/OSFI/CDIC database both include bank trust and mortgage subsidiaries and, accordingly, the subtotal for depository corporations include some double counting.

4/ Represents part included in monetary aggregates M2+ and M2++.

bank industry asset value published in 2001 and approximately two percent to the year 2002 values. Data produced from the quarterly survey of financial statements are fully integrated with the StatCan's other statistical programs. The CSNA is an integrated system of national accounts. Financial accounts and balance sheet accounts are consistent with balance of payments counterparts, with a couple of items reconciled. Financial accounts and balance sheet accounts are largely consistent with government finance statistics produced in StatCan's PID.

#### **4.4 Revision policy and practice**

##### *4.4.1 Revisions follow a regular, well-established, and transparent schedule*

The BoC revision policy follows a well-established schedule. Users of monetary statistics are informed that the published data are subject to revision. The most important revisions to the BoC's monetary data are continuity adjustments, which are a re-organization to reflect current institutional arrangements in the historical data. Seasonal adjustment factors are revised annually, resulting in historical revisions to all seasonally adjusted data. This exercise is done when the January data are published and the revisions are accompanied by an explanatory note to users. Revisions to the monetary statistics originating from reporting institutions are published as received (with very rare exceptions). Unless there is a significant revision that affects historical as well as recent data, no Note to Users is supplied.

Data from IOFD are revised for the most recent quarters when current quarter data are released. Revisions typically are completed within four subsequent quarters of being published. In addition, quarterly sample and modeled data are benchmarked to annual census data when these data's processing are completed. These revisions are released with first quarter data two years after the reference period. For example, revisions to 2000 quarterly published data are released with Q1-2003 data.

The benchmarking process involves carrying forward adjustments applied to each quarter in 2000, to subsequent quarters in 2001–2003, as well. When 2001 annual data are processed, new benchmarking adjustments are applied to the 2001 published quarterly data and carried forward until new annual benchmarking adjustments are prepared.

The CNSA financial account and balance sheet account follows the well-publicized CSNA revision schedule, which is to revise quarters of the current year each quarter; revise four years at the time of the first quarter (to incorporate benchmarks and source data that arrive with long lags); and revise historically on an occasional (to re-base, incorporate new concepts/treatments).

##### *4.4.2 Preliminary data are clearly identified*

The BoC preliminary or estimated data are identified, as are all revisions, regardless of the reason or magnitude. BoC's preliminary or estimated data are noted with an E. All revisions, regardless of the reason or magnitude, are noted with an R.

IOFD data pertaining to the most recent quarter to be published are considered to be preliminary. This is clearly noted in the heading of the data highlights (analysis) section of StatCan’s electronic publication. Preliminary and revised data presented in the summary table in this section are identified as preliminary or revised by a superscript p and r respectively, standard symbols used in StatCan publications.

#### *4.4.3 Studies and analyses of revisions are made public*

BoC explains significant revisions in the annual *Notes to the Bank of Canada Banking and Financial Statistics*, the StatCan publications, website, and CANSIM. However, no effort is made to publish reasons for changes from BoC’s preliminary to final data. Significant revisions give rise to explanatory notes in releases. All significant methodological innovations that may impact continuity are noted with data releases and to the extent possible, new series stated on the new basis are created.

StatCan routinely introduces changes in methodology for the financial and balance sheet accounts to accommodate introduction of new instruments, new institutions, or the evolution of markets. For example, in 1996 IEAD and IOFD jointly introduced the survey of “issuers of Asset-backed Securities and Securitization” with the BoC.

Revisions of the industrial classification of IOFD quarterly financial statistics for enterprises—from the 1980 Standard Industrial Classification for Companies and Enterprises to the 1997 NAICS—and the revision to the treatment of investment and holding companies are well covered in StatCan publications.

## **5. Accessibility**

### **5.1 Data accessibility**

#### *5.1.1 Statistics are presented in a way that facilitates proper interpretation and meaningful comparisons (layout and clarity of text, tables, and charts)*

Credit and monetary aggregates are published by the BoC in original and seasonally adjusted for monthly average or average on month-end. Access to monetary and financial statistics is easily achieved through the BoC and StatCan websites, regular publications, and CANSIM. The BoC does not currently disseminate more than ten years of data; for longer time series, users are instructed to access data through CANSIM.

