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Winter 2001–2002

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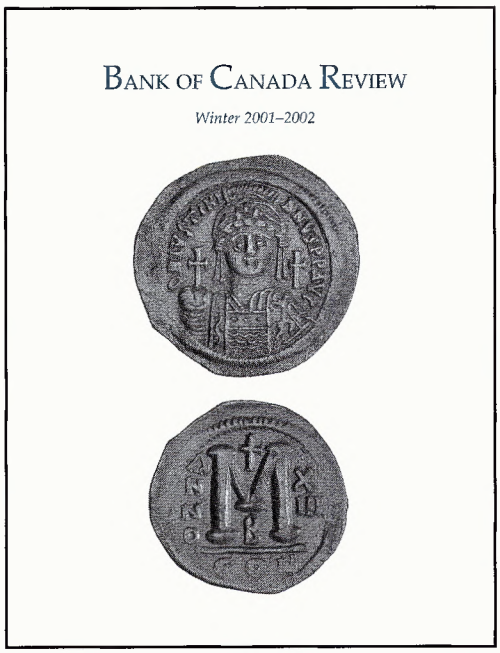

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Byzantine 40-Nummi Piece

The coins of the early Byzantine Empire illustrate that period's move away from the artistic conventions of ancient Rome towards a more medieval style. The 40-nummi piece of the Emperor Justinian shown on the cover is an early example of this trend.

Justinian ascended to the throne in AD 527. His first issue of copper coins resembled those of his immediate predecessors, who had introduced a standardized group of denominations ranging from 5 to 40 nummi. The design on the reverse of each coin featured a large Greek letter, indicating the denomination, surrounded by stars, pellets, crosses, or crescent moons, all above the abbreviated name of the mint. In the Roman tradition, the obverse featured a profile bust of the emperor and a legend giving his name and titles.

In the twelfth year of Justinian's reign, the copper coinage was modified, resulting in a design that was used even by several of Justinian's successors. The profile bust was replaced by a facing bust of the emperor in military garb holding a globe surmounted by a cross—a *globus cruciger*. This early Christian symbol showed that the emperor was God's chosen representative, appointed to rule as his regent on earth. The facing bust and the emphasis on Christian symbolism eventually became the norm throughout Europe. Justinian also introduced regnal dates as a means of dating copper coins struck throughout the empire. For example, the coin on the cover was struck "in year 13" (ANNO XIII) of Justinian's reign or AD 539–40.

The 40-nummi piece was the largest and heaviest copper coin minted under Justinian. About the size of an old Canadian silver dollar, it weighs 22.76 grams. It was struck in Constantinople (now Istanbul), the capital of the Byzantine Empire and is part of the National Currency Collection, Bank of Canada.

Photography by James Zagon, Ottawa.

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The Resolution of International Financial Crises: Private Finance and Public Funds

Andy Haldane, Bank of England and Mark Kruger, International Department

Foreword

The series of international financial crises that began in the mid-1990s—the Mexican peso crisis of 1994–95, the Asian financial crisis of 1997, the Russian default of 1998, the Brazilian crisis of 1998–99, and more recently, the situations in Turkey and Argentina—have been very costly to those directly affected and to the global economy more generally. Considerable work has been undertaken within the public, academic, and private sectors to find ways to prevent and better manage such crises. Significant progress has been made, but there is a general recognition that the work is not complete. The issues are complex. While each crisis has had a unique character, there have been a number of common elements from which lessons are being learned.

In terms of crisis prevention, there is broad consensus on the steps countries should take, and the international community has devoted considerable resources to assist in the task. There has been less agreement, however, on how crises should be resolved once they do occur.

It is in this latter area—the resolution of international financial crises—that the Bank of Canada and the Bank of England have undertaken joint work. The paper "The Resolution of International Financial Crises: Private Finance and Public Funds," by Andy Haldane and Mark Kruger, pulls together the work we have done over the past year and a half.

Our objective in this joint effort has been to develop a framework for crisis resolution that aligns the incentives of all parties in a way that deals with the crisis *and* preserves the integrity of the international financial system. It is a framework built on principles, not rules. It is a framework that attempts to be clear about the respective roles and responsibilities of the public and private sectors. This is especially important in light of the substantial changes in recent years in international financial markets. It is also important for the accountability of decisions taken.

The cornerstone of the framework is a strong presumption about the scale of "normal" access to official financing. Such a presumption, we believe, would provide the backstop for debtor-creditor negotiations and help condition expectations in financial markets. With limits on International Monetary Fund lending, private sector involvement becomes a crucial part of crisis resolution. The precise form of private sector involvement is a choice for the debtor country. But it would be selected from a range of options, including both voluntary and involuntary solutions. Among the former, bond exchanges and agreement with creditors to reschedule debt have proved helpful in past crises. Among the latter, standstills are potentially useful in dealing with crisis situations and are included in the framework as an important part of the international community's "tool kit" for crisis resolution.

The international community faces many challenges in promoting the benefits of global economic integration. The prevention and resolution of international financial crises remains one of those challenges. By publishing this joint work, the Bank of Canada and the Bank of England hope to further the debate and discussion of these important matters and to move us closer to agreement on how the international financial system can be improved.

Paul Jenkins/Mervyn King
Ottawa/London November 2001

Since the mid-1990s, the incidence of financial crises among emerging-market countries appears to have increased. In response, governments and international financial institutions have worked intensively on ways to reduce the likelihood and virulence of crises. This is the debate on the so-called "international financial architecture."

There is now a fairly widespread consensus within the official community on appropriate crisis-prevention measures.

There is now a fairly widespread consensus within the official community on appropriate crisis-*prevention* measures. For example, the best defence against financial crises is to establish sound macroeconomic fundamentals and to have a credible policy framework able to deal with economic and financial shocks. A broad international consensus has also emerged on the importance of prudent balance-sheet management, with a particular focus on the balance-sheet positions of governments and the financial system. And considerable work has been done by international groups to establish codes and standards of best public policy practice. The official community should not be prescriptive about the adoption of standards. But it should promote transparency about the degree of country compliance with them.

Even with such prevention measures in place, however, crises will still occur from time to time. Moreover, there is less consensus among policy-makers on appropriate crisis-*resolution* measures in these circumstances. The International Monetary Fund (IMF) has responded to crises by providing often large-scale lending packages, conditional on the implementation of macroeconomic and structural reform. These programs are intended to offer bridging finance to the debtor. And this combination of reform plus bridging finance is in turn intended to help catalyze private sector capital flows.

But there is a concern that official lending on this scale may also undermine the incentives of debtors and creditors operating in international capital markets—a moral-hazard risk. And the lack of ex ante clarity about the scale of official assistance represents an additional source of risk for borrowers and lenders operating in these markets. It may also serve to delay negotiations between debtors and creditors should repayment problems arise.

Against that backdrop, this paper sets out an alternative framework for the resolution of international financial crises. The framework has the following ingredients. It is based on a presumption that multilateral official finance is limited in size. These limits mean that there would be some point at which the private sector would necessarily be involved in resolving crises. The precise form of private sector involvement will depend on the crisis at hand. A range of private sector involvement options are possible, including voluntary debt rollovers and bond exchanges. From time to time, the crisis may necessitate the debtor calling a temporary payments standstill. This can be done in an orderly fashion, with support from the IMF, so as to benefit creditors as well as debtors. The framework allows for IMF lending
limits to be breached in exceptional circumstances. But such exceptional financing would be subject to strict procedural safeguards.

In one sense, the proposal made here is a modest one, because all of its elements already exist. The key difference is that here these elements are put together in the context of a sequenced and structured crisis-resolution framework. Sequenced because the resolution of a crisis can be traced out as a chronological decision tree; and structured because the framework aims to align the incentives of all parties to a crisis. In this way, the incidence and cost of crises would potentially be reduced.

A Spectrum of Approaches to Crisis Resolution

There has been intense debate among academics and policy-makers on the best approach to crisis resolution. At one end of the spectrum, some have suggested that the IMF could provide emergency liquidity assistance in potentially unlimited amounts—an international lender of last resort. At the other end, official finance is seen by some as part of the problem.

Fischer (2000) argues that not only is there a need for an international lender of last resort, but that the IMF has de facto taken on this role. He argues that it is not necessary for an international lender of last resort to be able to issue liquidity in order to be effective. What is needed, in most cases, is the reallocation of resources

from liquid to illiquid entities. Since the IMF is akin to a credit union, potential borrowers have access to a pool of resources that the IMF can onlend from member countries. In addition, Fischer notes that the IMF can borrow from the General Arrangements to Borrow (GAB) or the New Arrangements to Borrow (NAB), where necessary.

The International Financial Institutions Advisory Commission (2000), the "Meltzer Commission," also recommends that the IMF act as an international lender of last resort. Liquidity loans would have short maturity (120 days, with one rollover), be made at a penalty rate, and be collateralized by a clear priority claim on the borrower's assets. Moreover, loans would be made only to countries that had met stringent preconditions, including conditions on financial soundness.

Schwartz (1998) argues that official financial institutions engender moral hazard and so do more harm than good. She notes that the private sector successfully dealt with financial panics in the latter part of the 19th century by relying on clearing-house loan certificates by private sector clearing houses. Thus, Schwartz recommends that "in the interest of a more stable and more free international economy" the IMF be abolished, not reformed.

These approaches are unlikely to be optimal. Turning the IMF into an international lender of last resort is impractical as there is neither the capacity nor the political will to provide official money in unlimited amounts with the requisite speed. It is also undesirable because of the risk of moral hazard affecting both debtors and creditors. This would hinder the efficient intermediation of funds from developed to developing countries.

Equally, a world without official finance would also be suboptimal. This would ensure the maximum degree of private sector involvement. But crisis resolution would come about through a combination of greater policy adjustment by the debtor and/or greater financing by the private sector. So output losses would be sharp and payment interruptions frequent and disorderly. Such an outcome would have adverse consequences for creditors as well as debtors—a deadweight cost. In short, it too would hinder the efficient functioning of the international financial system.

Between these two extremes, there is a middle way. This would recognize that modest amounts of official money can serve as a deterrent to self-fulfilling crises and provide time for policy adjustment. For example, the Independent Task Force sponsored by the Council on Foreign Relations, Inc. (1999) argued that the IMF should return to normal lending limits for crises that do not pose a systemic threat. In exceptional circumstances, the IMF should turn to the NAB/GAB or a "contagion facility." And activation of the systemic facilities would require a supermajority decision by creditors.

The Current Framework for Crisis Resolution

Some progress has also been made by the official sector in cultivating that middle way. For example, the statement by the G-7 at the Cologne Summit in 1999 set down some principles and tools for dealing with crises. By themselves, however, these principles and tools do not constitute a fully-fledged framework for crisis resolution. We know the ingredients of such a framework but still lack a recipe for combining them. In this respect, we would highlight two aspects of the current framework that warrant attention.

First, there is a need for greater clarity regarding the amount of official financing. The size of official packages has varied considerably across recent IMF programs. And in a number of recent large-country cases, normal IMF access limits have been breached, often by a significant margin. Too much discretion regarding official actions leads to confusion among debtors and creditors and time-consistency problems among policy-makers. Greater clarity about the scale of official financing would help to condition the actions and expectations of debtors and creditors about the roles they are expected to play in resolving crises.

Second, some of the crisis-resolution tools identified by the official sector have so far been underutilized. One example would be the inclusion of collective-action clauses in bond contracts to facilitate debt restructuring. Another would be a payments standstill, which provides a debtor with temporary respite from debt payments and allows for an orderly working out of debt problems. Too often in the past, sovereign default has been disorderly, with the work-out process slow, inefficient, and inequitable. A better approach would recognize that default is a natural feature of the market mechanism, not something to be avoided at all costs. But it would seek to limit the costs of sovereign default when they do occur.

A Clear Framework

The framework presented here aims to strike a balance between official lending, debtor adjustment, and private sector involvement, recognizing that each has a role to play in the resolution of crises. But those roles and responsibilities need to be made clear ex ante to all parties. Indeed, this is precisely the role of a crisis-resolution framework.

The key elements of this proposed framework are as follows:

A presumption of limited official finance

When crises strike, macroeconomic policies have to be adjusted to offset the adverse effects of shocks. But policy adjustment usually takes time. If policy is not credible, or if financial markets are impatient, then the prospect of adjustment may not be sufficient to change expectations. A country can fall victim to a self-fulfilling speculative attack.

Official money can help in these circumstances, serving as bridging finance during the period of domestic adjustment and helping catalyze private capital flows.

Official money can help in these circumstances, serving as bridging finance during the period of domestic adjustment and helping catalyze private capital flows. But such lending needs to be limited, to prevent the adjustment incentives of debtors from being dented, or official money simply substituting for private capital flows. For this reason, there should be a clear presumption that "normal" official lending limits apply in times of crisis.

Greater clarity about the limits on IMF lending would deliver three important benefits. First, it would reduce uncertainty, among both creditors and debtors, about the extent of the public sector contribution. Private creditors demand compensation for that uncertainty through a risk premium, which increases the cost of borrowing for emerging markets. A clearer framework for crisis resolution would reduce that uncertainty premium, to the benefit of both debtors and creditors.

Second, limits would reduce the potential for the private sector to game the official sector into providing more money ex post than would have been optimal ex ante. The official sector has to strike a balance between the need to resolve the current financial crisis and the need to prevent future financial crises. In short, the official sector faces a time-consistency problem (Kydland and Prescott 1977).

This balance between ex ante and ex post efficiency is familiar from a corporate bankruptcy context (Eichengreen and Portes 1995). The IMF faces a similar dilemma (Miller and Zhang 1999). As Rogoff (1999) argues, bailouts by the IMF encourage greater risk-taking by banks in industrialized countries, and those banks are also likely to take risks because of domestic support arrangements.

