The Bank of Canada's Management of Foreign Currency Reserves

Jacobo De León, Financial Markets Department

- *The Government of Canada's official international reserves are held primarily in the Exchange Fund Account (EFA). Reserves provide the federal government with general foreign currency liquidity. The Bank of Canada, acting as fiscal agent, has traditionally used reserves for interventions in the exchange market to promote orderly conditions for the Canadian dollar.*
- *The EFA is managed in a comprehensive portfolio framework that matches assets and liabilities. The EFA is funded by Canada's foreign currency borrowings in capital markets. Achieving a low funding cost for these borrowings, subject to prudent practices, is the main objective of the liability management.*
- *The main objective of EFA asset management is to minimize the cost of carry of reserves, while maintaining an adequate level of liquidity and ensuring safety of capital.*
- *The scope and sophistication of the Bank of Canada's management of foreign currency reserves have increased over the years, keeping pace with developments and innovations in financial markets.*

As of 31 December 2000, Canada held about US$32.2 billion in total official international reserves. Of that amount, about US$28.8 billion (89 per cent of total reserves) was held in liquid foreign currency assets.[1] This article describes the approach used by the Bank of Canada to manage the liquid foreign currency portion of Canada's official reserves, particularly the framework for matching assets and liabilities that governs the reserve-management operations. It also briefly reviews the evolution of the objectives and management of this activity over the past 25 years, in light of the changing level of reserves and developments in financial markets.

Ownership, Governance, and Rationale for Holding Foreign Currency Reserves

In Canada, official reserves are held primarily in a government account called the Exchange Fund Account (EFA).[2] International reserves provide the Government of Canada with general foreign currency liquidity. Reserves also enhance investor confidence, since they ensure that the government is always ready to meet international requirements or unforeseen obligations—for example, foreign currency debt-servicing payments, contributions to international institutions,

1. The remaining US$3.4 billion of Canada's official international reserves included the reserve position in the International Monetary Fund, equivalent to US$2.5 billion and held directly by the Department of Finance, Special Drawing Rights valued at US$574 million, and gold with a value of about US$323 million.

2. Reserves not in the EFA are held directly by the Department of Finance, the Bank of Canada, and the Receiver General for Canada. The Bank of Canada's holdings reflect swap operations carried out between the Bank and the EFA for cash-management purposes related to monetary policy. For more detail on this type of transaction, see Faure (1977).

and foreign currency expenditures of various government departments.

Traditionally, reserves were used to intervene in the foreign exchange market for the Canadian dollar. Over the years, the use and frequency of intervention has changed. Because Canada follows a flexible exchange rate regime for its currency, the objective of intervention has been limited to promoting orderly conditions in the foreign exchange market during episodes of excessive fluctuation in the Canadian dollar as opposed to fixing the value of the dollar at a particular level.

Because Canada follows a flexible exchange rate regime for its currency, the objective of intervention has been limited to promoting orderly conditions in the foreign exchange market during episodes of excessive fluctuation in the Canadian dollar as opposed to fixing the value of the dollar at a particular level.

EFA assets are governed by the provisions of the Currency Act, which provides the legal framework for investment activity and management. The liabilities that fund the EFA are subject to the precepts of the Financial Administration Act. As part of its responsibilities as fiscal agent, the Bank of Canada administers and effects all transactions for the Account on behalf of the Minister of Finance.[3] In practice, the Account is managed jointly, through a close partnership between the Bank of Canada and the Department of Finance.

The EFA is held in the name of the Minister of Finance. The Minister must approve the general policies for managing the EFA, mainly through a set of investment guidelines deemed appropriate under the Currency Act, and must provide an annual report on the operations of the Account to Parliament.

General oversight responsibility for the Account rests with the EFA Policy Committee, which is composed of senior officials from the Department of Finance and the Bank of Canada. The committee meets several times a year to review EFA operations and, at times, to adopt formal changes to the management of the EFA, such as new investment guidelines, or make recommendations on other major policy changes.

Direct management of the EFA is jointly shared by the Director of the Financial Markets Division at the Department of Finance and the Chief of the Financial Markets Department at the Bank of Canada. The responsibilities for the day-to-day portfolio management and strategy implementation of the EFA are carried out by the staff of the Foreign Reserves Management Team at the Bank.