There are institutional arrangements with the Bank for International Settlements and the International Monetary Fund (IMF) for the BoC to provide monetary data, which they disseminate.

IOFD releases quarterly financial statistics for enterprises and IEAD releases annual national balance sheet accounts data in summary form in *The Daily* (see 5.1.4). Under the “Policy on

Highlights of Publications,” each release is to include tables and charts (if appropriate) as well as analysis of developments in the form of highlights. These highlights, to which StatCan has devoted considerable attention over the years, are required for all publications that present statistical information or analytical findings. They are intended to convey significant findings, comparisons, and trends to assist the reader in understanding and using the publication.

### 5.1.2 *Dissemination media and formats are adequate*

The BoC website fills a vital role of conveying economic data, research, and policy information to domestic and international audiences. The site, which was providing data and documents to over 100,000 users per weeks by end-2001, featured a variety of new content and services in 2001, including enhanced data search and display capabilities and the introduction of live Webcasts of major speeches and press conferences. The BoC has also taken a leadership role in promoting effective use of the Web among central banks. The BoC’s website received the second-highest rating of 25 central bank websites evaluated by Lombard Street Research Ltd. three years ago and has been informally notified that it ranks first in a recent evaluation.

The main vehicles used to disseminate data to the public are the BoC’s *WFSs*,<sup>42</sup> the monthly *BFS* and the CANSIM database. The *WFS* and *BFS* packages are available through subscription at a modest cost. The *WFS* is also available free of charge via the Internet. CANSIM data are available via StatCan.

StatCan disseminates data primarily through its public website. A detailed announcement is made in its free electronic release newsletter *The Daily*. Data products are available in both English and French, simultaneously. In addition to the first release in *The Daily*, quarterly financial statistics for enterprises and annual national balance sheet accounts are available in several other media and formats.

The public may purchase the full electronic publication from StatCan website or specific series of interest from its online data archive, CANSIM, or visit a depository library across Canada (StatCan’s regional offices and designated public libraries). The CSNA Financial Account and Balance Sheet Account are also available on diskette.

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<sup>42</sup> BoC’s and commercial banks’ balance sheet and monetary and credit aggregates are disseminated in the *WFSs*. Financial institutions other than commercial banks are only disseminated in the *BFS*.

### 5.1.3 *Statistics are released on a preannounced schedule*

Advance release calendars are published by both the BoC and StatCan. The release dates for the *WFS* are posted on the BoC and IMF (SDDS) sites. Release of the *BFS* is usually around the 21st of each month; however, no release schedule is provided to the public.

A schedule of release dates for quarterly financial statistics for enterprises and annual national balance sheet accounts, as well as for 29 other of StatCan's major economic indicators, is published for the coming calendar year at the end of November in *The Daily*, the agency's official release bulletin. These dates are also available on *TheDaily* module of StatCan's website. In addition, on the last working day of each month, *The Daily* publishes an entire set of release dates for these indicators for the coming month, as well as dates for other major releases. Each Friday, *The Daily* publishes a list of release dates for the coming week.

Overall, StatCan's record of meeting release dates is good. The quarterly financial statistics for enterprises and annual national balance sheet accounts have been released on the preannounced dates each quarter and year for at least the last five years.

### 5.1.4 *Statistics are made available to all users at the same time*

BoC data are released simultaneously to all interested parties. The statistics are posted on the Internet as soon as the *WFS* package is ready on Fridays (unless Friday is a holiday), typically between 10:30 and 11:30 a.m. Eastern time. The corresponding time series are available via StatCan's CANSIM database on Friday at 8:30 a.m. Eastern time. Subscriptions will be received by the public (hard copy form) at various times depending on the speed of the regular mail service. No external users have earlier access to any survey outputs.

*The Daily*, as outlined in the "Policy on Statistics Canada's *Daily* (Official Release)," is StatCan's official release bulletin. Its purpose is to disseminate summary findings of statistical programs or major conclusions of analytical products. In doing so, it provides a single, comprehensive source of information on the agency's offerings. StatCan considers the vehicle as unique among the world's statistical agencies. *The Daily* has been an Internet vehicle since 1995, and has been published in hardcopy since 1932, each working day. With two exceptions, release time is 8:30 a.m. Eastern time. The two exceptions are the Consumer Price Index and Labour Force Survey, both of which by tradition are released at 7:00 a.m. Eastern time.