Policy-makers are, of course, familiar with the time-consistency problem. It crops up in all fields of public policy—fiscal, monetary, regulatory, etc. In response, they have often adopted clearer public policy frameworks. For example, in the monetary policy sphere, inflation targeting combines clarity about the objective of policy—the inflation target—with discretion about how best to achieve this target. It is a framework of "constrained discretion," with clear roles and responsibilities for the different players. This helps mitigate time-consistency problems in monetary policy.

The adoption of a clear framework for crisis resolution could offer the international financial community similar time-consistency benefits. It would set out the presumptive constraints on official lending. And debtors and creditors would then have the discretion to operate in their own best interests, subject to these constraints.

Some have argued that the official sector should pursue a policy of "constructive ambiguity" in the resolution of crises. An analogy is sometimes made with domestic lender-of-last-resort facilities, where ambiguity is used to mitigate moral hazard. But international moral hazard can be mitigated in ways that do not introduce costly uncertainty into the framework for crisis resolution—for example, by limiting lending.

Third, a related benefit of lending limits is that they would guard against moral hazard. Moral hazard applies to both debtors (by blunting incentives to undertake the necessary adjustment and reform) and creditors (by blunting incentives to undertake effective risk management). Moral hazard is clearly a question of degree. Every insurance contract possesses

some degree of moral hazard. And the empirical evidence on the moral-hazard effects of official lending is not conclusive. Nevertheless, anecdotal evidence of the importance of moral hazard is widespread. And the longer the current system of non-binding lending limits persists, the greater the scope for moral hazard to increase in the future.

The nature of private sector involvement

While there is broad agreement on the need for private sector involvement in crisis resolution, there is still uncertainty about what precisely it means and how best to bring it about.

Crisis lending by the official sector and private sector involvement are two sides of the same coin. So with limited IMF lending, private sector involvement would at some stage become an element in resolving all crises.

The precise form of private sector involvement is, above all, a choice for the debtor country, in consultation with its creditors. A spectrum of private sector involvement options is possible. Both voluntary solutions (such as bond exchanges and debt rollovers) and involuntary solutions (such as standstills) should be acceptable, in principle, by the official community. The role of the official sector is to make clear on what terms and conditions official finance will be available, and the limits of that finance. The debtor country must then decide for itself which option to take. The appropriate option will depend on the specifics of the crisis at hand.

In the majority of crisis cases, it should be possible for debtors to secure private sector involvement voluntarily, either by raising new money in the markets, or by reprofiling existing money in consultation with creditors. This has worked effectively in helping resolve crises in the past—for example, in Korea in 1997 and in Brazil in 1999. For countries with unsustainable debt burdens, market-based bond exchanges, which write down the face value of debt outstanding—for example, as in Pakistan in 1999 and the Ukraine and Ecuador in 2000—are a second voluntary means of resolving crises.

On occasion, however, the combination of limited IMF lending and policy adjustment may be inadequate to mobilize sufficient private finance on a voluntary basis—for example, if capital flight is pervasive. In such situations, it would be counterproductive for the official sector to continue financing private capital flight. What is needed is some backstop measure to provide debtors and creditors with a breathing space to arrive at a co-operative outcome—a standstill.

The role of standstills

Standstills should not be construed as a way of relieving debtors of their obligation to service their debts in full and on time. Rather, they are a way of enhancing the effectiveness of the crisis-management process. In particular, they offer three benefits.

First, they can promote creditor coordination. An orderly standstill can break the circuit of destabilizing and, ultimately, self-fulfilling creditor expectations. By reducing creditor externalities, standstills can be a positive-sum game, advantageous for debtors and creditors alike. In a domestic context, Diamond and Dybvig (1983) show that allowing banks to suspend withdrawals can be a fully efficient mechanism for eliminating collective-action problems among creditors.

Second, standstills can align creditor and debtor incentives. Creditors will be more willing to reach voluntary agreements quickly if there is a credible threat of a standstill. And debtors will be more willing to negotiate if they know that official monies are limited. So having standstills as a backstop should prevent the prolonged debt negotiations that have characterized a number of recent IMF program cases. For example, in the case of Korea in late 1997, a large official assistance package did little to reduce capital flight and stabilize the balance of payments. It was only after "the Federal Reserve Bank of New York called a meeting to convince key U.S. banks that a rollover of their maturing interbank lines was in their own interest as not all of them could exit at the same time" that debtors and creditors were able to arrive at a solution (IMF 2000).

Third, standstills can help ensure that payment stoppages are orderly. Standstills provide a safe harbour while debtors put in place remedial policy actions—for example, macroeconomic policy adjustment or debt restructuring. In this way, they are potentially useful both in cases where a country faces a short-term liquidity problem that necessitates the reprofiling of debt service, and in cases of unsustainable debt burdens where debt reduction is required.

The decision to call a standstill lies with the debtor. But the official sector can play a useful supporting role. Such support could take the form of the IMF's lending-into-arrears (LIA)—the provision of bridging finance. IMF lending would occur only under strict conditions, however, including the debtor negotiating

with its creditors in good faith, creditors being treated equally, and the process having a definite time limit. That would ensure that debtors play fair during a standstill, neither calling them too often nor maintaining them too long. These guidelines would help ensure that a standstill is orderly.

Standstill guidelines

Standstill guidelines provide a framework for the resolution of sovereign debt problems. They are, in some respects, akin to bankruptcy procedures. For this reason, some have asked whether sovereign payments standstills should have a statutory basis. This would require a change in the law in all jurisdictions in which a debt contract might need to be enforced. The advantage of this is that it would confer legal protection on a debtor calling a standstill.

But changes in the law in many jurisdictions would also be a formidable exercise. Moreover, it is clear that countries, having sovereign rights, are different from corporations in several important respects. Sovereign debtors do not require a court's permission to call a standstill. Moreover, creditors cannot easily seize the domestic assets of a sovereign. Nor can they insist that a country's management be replaced. Because of these differences, many of the benefits of a standstill can be achieved within a non-statutory framework, underpinned by a set of guidelines (see Schwarcz 2000). These guidelines would then form the conditionality that applied to the IMF's lending-into-arrears. An illustrative set of guidelines might include:

1. Transparency. The debtor should communicate effectively by releasing all pertinent information to all creditors on a timely basis.
2. For the debtor to be bargaining in good faith, offers must be reasonable. Debtors that are illiquid should be offering rescheduling that maintains the value of their obligations in net present-value terms. If debt reduction is necessary, the amount of the haircut offered by the debtor should not be greater than necessary to achieve a sustainable medium-term debt profile.
3. Creditors should, as far as possible, be treated equally. This means that not only should individual creditors (foreign and domestic) within a class of instruments be treated the same, but that holders of different instruments be treated according to the seniority of their contracts. A presumption of seniority should not be made where none exists in the debt contract.
4. Net new money should be granted seniority over existing claims, consistent with the "super-priority" principle in a corporate-insolvency context. Trade credit should be exempt from the standstill to help maintain production.
5. The process should be explicitly time-limited, to prevent debtors maintaining standstills too long. Should the time limit expire as a result of the debtor failing to submit to creditors a reasonable offer, then the guidelines will have been breached. If, however, the time limit expires as a result of some or all creditors failing to accept a reasonable offer made by the debtor, then the debtor is not in breach of the guidelines.

As long as the debtor is taking action that complies with the guidelines, the IMF should be willing to offer support by LIA. With this framework in place, there would be incentives for debtors and creditors to reach timely agreement on a debt reprofiling. It would also be reasonable to hope that, for a debtor country following the guidelines, the risk of litigation from a creditor would be reduced. That is because creditors would know that when a debtor has followed the guidelines, and is therefore treating all creditors in an even-handed manner, it would be easier to persuade the courts to side with the debtor and not allow a minority creditor to grab a country's assets. Past experience shows that courts do take the behaviour of debtors into account. It is true that the recent case *Elliot Associates versus Peru* shows that creditors can prevent a negotiated agreement from coming into effect. But the recent experience of restructuring debt in Russia, Pakistan, Ukraine, and Ecuador offers some encouragement. And either way, there is real merit in putting in place guidelines that could be used by courts in their interpretation of the behaviour of debtors and creditors.

Clearly, these guidelines would need to evolve in the light of experience, to ensure they strike the right balance between creditor moral hazard on the one hand (IMF loans financing capital flight) and debtor moral hazard on the other (debtors calling standstills too frequently or maintaining them for too long). But all regulation needs to be dynamic and responsive to the changing behaviour of market participants.

Potential costs of standstills

A number of potential costs of standstills have been identified. While they should not be taken lightly, many of these costs are more apparent than real.

One argument against standstills is that they undermine the primacy of contracts. This argument does not, however, hold up under close scrutiny. The presumption should always be that debtors meet their obligations in full and on time. But faced with a genuine liquidity shortfall or an unsustainable debt burden, meeting contractual terms may be impossible. In such cases, sovereign debtors need a safe harbour. Bankruptcy law provides this in a corporate context. Everyone accepts this as an important part of the capital market mechanism; it supports, not supplants, market forces. The same is true in an international context, where standstill guidelines can serve as surrogate bankruptcy law.

A second argument against standstills is that they may encourage debtors to default. Given emerging-market economies' dependence on international capital, it seems unlikely that they would wilfully default on their obligations. Moreover, the IMF can play a useful role in guarding against strategic default, by refusing to lend-into-arrears to those countries. The conditions attached to lending-into-arrears would also help ensure the debtor played fair during the standstill phase.

A credible, well-managed standstill ought to enhance value for longer-term investors by mitigating the costs of coordination failure.

Some have argued that including standstills in the framework for crisis resolution might encourage investors to "rush for the exit" at the first sign of trouble, thereby triggering a crisis. Investors with a short time horizon will always want to get out quickly, regardless of the institutional arrangements in place. Against this, the situation for relationship lenders, who value returns over the medium term, is quite different. A credible, well-managed standstill ought to enhance value for longer-term investors by mitigating the costs of coordination failure. So the incentive for longer-term investors to rush for the exits will be reduced. This would mitigate—and potentially offset—the negative consequences arising from the behaviour of skittish investors.

Others have argued that standstills may require capital controls to be enforceable, and that these are administratively impossible or extremely costly to impose. In the vast majority of cases, however, capital controls would not be needed to enforce a standstill; it would simply be a case of the sovereign ceasing payments temporarily. Occasionally, this moratorium may need to extend to the banking system. On rare occasions, when capital flight is large and persistent, capital controls may be required to provide a breathing space. But these cases would be the exception, not the rule. And because these controls would be temporary, their costs would not be punitive.

Another concern regarding standstills is that they might lead to contagion. Spillovers are a fact of life in a world of large, cross-border capital flows. The issue is whether standstills would worsen these spillovers. Orderly standstills, as part of a coherent crisis-resolution framework, ought to mitigate uncertainties about the work-out process and preserve value. In this way, they may well relieve contagion risks by comparison with the counterfactual case of disorderly default.

An apparently powerful argument against standstills is that they may increase the cost of borrowing and reduce the flow of capital to emerging markets. This might happen, for example, because markets raise their perceived probability of a sovereign default. Given the high cost of borrowing for emerging markets, this argument is a potentially potent one. But it is only part of the story.

First, a lower volume of capital flow does not necessarily translate into lower welfare for a country. Before the Asian crisis, more capital flowed to emerging markets than could readily be absorbed. The bust that followed the boom was very damaging to the countries concerned. A lower but more stable flow of capital would have been welfare-enhancing.

Second, even if aggregate capital flows are lower in a world of standstills, the composition of capital flows—less short-term and more long-term lending—is likely to improve. This improved composition of

capital would reduce countries' susceptibility to future crises, by reducing the probability of capital-flow reversals.

Third, there are good reasons for believing an orderly framework for standstills will not raise the cost of capital for emerging markets. In pricing country risk, markets take account of three factors: the probability of a country defaulting; the recovery value in the event of a default; and a compensation for risk—a risk premium. An enhanced role for payments standstills might arguably increase the perceived probability of default (though it is possible that the expectation of a standstill could actually *reduce* the incidence of default). But against that, a predictable framework for crisis resolution will increase the recovery value on debt in the event of default and lower the degree of uncertainty regarding work-out procedures. In this way, the cost of capital for sovereigns may well be reduced with a clear crisis-resolution framework in place.

Exceptional Finance

While the framework is founded on the principle of limited official finance, exceptional events do sometimes occur. No rule or constraint is inviolable. So there is a need to preserve the incentives and credibility of a system of official lending limits, while allowing for a degree of flexibility to deal with truly exceptional circumstances.

The IMF has long had the ability to lend beyond normal limits by invoking an exceptional-circumstances clause or, more recently, through the provision of loans under the Supplemental Reserve Facility (SRF), a short-term facility introduced in late 1997 in the wake of the Asian crisis. But procedural safeguards on these facilities are limited, and the definition of exceptional circumstances is left vague. Procedural safeguards need to be buttressed.

One possible model of procedural safeguards for exceptional lending is the U.S. Federal Deposit Insurance Corporation (FDIC) Improvement Act of 1991. The Act allows the FDIC to exempt a bank from "least cost resolution" provisions if it believes that the financial security of the United States is threatened and FDIC assistance would mitigate adverse effects. This judgment would be made by the Secretary of the Treasury, based on the recommendation of two-thirds of the FDIC Board and the Board of Governors of the Federal Reserve, following consultation with the President. The General Accounting Office is required to review the basis for the decision ex post to ensure that regulators are held responsible for the spirit of the Act (Bentson and Kaufman 1998).

One possible model of procedural safeguards for exceptional lending is the U.S. Federal Deposit Insurance Corporation (FDIC) Improvement Act of 1991.

Similar rules for good governance can be developed for IMF lending in the context of international financial crises. First, there is a case for identifying more clearly than at present the circumstances that would justify a departure from normal lending limits. For example, one justification for exceptional finance could be situations that threaten the stability of the international monetary system. This is consistent with the rationale the IMF uses when it seeks supplementary financing from the NAB countries.