The Evolution of Canada's Reserves

Liquid reserves

Canada raises liquid foreign currency reserves by borrowing in international capital markets.[4] The resulting foreign currency liabilities created to fund the EFA assets are direct Government of Canada liabilities.

Since 1986, the level of liquid foreign currency reserves has been rising and, as of December 2000, stood at over US$28 billion. From 1975 to 1986, the level of reserves was relatively stable, averaging about US$2.5 billion.

In the late 1980s, reserves rose steadily, reaching about US$16 billion by 1990. This increase reflected reserve accumulation resulting from official market operations undertaken in the context of an appreciating Canadian dollar.

In the early 1990s, the level of reserves declined, reflecting official efforts to dampen the volatility of a declining Canadian dollar. The mid-1990s was a period of relative stability. Then, reserves began to rise again in the late 1990s, particularly after 1998, reflecting increased flows and volatility in foreign exchange markets as well as the government's commitment to maintain a prudent level of liquid reserves more in line with that of comparable countries. Substantial progress has been made in this regard (Charts 1 and 2).

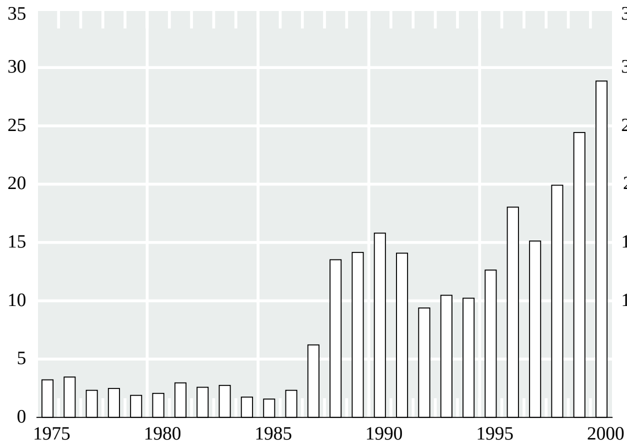
3. In addition to funds-management and advisory responsibilities with regard to foreign currency reserves, the Bank of Canada's fiscal-agent responsibilities to the government include other functions, such as domestic debt, cash, and treasury management, as well as advising on financial markets.

4. Canada's foreign currency funding activities are carried out exclusively to fund the EFA. That is, no foreign currency is borrowed for the purpose of domestic spending. All funding for domestic government operations at the federal level is raised domestically in Canadian dollars.

Chart 1

Liquid foreign currency reserves, 1975–00

US$ billions[a]

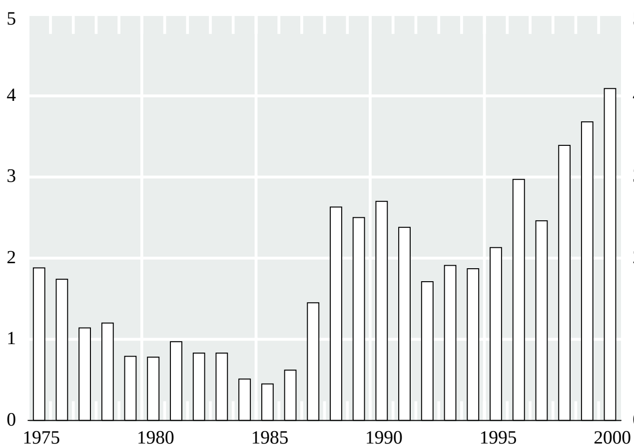


Source: Bank of Canada

a. Assets are reported on a par-value basis at calendar year-end.

Chart 2

Liquid foreign currency reserves as a percentage of GDP,[a] 1975–00



Source: Bank of Canada

a. GDP data are estimated for calendar-year 2000.

