

Data quality

The balance of payments (BOP) measures Canada's transactions with non-residents.

Myriad transactions, requiring a wide variety of sources to track them, are conducted with non-residents. Generally, the statistics are derived from a combination of surveys and other sources, chiefly administrative records. Results of surveys conducted within the Balance of Payments Division are integrated with surveys and administrative data¹ from elsewhere within and outside Statistics Canada, and are supplemented by benchmark and category-specific estimates. It is difficult to give a precise measure of quality for such a complex and interrelated system as the BOP. Some judgmental view is needed in qualifying the data as good or weak. As a result of the checks and balances in the system, even weak data input assumes a different character when analysed and made final.

Quality can be assessed in part by the extent and magnitude of the revisions. The series for the most recent years are subject to more revisions since they are largely derived from quarterly sample surveys and projections from annual census surveys or administrative sources.

Another indicator of data quality is the statistical discrepancy, which can be derived as a result of the double-entry bookkeeping system used to record BOP transactions. Under this system, a debit in one account should conceptually give rise to an identical credit in another account. In practice, however, the equality between the accounts is not achieved because of the wide variety of sources used. The net difference among the accounts is entered as the statistical discrepancy, which in effect makes the BOP 'balance.' The discrepancy is used as a broad assessment measure, either on its own or in relation to a broader measure, such as the sum of current account receipts and payments or all the transactions of the BOP. However, the discrepancy as a measure of data quality has its limitations-it reflects only the net of measurement errors and unrecorded transactions.

The data benefit from internal consultations and review, both within the system of National Accounts (for example, commodity-by-commodity balancing through the input-output system) and with other areas of Statistics Canada, such as the Culture, Tourism and Centre for Education Statistics Division (CTCES), the Services Division and the Science, Innovation and Electronic Information Division.

Use has also been made of administrative data sources-particularly those of the Canada Revenue Agency (CRA)-that help in cross-checking and in researching coverage. With some notable exceptions, such as goods, public debt and public administration, these administrative data sources appear less reliable as primary sources for international transactions.

Two other tools are used on an ongoing basis to help assess data quality. First, comparisons of detailed categories and methodology are made in the course of the annual reconciliations of the current accounts of Canada and the United States.² Also useful is an events-tracking system developed in recent years that monitors international transactions by regularly scanning the business media. Tracked events are both company-specific and of a general background nature (e.g., industry trends and developments). The information assists with the editing and updating of survey coverage for BOP surveys and other series. Institutionally, advisory groups and managers of Statistics Canada, as well as the views of users, are reflected in the ongoing work of data development, compilation and analysis. A further influence has been the implementation in Canada of the international standards for BOP compilers, notably in 1996 and 1997, following the release by the International Monetary Fund (IMF) of its latest

1. Typically, these consist of financial records and other records of government programs.

2. For further reference, see "Reconciliation of Canada-United States Current Account, 2000 and 2001," in the third quarter 2002 issue of this publication and in the November 2002 issue of *Survey of Current Business* by the U.S. Bureau of Economic Analysis.

manual.³ A more current reference for services statistics is available from the United Nations (UN) Statistical Office.⁴

While the following paragraphs cannot offer a full evaluation of data from each of the many data sources employed, the quality of the BOP overall is believed to range from good to acceptable.

Current account series

Current account transactions with non-residents are broken down as follows: goods and services, investment income, and current transfers.

Goods

The quality of customs data, the fundamental source of data, is considered to be good. While the customs records are designed to meet administrative more than statistical purposes, their classification and coverage have seen various improvements, notably through the exchange of import data with the United States beginning in 1990.⁵ Periodic reconciliations are conducted with other major trading partners by the International Trade Division (ITD).

Adjustments are made to customs data to ensure consistency with BOP concepts and the National Accounts framework. Many of these adjustments are derived from other administrative or corporate information and may be lacking in timeliness or geographic detail.

Data quality for the adjustments is mixed. Since the change to valuing goods at the frontier of the exporting country, historically implemented in 1997, inland freight to the border is included with the value of goods. This is in conformity with international standards for the reporting of goods trade. Since goods are valued at the borders of the exporting country, some transportation services could occur within the exporting economy between residents of the exporting economy and non-residents. To preserve the uniform valuation of the goods at the borders, an offsetting entry should be made in transportation services.⁶ In 1997, general estimates of trucking freight beyond the border were introduced as international transport services. These estimates have been added on a gross basis.