Second, the mechanism for taking such a decision needs to be better defined. A special IMF Staff report could be prepared demonstrating that exceptional circumstances exist. In addition, the Staff's findings would have to be confirmed by a supermajority of the Executive Board. If a decision was taken to provide exceptional financing, the Staff report should be made public in the form of an open letter from the Fund's Managing Director.

Third, it would be necessary to ensure that official monies were not financing capital flight on an ongoing basis. A floor on reserves could be established to serve as a brake on capital outflows. If the reserve floor was breached, additional official monies would be suspended.

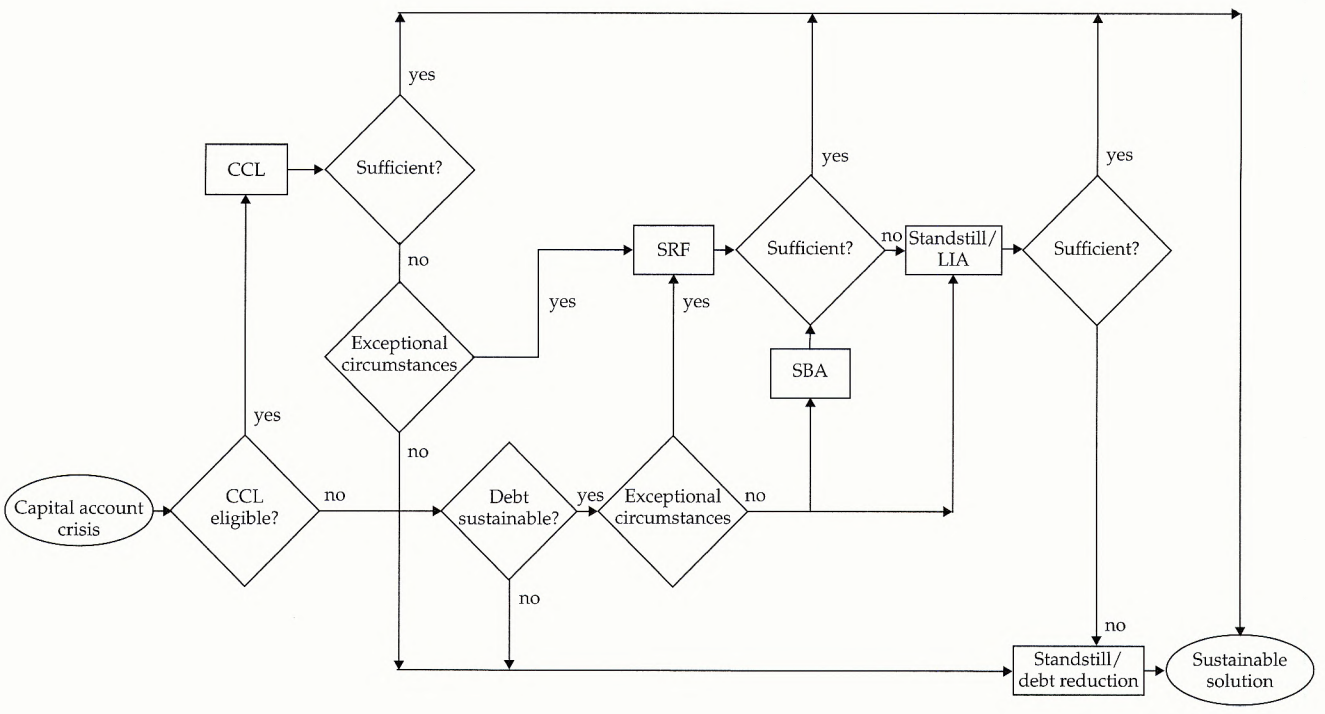
Finally, those taking the decision to grant exceptional access would be accountable for their actions ex post and subject to an independent evaluation. This function could be performed by the Fund's new Independent Evaluation Office.

A Framework for IMF Intervention

The flow chart (Chart 1) is intended as a summary of the framework. It is shown as a decision tree, tracing

Chart 1

Chronology of Crisis Resolution



out the chronology of crisis in terms of the options open to the debtor in moving from crisis to a sustainable solution.

Consider a stylized example. The first order of business would be an assessment of the country's debt burden. If a country's debt burden is not sustainable, then the provision of official finance risks worsening a country's financial position: the solution to the country's problem is less debt, not more. Moreover, since official creditors typically have seniority, this additional official finance reduces the value of existing private claims.

In assessing a country's medium-term debt sustainability, too much emphasis has in the past been put on the profile of the country's debt-to-GDP or debt service-to-exports ratios, with the debt burden judged to be sustainable if the ratios are falling over time. This sort of analysis says nothing about the sustainable level of these ratios (Cohen 2000). Sustainability analysis should also assess sustainability thresholds.

If debt is unsustainable, creditors will be required to reduce their exposures in net present-value terms. In these circumstances, it is important that there is an efficient means of organizing creditor-debtor negotiations during the work-out. It is also important that creditor losses be allocated fairly. Standstill guidelines provide one means of ensuring that the debt work-out process is efficient, equitable, and expeditious.

If the debt burden is sustainable, the presumption would be that normal IMF lending limits applied. Some countries may be eligible for the IMF's Contingent Credit Line (CCL), if they have satisfied the requisite ex ante conditionality. Other countries may be eligible for a Stand-By Arrangement (SBA), in which case, they would be required to abide by the requisite ex post conditionality. In most cases, limited official assistance of this type would be sufficient to buy time for the country to overcome a crisis.

In more severe cases, however, official finance may not by itself be sufficient. The country may need to approach creditors in order to raise new money, or to work out a reprofiling of its existing debt service. Because the country's debt burden is sustainable, creditors would not suffer losses in net present-value

terms under such a rescheduling. So it should be possible to raise net new financing through market-based, voluntary procedures, such as debt rollovers, swaps, and exchanges.

But if a voluntary agreement cannot be reached, or if capital flight is pervasive, the country has recourse to a standstill in order to halt the liquidity drain. The IMF can support the standstill by lending-into-arrears if the country is abiding by its standstill guidelines. The amount of official resources available under LIA would be limited to the amount not previously drawn under the SBA, so that there is an overall limit on access to IMF resources.

The presumption of normal limits applies to both SBA- and CCL-eligible countries. Additional financing would be available but only under exceptional circumstances. These require additional justification. The additional resources would be provided under the SRF. Funds available under the SRF are of shorter maturity and higher cost than under the SBA.

Conclusions

There is both a need and a desire for greater clarity in the framework for crisis resolution. A clear understanding of the respective responsibilities of the private and official sectors is fundamental in this regard. A central element in shaping private sector expectations is knowledge that the official sector will behave predictably. Constraints on IMF lending are a key step in that direction. They ensure that private sector involvement is a crucial part of crisis resolution. And they help encourage debtors and creditors to seek co-operative solutions to crisis.

A central element in shaping private sector expectations is knowledge that the official sector will behave predictably.

In resolving crises and securing private sector involvement, the official sector must decide how much official finance will be made available and on what conditions. The debtor country must then decide which option to follow. One such option is a payments standstill. The official sector should stand ready to support standstills if they are implemented in an orderly fashion. In exceptional circumstances, it may be necessary to breach normal lending limits. But such financing would be subject to stringent safeguards. A framework with these characteristics—constraints, clarity, and orderliness—has the potential to reduce the incidence and cost of crises.

Literature Cited

Bentson, G. and G. Kaufman. 1998. "Deposit Insurance Reform in the FDIC Improvement Act: The Experience to Date." *Economic Perspectives* 22 (2). Federal Reserve Bank of Chicago: 2–20.

Cohen, D. 2000. "The HIPC Initiative: True and False Promises." OECD Development Centre Technical Papers No. 166, September.

Council on Foreign Relations, Inc. 1999. *Safeguarding Prosperity in a Global Financial System: The Future International Financial Architecture*. Report of an Independent Task Force. Washington: Institute for International Economics, October. Available at <http://www.cfr.org/public/pubs/IFATaskForce.html>.

Diamond, D. and P. Dybvig. 1983. "Bank Runs, Deposit Insurance, and Liquidity." *The Journal of Political Economy* 91: 401–19.

Eichengreen, B. and R. Portes. 1995. *Crisis? What Crisis? Orderly Workouts for Sovereign Debtors*. London: Centre for Economic Policy Research.

Fischer, S. 2000. *On the Need for an International Lender of Last Resort*. Essays in International Economics No. 220. Princeton, New Jersey: Princeton University, Department of Economics.

G7 Finance Ministers. 1999. *Report of G7 Finance Ministers to the Köln Economic Summit*. Cologne, Germany, 18–20 June 1999. Available at <http://www.g7.utoronto.ca/g7/finance/fm061999.htm>.

International Financial Institutions Advisory Commission. 2000. *Report of the International Financial Institutions Advisory Commission*. Washington, D.C. Available at <http://www.house.gov/jec/imf/ifiac.htm>.

International Monetary Fund. 2000. *International Capital Markets: Developments, Prospects, and Key Policy Issues*.

Kydland, F. and E. Prescott. 1977. "Rules Rather than Discretion: The Inconsistency of Optimal Plans." *The Journal of Political Economy* 85: 473–92.

Miller, M. and L. Zhang. 1999. "Sovereign Liquidity Crisis: The Strategic Case for a Payments Standstill." Centre for the Study of Globalisation and Regionalisation Working Paper No. 35/99.

Rogoff, K. 1999. "International Institutions for Reducing Global Financial Instability." *Journal of Economic Perspectives* 13: 21–42.

Schwarcz, S. 2000. "Sovereign Debt Restructuring: A Bankruptcy Reorganization Approach." *Cornell Law Review* 85: 956–1034.

Schwartz, A. 1998. *Time to Terminate the ESF and the IMF*. Cato Institute Foreign Policy Briefing No. 48.

The Canadian Fixed-Income Market: Recent Developments and Outlook

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- *The composition of the Canadian fixed-income market is changing, with securities issued by private issuers accounting for an increasing proportion of the market. This trend is generally expected to continue in future years.*
- *Shrinking federal government financial requirements are raising some important issues with respect to the future of the fixed-income market, as it remains unclear what would fill the pivotal benchmark and hedging roles that Government of Canada securities currently play.*
- *Another evolving trend in the market is the emergence of electronic trading platforms. These platforms have the potential to facilitate the price-discovery mechanism, increase cost efficiency, and improve the liquidity and transparency of the market.*

The Canadian market for fixed-income securities is in the midst of a structural transformation that parallels similar changes occurring in other national financial markets around the globe. Shrinking federal government financial requirements raise questions about the consequences of falling marketable debt issuance by the Government of Canada. At the same time, corporations are raising their issuance of marketable debt, benefiting from easier and cheaper access to capital markets as well as from increased investor demand for corporate bonds.

Government of Canada securities currently constitute a predominant proportion of outstanding fixed-income instruments and also play pivotal roles in capital markets. For example, they serve as reference benchmarks for the valuation of other traded securities as well as for establishing the costs that households and businesses face when borrowing funds from financial institutions. As such, they contribute to the mechanism through which monetary policy affects economic activity. They also act as hedging vehicles, allowing participants in the fixed-income market to better control their exposure to risk. Moreover, their creditworthiness and liquidity make Government of Canada securities a popular asset for many types of market participants, such as pension funds and insurance companies.

With the corporate market still fairly underdeveloped and illiquid compared with the market for Government of Canada securities, there are generally few benchmarking and hedging alternatives. A reduction in the supply of marketable government debt therefore transcends the market for Government of Canada

securities, potentially raising broader issues about the efficient working of Canadian financial markets. Several measures are being implemented by regulatory bodies and other institutions, such as the Bank of Canada, to mitigate these concerns by preserving and enhancing the liquidity of the market.

Another emerging trend in the fixed-income market is the rapid development of technological innovations such as electronic trading platforms. Depending on how widely these systems are accepted by market participants, they could significantly alter the market's liquidity and transparency, as well as its efficiency.

This article starts with some background information about the fixed-income market and its regulatory framework. The two main developing trends that are affecting the market, namely the shift in its composition and the emergence of electronic trading, are then discussed.

Background

The Canadian market for fixed-income securities is decentralized, over-the-counter, and quote-driven. A small group of dealers act as market-makers, keeping an inventory of securities and standing ready to buy or sell at quoted rates. The fixed-income market is primarily a wholesale market, where most of the trading is done by institutional investors. An investor[1] wishing to enter into a transaction usually contacts dealers active in the market and trades with the counterparty quoting the best price. In addition to having access to the dealers' inventory of securities, the investor can also access the primary market for Government of Canada securities by submitting bids through an investment dealer eligible to participate at auctions. The investor can also participate through a dealer in new issues of provincial, municipal, or private sector debt, which are usually distributed through syndicates rather than through auctions.

In addition to trading with investors, dealers trade among themselves, mainly to offset or hedge some of the risk arising from their transactions with customers. They can trade directly with each other or through one of the four inter-dealer brokers that, as their name indicates, act as facilitators for transactions between dealers. Dealers generally prefer to use a broker because it allows them to trade with their competitors in a more anonymous fashion.

Compared with the order-driven equity market, transactions in the fixed-income market tend to be larger and not as frequent. The higher privacy of the over-the-counter structure allows fixed-income market participants to conduct these large trades with less price impact than if real-time trade information was more readily available to other market participants.

Market Regulation

The Canadian fixed-income market has developed without a national regulator with broad rule-making and supervisory powers. The market is instead monitored by a number of organizations, notably the various provincial securities commissions comprising the Canadian Securities Administrators (CSA), and the Investment Dealers Association of Canada (IDA). Because they are responsible for issuing Government of Canada securities and support well-functioning secondary markets for these securities, the Bank of Canada and the Department of Finance also take an interest in the oversight of these markets.