Release in *The Daily* marks the passage of data, analysis, or products to the public domain. Until release in *The Daily*, data are considered "protected", and may not be disseminated outside StatCan except in the following cases: (1) where validation by an external organization is necessary, (2) when sponsors of cost-recovery programs are granted access for a reasonable period prior to release, and (3) where sources of administrative data, and/or any other organization authorized by the source organization, are granted access to data

developed from those files. These exceptions still require a formal release in *The Daily* within a relatively short delay.

#### *5.1.5 Nonpublished (but nonconfidential) subaggregates are made available upon request*

Most of the nonconfidential subaggregate data not published in printed form are available through StatCan in the CANSIM database. As a result, there are not many requests for subaggregate data at the BoC. Requests for data are accommodated on an ad hoc basis. The BoC has no commitment to do this, but typically does try to respond to requests. The *WFS* includes a name, telephone number, and e-mail address for a responsible contact. Users of the statistics who are interested in more information than what is available in the document usually send their request to that person.

IOFD's Client Services Unit responds to special tabulation requests for nonconfidential data.

## **5.2 Metadata accessibility**

### *5.2.1 Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical techniques is available, and differences from internationally accepted standards, guidelines, or good practices are annotated*

Metadata access is through the BoC and StatCan publications and websites, as well as the OSFI website for federally supervised financial institutions. The most extensive documentation is available in the annual *Notes to the Bank of Canada Banking and Financial Statistics*.

The introduction to the "Policy of Informing Users of Data Quality and Methodology" sets out a statistical agency's responsibility to inform users of the concepts and methodology used in collecting, processing, and analyzing data, of the accuracy of those data, and of any other features that affect their "fitness for use." The policy requires that all statistical products include or refer to documentation on data quality and methodology. The accompanying standards detail the requirements for documentation (and include examples for factitious datasets as illustrative). Canada has made a commendable effort to have metadata on all of its major series available to its users online, in a standard format, and free of charge. The newly developed on-line IMDB, a corporate repository of information on each of StatCan's 400 active surveys, is to serve as a tool to help meet the aim of the policy. The IMDB provides a standard template that is to be populated with pre-existing and new metadata. The IMDB represents a model dissemination practice, and StatCan is committed to its continuous improvement.

StatCan's *Quarterly Financial Statistics for Enterprises* (Catalogue No. 61-008-XIE) also includes a comprehensive description of the data. StatCan's *A Guide to the Financial Flow and National Balance Sheet Accounts* (Catalogue No. 13-585E) also provides comprehensive information on the definitions, concepts, sources, and methods. Reporting Guides and

questionnaires are separately available for each type of financial institutions at StatCan's and OSFI's websites.

### *5.2.2 Levels of detail are adapted to the needs of the intended audience*

Analysts in the MFA Department and StatCan work regularly with internal users and occasionally with external users to help them understand how the data are constructed and ad hoc requests for data can be accommodated.

The publication *Financial Flow and National Balance Sheet Accounts—Sources, Concepts, Methods* is planned to be updated in 2004.

## **5.3 Assistance to users**

### *5.3.1 Contact person for each subject field is publicized*

Prompt and knowledgeable service and support is available from the BoC to users of statistics. All statistical releases identify specific individuals who may be contacted by mail, telephone, facsimile, or by email. StatCan's "Policy on Spokespersons and Media Relations" calls for data contacts to be provided for each *Daily* release. These contacts are professional staff that provide day-to-day explanation and interpretation. Most major releases and data availability announcements that the mission reviewed provided these contacts. Users were very complimentary of the service they provided. The contacts were considered knowledgeable and responsive.

StatCan's website lists a contact name and telephone number for the specific publication providing this information and toll free phone (Canada-U.S.A.), fax and TTY numbers and e-mail addresses for StatCan products and services. The electronic publications relating to monetary and financial statistics list further contacts as well.

### *5.3.2 Catalogs of publications, documents, and other services, including information on any charges, are widely available*

A catalogue of publications, documents, and other services, which is free of charge, is available from the BoC and StatCan in hard copy publications and on websites. The BoC also has leaflets providing (1) phone numbers to contact different services, including on financial market statistics and publications; (2) how to request the BoC's free email notification service; and (3) an order for free and priced publications.