Receipts on inland freight-to-border charges on Canadian exports are provided by ITD from U.S. Customs documentation as part of the bilateral agreement to exchange import data. Certain additional rail charges paid from abroad on forestry products are also included. Payments to the United States for carrying imports to the Canadian border are based on internal estimates of freight charges by mode of transport. In May 1998, ITD significantly revalued downward its inland freight on imports. The change has reduced the large BOP measure of truck freight by about one-third, and the lower level has been carried back in the BOP-based statistics to 1993 with a link adjustment to 1992, the latest unrevised year at the time. Other improvements have seen a shift of adjustments into the customs series, either annually (as to record higher grain volumes after 1996) or on a current monthly basis. The underestimation of non-U.S. exports, referred to in the "Annual revisions" section of the first quarter 2001, 2002 and 2003 editions and of this current edition of this publication, relies on a variety of sources. These include small samples and certain intercountry reconciliations at different points in time, supplemented by information from the Canadian input-output tables. There is thus scope for further estimation to be made while steps proceed to improve underlying data. Also, the underestimation of non-U.S. exports in the current period, as a result of expected but unreceived documents, is recognized by a general adjustment that began in 1998; details are available from ITD, which computes and monitors the amount. Likewise, ITD now computes and monitors the adjustment removing from goods custom software that is already in imports of services.

While such issues of data quality have recently been addressed, readers should still be aware that most of the BOP adjustments to goods are not intended to be independent measures of activity in their own right; they frequently represent corrections to phenomena already measured directly elsewhere. As such, they rely on

3. These are described in the *Balance of Payments Manual, 5th Edition, International Monetary Fund, 1993*.

4. *Manual on Statistics of International Trade in Services, United Nations Statistical Office, 2002 for the European Commission, IMF, Organisation for Economic Cooperation and Development, United Nations, United Nations Conference on Trade and Development and the World Trade Organization.*

5. See publications of the International Trade Division, the division responsible for the production of customs data. That program and data characteristics are described, for example, in *Canadian International Merchandise Trade, Catalogue no. 65-001-XIB*.

6. See recommendations of Chapter XI of the *Balance of Payments Manual, 5th Edition, International Monetary Fund, 1993*.

available approaches and secondary sources for their calculation, and less precision should be attributed than to directly-measurable transactions.

Services

International transactions in services consist of the following categories: travel, transportation, commercial and government services.

Significant portions of the data on services, principally for travel and commercial services, are derived from annual or more frequent surveys. Over 40% of all receipts and nearly one-third of payments are based directly or indirectly on administrative records. For the estimates of travel spending, monthly administrative data are synthesized with quarterly survey data, whereas for commercial services, survey data are the main source and annual administrative data are used to assess and improve the survey results. Administrative sources for commercial services, first available for 1989, initially augmented the overall coverage of these services by about 2%, but over the last three survey years added a further 3% to value. Administrative data have also been used in the verification of travel data. Benchmark indicators are used to derive certain other series where current direct measures are not available.

The general quality of services data is regarded as acceptable, even though unique measurement problems arise because of the intangible nature of services.

Travel

Outlays are for travel of less than one year, as well as travel for one year or more related to education and health.

The basic statistics are compiled by the CTCES from a combination of census and sample counts of travellers crossing the border, coupled with sample surveys (redesigned for the 1990 reference year) to collect specific information from travellers, including their expenditures.⁷ The counts of travellers are considered to be reliably measured, while the response rates for expenditure factors and other characteristics typically remain low. Survey methodology is kept under continuing review and special characteristics are studied periodically.⁸ With the data releases of the first quarter 2002, the coverage of spending by travellers moving through key airports has been raised as a result of new survey methodology and sample adjustment by CTCES. For overseas travellers, response rates for the first full year of the survey (2000) stood at 93% and at 96% for year 2001; also, geographic patterns have been made more reliable. In co-operation with the Balance of Payments Division, CTCES produced link estimates to the latest unrevised year, 1997 and preliminary estimates for 2000 and 2001. Final estimates for 2000 and 2001 have been reported by CTCES in August 2002. With the first quarter 2003 issue of this publication, final data for 2001 and 2002 have been included and a new link with the most recent unrevised year (1998) was made again.