Canadian Securities Administrators

The CSA is a committee composed of the various provincial securities regulators. Although it does not have regulatory powers in itself, the CSA provides the market with a forum that facilitates policy discussion and harmonization among provincial regulators. It aims to foster fair and efficient markets, maintain public and investor confidence in the integrity of those markets, and protect investors from inequitable and fraudulent practices.

Initiatives currently being pursued by the CSA focus on increasing the transparency of fixed-income markets by subjecting certain types of transactions to real-time transparency standards. Increased transparency is intended to improve the integrity of the market, encourage more trading, and enhance liquidity. There is ongoing debate between various market participants and observers on the optimal level of transparency that would be beneficial for the growth and the efficiency and liquidity of the market. The debate centres on the trade-off between the benefits of increased transparency and the potential negative impact on market liquidity of mandated public dissemination of trade-related information, given the unique characteristics of the fixed-income market in terms of relatively large average trade size and low frequency of trades, as well as a high concentration of market participants.

1. Because of the considerable size of typical money market and bond transactions, institutional investors such as pension funds, mutual funds, and insurance companies dominate trading activity, with individual investors participating in fixed-income markets mainly through the business services of these institutions.

Investment Dealers Association of Canada

The IDA is a self-governing body that regulates the business activities and capital-adequacy requirements of investment dealers. According to its mission statement, its role is to "foster fair, competitive and efficient capital markets by encouraging participation in the savings and investment process and by ensuring the integrity of the marketplace." The IDA achieves this goal by auditing and reviewing the conduct of its members to ensure that they comply with protocols concerning matters such as employee competence, capital adequacy, and the handling of client accounts.

In 1998, the IDA adopted *Policy No. 5: Code of Conduct for IDA Member Firms Trading in Domestic Debt Markets*. This set of guidelines applies to IDA member firms as well as to customers and counterparties with which member firms conduct business. *Policy No. 5* is aimed specifically at promoting and maintaining the integrity of the Canadian market for debt securities as well as encouraging liquidity, efficiency, and active trading in this market. Possible sanctions against firms or their personnel who are in violation of *Policy No. 5* include fines of up to $1 million per offence and, if the breach of conduct is related to Government of Canada securities, the suspension or removal of eligible bidder status for auctions of such securities.

The IDA is considering formalizing and strengthening its role in the fixed-income market by becoming the market's designated regulator. This would imply overseeing the entire debt market and not just the activities of IDA member firms. The IDA is currently conferring with the CSA to clarify its potential roles and responsibilities, as well as to determine the infrastructure necessary for fulfilling this expanded mandate.

Bank of Canada and Department of Finance

As the federal government's fiscal agent, the Bank, on behalf of the Department of Finance, is responsible for administering and setting the terms and conditions for auctions of Government of Canada securities. These terms and conditions aim to preserve the integrity of the primary market for Government of Canada debt by preventing the manipulation of the auction process and by promoting the maintenance of public confidence in the process. Measures were taken in 1998 to prevent market participants from acquiring excessive amounts of a specific issue, which might otherwise allow them to control (or "squeeze") the issue (Harvey 1999). Examples of such measures include the establishment of maximum bidding limits and the separation of bids submitted by dealers for their own accounts from those submitted on behalf of clients. Dealers and investors wishing to submit bids at auctions are also required to report their holdings of the securities being issued. If a dealer's holdings exceed a certain threshold, its bidding limit is adjusted downwards.

As well, the Bank is involved with the Department of Finance, the IDA, and provincial securities agencies in maintaining the integrity of the secondary market for Government of Canada securities and in promoting market conditions that favour active trading and lending of securities as well as market efficiency and liquidity. For example, the Bank contributed to the consultations that led to IDA *Policy No. 5* and continually monitors the market for situations in which the policy may apply. This activity contributes to investor welfare and helps provide a reliable source of low-cost funding for the government.

In recent years, the composition of the fixed-income market has been altered significantly by the simultaneous shrinking financial needs of the federal government and the steady rise in corporate issuance.

An Overview of Market Structure

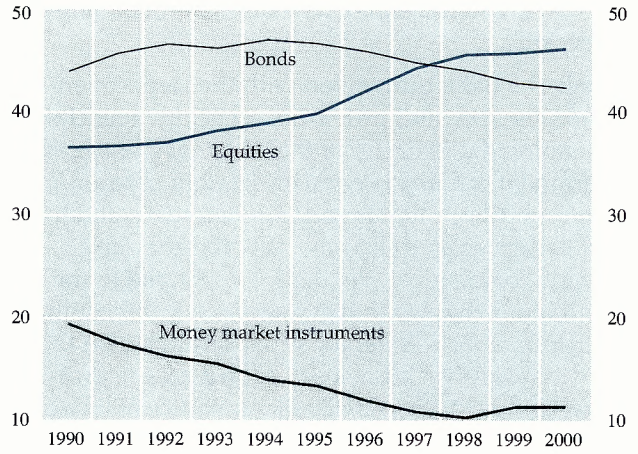
Canadian financial markets have grown considerably during the past decade, with the stock of outstanding marketable securities (bonds, money market instruments, and equities) increasing by approximately 115 per cent over the period to reach $2.4 trillion in 2000 in terms of the price at which investors have acquired their securities holdings.[2] Although equities constitute an increasing proportion of that stock, exceeding bonds in 1999, fixed-income securities nevertheless remain an important segment of capital markets. Taken together, bonds and money market instruments made up almost 55 per cent of the total stock of financial instruments denominated in Canadian dollars in 2000. Chart 1 illustrates this change in the composition of financial markets.

2. Source: Statistics Canada, National Balance Sheet Accounts

Chart 1

Share of the Financial Markets, by Type of Security

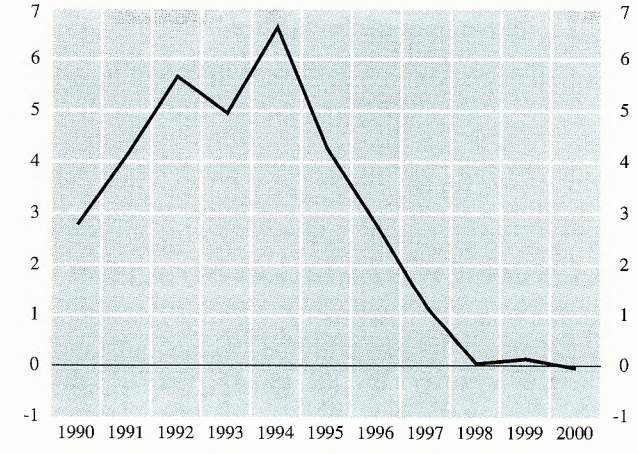
Per cent



Source: Statistics Canada, National Balance Sheet Accounts

Chart 2

Ratio of Net Bond Issuance in Canadian Dollars, Government of Canada vs. Private Sector



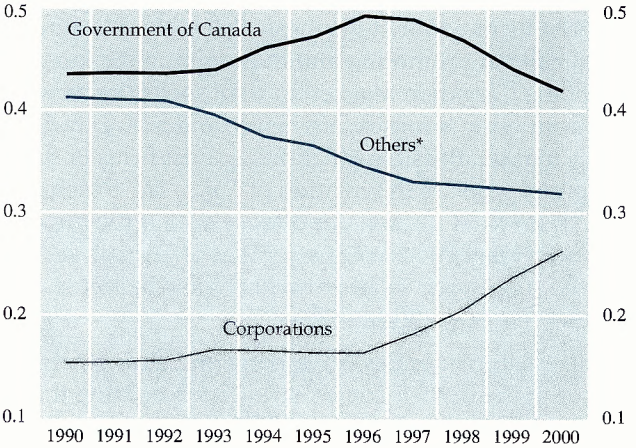
Source: *Bank of Canada Banking and Financial Statistics*

In recent years, the composition of the fixed-income market has been altered significantly by the simultaneous shrinking financial needs of the federal government and the steady rise in corporate issuance. While both these trends are examined later in more detail, it is worth noting that corporations are responsible for an increasing proportion of the stock of marketable debt. Chart 2, which shows the ratio of net new bond issues placed in Canada by the federal government relative to those placed by corporations, illustrates the profound changes that the bond market is experiencing. Although this ratio has historically been somewhat volatile, its striking decline in the latter part of the 1990s signals an evolving trend in terms of marketable-debt issuance. As shown in Chart 3, one consequence of the substitution of corporate bonds for government marketable debt is that Government of Canada bonds now account for only about 38 per cent of the stock of outstanding bonds compared with roughly 46 per cent when their share of the market peaked in the mid-1990s.

Chart 3

Share of the Market for Bonds Denominated in Canadian Dollars, by Type of Issuer

Per cent



Source: *Bank of Canada Banking and Financial Statistics*
* Other domestic bonds include bonds issued by provincial and municipal governments as well as by other public institutions.

Developing Trends

The changing composition of the fixed-income market

The market for Government of Canada securities

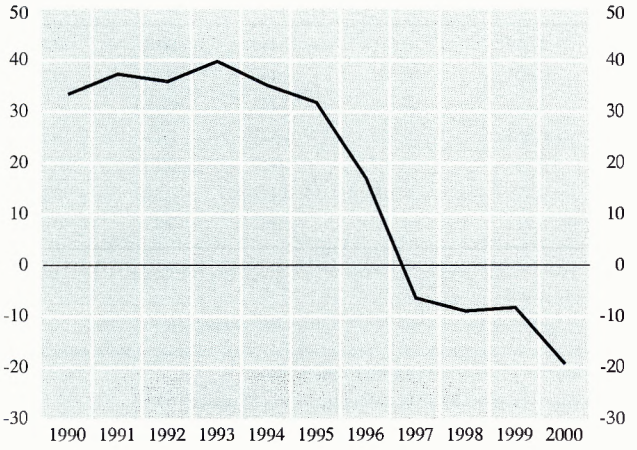
The federal government eliminated its operating deficit in the mid-1990s, achieving a surplus in the 1996/97 fiscal year. Since then, with the strong performance of the Canadian economy and fiscal discipline, the government's financial needs have been virtually eliminated[3] (Chart 4).

3. Based on its latest budget, the federal government is expected to have some small financial requirements of $1.9 and $1.0 billion, respectively, in fiscal years 2001/02 and 2002/03.

Chart 4

Government of Canada Net Borrowing

$ billions



Source: Statistics Canada

Since the early 1990s, the Government of Canada has also taken measures to reduce the vulnerability of its public debt portfolio to swings in interest rates by increasing the proportion of long-term, fixed-rate securities. Government of Canada bonds now account for about two-thirds of the government's debt, whereas in fiscal 1992/93, they made up about 50 per cent. Because of this initiative, the bond market has not been affected to the same extent as the money market by the government's reduced financial needs. As shown in Tables 1 and 2, the outstanding stock of Government of Canada bonds continued to grow, while that of treasury bills plateaued in the 1992 to 1995 period. Although the stock of treasury bills has been declining since the government started to accumulate fiscal surpluses in fiscal 1996/97, the outstanding stock of government bonds has been maintained at its peak of about $300 billion. The composition of the overall Canadian bond market has, however, been altered somewhat since 1997, since the growth of the corporate bond market has led to a small decrease in the proportion accounted for by Government of Canada bonds. In contrast, over the same period, the stock of Government of Canada treasury bills has declined by roughly 20 per cent (Table 2). As a result, treasury bills made up only 32 per cent of money market securities in 2000, compared with 64 per cent in 1995, before their stock started to decline. From Tables 1 and 2, it can be seen that the outstanding stock of securities issued by private entities has been increasing strongly in recent years, a trend discussed in more detail in the next section. Table 3 shows that the market for interest rate futures contracts has also grown substantially, as evidenced by the significant rise in the open interest on these contracts.

Table 1

Outstanding Bonds Denominated in Canadian Dollars

$ billions

	Government of Canada bonds	Corporate bonds*	Other domestic bonds**	Total
1990	138.3	62.0	167.4	367.7
1991	157.3	69.4	185.2	411.9
1992	172.1	75.2	197.6	444.9
1993	198.3	88.2	210.0	496.5
1994	226.2	94.0	212.3	532.5
1995	249.8	98.3	219.8	567.9
1996	277.8	104.3	220.2	602.3
1997	298.9	124.2	225.3	666.6
1998	299.4	145.4	230.2	675.0
1999	301.9	179.4	243.1	724.4
2000	301.0	207.3	253.0	761.3
2001***	296.6	228.5	253.4	778.5

Source: *Bank of Canada Banking and Financial Statistics* (Tables G6 and K8)

* Includes bonds and asset-backed securities issued by corporations

** Includes bonds issued by provincial and municipal governments as well as by other public institutions

*** For 2001, this table shows the outstanding stock as of 31 August instead of at year-end.

Table 2

Outstanding Money Market Securities Denominated in Canadian Dollars

$ billions

	Government of Canada treasury bills	Commercial paper*	Asset-backed paper	Bankers' acceptances	Other short-term securities**	Total
1990	135.4	29.3		44.1	14.2	223.0
1991	147.6	28.8		36.2	14.0	226.6
1992	159.5	26.3		22.0	17.7	225.5
1993	165.9	28.0	3.7	26.2	16.6	240.4
1994	159.6	31.9	3.7	26.6	18.1	239.9
1995	160.1	35.6	4.8	30.7	17.9	249.1
1996	135.2	31.2	8.7	34.0	17.4	226.5
1997	108.8	35.9	22.4	40.2	17.1	224.4
1998	87.1	40.1	41.4	45.9	17.4	231.9
1999	93.5	51.5	52.9	47.1	18.0	263.0
2000	78.7	55.8	60.3	51.5	20.2	266.5
2001***	84.3	50.0	59.8	48.7	19.0	261.8

Source: *Bank of Canada Banking and Financial Statistics* (Tables G6 and F2)

* Includes paper issued by finance companies and by other financial and non-financial corporations

** Includes treasury bills issued by provincial and municipal governments, as well as commercial paper issued by foreign corporations

*** For 2001, this table shows the outstanding stock as of 31 August instead of at year-end.

Table 3

Average Open Interest on Interest Rate Futures Contracts

Thousands of contracts

	Futures contracts on 3-month bankers' acceptances (BAX)	Futures contracts on 10-year Government of Canada bonds (CGBs)
1993	35.5	11.8
1994	74.5	25.9
1995	89.6	21.5
1996	91.6	21.1
1997	145.9	32.2
1998	236.5	45.8
1999	214.4	43.3
2000	213.4	48.8
2001*	198.5	59.2

Source: Montreal Exchange

* For 2001, this table shows the average open interest up to 31 August instead of for the full year.