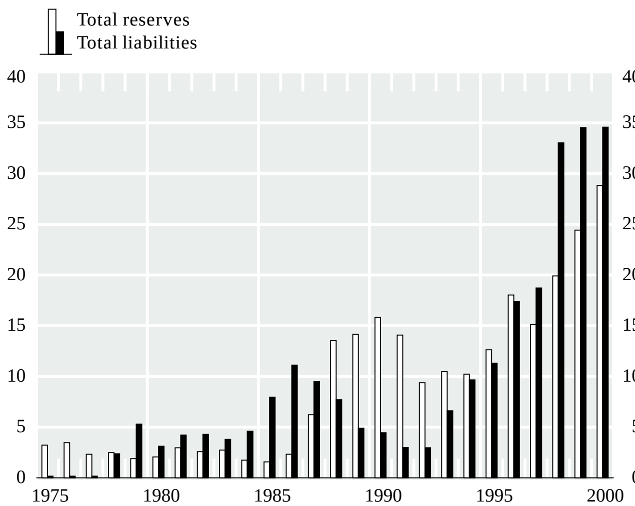
The asset-liability balance

Over the long run, EFA assets and liabilities are expected to be held in approximately equivalent amounts, thus keeping the Account balanced. In the short run, however, intervention in the foreign exchange market can affect this balance. Depending on the direction of the intervention, net reserve assets may be accumulated or depleted. While other factors may affect the gross level of reserves, such as increases in foreign currency issuance or payments related to foreign currency obligations on maturing debt, such transactions would have no impact on the EFA's net asset-liability position (Chart 3).

Chart 3

EFA Assets and Liabilities, 1975–00

US$ billions[a]



Source: Bank of Canada

a. Figures are reported on a par-value basis at calendar year-end.

Changes in Reserves-Management Practices

Canada's approach to managing reserves has changed over the years, evolving with developments in financial markets, changing approaches to foreign exchange intervention, and federal government policies.

In the past, there were episodes when changes in the level of reserves primarily reflected official market operations. During these episodes, the main objective of reserves management was to ensure a high degree of liquidity and capital preservation.

As the level of reserves rose, the objectives of their management changed to more explicitly recognize the cost of carry for these reserves (that is, the difference between the all-in cost of funding the reserves and the earnings derived from investing them). To reduce the cost of carry, more emphasis has been placed on increasing the flexibility of the investment criteria and on the prudent management of market, credit, and operational risks, while still maintaining a high degree of liquidity and safety of capital.

Liquidity and safety of investments—1975–86

Until 1986, the level of liquid reserves was relatively low and stable, fluctuating around US$2.0 billion to US$3.0 billion. At times, however, there was significant monthly variation in reserve levels as outstanding foreign currency borrowings matured and new borrowings were undertaken. On a net basis, the EFA moved from a surplus early in the period to an increasing deficit position on intervention activity undertaken to calm a depreciating and volatile currency market.

Consequently, the vast majority of funding and virtually all investments during this period were made into short-term U.S.-dollar assets. The emphasis of reserves management was almost exclusively on liquidity and safety of capital, while the portfolio was managed under very rigid investment constraints.

Return on investment gains importance—late 1980s

In the late 1980s, reserve levels began to rise, primarily reflecting the intervention policy of moderating sharp daily movements in the exchange rate against a background of an appreciating Canadian dollar. From a base of about US$2 billion in 1986, reserves surged to US$13 billion two years later. From 1988 to 1991, the level of reserves oscillated between US$13 billion and US$16 billion.

The accumulation of reserves also led the net balance of the EFA to move into a surplus position. This increase in reserves prompted gradual changes in the investment-management process towards adopting a more formal approach and placing a greater emphasis on enhancing the return on investments.

During this period, a fixed amount of reserves was invested into assets denominated in German marks and Japanese yen. Holding these currencies enabled Canada to take part in concerted interventions with other G-7 countries. By and large, these non-dollar assets were not actively managed.

Broadening eligible investment criteria—early 1990s

The level of reserves declined in the early 1990s as the Canadian dollar depreciated against the U.S. dollar. The amount eventually stabilized in the range of US$9 billion to US$12 billion, where it remained until 1995.

An important development during this period was the Currency Act amendment of June 1993. The amendment brought more flexibility to the reserves-management process by broadening the scope of investment alternatives available to the EFA.

Funding innovations to increase the level of reserves—mid-1990s

In the mid-1990s, the level of foreign currency reserves gradually began to increase, following the government's commitment to this effort. Additional foreign-currency-borrowing programs (mainly for medium- and long-term maturities) were added to the funding tools already in use.

It was also at this time that a tiered approach to investments was first implemented. One tier was dedicated to meeting the core liquidity needs of the portfolio, while a second tier was used to match outstanding liabilities that would mature within a year. The remaining EFA assets were managed to maximize the return on investment, although within strict guidelines. This was the initial step towards the eventual adoption of the current framework for matching assets and liabilities.