StatCan website has been developed as a convenient, one-stop shopping center. Users are also advised in each publication of the national inquiries phone line and e-mail address. The Statistics Canada Regional Reference Centre is also widely mentioned.

Table 14. Canada: Data Quality Assessment Framework—Summary of Results:  
Bank of Canada<sup>1/</sup>—Dimensions 0-1

Key to symbols: NA = Not Applicable; O = Practice Observed; LO = Practice Largely Observed; LNO = Practice Largely Not Observed; NO = Practice Not Observed.							
Element	National Accounts	Consumer Price Index	Producer Price Index	Government Finance Statistics	Balance of Payments Statistics	Monetary Statistics	Comments
<b>0. Prerequisites of quality</b>							
0.1 Legal and institutional environment						O	
0.2 Resources						O	
0.3 Quality awareness						O	
<b>1. Integrity</b>							
1.1 Professionalism						O	
1.2 Transparency						O	
1.3 Ethical standards						O	

<sup>1/</sup> The Bank of Canada only compiles monetary statistics.

Table 15. Canada: Data Quality Assessment Framework—Summary of Results:  
 Monetary Statistics—Dimensions 2–5  
 (Compiling Agency: Bank of Canada and Statistics Canada)

Key to symbols: NA = Not Applicable; O = Practice Observed; LO = Practice Largely Observed; LNO = Practice Largely Not Observed; NO = Practice Not Observed.						
Element	NA	Assessment				Comments
		O	LO	LNO	NO	
<b>2. Methodological soundness</b>						
2.1 Concepts and definitions			X			BoC and StatCan: Even though monthly credit and monetary aggregates are compiled, fully consolidated balance sheets are not compiled.
2.2 Scope		X				
2.3 Classification/sectorization			X			
2.4 Basis for recording			X			BoC and StatCan: Market valuation is not generally applied and some transactions are recorded on a net basis.
<b>3. Accuracy and reliability</b>						
3.1 Source data		X				
3.2 Statistical techniques		X				
3.3 Assessment and validation of source data		X				
3.4 Assessment and validation of intermediate data and statistical outputs		X				
3.5 Revision studies		X				
<b>4. Serviceability</b>						
4.1 Relevance		X				BoC and StatCan: There are potential inconsistencies in coverage, classification, and sectorization. Consistency checks with other macroeconomic statistics are not routinely undertaken by the BoC.
4.2 Timeliness and periodicity		X				
4.3 Consistency			X			
4.4 Revision policy and practice		X				
<b>5. Accessibility</b>						
5.1 Data accessibility		X				
5.2 Metadata accessibility		X				
5.3 Assistance to users		X				

### **Summary of the Special Data Dissemination Standard (SDDS)**

The SDDS prescribes the following practices under each of the identified dimensions:

#### **Data dimension** (coverage, periodicity, and timeliness)

- the dissemination of 18 data categories, including component detail, covering the four main sectors of the economy, with prescribed periodicity and timeliness.

#### **Access dimension**

- the dissemination of advance release calendars providing at least one-quarter advance notice of approximate release dates, and at least a one-week advance notice of the precise release dates; and
- the simultaneous release of data to all users.

#### **Integrity dimension**

- the dissemination of the terms and conditions under which official statistics are produced and disseminated;
- the identification of internal government access to data before release;
- the identification of ministerial commentary on the occasion of statistical release; and
- the provision of information about revision and advance notice of major changes in methodology.

#### **Quality dimension**

- the dissemination of documentation on statistical methodology and sources used in preparing statistics; and
- dissemination of component detail and/or additional data series that make possible cross-checks and checks of reasonableness.

In support of their subscriptions, SDDS subscribers undertake to do the following:

#### **Metadata:**

- post descriptions of their data dissemination practices (metadata) on the IMF's DSBB. Summary methodologies, which describe data compilation practices in some detail, are also disseminated on the DSBB.

**Internet website:**

- maintain a website, referred to as the National Summary Data Page, which contains the actual data described in the metadata and to which the DSBB is electronically linked.

At the March 29, 2000 meeting of the IMF's Executive Board, Directors approved the incorporation of a new SDDS data category on external debt. The transition period for implementing this data category expires in March 2003.

As a result of the IMF Executive Board's Third Review of the SDDS in March 2000, the IMF staff began monitoring observance of the Standard. Monitoring commenced at the beginning of July 2000 and is limited to the coverage, periodicity, and timeliness of the data and to the dissemination of advance release calendars.