Table 4

Weekly Money Market Turnover, Annual Average

	Government of Canada treasury bills	Commercial paper*	Bankers' acceptances	Other short-term securities**	BAX***
1995	0.549	0.616	0.444	0.187	0.499
1996	0.601	0.582	0.447	0.225	0.505
1997	0.475	0.599	0.434	0.215	0.537
1998	0.364	0.549	0.429	0.265	0.553
1999	0.246	0.501	0.447	0.253	0.541
2000	0.275	0.519	0.477	0.243	0.450
2001****	0.232	0.537	0.552	0.237	0.445

Source: *Bank of Canada Banking and Financial Statistics* (Tables F11, G6, and F)] and the Montreal Exchange

* Asset-backed securities are included with commercial paper in this table.

** Includes treasury bills issued by provincial and municipal governments, as well as commercial paper issued by foreign corporations

*** Turnover computed by dividing trading volume by open interest

**** For 2001, this table shows the average turnover up to 29 June instead of for the whole year.

Anecdotal evidence suggests that the reduced issuance of Government of Canada securities has contributed to a decline in the liquidity of that market, with investors increasingly adopting a buy-and-hold strategy that further curtails the effective supply of these instruments (i.e., the supply of securities in the hands of *active* market participants). Trading activity in Government of Canada treasury bills has also declined since issuance was at its peak, dropping more rapidly than the stock of securities itself. Table 4 shows that the weekly turnover of treasury bills, defined as the ratio of their weekly trading volume to their outstanding stock, declined from 0.549 in 1995 to 0.232 in 2001. While the weekly turnover for Government of Canada bonds increased concurrently with their stock in 1996 and 1997, it has declined significantly since then, even though the stock of outstanding bonds has remained fairly steady. As shown in Table 5, weekly turnover volume has fallen from 0.317 in 1997 to 0.236 in 2001.

Table 5

Weekly Bond Turnover, Annual Average

	Government of Canada bonds	Corporate bonds*	Other domestic bonds**	CGBs***
1995	0.244	0.012	0.020	0.190
1996	0.303	0.010	0.022	0.201
1997	0.317	0.012	0.018	0.157
1998	0.270	0.014	0.024	0.160
1999	0.202	0.013	0.027	0.146
2000	0.195	0.014	0.022	0.122
2001****	0.236	0.014	0.024	0.114

Source: *Bank of Canada Banking and Financial Statistics* (Tables F12, G6, and K8) and the Montreal Exchange

* Includes bonds and asset-backed securities issued by corporations

** Includes bonds issued by provincial and municipal governments, as well as by other public institutions

*** Turnover computed by dividing trading volume by open interest

**** For 2001, this table shows the average turnover up to 29 June instead of for the whole year.

The share of the securities industry's revenues stemming from trading in fixed-income products has also been on a declining trend. A number of foreign firms have recently stopped playing a market-making role in the Canadian market, citing low profitability. Moreover, anecdotal evidence suggests that institutional investors are increasingly opting for passive, lower-cost investment strategies, such as indexation, rather than active management. This reduces trading activity. Interest from international investors has also fallen off in recent years, given that the yields on Government of Canada securities have been lower than those on their U.S. counterparts.

Since issuance patterns and the practices of market participants are exerting downward pressure on the effective supply of Government of Canada securities, market prices are increasingly influenced by so-called technical factors, thereby deviating from what economic fundamentals would suggest. For example, if the issuance of Government of Canada bonds is expected to be reduced, investors would likely be

willing to pay a scarcity premium to buy these bonds, providing that no close substitute or alternative investment vehicles are available. For example, anecdotal evidence suggests that such a scarcity premium, resulting from a reduction in the effective supply of long-term bonds, contributed importantly to the inversion of the long end of the yield curve that occurred in 2000. This premium was partly the result of an announcement by the U.S. Treasury Department that it might reduce its debt faster than expected.[4] This announcement came after a decision by the Canadian federal government in April 1998 to decrease its issuance of long-term bonds, reducing the auction frequency from quarterly to semi-annually. In the future, a significant reduction in the effective supply of a given Government of Canada security could lead to a situation where some supply/demand imbalances arise for that security, so that it becomes very expensive to borrow in the market for repurchase agreements. (In market parlance, that security would be said to be "on special" in the "repo" market.) An increase in the frequency and/or the severity of these episodes would likely make market participants more reluctant to take short positions in the Government of Canada securities market, which would reduce the market's effectiveness in fulfilling its hedging and benchmarking roles. Unless market participants begin using securities other than Government of Canada bonds for benchmarking purposes, such distortions would likely affect borrowing costs and, potentially, other administered rates, such as mortgage rates.

The federal government is, however, committed to preserving the integrity of the market for Government of Canada benchmark issues, and is adopting initiatives to enhance market liquidity and to alleviate some of the pressures on the effective supply of these securities. The government has, for example, progressively increased the target size for 5-, 10-, and 30-year benchmark bonds and has approved new rules that allow bonds that have been stripped to be reconstituted above the original amount stripped. The government has also implemented a program in which it buys back bonds that have become relatively illiquid. This program allows the government to increase the size of current benchmark issues more rapidly than would otherwise be possible. It enhances liquidity by allowing market participants to hold a larger proportion of their portfolios in liquid benchmark issues rather than in illiquid bonds. The program is being expanded (on a trial basis) in the first quarter of 2002 to allow dealers to directly exchange illiquid bonds for benchmark issues. Another initiative being pursued is the possibility of lending some of the Bank's holdings of Government of Canada securities to market participants when demand imbalances arise. Discussions are ongoing with market participants to iron out the details of the program, which would reduce the frequency and severity of "specials" and thus help maintain the liquidity and efficiency of the market for repurchase agreements.

The federal government is, however, committed to preserving the integrity of the market for Government of Canada benchmark issues, and is adopting initiatives to enhance market liquidity and to alleviate some of the pressures on the effective supply of these securities.

The market for securities issued by the private sector

While the market for Government of Canada securities undergoes these changes, the private sector is intensifying its participation by issuing an increasing amount of marketable debt. As shown in Table 1, the outstanding stock of corporate bonds (including asset-backed securities) has slightly more than doubled since the mid-1990s, reaching $228.5 billion in 2001. Corporate bonds accounted for 29 per cent of the stock of the overall Canadian bond market in 2001, compared with 17 per cent in 1995.

The Canadian market for corporate bonds has been slower to develop than that of the United States, partly because of the limited investor base, the previous high financing needs of the public sector, and the relative ease with which corporations can issue debt outside of Canada, mainly in the United States (see Miville and Bernier 1999). As shown in Table 6, the U.S. market for corporate bonds issued by domestic

4. This question has recently resurfaced following the suspension of 30-year bond issuance by the U.S. Treasury.

Table 6

Country Share* of the World Bond Market for Domestic Issues in 2000**

Per cent

	Government bond market	Corporate bond market	Overall bond market
United States	46.0	57.4	49.1
Euro area	17.9	16.9	19.8
Japan	22.9	12.4	17.7
United Kingdom	2.4	0.9	3.4
Canada	**2.2**	**1.3**	**1.7**
Australia	0.4	1.0	0.6
Other countries	8.2	10.1	7.7

Source: Merrill Lynch, *Size and Structure of the World Bond Market*

* The content of this table has been computed by converting international issues into U.S. dollars.

** This table excludes debt issued by foreign entities.

firms is by far the most mature in the world. It is also the only one with a deep and liquid high-yield component.[5] Its growth has been aided by a well-developed infrastructure as well as a large global investor base. Historically, the development of the U.S. corporate bond market has also been helped by the fragmented U.S. banking system, which encourages corporations to obtain market-based financing.

Many non-U.S. corporations, particularly those that are smaller or have a lower credit rating, find the U.S. market to be a more receptive and reliable source of funding. Foreign corporations whose revenues are denominated in U.S. dollars, or who have sizable operations in the United States, also often find it advantageous to issue debt in U.S. dollars, since this allows them to hedge their cash flows against foreign exchange risk. Canadian corporations have not been an exception to this rule. Natural resource firms, which are important issuers of marketable debt and whose revenues are generally denominated in U.S. dollars, are an example.

As mentioned previously, the "investment-grade" Canadian corporate market has been maturing, benefiting from several factors that are affecting both investor demand for corporate bonds and the cost of issuing marketable debt. One important underlying trend that is helpful to market development is the increased institutionalization of savings. Small investors have been holding a rising proportion of their savings in mutual funds or pension plans, which are traditionally important holders of corporate bonds. Furthermore, increasingly sophisticated institutional investors, striving to actively improve the risk-reward payoff of their portfolios, are conducting more credit analysis to identify investment opportunities in the corporate bond market. Some institutional investors have also relaxed some of their portfolio-investment rules and fiduciary constraints in order to increase their participation in the corporate market.

In some ways, the growth of the corporate market has also benefited from the heightened use of passive indexation by some institutional investors as an investment strategy.[6] As the corporate bond market grows and accounts for an increasing share of market indexes, institutional investors have to increase their holdings to match the index they are duplicating.

With interest rates perceived to be low in real terms, the recent interest rate environment has supported longer-term borrowing, and has allowed corporations to take advantage of the increased demand for corporate bonds. Provincial regulators have also taken initiatives to facilitate the registration of new issues. Companies are no longer required to file a new prospectus each time they wish to issue new debt, which significantly reduces their issuing costs. They can, instead, make known their intention to issue marketable securities up to a certain amount and take action only later when financial needs arise or when market conditions are right. Not only do companies retain flexibility with respect to the timing of a new issue, they can use the same prospectus to issue different types of securities (i.e., bonds, equities, preferred shares, etc.). Moreover, there has recently been a move towards harmonizing Canadian credit ratings with international standards, which may further enhance the attractiveness of the Canadian market.

Growth of the Canadian corporate market has so far been limited mainly to issues with a credit rating of A or better. Although the BBB investment-grade market has gained some momentum recently, the high-yield market in Canada remains in its infancy. Table 7 shows estimates of the distribution of the corporate bond segments of various bond indexes across credit categories. The breadth of securities available also remains limited, with financial institutions or well-established issuers dominating the corporate market. As shown in Table 5, the corporate market is also characterized by low trading activity, as the weekly

5. The high-yield market is composed of bonds issued by corporations with a credit rating that is not "investment grade" (i.e., lower than BBB).

6. Investors following a passive investment strategy aim to replicate the performance of a benchmark, generally a market index, whereas those following an active strategy would strive to identify investment opportunities that would maximize the risk-adjusted return of their portfolios.

Table 7

Distribution of Corporate Bonds in Bond Indexes by Credit Rating (as of November 2001)

Per cent

Credit rating	Scotia Capital	RBC DS	Merrill Lynch
AA or better	23.3	23.5	23.0
A	58.8	55.9	64.1
BBB	17.9	20.6	12.9

Source: Scotia Capital, RBC Dominion Securities, Merrill Lynch

turnover of corporate bonds remains at levels significantly lower than that of Government of Canada bonds.

The decline in the stock of Government of Canada treasury bills has led money market investors to turn to other short-term instruments to meet their portfolio needs. Alternatives such as bankers' acceptances, commercial paper, and asset-backed securities have moved in to fill the void, and their outstanding stock has soared over the 1995–2000 period (Table 2). The futures market for 90-day bankers' acceptances (known as BAX contracts) has also grown considerably, and has established itself as one of the mainstays of the Canadian money market. The futures market is used to hedge exposure to variations in interest rates and to speculate on the direction of interest rates in order to enhance portfolio performance.

Anecdotal evidence suggests that, so far, investor demand for short-term corporate instruments is mainly geared towards well-known issuers with a high credit rating. Investor appetite for securities with a lower rating remains somewhat limited. The ability of short-term paper to fill some of the void created by the reduced stock of treasury bills can be attributed primarily to the fact that they are a relatively low-risk alternative to government debt for investors seeking to enhance their returns by positioning themselves in a slightly more risky portion of the credit spectrum.

The increased appetite of investors for corporate debt instruments will likely cause this market to develop further, with a greater variety of products available in terms of industrial sectors and credit categories. Liquidity and trading volume should improve as the market continues to grow.

But for this growth to continue, the market must have liquid benchmark issues that serve as a reference for pricing and hedging. Money market participants already use bankers' acceptances as benchmarks to establish the price of other short-term instruments. It remains to be seen what type of securities could fill this important role in the bond market if the stock and liquidity of Government of Canada bonds were to decrease significantly. While highly rated corporate bonds are one of the candidates, they do not appear to be as well suited for such a role as bankers' acceptances are in the money market. The corporate bond market has the disadvantage of being significantly more fragmented than the market for bankers' acceptances, which is limited to chartered banks. From an investor perspective, the short time to maturity of bankers' acceptances also helps to make securities issued by one bank fairly close substitutes for those issued by another.

The increased appetite of investors for corporate debt instruments will likely cause this market to develop further, with a greater variety of products available in terms of industrial sectors and credit categories.