Introduction of the asset-liability-matching framework—1997

In 1997, a framework to match assets and liabilities was developed and implemented to govern the management of foreign currency reserves. This move was partly motivated by past successes in immunizing some of the portfolio's liabilities. Prior to this, assets and liabilities had usually been managed separately.

In 1997, a framework to match assets and liabilities was developed and implemented to govern the management of foreign currency reserves. Under this framework, funds are invested in assets that match, as closely as possible, the characteristics of the foreign currency liabilities issued, thereby helping to immunize the portfolio against currency and interest rate risks.

The matching framework was implemented to minimize market risk in the management of reserves. Under this framework, funds are invested in assets that match, as closely as possible, the characteristics of the foreign currency liabilities issued, thereby helping to immunize the portfolio against currency and interest rate risks.

Investment guidelines—1999

In October 1999, a comprehensive review of activities and objectives in the management of foreign reserves led to a new structure for the EFA portfolio, including changes to the investment guidelines. The new guidelines, which are more consistent with a regime of less-frequent intervention episodes, increased the management flexibility of the portfolio by permitting a broader range of acceptable investments. The EFA is now allowed to hold debt issued by a larger number of highly rated sovereign governments and their agencies, and by supranational organizations. This added flexibility helps to minimize the cost of carry within the asset-liability-matching framework.

Current activities in reserves management

Under the current matching framework, proceeds from short-term liabilities are invested in securities of the same maturity and currency denomination. For longer-term maturities, investments are made into large and liquid benchmark bond issues.

The bulk of reserves are invested in U.S. dollars since most liabilities are denominated in U.S. dollars. The emphasis on U.S. dollars also reflects the fact that, historically, foreign-exchange intervention took place primarily in the Canada / U.S. dollar exchange market. The rest of the reserves are invested in euro and yen assets. Over the past two years, the non-U.S.-dollar proportion of outstanding liabilities, and the assets matching them, has become more significant, an increase that reflects the funding-cost-advantage opportunities available to Canada in those non-U.S.-dollar markets.[5]

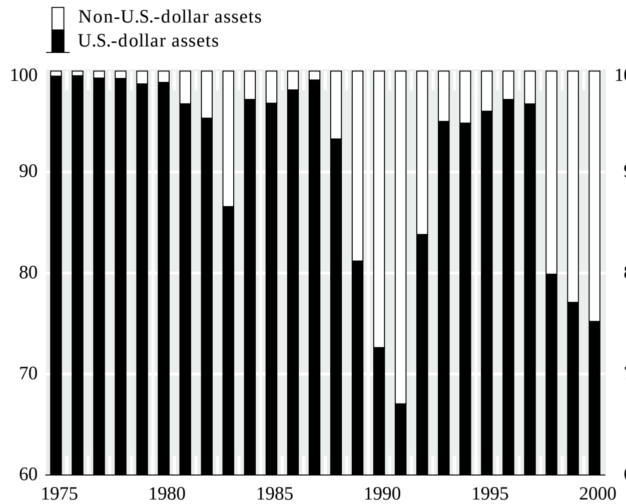
As at 31 December 2000, about US$21.7 billion of liquid reserves (75 per cent of the total) was held in assets denominated in U.S. dollars, the remainder, equivalent to US$7.1 billion, was denominated in euros and yen (Chart 4).

5. Note that although the proportion of non-U.S.-dollar reserves was higher in the early 1990s, this episode reflected a decline in U.S.-dollar holdings as opposed to the present case of a level increase in non-U.S.-dollar assets.

Chart 4

Currency Mix of Liquid Reserve Assets, 1975–00

Percentage of total[a]



Source: Bank of Canada

a. The non-U.S.-dollar component is expressed in U.S.-dollar terms as of calendar year-end.

Liability Management

Unlike the approach used for debt management in the domestic market, consisting of regular issuance with an emphasis on predictability and transparency, Canada follows a more opportunistic approach for funding its foreign currency reserves. The main objective of this approach is to achieve the lowest possible funding cost subject to prudent liability-management considerations. These prudent practices include: ensuring continued access to capital markets; diversifying sources of funding by maintaining a presence in various segments of the market through different funding programs; and maintaining a balanced profile of liability maturities to minimize the risks involved in rollover and refinancing.

Canada follows a more opportunistic approach for funding its foreign currency reserves. The main objective of this approach is to achieve the lowest possible funding cost subject to prudent liability-management considerations.