The series on health-related travel payments represent payments for both hospital and physician services. Data under provincial health plans were updated in 1996 from administrative sources and certain historical gaps filled with reference to related series from public reports. Access to U.S. sources enabled a fuller estimate from 1995 to cover payments beyond provincial health plans at major medical centres and university hospitals. Some health expenditures may be embedded in other travel spending, but amounts are difficult to assess.

The receipts data for health consist of foreign spending for hospital services in Canada, as recorded by the Health Division's annual hospital survey, with projections for recent years where survey results are not yet available. With the release of the first quarter 1999 data, a provision for receipts data on physician services, based on available ratios for payments, is added beginning in 1995.

For the education series, both receipts and payments cover expenditures by students for tuition, accommodation and personal spending for those in full-time university and college programs. On the receipts side, with co-operation of

7. Publications by CTCES provide additional description of the sources, methods and quality of the travel series. For example, see *International Travel 2000*, Catalogue no. 66-201-XIE, April 2004.

8. One important component of expenditures by Canadian travellers abroad (namely spending on goods) was validated for 1990 and 1991 through analysis of related administrative data. See *Statistics Canada Cross-Border: Shopping Trends and Measurement Issues*, National Accounts and Environment Division Technical Series, No. 21, January 1994.

CTCES, time series on the number of foreign students in Canada and average tuition were combined with estimates of other expenditures to produce the historical estimates.

For payments, the U.S. Bureau of Economic Analysis kindly supplied comprehensive series from 1981. Data on student expenditures overseas are updated by CTCES to incorporate more recent volume and expenditure estimates.

It should be noted that some outlays for postsecondary education may remain in general travel expenditures, including amounts for full-time programs of less than a year. In some cases, travellers would be reporting outlays for commercially supplied or personal interest courses as part of general expenditures as well. The series on education for their part do not extend to international students at the elementary and secondary levels. As with health-related travel, the education series is seen as a conservative estimate of activity. In recent years, lags in enrolment data have increased the scope for revision. Some new CTCES re-estimations of foreign students studying in Canada and Canadian students studying abroad have been linked to 1998. The revisions incorporate a more current estimate of the number of full-time university students and the spending per student.

Finally, business travel includes estimates of spending by boat and rail crews, calculated by CTCES. These estimates are included along with spending by plane and truck crews.

Transportation

The main elements consist of water, air and certain land transport.

Data quality is mixed and ranges from weak to acceptable. Water and air transportation is derived from a number of small customized BOP surveys conducted annually (the coverage ranging from 7 to 47 firms, depending on the survey). Response rates on four vessel surveys for 2002 averaged 61%, while a survey of 55 foreign airlines showed a response rate of 65%. Where regular follow-ups do not produce sufficient data, amounts are imputed based on prior responses and available external information. While frames are updated from industry registers and media sources, direct coverage remains incomplete. In the case of ocean freight payments, unit freight charges from survey data are calculated and applied to annual volume data from the Transportation Division on international cargo unloadings.

The data include a provision that recognizes earnings by Canadian and U.S.-domiciled truckers for the carriage of goods in the other country. These estimates adapt methodology developed by the U.S. Bureau of Economic Analysis. These transactions are classified not with domestic inland freight, but as international freight occurring beyond the export frontier. Data are limited because of difficulties in estimating for example, the shares of U.S.-and Canadian-domiciled carriers. Coverage begins in 1980 on receipts and 1987 on payments, reflecting the earlier access to U.S. markets as deregulation became more widespread across the North American transport industry.

Because it is a component of both Canadian and U.S. calculations, the lower valuation in 1998 of inland freight by ITD, lowered the BOP estimates somewhat for receipts and payments of transborder trucking by both Canadian and U.S. statisticians. From 1993, some increase was made to payments overseas for land-side airline services and receipts on air freight to align more with recently reported source information. By 1999, it was concluded that certain rentals comprised financial leases transactions more appropriately reflected in the financial account than showing as a transportation service. Changes were accordingly made as of the first quarter 1999 issue, beginning with the year 1995. In 2002, a reclassification of certain support services to air transport was made from commercial services. The shift to the transportation account beginning with 1998, brings treatment into line with present international standards.