For the bonds of a given corporation to be used as benchmarks in the bond market, however, the size and the regularity of debt issuance would have to be of a magnitude sufficient for trading to reach a reasonably high level of liquidity. Bond prices for a given corporate security are typically influenced by too many idiosyncratic characteristics associated with that particular security for a situation similar to the money market's experience with bankers' acceptances to emerge in the bond market.

Other candidates to reach benchmark status are interest rate swaps. These instruments are agreements between two parties to exchange one stream of cash flow against another. The most common form of swap involves the exchange of fixed interest rate payments on a notional principal amount against floating interest payments on the same amount over a specified period of time. The fixed rate at which parties conclude the transaction could serve as the benchmark for pricing other securities. Indeed, some believe that swaps might possess some advantages as pricing instruments, since they embody some credit risk and are therefore more closely related to the securities being priced than (risk-free) Government of Canada securities (Fleming 2000). Interest rate swaps also

have the advantage of having no underlying fundamental security. There is, therefore, no supply limit. Anecdotal evidence suggests, however, that the Canadian swap market is not very liquid and has limited depth in terms of active institutional participants and counterparties, which may constrain its development as an effective benchmark.

Electronic trading platforms

Trading practices in the fixed-income market could change significantly following the introduction of electronic trading facilities, which allow the automated execution of one or more steps in the trading process; namely, the transmission of orders, the execution of trades, and the dissemination of pre-trade (i.e., spot quotes and limit orders) and post-trade (i.e., transaction price and volume data) information. While these systems have the potential to increase market transparency, facilitate the price-discovery mechanism, and increase cost-efficiency (Bank for International Settlements 2000), regulation of alternative trading platforms should be carefully considered. For example, some forms of transparency requirements regarding real-time information can have disadvantages (particularly for large, wholesale trades), since they might affect the prices of the securities being traded, especially if the market for those securities is rather illiquid or underdeveloped.

These platforms, widespread in worldwide equity markets, are being rapidly introduced into international fixed-income markets. Close to 80 operating electronic bond-trading systems have recently been identified in the United States by the Bond Market Association in December 2001. The U.S. experience suggests, however, that individual trades on electronic trading platforms tend to be small and are concentrated in homogeneous, commoditized products such as Treasury and federal agency securities.

The Canadian domestic fixed-income market is still operating under a traditional structure, where most institutional trades are made over the phone. However, a group of major Canadian dealers recently announced their intention to create an electronic trading platform for Government of Canada bonds and treasury bills as well as certain corporate issues. This electronic trading system would provide institutions with consolidated real-time bids and offers from all participating dealers for each security. Investors would also have the opportunity to solicit trades with dealers of their choice.

Some firms have recently started to offer electronic trading in fixed-income securities to smaller non-institutional investors, commonly referred to as "retail investors" in market parlance. More competition is likely to emerge in this sector with the upcoming launch of a retail distribution system based on a successful U.S. business model. According to current plans, several major Canadian dealers would participate in the system as liquidity providers. Retail clients of the various discount brokers and dealers would be able to access this liquidity pool and would be able to buy and sell fixed-income securities on-line from the liquidity providers quoting the best prices. This should provide retail investors with a more competitive pricing platform, enhance the transparency of the Canadian fixed-income market, and may lead to more trading by retail investors.

Because of the relatively small size of the domestic fixed-income market, it remains to be seen if such systems will be viable in Canada. Many attempts have failed internationally because of a lack of interest from market participants. With only a limited number of large institutional investors and with an increasing number of these adopting passive investment strategies, such a system may not generate enough activity to be profitable. The stagnant profitability of the fixed-income trading operations of investment dealers supports these doubts. Many market participants believe that electronic trading platforms will make institutional trading in benchmark bonds more efficient for relatively small transactions but that large ones will continue to be made over the phone, where bilateral negotiations can still take place.

Concluding Remarks

The Canadian fixed-income market is currently undergoing a period of change. Growth in the issuance of corporate bonds has been robust in recent years, with these securities now accounting for about 29 per cent of the overall bond market, compared with about 17 per cent in the mid-1990s. Privately issued debt should play an expanded role in the future. The virtual elimination of federal government financial requirements is also expected to contribute to the reduced dominance of Government of Canada securities. The important roles that these securities play in the market make this transformation quite significant for a number of reasons. Liquidity has already begun to erode somewhat, but could be supported by a series of initiatives implemented by market regulators and by the government to preserve the market's integrity. Liquidity might also be enhanced by the introduction of electronic trading platforms, which could improve market transparency and efficiency.

Literature Cited

Bank for International Settlements. 2000. *The Implications of Electronic Trading in Financial Markets*, November.

Fleming, M. 2000. "Financial Market Implications of the Federal Debt Paydown." *Brookings Papers on Economic Activity* 2: 221–51.

Harvey, N. 1999. "Recent Initiatives in the Market for Government of Canada Securities." *Bank of Canada Review* (Summer): 27–35.

Miville, M. and A. Bernier. 1999. "The Corporate Bond Market in Canada." *Bank of Canada Review* (Autumn): 3–8.

Risk Management in the Exchange Fund Account

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- *In managing the Exchange Fund Account (EFA),* the Bank of Canada and the Department of Finance strive to limit the risks to which the Government of Canada is exposed in financing and investment operations that involve foreign currencies.*
- *The EFA is exposed to various types of risk: credit risk, market risk, liquidity risk, operational risk, and legal risk. The approach used to manage them collectively has allowed risk to be held at a low level.*
- *The EFA governance process involves close collaboration between the Department of Finance and the Bank of Canada. This collaboration covers management of the Account and administrative tasks. Financing and investment operations are carried out by the Bank in its role as fiscal agent for the government.*
- *The first step in managing the EFA's risks involves identifying, analyzing, evaluating, and modelling them. The second involves establishing guidelines to limit these risks, while the third ensures day-to-day adherence to those guidelines, as well as periodically proposing new risk-control mechanisms.*

This article follows up on a paper published in last winter's issue of the *Review*, which dealt with the Bank's management of Canada's official international reserves (De León 2000–2001). Its goal is to explain the methods that the Bank has used to analyze and model the principal risks inherent in the financing and investment operations of the EFA, and the rules put in place to manage these risks.[1]

Before examining the actual management of these risks, it is important to clarify the nature and the goals of the Account and to underline the unique character of the institutional framework that is used to manage the government's official international reserves.

The Nature and Goals of the EFA

In many countries, the official international reserves are owned by either the central bank alone or by both the central bank and the government. For example, in Denmark and Switzerland, the reserves belong to the central bank, whereas in the United States they are split between the Federal Reserve and the Treasury. In Canada, these reserves belong to the government and are held in a special account at the Bank of Canada in the Minister of Finance's name. This account is called the Exchange Fund Account, and it is funded by currency swaps and direct foreign currency borrowings in international capital markets by the government .[2]

* In the context of this article, the term "Exchange Fund Account" is used to describe the liquid foreign currency assets held in the EFA and the foreign currency liabilities and swaps that are used to fund them.

1. This analysis is part of a larger effort to analyze and manage the risks associated with the transactions carried out by the Bank of Canada in its role as fiscal agent for the federal government. In addition to direct EFA investment and financing operations, these transactions include the EFA's securities-lending operations and sale and repurchase agreements, as well as the management of gold stocks (options and loans), the government's Canadian-dollar debt and the Receiver General's cash balances.

2. For more information on the government's currency swap operations, see Kiff, Ron, and Ebrahim (2000–2001).

The EFA's goals and objectives are defined in the Minister of Finance's annual report to Parliament on the operations of the Account for 2000 (Finance Canada 2001, p. 1).

Since risk management is one of the major considerations underlying the various operations of the EFA, it is useful to review the fundamentals and specific features of its management regime.

Managing the EFA's Risks: Principles, Internal Governance, and Rules

One of the fundamental principles of sound financial management is the maintenance of a balance between the desired return and the risk level: the return-risk relationship. Every organization establishes this relationship as a function of its financial goals and its preferences in matters of risk. In the case of the EFA, the stated objective is to protect the reserves against risk while minimizing the net cost of carry and maintaining adequate liquidity in various currencies. Box 1 shows how these principles influence the various entities responsible for managing the Account.

Sound risk management also implies the implementation of an appropriate governance process. To achieve this, the decision-making framework and the roles of the different stakeholders have been well defined and adapted to the governance, organizational, and operational framework of the EFA (see Chart 1 and Appendix).[3] This framework provides for direction, accountability, and reporting of activities related to the management of the EFA consistent with best practices.

Finally, sound risk management requires not only that the risks be expressly identified and contained by clear operational rules, but also skilled personnel and adequate computer support. This is why the Risk-Management Unit was created in 1997 in the Bank of Canada's Financial Markets Department. Overall, the results obtained in managing the risks of the EFA are consistent with the guidelines of the International Monetary Fund (IMF) and with the performance of other major industrialized countries (IMF 2000, 2001).

3. For more information on EFA governance, see De León (2000-2001).

Box 1

Principles Governing the Management of the EFA

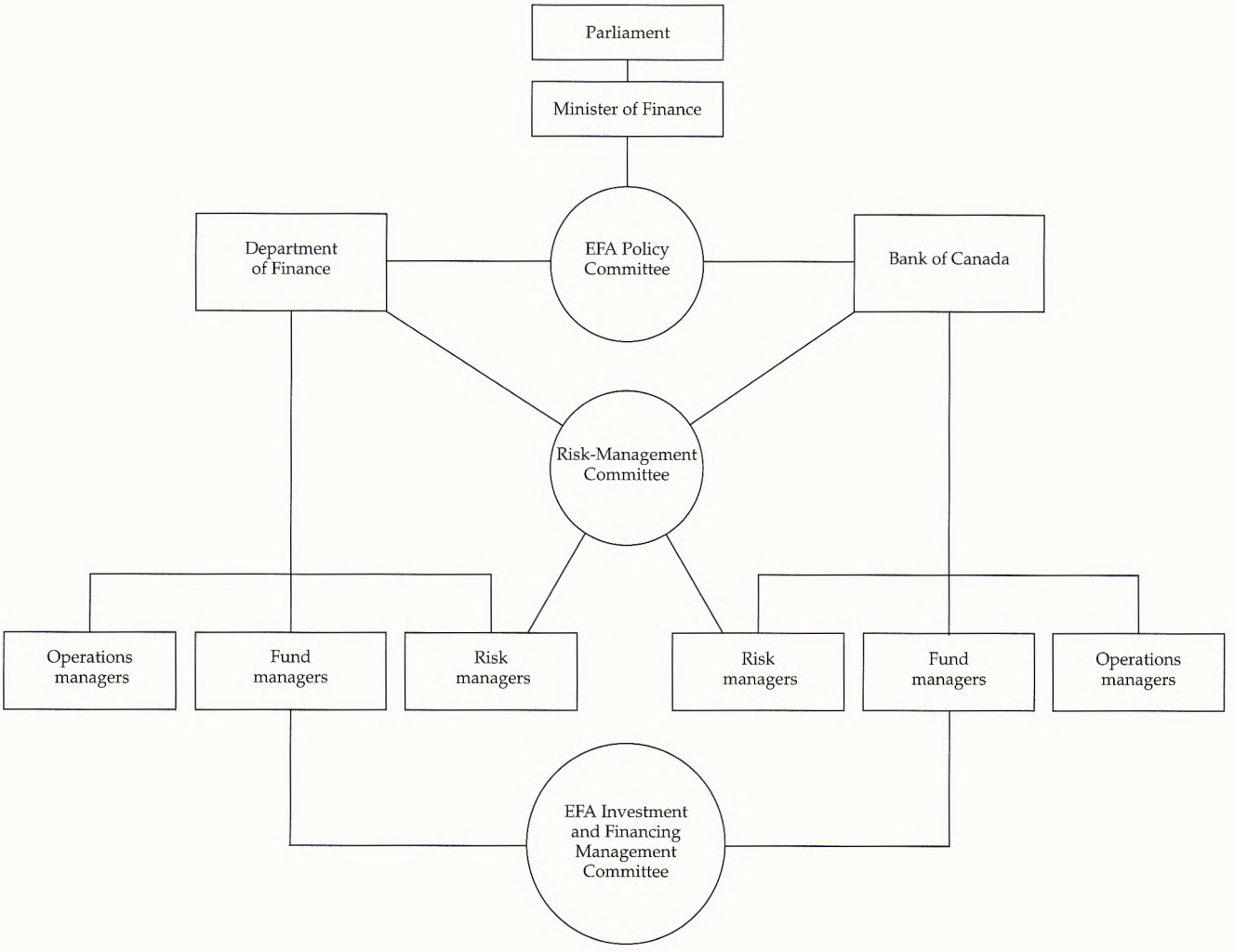
General

- The reserve assets and the liabilities that fund them are managed like portfolios, using an approach integrating many of the principles applied by financial institutions in the private sector, especially the prudent management of risk.
- In the case of assets, considerable attention must be paid to their liquidity, quality, and diversification, as well as to credit ceilings set for the counterparties.
- In the case of liabilities, the same attention must be paid to methods for raising capital, diversification of the investor clientele, the costs of the different sources of financing, and the maturity profile of the commitments.
- Exemplary risk-management practices must be applied.

Specific

- To ensure liquidity and to facilitate general intervention operations, the EFA must hold sufficient high-quality liquid assets.
- The spread between the interest paid on funds raised by the government to finance the EFA's assets and the interest earned on those assets must be minimized.
- Foreign exchange reserves must be managed so that, as much as possible, assets and liabilities are matched both in terms of currencies and durations.
- A prudent structure and profile of maturities must be maintained to limit refinancing requirements.
- Foreign currency borrowing that finances the EFA's reserves must be conducted in a manner that protects Canada's reputation as a "successful borrower" in international capital markets.