*Source: Guide to the SDDS, February 2002: <http://dsbb.imf.org>*

**Data Quality Assessment Framework—Generic Framework**  
(July 2001 Vintage)

Quality Dimensions	Elements	Indicators
<p><b>Prerequisites of quality<sup>1/</sup></b></p>	<p><b>0.1 Legal and institutional environment</b>—<i>The environment is supportive of statistics.</i></p> <p><b>0.2 Resources</b>—<i>Resources are commensurate with needs of statistical programs.</i></p> <p><b>0.3 Quality awareness</b>—<i>Quality is a cornerstone of statistical work.</i></p>	<p>0.1.1 The responsibility for collecting, processing, and disseminating statistics is clearly specified.</p> <p>0.1.2 Data sharing and coordination among data producing agencies are adequate.</p> <p>0.1.3 Respondents' data are to be kept confidential and used for statistical purposes only.</p> <p>0.1.4 Statistical reporting is ensured through legal mandate and/or measures to encourage response.</p> <p>0.2.1 Staff, financial, and computing resources are commensurate with statistical programs.</p> <p>0.2.2 Measures to ensure efficient use of resources are implemented.</p> <p>0.3.1 Processes are in place to focus on quality.</p> <p>0.3.2 Processes are in place to monitor the quality of the collection, processing, and dissemination of statistics.</p> <p>0.3.3 Processes are in place to deal with quality considerations, including tradeoffs within quality, and to guide planning for existing and emerging needs.</p>
<p><b>1. Integrity</b></p> <p><i>The principle of objectivity in the collection, processing, and dissemination of statistics is firmly adhered to.</i></p>	<p><b>1.1 Professionalism</b>—<i>Statistical policies and practices are guided by professional principles.</i></p> <p><b>1.2 Transparency</b>—<i>Statistical policies and practices are transparent.</i></p> <p><b>1.3 Ethical standards</b>—<i>Policies and practices are guided by ethical standards.</i></p>	<p>1.1.1 Statistics are compiled on an impartial basis.</p> <p>1.1.2 Choices of sources and statistical techniques are informed solely by statistical considerations.</p> <p>1.1.3 The appropriate statistical entity is entitled to comment on erroneous interpretation and misuse of statistics.</p> <p>1.2.1 The terms and conditions under which statistics are collected, processed, and disseminated are available to the public.</p> <p>1.2.2 Internal governmental access to statistics prior to their release is publicly identified.</p> <p>1.2.3 Products of statistical agencies/units are clearly identified as such.</p> <p>1.2.4 Advance notice is given of major changes in methodology, source data, and statistical techniques.</p> <p>1.3.1 Guidelines for staff behavior are in place and are well known to the staff.</p>

**Data Quality Assessment Framework—Generic Framework  
(July 2001 Vintage)**

Quality Dimensions	Elements	Indicators
<p><b>2. Methodological soundness</b></p> <p><i>The methodological basis for the statistics follows internationally accepted standards, guidelines, or good practices.</i></p>	<p><b>2.1 Concepts and definitions—</b> <i>Concepts and definitions used are in accord with internationally accepted statistical frameworks.</i></p> <p><b>2.2 Scope—</b><i>The scope is in accord with internationally accepted standards, guidelines, or good practices.</i></p> <p><b>2.3 Classification/sectorization—</b> <i>Classification and sectorization systems are in accord with internationally accepted standards, guidelines, or good practices.</i></p> <p><b>2.4 Basis for recording—</b><i>Flows and stocks are valued and recorded according to internationally accepted standards, guidelines, or good practices.</i></p>	<p>2.1.1 The overall structure in terms of concepts and definitions follows internationally accepted standards, guidelines, or good practices: see dataset-specific framework</p> <p>2.2.1 The scope is broadly consistent with internationally accepted standards, guidelines, or good practices: see dataset-specific framework.</p> <p>2.3.1 Classification/sectorization systems used are broadly consistent with internationally accepted standards, guidelines, or good practices: see dataset-specific framework.</p> <p>2.4.1 Market prices are used to value flows and stocks. 2.4.2. Recording is done on an accrual basis. 2.4.3 Grossing/netting procedures are broadly consistent with internationally accepted standards, guidelines, or good practices.</p>