Ensuring continued access to capital markets

Continued access to capital markets is facilitated by ensuring that Canada has the necessary legal documentation and arrangements in place to allow EFA managers to raise funds in a variety of markets and jurisdictions, particularly in the deep and liquid U.S. market.

Access to capital markets is then expedited by keeping Canada's name in the market by occasionally issuing public bonds denominated in foreign currency. This type of issuance promotes investor familiarity with the securities that Canada issues, a factor that can potentially reduce borrowing costs in the future. At the same time, prudent liability management demands that care be taken to avoid saturation in a particular market or currency. This is achieved by issuing only infrequently, thus maintaining some "rarity value" to Canada's name.

Finally, in cases of market stress, when access to capital markets can be obtained only at unfavourable terms, backstop banking facilities are available.

Diversifying funding sources

A related key principle governing foreign currency-liability management is ensuring the diversification of funding sources. There are currently a number of funding programs with varying characteristics. These have been established at different times in response to considerations of costs, risk diversification, and maturity structure. (See Box on page 19.)

Over the years, the use and level of activity of the different funding programs have varied, reflecting the desired pace of reserves accumulation and the opportunities available in the market, especially with respect to cost-effectiveness.

Before the current funding tools were available, most borrowings were made in the form of U.S.-dollar bonds. Even when non-dollar issuance was undertaken, normally to capitalize on temporary cost opportunities available in other markets, the currency profile of the liability was often converted through the use of swaps into U.S. dollars.

More recently, the proportion of liabilities issued in the form of cross-currency swaps of domestic liabilities has increased, reflecting their cost-effectiveness.[6]

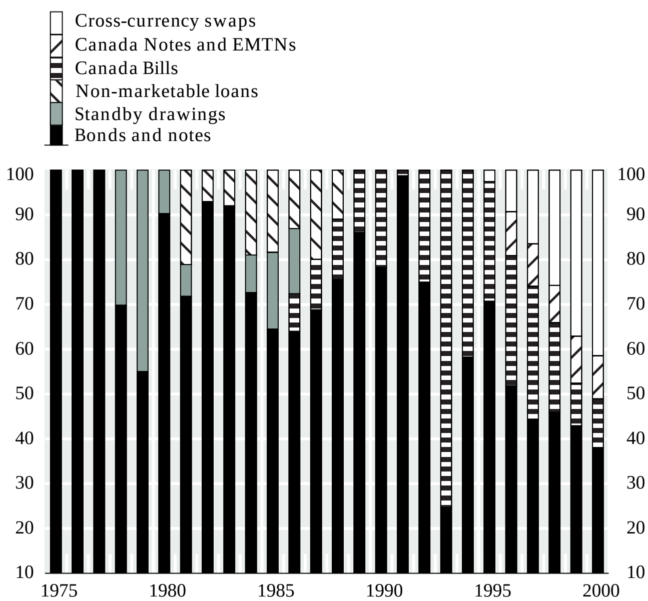
6. For estimates of the cost-effectiveness of the cross-currency swaps program, see the article "The Federal Government's Use of Interest Rate Swaps and Currency Swaps," in this issue of the *Review*.

As at 31 December 2000, there was about US$34.0 billion in outstanding foreign currency liabilities. About 80 per cent of total liabilities was evenly split between bonds and the notional amount of cross-currency swaps outstanding. About 11 per cent of liabilities was in the form of Canada Bills, while Canada Notes and EMTNs made up the rest (Chart 5).

Chart 5

Composition of Foreign Liabilities, 1975–00

Per cent of total outstanding[a]



Source: Bank of Canada

a. Figures are for outstanding liabilities on a par-value basis at calendar year-end.

Reducing financing and rollover risk

The final major consideration in prudent liability management is reducing the risks involved in rollover and refinancing to a manageable level. These risks refer to the potentially higher costs that would be incurred if Canada had to issue securities or refinance maturing liabilities in an environment of rising interest rates.

To minimize these risks, a prudent and balanced profile of outstanding issues is maintained. In practice, this is achieved by avoiding large concentrations of maturing liabilities, in particular by keeping the total amount of foreign currency liabilities that mature within one year to less than one-third of the total holdings of liquid foreign currency assets. Likewise, and related to the investment activity, rollover risk is reduced by maintaining a close maturity match between the assets and liabilities.