Commercial services

The Balance of Payments Division collects much of the detail on commercial services through its comprehensive annual survey of international service transactions of some 3,000 firms in Canada.⁹ The identification of new firms trading in cross-border services can be difficult. For the firms that are surveyed, however, the quality of the

9. See Appendix 2 of *Canada's International Trade in Services, 2003, Catalogue no. 67-203-XIB for the categories used to collect annual data for 2003. They are from form BP-21S, International Transactions in Commercial Services.*

overall reported results is seen as reliable, and the 2002 response rate stood at 68%. To reduce the response burden, starting with the reference year 2003, approximately 900 small respondents will be surveyed once every three years instead of every year. Three targeted surveys of 233 insurance carriers and agencies showed average response rates of 96%. Non-responses tend largely to consist of low or nil value transactions for the period. However, a provision based on analysis of taxation records is applied to allow for underreporting in the survey and for operations too small to survey. As the data are surveyed net of withholding taxes, an overall estimate of these taxes is re-allocated to applicable royalty categories.

For each current year, data are estimated from a quarterly sample of firms that is based on the previous comprehensive annual survey data. Where follow-ups do not result in sufficient data, amounts are imputed from past results, external information and broader projections of annual information. In 2002, the quarterly sample survey was redesigned. Its stratification was unlinked from six summary industry categories-in which the 'other' grouping was predominant-to a direct sample of some 28 categories of receipts and payments. As before, it employs two quarterly survey sources but the number of firms surveyed was expanded by 25%. The first source is a quarterly survey of 529 firms, mainly Canadian-controlled. The second source comprises a selection of 300 firms made from a quarterly survey of financial transactions by mainly foreign-controlled firms. Response rates on the expanded base have decreased slightly to 60% in 2003. However, because of the increase in the sample, there was a larger number of firms responding to these questionnaires.

The annual commercial services survey is supplemented with good to weak data from other specific enquiries made quarterly and annually, and includes benchmark studies and administrative records. With the first quarter 1998 data release, BOP recalculated commission rates from 1994 that apply to trading in securities. The result was a substantial lowering in the series for both receipts and payments; the lower rates applied to volume data served to reflect wider competition in securities dealing. Other corrections have been made during the following years leading to further downward revisions to receipts and payments in 2003, the substantial revision to the receipts mainly affected the commissions received on trade of U.S. securities with residents from countries other than the United States.

Addition of survey data is incorporated from 1996 on certain computer services transactions, while additional respondents in the area of geomatics and commercial education were added also from 1996 with the assistance of Industry Canada. Data reviews with CTCES have continued so as to fill out coverage of audio-visual services, for example on film labs and sound recording. Fuller data have been added from certain redesigned surveys of the Services Division following Statistics Canada's Unified Enterprise Survey initiative in recent years.

Other changes from 1995 include removal from goods of certain pre-packaged software already reported with services. A block of lower-valued Canadian International Development Agency (CIDA) contracts was also added, to miscellaneous business services. From 1996, pre-packaged software export values were reclassified from computer services as they were considered to fall under royalties. From 1997, additional provisions were made for certain payments abroad not sufficiently covered by survey sources. Other additions from 1997 include initial estimates of multimedia transactions and royalty payments for cable services. Where identified, support services related to the Internet and its access are presently assigned to information services.

From a quality standpoint, data limitations preclude separate articulation under Investment income of earnings by seasonal and border workers. Rather, a provision is included with miscellaneous business services, where such earnings are treated as units of own account labour.

A fuller description of data for individual commercial services appears in Canada's International Trade in Services, Statistics Canada, Catalogue no. 67-203-XIB.

Government services

The category comprises international transactions arising from government activities (diplomatic, commercial and military) not covered elsewhere in the BOP.

The quality of the series varies, reflecting access to sound administrative records through to estimates based overall on very limited information.

After some years, spending in Canada by foreign embassies was re-estimated through a voluntary survey that produced a small but helpful cross-section of responses for the year 1995. Results generally raised previous estimates. A number of changes were made from 1993, following a review of government transactions with the Input-Output Division. Military expenditures abroad were scaled more in line with declining outlays on personnel. In recent years, additions and changes were made to more aptly reflect outlays for trade development by provincial governments and, on the receipts side, the use of facilities by visiting non-U.S. military forces. Reduced were a number of in-Canada outlays of a commercial nature deemed paid to Canada by recipients of official aid flows and already recognized elsewhere under services to business.