Chart 1
Structure of EFA



The EFA Balance Sheet

From the legal and accounting perspectives, the EFA is an autonomous entity with its own asset base. But examination of the official balance sheet published in the Minister of Finance's report for the year 2000 reveals that its sole liability is "Advances" from the Consolidated Revenue Fund. This is because the Account was originally created through an advance from the government, which also funds it (and is, in the final analysis, its only creditor). Nonetheless, the government regularly incurs foreign currency liabilities, the value of which must always be assessed against its foreign currency investments. Table 1 sets out the foreign currency investments and foreign currency liabilities of the Government of Canada to fund the EFA, in the form of a balance sheet.

As the table shows, the EFA's investments and liabilities are denominated in three currencies, the U.S. dollar, the euro, and the yen. These investments make up the so-called liquid reserves of the EFA, and they are recorded at par value. Risk analyses and the day-to-day management of the EFA are conducted on the basis of either the market value or, when the market value is unknown, an estimate of fair value.

The table shows that, on 31 December 2000, assets and liabilities in euros and yen were more or less matched, but liabilities in U.S. dollars exceeded the corresponding assets by US$6.8 billion. This situation arose largely as a result of foreign exchange intervention and important commitments to the IMF in 1998. This imbalance, which reached about US$13.2 billion at its widest point, has been gradually reduced through a

Table 1

The EFA's Investments and Liabilities on 31 December 2000

US$ millions, par value

Currency	Assets	Liabilities
U.S. dollar	20,730	27,512
Euro	6,674	7,245
Yen	506	492
Total	27,910	35,249

Source: Finance Canada 2001, Table 4, p.10.

Note: These values differ from the entries in Table I2 of the *Bank of Canada Banking and Financial Statistics*, which are expressed at market value. That table also contains data on gold holdings, special drawing rights, and the reserve position in the IMF, which are not discussed in this article.

program of U.S.-dollar acquisitions—designed to equalize assets and liabilities denominated in that currency—implemented jointly in 1998 by the Department of Finance and the Bank of Canada (Finance Canada 2001).

Types of Risk

Credit Risk

The term "credit risk" refers to the possibility that a counterparty to an EFA investment operation will renege on a commitment or declare bankruptcy. In the case of a private corporation, non-repayment of debt may result from bankruptcy or dissolution; in the case of a sovereign counterparty, from a moratorium on repayment of external debt, the institution of exchange controls, or repudiation. Credit risk also covers financial losses caused by a downgrading of the counterparty's credit rating if the portfolio is defined at market value.

To measure exposure to credit risk, the approach currently used is that recommended to international banks by the Basel Committee on Banking Supervision (Bank for International Settlements 1988, 1994, 1995).[4] This approach yields a risk-weighted exposure (RWE). Using the RWE formula, the actual exposure for each type of product is calculated each day using fair value, which is then broken down by counterparty. Finally, the potential exposure for derivatives used in managing market risk is added. The results of these computations for the EFA are presented in Table 2, which shows a breakdown of RWE in June 2001.

As the table illustrates, the overall credit risk of the Account's operations is minimal, given the high proportion of the RWE allocated to organizations rated AAA by Standard & Poor's, Moody's, Fitch IBCA, and Dominion Bond Rating Service.

To limit the credit risks inherent in EFA operations, there are restrictions on the types of counterparties and on the types of transactions that the EFA may undertake with these counterparties. Under this system, the credit rating serves not only to determine the choice of counterparties, but also the magnitude of the credit risk allowed.

Among the ceilings implemented, some are specific, while others are more global. Overall, the ceilings generally vary according to the counterparty's category (sovereign government, public institution, supranational organization, commercial financial institution) and credit rating. Furthermore, they consolidate all the transactions undertaken with any given counterparty, they take into account actual and potential exposure in the case of certain derivatives, and the term and type of transactions involving the eligible counterparties. Specific ceilings ensure that risk is spread among the counterparties, especially those in the private sector, while global ceilings provide for a similar dispersion of risk among broad categories of counterparties.

Table 2

Breakdown of Risk Exposure in the EFA on 29 June 2001

(Following BIS 1988, 1994, and 1995 methodology)

US$ millions

Category of counterparty and weighting coefficient	Unweighted exposure	Risk-weighted exposure	Allocation of risk
OECD-member sovereign states and their fully guaranteed agencies (0%)	14,060	0	74% in AAA 26% in AA
Other agencies of OECD-member sovereign governments and supranational entities (20%)	11,500	2,300	98% in AAA 2% in AA
Private financial institutions of OECD-member countries (20%)	4,485	897	5% in AAA 95% in AA

4. These guidelines were set out in publications of the Basel Committee on Banking Supervision (Bank for International Settlements 1988, 1994, 1995). The 1988 guidelines set capital requirements for international banks at a level consistent with the credit risk associated with balance-sheet transactions. In 1994 and 1995, modifications were made to cover derivatives. Globally, this approach allows the estimation of actual exposure based on market value, to which potential exposure for derivatives is added. This latter risk is estimated using projection factors recommended in the 1995 guidelines. The total obtained by this method is then weighted by a risk factor varying between zero per cent for risks associated with securities issued in the domestic currency by OECD-member sovereign states and their fully-guaranteed agencies, 20 per cent for other agencies of OECD-member sovereign governments, supranational institutions, and private banks of OECD-member countries, and 100 per cent for other private sector organizations. Examples of these computations can be found in Kiff, Ron, and Ebrahim (2001).

To limit the credit risks inherent in EFA operations, there are restrictions on the types of counterparties and on the types of transactions that the EFA may undertake with these counterparties.

Other methods of limiting credit risk include: bilateral netting agreements with the counterparties in the case of swaps and forward foreign exchange contracts; a system of collateral for transactions involving certain derivatives (to be established soon) allowing for a further decrease in associated credit risk; and a more thorough analysis of the credit risk presented by various entities (subsidiaries, brokerage houses, etc.) connected to a single counterparty.

Market Risk

The term "market risk" refers to fluctuations in the values of securities arising from changes in interest and exchange rates. In the case of the EFA, market risk has two sources: non-matching and partial matching of assets and liabilities. When assets and liabilities are matched by term and currency, this risk is low, because the impact of interest rate and exchange rate fluctuations on both assets and liabilities will cancel each other out.

Fund managers in the private sector begin by establishing benchmarks from which they deliberately assume market risk in order to increase the yields from their investments. In the EFA, foreign reserves are managed to ensure, as much as possible, that the assets match the liabilities in currency and duration. In this way, market risk is minimized. Indeed, matching is an integral means of managing market risk for the EFA. This goal has been met for the euro and the yen, but not completely for the U.S.-dollar portfolio (Table 1).[5]

To minimize market risk associated with interest rate fluctuations in the case of non-matching or incomplete matching, EFA fund managers start by matching assets and liabilities with the longest terms. Since total liabilities in U.S. dollars exceed the corresponding assets, this matching has been only partial; i.e., only in the long and medium term.

In the EFA, foreign reserves are managed to ensure . . . that the assets match the liabilities in currency and duration. . . . Indeed, matching is an integral means of managing market risk for the EFA.

Furthermore, since the EFA was created to give the federal government access to liquid foreign currency, the analysis of risk managers focuses on potential changes in the market value of the EFA's assets and liabilities. Since variations in these values are often caused by significant events in financial markets, the Risk-Management Unit develops scenarios to measure and limit this aspect of market risk. For these purposes, they sometimes use traditional methods and, in some instances, apply "extreme value" theory.[6]

The so-called traditional scenario approach is generally developed on the basis of observation and qualitative analysis of past events; for example, the Asian crisis of 1997–98, the Russian debt restructuring in 1998, and the collapse of U.S. Long-Term Capital Management in 1998. This approach allows for the development of scenarios on the basis of real events, but it is difficult to assign probabilities, and thus requires judgment in estimating the probability of similar events that are likely to affect the value of the Account's investments.

Scenarios based on extreme value theory are derived from the historical distribution of the probability of significant events.[7] For example, the numbers shown

5. The goal of matching assets and liabilities is pursued for each currency and for each maturity group; i.e., 0 to 6 months, 6 to 12 months, 18 months to 2 years, 2 to 3 years, 3 to 4 years, 4 to 5 years, 5 to 7 years, 7 to 9 years, and 9 to 10 years.

6. The Bank's staff consider the scenario method more suited to evaluating the EFA's market risks than the Value-at-Risk, or VaR, method recommended by the Basel Committee. Indeed, this latter approach was developed for managing trading accounts, and it generally relies on past values of volatility indexes and correlation coefficients, which unfortunately do not hold during periods of pronounced volatility in financial markets.

7. For more information on extreme value theory, see Bensalah (2000). This approach essentially tries to model extreme events.

in Table 3 correspond to some plausible scenarios (at a given level of confidence) for shocks affecting the Canada-U.S. exchange rate on a single day. For example, the single-day variation of the Canadian dollar vis-à-vis the U.S. dollar over the past five years was 1.36 per cent in only 0.1 per cent of the cases observed. These statistics allow us to assess the results of statistical sensitivity tests.

Table 3

Extreme-Shock Scenarios Affecting the Canada-U.S. Exchange Rate Between 1995 and 2000

Probability of occurrence (per cent)	Largest single-day depreciation observed (per cent)
5.0	0.72
2.5	0.89
1.0	1.16
0.1	1.36

It should be noted that, compared with other floating currencies, the Canadian dollar is relatively stable: it rarely fluctuates more than one per cent over the course of a single day.

Liquidity Risk

Liquidity risk has two aspects. The first deals with the ability to sell certain assets at the appropriate moment. This is crucial, since fund managers must be able to sell assets at fair value and obtain payment immediately through the settlement system. Since the purpose of the EFA is to provide general foreign currency liquidity for the government and to promote orderly conditions in the foreign exchange market for Canadian dollars, it must be in a position to rapidly sell securities and obtain liquid money to deal with extreme market swings.

Moreover, various policies have been adopted to limit liquidity risk. In keeping with these rules, the securities in which the EFA invests—eligible securities denominated in U.S. dollars, euros, or yen—must be very liquid. First, given that the market for securities issued by the U.S. government and its many agencies is considered the most liquid in the world, and that the U.S. dollar is generally used in the Account's foreign exchange operations, the share of U.S. dollars in the EFA's liquid assets has been fixed at a minimum of 50 per cent. Also, the outstanding par value of such securities must be at least US$500 million, and must be issued by eligible counterparties. This rule must always be respected, whether the investments are in long- or short-term securities. Moreover, the Account may not hold more than 10 per cent of the securities issued by any one counterparty—a restriction which, incidentally, is found in various laws and regulations, especially those applying to the securities industry and private pension plans. Finally, the total amount of securities unredeemable before maturity, for which there is no secondary market, cannot exceed 15 per cent of the Account's liquid assets.

Since the purpose of the EFA is to provide general foreign currency liquidity for the government and to promote orderly conditions in the foreign exchange market for Canadian dollars, it must be in a position to rapidly sell securities and obtain liquid money to deal with extreme market swings.

Since the liquidity of investments is closely related to their maturity, there are rules governing the maximum maturity of financial securities eligible to be included in the EFA portfolio (Table 4). Also, the maturities of the government's foreign currency liabilities to fund the EFA must be spread so that no more than one-third of them are redeemed or rolled over during the upcoming year. Finally, in order to cope with any eventuality, the EFA has several other means of rapidly increasing its liquid holdings, including its short-term U.S.-dollar commercial paper program, the possession of assets denominated in euros and yen (which also have very large secondary markets), and a US$6 billion line of credit with various foreign financial institutions.

Table 4

Maximum Maturity of Financial Securities in the EFA

Type of investment	Maximum maturity
Securities having a secondary market	10.5 years
Liquidity-management securities issued by a private sector institution and for which there is a secondary market (e.g., commercial paper)	1 year
Securities for which there is no secondary market (e.g., commercial deposits)	3 months
Gold lending[a]	1 year

a. The goal of these operations is essentially to earn income on this type of non-interest-bearing asset.

Operational Risk

Operational risk refers to the possibility of financial losses being caused by a malfunction or crash of computer systems, by employee error or fraud, by faulty operational processes, or by external events over which the organization has no control.

In the private sector, the consequences of this risk are usually evaluated in terms of the resulting direct and indirect losses from foregone earnings. In the case of the EFA, the managers consider direct losses and factors that might have a financial impact on the operations managed by the Bank of Canada.

There are two major approaches for measuring operational risk: "top-down" and "bottom-up." The top-down approach yields an estimate of the financial impacts of different aspects of operational risk based on calculations of losses that the organization has incurred in the past. This more actuarial approach is probably best suited to modelling substantial and infrequent losses resulting from failure of the controls in place. However, since the available data are not sufficiently reliable for the calculations this method requires, it is not widely used at this time. Several organizations are working to fill this gap.

As the name suggests, the bottom-up method follows the opposite path. It starts from the different aspects of the operations performed by the organization and integrates all operational sectors from which risks are likely to occur. In general, these sectors actively participate in identifying the sources of risks, and they become familiar with the controls needed to remedy them. This approach is consistent with the concept of total quality management as implemented by many financial institutions, and which the Bank applies to analyzing the operational risk to which the EFA is exposed.

In the case of the EFA, the managers consider direct losses and factors that might have a financial impact on the operations managed by the Bank of Canada.

In keeping with this approach, the Bank analyzes operational processes, establishes controls that are regularly reviewed, and closely monitors employee turnover and changes in the skill mix of the staff. The Bank has also developed several indicators of sources of risk and helps evaluate solutions and relevant technological applications. These include a new computer program for integrated (or "straight-through") processing of operations. The Bank monitors the integrity of the financial data used by models and has begun to monitor back-office operations. Finally, emergency measures have been put in place to deal with extraordinary events.