Glossary of Terms

Canada Bills are promissory notes denominated in U.S. dollars and issued for terms of up to 270 days. They are discount obligations and were first introduced in 1986. Investors participate in the Canada Bills program by buying directly through a syndicate of Canadian and U.S. investment dealers.

Canada Notes are promissory notes usually denominated in U.S. dollars and available in book-entry form. Notes can be issued for terms of nine months or longer at a fixed or floating rate. Launched in March 1996, this program is sponsored by a syndicate of banks and investment dealers but is also open to "reverse inquiry," thereby maximizing issuance possibilities.[1]

Euro Medium-Term Notes (EMTNs) are foreign currency medium-term notes issued outside of the United States and Canada, usually with terms to maturity greater than one year. They can be issued with fixed or floating interest rates and can include embedded options. Coupon payments can be made in one currency and principal payments in another currency. The program began in March 1997 and has been used for both private placements and public issues.

Cross-currency swaps is a program that has grown substantially since its introduction and now accounts for over one-third of the liability portfolio. It entails swapping a domestic Canadian-dollar liability into a foreign-currency-denominated liability with a counterparty. The significant growth of outstanding cross-currency swaps reflects sizable cost savings resulting from the significant comparative advantages that Canada experiences in its own domestic market. To minimize the risk of affecting domestic bond markets, cross-currency swaps are subject to strict execution criteria and guidelines.[2]

Global bonds are syndicated, marketable debt instruments issued in foreign currencies with fixed or floating interest rates. Since the mid-1990s, Canada has issued bonds with maturities of up to 10 years. These issues have been used to enhance the goal of reserve accumulation and to reinforce Canada's image as a successful issuer in international capital markets. Although the majority of global bonds have been issued in U.S. dollars, the program has been used successfully to borrow in other currencies. Global bonds have two drawbacks. First, they are not as cost-effective as the other funding programs. Second, given their large size, they reduce the efficiency of the reinvestment of proceeds, since it takes some time to properly diversify the large amount of funds received.

Standby-line-of-credit facility was first put in place in the late 1970s. The facility, which involves a consortium of major international banks, was used in the past as a source of core liquidity for EFA operations. The facility has not been drawn on since 1986 and is maintained only as a backstop measure.

1. In a reverse inquiry, an investor may request that Canada issue notes with very specific characteristics or structure, usually for non-public, private placement. Note that not all reverse inquiries result in note issuance.

2. For more details on the swaps program, see the article "The Federal Government's Use of Interest Rate Swaps and Currency Swaps," in this issue of the *Review* and Nowlan (1992).

Asset management

The portfolio of EFA assets consists of two tiers: a *Liquidity Tier* and an *Investment Tier*. The Liquidity Tier is dedicated to meeting all of the EFA's core liquidity requirements. These are the assets that would be liquidated for intervention purposes or to fulfill the government's other foreign currency requirements. The Liquidity Tier consists of highly rated, U.S.-dollar-denominated, marketable, short-term assets (under one year), such as discount notes and bank deposits.

The Investment Tier is larger than the Liquidity Tier and consists of a diversified mix of highly rated, large and liquid notes and benchmark bonds denominated in U.S. dollars, euros, and yen. Overall, the day-to-day management of the Investment Tier seeks to closely match the duration of the assets and the liabilities. The investment performance is evaluated against benchmarks based on the portfolio's liabilities.

At present, the main objective of EFA asset management is to minimize the cost of carry of reserves, while maintaining an adequate level of liquidity and ensuring safety of capital. Constraints on the liquidity and safety of capital are embedded in the investment guidelines and are the guiding principles of the investment activity. In addition, a formal risk-management-control system has been put in place to ensure that the guidelines are properly implemented.

At present, the main objective of EFA asset management is to minimize the cost of carry of reserves, while maintaining an adequate level of liquidity and ensuring safety of capital.

Minimizing the cost of carry

The main strategy in this regard has been shifting the composition of EFA assets. This involves decreasing the allocation invested in U.S. government Treasuries in favour of other high-quality, fixed-income securities. The latter trade at a higher yield (a spread) to U.S. government Treasuries, the so-called "spread product." These securities can yield close to, or above, the interest that Canada pays on its foreign borrowings.