From 1997, data on a range of immigration services paid by non-residents have been added to this account. They draw on administrative aggregations of revenues and entry of persons recorded by Citizenship and Immigration Canada.

Investment income

Investment income consists of income on direct, portfolio and other investments. The data vary in quality, depending upon the sources used. Furthermore, while totals of withholding taxes as shown in current transfers are seen as reliable, their allocation among interest, dividends and services is entirely estimated.

Receipts

Data on direct investment income receipts are largely reliable. Canadian firms making direct investments abroad earn interest on their holdings of debt issued by those enterprises abroad, as well as profits (losses) from their equity interest in these enterprises. Such data are derived from three surveys of financial transactions:

- (a) annual, 3,737 firms, between Canada and other countries (2002 response rate of 58%)
- (b) quarterly, 300 largest firms (2003 response rate of 64%)
- (c) annual, 1,378 firms, of capital invested abroad by Canadian enterprises (2002 response rate of 49%).

Investment income on portfolio investment are made up of dividends and interest. Dividend receipts are derived by applying dividend yields to a large and detailed inventory of foreign stocks held by the major Canadian financial institutions. Data on interest receipts are derived from estimates of bond holdings and are seen as limited. A major improvement to the quality and coverage of the underlying positions for portfolio dividends resulted from the IMF-co-ordinated survey of portfolio investment abroad beginning with the reference year 1997 and implemented as an ongoing annual Canadian survey since that time. Methodology was developed to derive yields on a detailed company basis to combine with position and flows data. This resulted in substantially higher dividend flows from the reference year 1997. The 2002 survey for Canada covered 571 companies with a response rate of 75%. More research is needed in order to reflect in these series certain results from the major survey of portfolio holdings abroad co-ordinated among countries by the IMF.

In 2003, an important change was made to the dividends and re-invested earnings series of the Canadian banks. Before, these two types of income were combined under dividends because of some data source limitations and in order to avoid possible double counting with other financial data. These revenues have been correctly assigned, back to 1999. Following this methodological change, dividend receipts for the banking sector have decreased while the reinvested earnings of that sector have increased by the same values.

As for interest receipts on other investments, the data quality is mixed. Earnings on international reserves are obtained from official records and are considered to be accurate; similarly, interest receipts on government-financed export credits are based on reliable administrative records. Interest revenues and expenses of the banks are shown on a gross basis, for both assets and liabilities. The quality of banking data is reliable. The data for interest on deposits abroad by non-banks, however, are weak. While rates applied to these asset categories are from established public sources, so far, it has not been possible to identify the range of resident holdings outside Canada, given the limitations in the frequency, nature and classification practices of foreign sources used.

Payments

The data on direct investment income is generally reliable. Profits data are taken directly from quarterly survey data conducted by the Industrial Organization and Finance Division (IOFD) of Statistics Canada and combined with BOP survey information on dividends. Recent data from the former source are still subject to change. Interest on the debt issued by direct investment enterprises in Canada to non-resident direct investors are derived from the same two survey sources described above for investment income receipts from direct investment.

Payments on portfolio investment are made up of dividends and interest. Data on payments of dividends are derived from surveys of Canadian companies that are known to have foreign portfolio holders. It has been difficult with any precision to establish the level of foreign portfolio ownership, and therefore the associated dividend payments are limited accordingly. Data on interest payments on bonds however, are calculated from a detailed inventory of Canadian bonds, including discount bonds, resulting in reliable calculations based on security-by-security information. Underlying amounts, rates, maturity date and currency are obtained on a preliminary basis (monthly and quarterly) from 193 issuers and brokers (with a response rate of 93% in 2003) and are then confirmed through annual surveys of Canadian borrowers where responses averaged 57% in 2002. The quality is good. Interest on money market instruments (such as treasury bills and commercial paper) is calculated precisely in the same manner as bonds. This change took place beginning in reference year 2003. Information on flows, from which stock positions are cumulated, is obtained with virtually complete responses from monthly surveys of brokers and large Canadian borrowers. However, the geographic distribution of foreign holders is more difficult to establish.