**Data Quality Assessment Framework—Generic Framework  
(July 2001 Vintage)**

Quality Dimensions	Elements	Indicators
<p>3. Accuracy and reliability</p> <p><i>Source data and statistical techniques are sound and statistical outputs sufficiently portray reality.</i></p>	<p><b>3.1 Source data</b>—<i>Source data available provide an adequate basis to compile statistics.</i></p> <p><b>3.2 Statistical techniques</b>—<i>Statistical techniques employed conform to sound statistical procedures.</i></p> <p><b>3.3 Assessment and validation of source data</b>—<i>Source data are regularly assessed and validated.</i></p> <p><b>3.4 Assessment and validation of intermediate data and statistical outputs</b>—<i>Intermediate results and statistical outputs are regularly assessed and validated.</i></p> <p><b>3.5 Revision studies</b>—<i>Revisions, as a gauge of reliability, are tracked and mined for the information they may provide.</i></p>	<p>3.1.1 Source data are collected from comprehensive data collection programs that take into account country-specific conditions.</p> <p>3.1.2 Source data reasonably approximate the definitions, scope, classifications, valuation, and time of recording required.</p> <p>3.1.3 Source data are timely.</p> <p>3.2.1 Data compilation employs sound statistical techniques.</p> <p>3.2.2 Other statistical procedures (e.g., data adjustments and transformations, and statistical analysis) employ sound statistical techniques.</p> <p>3.3.1 Source data—including censuses, sample surveys and administrative records—are routinely assessed, e.g., for coverage, sample error, response error, and nonsampling error; the results of the assessments are monitored and made available to guide planning.</p> <p>3.4.1 Main intermediate data are validated against other information where applicable.</p> <p>3.4.2 Statistical discrepancies in intermediate data are assessed and investigated.</p> <p>3.4.3 Statistical discrepancies and other potential indicators of problems in statistical outputs are investigated.</p> <p>3.5.1 Studies and analyses of revisions are carried out routinely and used to inform statistical processes.</p>

**Data Quality Assessment Framework—Generic Framework  
(July 2001 Vintage)**

Quality Dimensions	Elements	Indicators
<p><b>4. Serviceability</b></p> <p><i>Statistics are relevant, timely, consistent, and follow a predictable revisions policy.</i></p>	<p><b>4.1 Relevance</b>—<i>Statistics cover relevant information on the subject field.</i></p> <p><b>4.2 Timeliness and periodicity</b> – <i>Timeliness and periodicity follow internationally accepted dissemination standards.</i></p> <p><b>4.3 Consistency</b>—<i>Statistics are consistent within the dataset, over time, and with major datasets.</i></p> <p><b>4.4 Revision policy and practice</b>—<i>Data revisions follow a regular and publicized procedure.</i></p>	<p>4.1.1 The relevance and practical utility of existing statistics in meeting users’ needs are monitored.</p> <p>4.2.1 Timeliness follows dissemination standards. 4.2.2 Periodicity follows dissemination standards.</p> <p>4.3.1 Statistics are consistent within the dataset (e.g., accounting identities observed). 4.3.2 Statistics are consistent or reconcilable over a reasonable period of time. 4.3.3 Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks.</p> <p>4.4.1 Revisions follow a regular, well-established and transparent schedule. 4.4.2 Preliminary data are clearly identified. 4.4.3 Studies and analyses of revisions are made public.</p>

**Data Quality Assessment Framework—Generic Framework  
(July 2001 Vintage)**

Quality Dimensions	Elements	Indicators
<p><b>5. Accessibility</b></p> <p><i>Data and metadata are easily available and assistance to users is adequate.</i></p>	<p><b>5.1 Data accessibility</b>—<i>Statistics are presented in a clear and understandable manner, forms of dissemination are adequate, and statistics are made available on an impartial basis.</i></p> <p><b>5.2 Metadata accessibility</b>—<i>Up-to-date and pertinent metadata are made available.</i></p> <p><b>5.3 Assistance to users</b>—<i>Prompt and knowledgeable support service is available.</i></p>	<p>5.1.1 Statistics are presented in a way that facilitates proper interpretation and meaningful comparisons (layout and clarity of text, tables, and charts).</p> <p>5.1.2 Dissemination media and formats are adequate.</p> <p>5.1.3 Statistics are released on the preannounced schedule.</p> <p>5.1.4 Statistics are made available to all users at the same time.</p> <p>5.1.5 Nonpublished (nonconfidential) subaggregates are made available upon request.</p> <p>5.2.1 Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical techniques is available, and differences from internationally accepted standards, guidelines or good practices are annotated.</p> <p>5.2.2 Levels of detail are adapted to the needs of the intended audience.</p> <p>5.3.1 Contact person for each subject field is publicized.</p> <p>5.3.2 Catalogs of publications, documents, and other services, including information on any charges, are widely available.</p>