Another more recent step has been the development, and more active use, of a euro-currency portfolio. This is an offshoot of the increased use of the more cost-effective terms of financing and investing in currencies other than the U.S. dollar. Finally, the cost of holding securities is further reduced by earnings derived from an active securities-lending program.[7]

Maintaining adequate liquidity and safety of capital

The need to maintain adequate levels of liquidity is based on the premise that potential cash outflows are not always predictable. Adequate liquidity levels ensure that funds are available for use in the case of intervention operations or to fulfill other foreign currency commitments. In practice, liquidity is maintained by investing into marketable, short-term discount notes and commercial bank deposits, as well as longer-term securities issued by highly rated sovereigns, agencies, and supranational institutions.

Safety of capital is maintained so that reserve assets are not diminished by credit defaults or exposed to potentially unrecoverable capital loss. In practice, this is achieved by investing in high-credit-rated securities and by maintaining a high degree of investment diversification. Avoiding investments of a speculative nature also contributes to preserving Canada's reputation as a prudent reserve manager.

Risk management

Investing in higher-yielding issues entails taking on higher credit and liquidity risks. This has led to the implementation of a comprehensive risk-management framework. At the same time, the major means of minimizing the EFA's market risk is the maintenance of a close asset-liability match, which, as previously mentioned, largely serves to immunize the portfolio.

Many measures are taken to limit the EFA's exposure to credit and liquidity risk. Credit risk is managed by setting a high minimum credit rating of AA or better on investments. There are also a number of constraints to ensure credit diversification. Limits are placed on the specific category of issuer and on the amount that can be invested in a specific name within each category. Credit constraints are consolidated so that they apply portfolio-wide, across currencies and maturities. Finally, more recently, growing emphasis has been placed on the role of secured and collateralized investments.

Liquidity risk is managed by investing only in issues that are publicly traded and that meet minimum size requirements. These issues are usually the large and liquid benchmarks that are well sponsored by dealers. That is, a number of dealers have to have made significant market-making commitments to the sector and the specific benchmark issues. Finally, there are constraints limiting the maximum proportion of any one specific outstanding benchmark issue that can be held in the EFA.

Finally, to maintain better control over the various transactions, the exposure to credit and liquidity risk, as well as a check on operations, the Risk Management Unit (RMU) produces daily reports and carries out regular reviews to ensure that foreign assets are managed in accordance with the official guidelines.[8]

7. In 1996, a program was established to lend securities to various counterparties through agents. The loans are secured through collateral provided by the counterparties as well as by the guarantees of the agents.

8. The RMU was established jointly by the Bank of Canada and the Department of Finance in 1997 to implement the risk-management program for most of the government's financial risk exposure.

Concluding Remarks

In Canada, the increase of international reserves holdings has been accompanied by increased transparency and sophistication in the management of reserves. Since July 1999, Canada has been reporting its disaggregated reserves position on a weekly basis. Canada was also one of the first countries to fully meet the requirements of the IMF and G-10's new format for presentation of international reserves data. Larger reserves holdings have also resulted in a more intense effort to keep pace with advances in financial markets and to capitalize on market innovations, adopting them and adapting them to meet the needs of the EFA.

This effort, which encompasses all aspects of portfolio management, including investments, information systems, risk management, and funding operations, is expected to continue as the Bank of Canada strives to fulfill its role and commitments as fiscal agent to the government through its management of reserves.

Literature Cited

Bank of Canada. *EFA Annual Report*. Various issues 1975–2000.

———. *Summary of Government of Canada Direct Securities and Loans*. Various issues, 1975–2000.

Faure, F. 1977. "Technical note on temporary Bank of Canada-Exchange Fund Account swaps." *Bank of Canada Review* (July): 15–20.

Finance Canada. 1996. *Budget Plan 1996*. (March)

———. 1998. *Budget Plan 1998*. (February).

———. *Debt Operations Report*. Various issues, 1993–1996.

Finance Canada. *Debt Management Report*. Various issues, 1997–2000.

———. 2000. *Debt Management Strategy 2000–01* (March).

Kiff, J., U. Ron, and S. Ebrahim. 2000–2001. "The Federal Government's Use of Interest Rate Swaps and Currency Swaps." *Bank of Canada Review* (Winter): 23–-34.

Nowlan, G. 1992. "Exchange Fund Account cash management swaps: A technical note." *Bank of Canada Review* (May): 3–10.