Interest payments on other investments consist of interest on borrowing from foreign banks and on deposit liabilities. Interest on borrowings from non-resident banks is obtained from outstanding positions and relevant market yields. In addition, some relatively minor components are based on administrative records and best estimates. Consequently, the data have limitations. As mentioned above, investment income on banking claims is presented separately for revenues and expenses. Interest from banking operations booked in Canada is derived from data supplied by all banks from a quarterly survey and the quality is reliable.

Current transfers

Quality for this diverse group ranges from most reliable to acceptable.

From 1991, estimates from U.S. sources are included for study, certain personal gifts and health benefits that are received, but not paid for, by Canadians residents.

Information on remittances, a second component of current transfers, is taken from a variety of sources. Reliable administrative data exist for Canadian government payments abroad to non-residents. Personal remittances to non-residents are obtained directly from Statistics Canada's Survey of Household Spending. Remittances regarding charitable and academic institutions and inward personal remittances data are considered weak. Fuller bilateral data have now improved the estimate of pension receipts somewhat, though some recent values have been revised downwards at source.

Data on Canadian withholding taxes originate from CRA, by fiscal quarter, with the last fiscal-year amounts assigned to that year. Recently, revisions to this series for timing and accrual adjustments were supplied from the Public Institutions Division back to 1993 and were applied from 1995. U.S. withholding taxes are based on lagged information from the U.S. Internal Revenue Service; all other foreign withholding taxes are estimated. Allocation of these taxes back to investment income and commercial services is entirely estimated.

Data on federal government expenditures in support of international organizations and programs come largely from the Public Accounts and the quality is taken as reliable. A reworking in 1999 of detailed information from this source led to an upward revision from 1995.

Lastly, data on official contributions and on recently included administrative expenses are obtained from the CIDA. The data are reliable. In 2003, administrative data have been used to estimate the remittances made by non-governmental organizations from Canada. Data have been revised upward by almost 50% from 1999. Quality for these data improved greatly.

Capital and financial account series

Capital account

This account is made up of capital transfers (i.e., migrants' assets, debt forgiveness and inheritances), and transactions in non-produced, non-financial assets (i.e., intellectual property rights such as patents, and tangible assets such as embassy land).

The quality of the various series on immigrants' assets (funds in possession, purchases of houses in Canada, and the rest of their wealth) is considered to be fair. The data are based on monthly administrative records filed by prospective immigrants at the time of visa application. They come with a one-month delay with previous months' estimates often revised; the quality is acceptable. An average amount of funds transferred is applied to estimates of the number of emigrants, supplied by the Demography Division of Statistics Canada. The quality of data is weak because of the lack of a good information source. Debt forgiveness by the Government of Canada and through its enterprises is derived through administrative data and considered reliable. Small estimates of inheritances are based on earlier studies and the quality is weak.

Financial account

Financial account transactions with non-residents are broken down between Canadian assets and Canadian liabilities and are further segmented within each of those headings by direct, portfolio and other investment.

Canadian assets

Direct investment

Canadian direct investment abroad flows comprise cross-border flows in equity and debt (both long- and short-term) and reinvested earnings.¹⁰ The series undergo several updates as more complete information becomes available and estimates for undercoverage are gradually reduced. The first estimate is based on a quarterly sample of 300 (year 2003) of the most active companies. This is supplemented with an allowance for companies that are not surveyed quarterly and with information from the financial press. An audit is also done with another quarterly survey (larger sample) of financial data from IOFD to confirm some of the BOP survey information. This procedure thus provides more timely quarterly data than those obtained from the BOP annual survey, which is undertaken later. An annual survey of 3,737 companies (2002) is used to improve the initial estimates. Finally, a reconciliation is conducted between year-to-year changes of position data (taken from the annual survey of 1,378 firms in 2002) and the cross-border flow information. The response rate in 2003 for the quarterly survey was 64% while 58% and 49%, respectively, of the annual surveys for 2002 were returned. This resulted in data that are believed to fall into the acceptable to good range. However, quality problems arise because of the ongoing difficulties in identifying new firms that directly invest abroad.