<sup>1/</sup> The elements and indicators included here bring together the “pointers to quality” that are applicable across the five identified dimensions of data quality.

### Summary of Discussions with Users

The mission met or held teleconferences with 15 users from business, academia, government, and international organizations. The “sample” was not random. Indeed, it was heavily weighted with very active users of macroeconomic data from StatCan and the BoC; several of them were members of StatCan’s consultative groups. (The agenda used for the discussions is in Box 1.)

These users rated the overall quality of Canadian macroeconomic statistics as very good. On a scale of 1 to 5, with 5 being “excellent” and 1 being “poor,” everyone who gave a rating rated Canadian statistics as at least 4. They readily offered comparisons with U.S. statistics. While they spoke favorably of the U.S. policy of free official statistics, they believed that Canada tended to make a better tradeoff between timeliness and revisions. In other words, they will take somewhat slower data in order to get fewer revisions than in the United States.

Key points among the views expressed about macroeconomic statistics are as follows:

- The coverage and amount of detail is generally satisfactory. Several users wished that more detail could be made available by province and by industry, but recognized that confidentiality issues loomed large. Several identified the gaps in the coverage of services and the lack of a measure of labor compensation as issues. Several would find a functional breakdown of government expenditures in a national accounting framework useful, showing, for example, expenditures on “health.”
- Accuracy is generally regarded as high. Large revisions to trade data raise concerns about accuracy for some users.
- Timeliness, as mentioned above, is often seen in a tradeoff with revisions. By and large, timeliness is viewed as satisfactory. Periodicity is viewed as satisfactory.
- Views on documentation of methodology and information about quality were mixed. Some want more documentation on the Internet. In particular, information about the estimates for inventories is missed. Even when critical of the lack of documentation online or in hard copy, users spoke highly of the knowledgeable, responsive persons who were easy to access on the phone.
- Some felt that they did not get enough information about past revisions. They noted that the documentation on breaks in series, such as at the introduction of NAICS, was inadequate. On a related point, several users want longer consistent time series to be made available after revisions.
- Most users were critical of the StatCan pricing policy, especially for data from CANSIM. On the other hand, most were complimentary about the one-stop shopping at the StatCan website.

As to special strengths, several users expressed appreciation for the consistent set of macroeconomic accounts built around the I-O tables.

### Box 3. Meeting with Data Users: Agenda

An IMF team will visit Ottawa during January 22-February 5, 2003 to prepare an assessment of Canada's macroeconomic statistics as part of the program on Reports on the Observance of Standards and Codes. The team will focus on national accounts, prices, balance of payments, monetary statistics, and government finance statistics. As background, the team is seeking statistics users' views on these datasets. The names of individuals and organizations who provide views will not appear in the team's report.

I. **Quality in statistics** can be viewed in terms of coverage and detail, accuracy, timeliness, etc. Often these dimensions must be traded off against each other. Further, quality comes at a cost, including response burden. Nevertheless, users' views on the following questions would be useful. Brief specifics would help the team follow up.

- a. Statistical products: are you satisfied with...
  - Coverage (the range of statistics) and amount of detail?
  - Accuracy?
- b. Dissemination: are you satisfied with...
  - Timeliness (lag in availability after reference period)?
  - Periodicity?
  - Ease of access to numbers?
- c. Documentation: are you satisfied with...
  - Explanatory notes and other documentation on methodology?
  - Information about quality?
  - Information about planned revisions? Explanation of past revisions?

II. **Overall assessment** of official macroeconomic statistics

- a. How do you compare Canada's statistics with those of other countries—e.g., the United States: Better? Same? Worse?
- b. On a scale of 1 to 5, with 1 being poor and 5 being excellent, how do you assess the overall quality of Canada's statistics?

III. **Additional comment:** Special strengths? Areas needing improvement or change?