Portfolio investment

For estimates of Canadian investment in foreign stocks and bonds, the accuracy is acceptable. The coverage may be incomplete to the extent that individuals transact in foreign bonds and stocks directly through foreign discount brokers or foreign investment firms. It is assumed, however, that most portfolio investment abroad is conducted through Canadian intermediaries who are surveyed. In addition, the largest direct holders are surveyed if it is established that they use non-resident channels of investment (for example, a foreign manager). The flows are measured mainly from monthly surveys (averaging 177 per month in 2003) sent to investment dealers and direct holders such as banks, pension funds, mutual funds, money managers and insurance companies. The response rate was over 90%.

While there is not an across-the-board survey of position information, portfolio asset positions have been surveyed annually since 1997 to the extent that they are owned by financial firms; this means that the surveys cover the vast

¹⁰ Re-invested earnings were included in direct investment flows from 1961. Short-term intercompany accounts were included from 1983.

majority of companies. The inaugural survey in 1997 was part of an international effort co-ordinated by the IMF to improve data availability on external portfolio investment. Some 29 countries participated in that survey.¹¹

In the late nineties, an acquisition strategy using shares became a major factor in measuring portfolio foreign equity transactions. For example, foreign companies that acquired Canadian companies would issue foreign treasury stock to the acquired company's shareholders. These flows are well identified in the financial press and confirmed through other published sources.

Other investment

Loans

Canada's loan assets comprise those by the Government of Canada and its enterprises, Canadian banks, corporations and those by the corporate and personal sectors through repurchase agreements (repos).

Loans by the Government of Canada, its enterprises and banks are derived through administrative data and are considered reliable. Repurchase agreements, or repo loans involve securities as collateral and are reported by Canadian dealers and brokers; they are considered to be of acceptable quality.¹² The data on corporate loans are believed to be good. They are obtained from an annual survey with a response rate of 58% for 2002. The first estimate is projected from a quarterly sample survey and is subject to revision. Overall, data on Canada's loan assets are considered to be in the range of acceptable to good quality.

Deposits

Canada's deposit assets are made up of those of Canadian banks and of all other Canadian (or non-bank) depositors.

Deposits of Canadian banks' are classified into the four following categories: Canadian dollar, foreign currency, gold and silver. They are derived from mainly administrative data and considered reliable.¹³ Non-bank deposits abroad are obtained from foreign banking data through the Bank of International Settlements. They are usually one quarter behind, and are aggregate data not on an instrument or issuer basis. These data are dependent on classifications of residency applied by reporting institutions outside Canada. The data have shown large unexplained fluctuations; these have been revised quite substantially and therefore are generally viewed as weaker estimates.

Official international reserves

Canada's reserve assets are derived from official records of the Government of Canada and therefore should be complete and accurate.

Other assets

This category contains many elements but is concentrated in the following short list: Canadian banks' security transactions (both long- and short-term), Canadian non-banks' foreign money market transactions, corporations' trade credits and other short-term receivables, progress payments by corporations, Government of Canada subscriptions to international agencies and deferred migrants' assets.

The foreign security transactions of Canadian banks are derived from monthly administrative data and are considered reliable, but are subject to revision. The foreign money market transactions are measured from both foreign administrative data and BOP survey data and are considered to be weaker estimates. Government of Canada subscriptions are derived from administrative data and considered reliable. The data on short-term receivables including trade credits are believed to be acceptable. They are obtained from an annual census survey with a response rate of 58% for 2002. The first estimate is projected from a quarterly sample survey and subject to revision. The series on deferred migrants' assets are considered to be weaker estimates. They are based on administrative records filed by prospective immigrants at the time of visa application. The series on progress payments are derived from the financial press and several known respondents that are surveyed on an occasional

¹¹ The IMF co-ordinated investment survey was repeated in 2001 with about 70 countries taking part. That survey will be continued annually in the future.

¹² A study was conducted in 1998/99 that improved the measurement of repos. This resulted in revising the measurements of earlier years.

¹³ Gold and silver deposit liabilities are derived from a monthly survey.

basis. Data on derivatives are obtained from a quarterly survey and the monthly securities survey. Both estimates on progress payments and for derivatives are considered weak.

Canadian liabilities

Direct investment

Transactions classified as foreign direct investment in Canada comprise cross-border flows in equity and debt (both short- and long-term) and reinvested earnings.¹⁴ Data on reinvested earnings are initially derived from a quarterly survey conducted by IOFD. The cross-border flows are measured through both a quarterly sample survey and a census annual survey. The coverage is validated against an annual survey of position data.

The series undergo several updates as more complete information becomes available and estimates for undercoverage are gradually reduced. The first estimate is based on a quarterly sample of 300 (year 2003) of the most active companies (the same sample used for direct investment abroad). This is supplemented with an allowance for companies that are not surveyed quarterly and with information from the financial press. It is also augmented and confirmed with results of the above-mentioned IOFD survey. Subsequently, an annual survey of 3,737 (year 2002) companies is taken to improve the initial estimates. Finally, a reconciliation of year-to-year changes of position data (taken from annual census survey of 5,183 companies in 2001) with cross-border flow information is conducted to provide final estimates. These estimates are verified against administrative data from time to time. Response rates for the three BOP surveys range from 61% to 66%. The data are believed to be of good quality.

Portfolio investment

Foreign portfolio investment flows for Canadian stocks, bonds and money market paper are believed to be relatively complete. However, the geographic distribution of the residence of the foreign holders remains difficult to establish—the Canadian issuers cannot accurately locate geographically the ultimate holders of their securities since the day-to-day operations are increasingly managed by security depositories through nominees.

The flows are reported in a monthly survey sent to investment dealers, the major banks, pension and mutual funds while debt and equity issuance is handled by tracking several overlapping published sources that are available on a monthly basis. The monthly surveys were sent to 177 firms in 2003 with a response rate of over 90%.

At times, the data may be revised when new transactors are identified or information becomes available through annual surveys of Canadian issuers. The coverage of most of these portfolio series is validated against both administrative data and annual census surveys covering foreign holdings of portfolio investment in Canada. In 2002, response rates for these annual position surveys were 57% for corporations and 91% for governments and their enterprises. These surveys enable the identification of retirements of debt issues called prior to maturity ('callable bonds'). The actual data on early retirements replace a macro allowance for these transactions. The data are believed to be of good quality.

In the late 1990s, an acquisition strategy using shares became a major factor in measuring portfolio Canadian equity transactions. For example, Canadian companies that acquired foreign companies would issue treasury stock to the acquired company's foreign shareholders. These flows are identified in the financial press and other published sources and are judged to be quite acceptable.

Other investment

Loans

Canada's loan liabilities comprise foreign bank borrowing, including foreign syndicated bank borrowing, other loans, mortgage loans, short-term foreign bank borrowing, and those by the corporate and personal sectors through repurchase agreements (repo loans).

¹⁴ Re-invested earnings were included in direct investment flows from 1961. Short-term intercompany accounts were included from 1983.

The borrowing by Canadian corporations and government enterprises consisting of foreign bank loans, including foreign syndicated bank borrowing, other loans and mortgage loans, are believed to be of acceptable quality. They are obtained from an annual census survey with a response rate of 57% for corporations and 91% for government enterprises for 2002. The first estimate is projected from a quarterly sample survey and subject to revision.

Repo loans, which involve securities as collateral, are reported by Canadian dealers and brokers, and are considered to be of acceptable quality. Foreign short-term bank borrowing comes from a combination of foreign administrative data and survey data and is considered to be of weak quality.¹⁵ Overall, data on Canada's loan liabilities are considered to be from acceptable to good quality.

Deposits

Canada's deposit liabilities are those lodged primarily with Canadian banks. There are also some small foreign deposits at the Bank of Canada.

Deposits with Canadian banks are distinguished into the four following categories: Canadian dollar, foreign currency, gold and silver. They are derived from mainly administrative data¹⁶ and considered reliable. Foreign deposits at the Bank of Canada are derived from administrative data and considered accurate.

Other liabilities

This category includes many elements whose quality varies according to the sources. The main series include Government of Canada demand note liabilities, corporations' trade credits and other short-term payables including the change in interest payable on loans, and progress payments. Government of Canada demand note liabilities are derived from administrative data and are considered reliable. The data on short-term payables including trade credits are believed to be acceptable. They are obtained from an annual census survey with a response rate of 58% for 2002. The first estimate is projected from a quarterly sample survey and subject to revision. The series on progress payments are derived from the financial press and several known respondents that are surveyed on an occasional basis; these data are considered of weaker quality because they are incomplete.

¹⁵ A study was conducted in 1998/99 that improved the measurement of repos. This resulted in revising the data for earlier years.

¹⁶ Gold and silver deposit liabilities are derived from a monthly survey.