Legal Risk

Like operational risk, legal risk has several aspects. The term refers to the possibility that duly concluded contracts do not have legal force because they are not supported by the necessary documents, do not carry the required signatures, or because one or several of the signatories does not have the appropriate signing authority. This risk also covers the situation of a private sector financial institution failing to comply with the requirements of the relevant regulatory body.

It is unlikely that a real legal risk will arise if the operation unfolds as expected. If one of the parties defaults, however, this risk takes on a whole new dimension, since it is at that moment that the courts become involved to determine whether the rights negotiated in the contracts can, in fact, be exercised.

The methods used to control this type of risk have so far resembled those used in the private sector. One essential aspect involves retaining all documentation

relating to the different operations in order to be able to clarify the rights and obligations of each party as needed. For example, in the case of swap operations, the government uses and keeps the documentation standardized by the International Swap Dealers Association and closely follows its evolution.

Conclusion

Efforts to manage risk in the EFA have been aimed at limiting credit risk by imposing ceilings to ensure a diversification of risk and containing exposure in terms of counterparties. Moreover, by monitoring and perfecting methods and models for evaluating credit risk, the Bank expects to be able to fine-tune its tools for analyzing and modelling the credit risks inherent in the EFA's operations, as well as the means used to manage them.

In the area of market risk, the Bank is working on increasing the sophistication of benchmarks and developing financial scenarios for measuring the impact of market developments on the value and liquidity of the securities in the EFA. This should make it possible to develop a more integrated approach to managing market risk and to facilitate an evaluation of the net cost of carry of the EFA's reserves in light of the various goals.

Finally, it is necessary to take account of the interdependence of these risks, rather than to assume that they are independent of one another. For example, high volatility in financial markets affects the liquidity of the negotiated securities as well as the credit risk they present. Furthermore, the liquidity of these securities depends on the reliability of the settlement and payments systems, the orderly functioning of which is considered in many countries to be a responsibility of the central bank. Finally, the various legal aspects of the contracts affect the ability to exercise the rights they create and carry with them financial consequences for the different contracting parties.

Bibliography

Bank for International Settlements. 1988. *International Convergence of Capital Measurement and Capital Standards,* Basel Committee on Banking Regulations and Supervisory Practices, amended July 1994 and April 1995.

Bensalah, Y. 2000. "Steps in Applying Extreme Value Theory to Finance: A Review." Bank of Canada Working Paper No. 2000-20.

Crouhy, M., D. Galai, and R. Mark. 2001. *Risk Management.* New York: McGraw Hill.

De León, J. 2000–2001. "The Bank of Canada's Management of Foreign Currency Reserves." *Bank of Canada Review* (Winter): 13–21.

Finance Canada. 2001. *2000 Annual Report to Parliament on the Operations of the Exchange Fund Account by the Minister of Finance and Report of the Auditor General to the Minister of Finance on the Examination of the Accounts and Financial Statements of the Exchange Fund Account.* Ottawa: Department of Finance.

International Monetary Fund. 2000. *Sound Practices in the Management of Foreign Exchange Reserves.* (March).

———. 2001. *Guidelines for Foreign Exchange Reserve Management.* (September).

Jensen, P.K. 2001. "Management of the Interest-Rate Risk on the Foreign-Exchange Reserve." *Monetary Review,* Danmarks Nationalbank (first quarter).

Jorion, P. 2001–2002. *Financial Risk Manager Handbook 2001/2002.* New York: Wiley (GARP Risk Management Library).

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.

Appendix

Roles and Responsibilities within the EFA

Minister of Finance

- Approve policies governing the investment and financing activities of the EFA.
- Approve policies for managing market, credit, and liquidity risk, as well as operational and legal risks.
- Approve the EFA's investment rules (current and future activities).
- Approve risk-management rules: level of tolerance to risk and means envisioned to manage risk.
- Present an annual report to Parliament on the operations of the EFA.

EFA Policy Committee (Bank of Canada and Department of Finance)

- Consists of senior representatives from the Bank and the Department of Finance.
- Generally oversee the Account.
- Provides direction and accountability to major policy initiatives.
- Review EFA operations.
- Make recommendations on policy changes.
- Meets semi-annually.

Risk-Management Committee (Bank of Canada and Department of Finance)

- Consists of managers from the Department of Finance, the Bank of Canada, and including two representatives with no connection to the operations of the EFA, one from the Department of Finance and one from the Bank of Canada.
- Ensures that EFA operations reflect the policies, rules, and ceilings with regard to financial and operational risks.
- Plays an advisory role for the elaboration of new rules and methods of managing certain risks and of appropriate performance measures.
- Reviews the reports generated by the Risk-Management Unit.
- Meets on a quarterly basis.

EFA Investment and Financing Management Committee (Bank of Canada and Department of Finance)

- Consists of fund managers and representatives of the Department of Finance and the Bank of Canada.
- Evaluates investment and financing proposals developed by the fund managers.
- Ensures that investment and financing activities follow the rules in place.
- Meets on a monthly basis.

Fund Managers (Bank of Canada and Department of Finance)

- Execute investment and financing operations in conformity with the applicable regulations and policies.
- Develop tactics for financing and investment operations.
- Propose new investments and financing approaches.
- Participate in monthly meetings of the EFA Investment and Financing Management Committee and attend quarterly meetings of the Risk-Management Committee.

Risk Managers (Bank of Canada and Department of Finance)

- Identify risks.
- Develop risk-management rules in collaboration with the fund managers.
- Analyze and model risks.
- Propose measures and management techniques for overall risk inherent in current and future EFA activities.
- Monitor the EFA's credit, market, and liquidity risks on a daily basis, and ensure that the fund managers respect the rules in effect.
- Participate in the monitoring of operational and legal risks in collaboration with representatives of other departments of the Bank and other branches of the Department of Finance.

- Report to the fund managers daily, to the Government Debt-Management Committee monthly, to the Risk-Management Committee quarterly, to senior officials from the Bank of Canada and the Department of Finance semi-annually, and to the Minister of Finance annually.

Operations Managers (Bank of Canada and Department of Finance)

- Verify the transactions records before their final approval.
- Confirm transactions with the counterparties.
- Approve transactions and enter the relevant information in the systems.
- Record the different aspects of the transactions.
- Effect the payments provided for and register income.
- Generate certain management reports.

The Canadian Economy: Current and Future Challenges

Remarks by David Dodge
Governor of the Bank of Canada
to the Greater Moncton Chamber of Commerce
and the Conseil économique du Nouveau-Brunswick
Moncton, New Brunswick
24 October 2001

It's a pleasure to be talking to you today, athough I wish these were happier times.

All of us at the Bank of Canada share a deep sorrow at the loss of so many lives in the 11 September terrorist attacks in the United States. Among those who died were innocent citizens of many nationalities, including Canadians. To their families, friends, and colleagues we extend our heartfelt sympathy. As we strive to come to terms with this tragedy and its implications for all of us, we are tremendously encouraged by the co-operation, solidarity, and determination that are abundantly evident both at home and in the international community. Through this time of anxiety and uncertainty, we at the Bank of Canada will continue to fulfill our responsibility to support the economic well-being of Canadians and to promote the stability of the domestic and international financial systems.

As we all struggle to fathom the dimensions of this tragedy and to get a measure of its immediate economic effects, it is important that we look through the short term to the longer-term trends and the potential of our economy. If we are to solidify our economic performance in the years ahead, we cannot lose sight of the challenges we must meet as a nation. Those longer-term challenges are my main topic for today.

Of course, in the current circumstances, there are also important near-term challenges for monetary policy. So I will conclude with a brief discussion of the current economic situation and the steps that the Bank is taking to support domestic demand in Canada.

Longer-Term Challenges to Good Economic Performance—Progress So Far

Let me start with the longer-term challenges.

The past decade was a watershed for the Canadian economy. Low inflation was firmly established, fiscal health was restored, and Canadian businesses undertook major restructuring. In short, we made remarkable progress in improving our economic performance.

Let me quickly review that progress, starting with the achievement of a credible low-inflation record.

. . . establishing a record of low and stable inflation

Since the early 1990s, the focus of Canadian monetary policy on low, stable, and predictable inflation has helped to anchor inflation expectations and to reduce the ups and downs in economic activity. Canadians have been able to make spending, saving, and investment decisions with greater certainty, knowing that their central bank will hold the line on future inflation and that the economy will be more stable.

. . . restoring fiscal health

But low inflation, although essential to good economic performance, is not sufficient by itself. It has to go hand in hand with prudent fiscal management.

Since the early 1990s, Canada has also taken action to put its fiscal house in order. And this is paying dividends. Wiping out deficits at all levels of government has helped to bring about low interest rates and relatively more stable financial markets.

. . . undertaking business restructuring and embracing open markets

Low interest rates and greater confidence about the future have, in turn, encouraged Canadian firms to undertake important restructuring initiatives to meet the challenges of sweeping worldwide technological change and intensely competitive global markets.

Over the past decade, these restructuring efforts have taken place against a backdrop of sustained efforts to open up our economy even further. Indeed, building on the trade agreements that we forged in the late 1980s and early 1990s, such as the North American Free Trade Agreement (NAFTA), we have significantly increased our involvement with the world economy.

Altogether, it is clear that, over the past decade, we in Canada have done a lot to strengthen our economic foundations. Because of this, we are now better positioned than we have been in a long time to weather economic turbulence and to take on new challenges.

But, in a rapidly changing, increasingly competitive world, "they who stand still, fall behind." If we are to seize the opportunities out there in the global economy, we have to continue to move forward and make further progress.

Longer-Term Challenges to Good Economic Performance—The Way Ahead

Before I focus on the new things we need to do to facilitate progress in the future, let me stress how important it is that we maintain the strong base on which everything else rests—sound macroeconomic policies.

. . . sound macroeconomic policies

Fostering a climate of low, stable, and predictable inflation is the best contribution monetary policy can make to good economic performance over the medium term. The Bank of Canada is carrying forward its commitment to preserve confidence in the future value of money—that you can bank on!

On the fiscal side, it is critical that our public finances remain healthy and that all levels of government continue to reduce their net indebtedness over time. A declining public debt relative to the size of our economy will make us less vulnerable to external shocks. But I hasten to add that I do *not* mean to suggest that we should not let the "automatic stabilizers" work when faced with an economic shock. (These stabilizers are the built-in features of revenues and expenditures that work to offset economic fluctuations. For example, in an economic downturn, tax revenues automatically go down and some expenditures, such as employment insurance payments, automatically go up.) Let us remember, however, that it is because of the progress we have made over the past decade in restoring healthy public finances that we can now afford to let these automatic stabilizers work.

Now, sound macroeconomic policies, while necessary, are not sufficient if we are to improve the structure and performance of our economy in coming years. I would like to think through with you what other policies and steps we might need.

As we look ahead, the one thing we can be sure about is that world markets for goods, services, and finance will become more and more globalized and competitive. Canada, as a very open economy, must operate in full recognition of that fact. In particular, in light of the heightened security concerns in the United States, it is important that we all work to facilitate the continued flow of goods and services between our two countries. Beyond this issue, there are many challenges for all Canadians. But there are also new opportunities for our firms to increase their global reach and to reap the benefits of large-scale production—provided they pursue new initiatives to enhance productivity and find more efficient ways to deliver products and services to domestic and foreign customers.

This is where innovation enters the picture.

. . . exploiting the potential of new technologies

The world is in the midst of far-reaching changes—changes that are transforming national economies and societies around the world through the widening application of new information and communication technologies. And more change is on the horizon—change that will come from dramatic advances in biotechnology and nanotechnology.

Technologies like these take time to spread and spawn new applications across a broad range of economic sectors—pretty much like the electric motor did in the past. But to realize the full potential of these new applications, major changes in the organization of a firm, of an entire sector or, indeed, of a whole economy, are often necessary. It is the combination of these applications and adaptations that leads to rising productivity and rising incomes.

Like many other economists who have studied these issues, I am optimistic that, over the next couple of decades, productivity will grow significantly faster than it did from 1975 to 1995, although perhaps not as fast as in the high-growth years of the 1950s and 1960s.

But while experience shows that innovations take time to diffuse widely, it is important to remember that the prime opportunities go to those firms and those economies that are quick to take advantage of the new realities. Through the first half of the 1990s, Canada lagged behind the United States in making the investments that are necessary to take advantage of new technologies. But since 1996, there has been a surge in such investments in Canada. And in the last couple of years, we were beginning to see the first signs of a productivity payoff. Once the prevailing global uncertainty and the cyclical forces that are now constraining output and investment growth in Canada dissipate, we will likely see more efficiency gains from those past investments and more capital spending on innovations. And once the necessary adjustments are made to deal with the need for heightened security, those innovations will mean rising standards of living for Canadians.

. . . redesigning organizational structures and upgrading skills

But, as I just said, to benefit fully from technology, changes and improvements in the structure of our economy and in the way we run our businesses are necessary.

At the company level—and that applies also to government departments and to the Bank of Canada—this means organizational changes and changes in management and work practices. It also means upgrading skills. Simply installing state-of-the-art equipment will not be enough. And it will, most certainly, not deliver efficiency and productivity gains if organizational structures and management practices are outmoded and if workers do not know how to use the new technology to advantage.

Some of these issues will no doubt sound familiar to many of you here in the Atlantic provinces, where considerable effort and progress have been made in recent years to diversify the regional economy and to move into areas that make greater use of new technologies. And this is especially clear here in Moncton where, over the past decade, you have enjoyed the strongest employment growth in the province—12,000 new jobs created since 1990—thanks to your ability to attract call centres and other information-technology companies.

. . . enhancing productivity

Now, the reason for adopting new technologies, revamping management and work processes, and upgrading labour skills is that we, as a nation, can become more efficient and more productive. Productivity growth is the key to rising real incomes and improved standards of living over the longer run.

But, you may ask, how does monetary policy fit in all this? And what can the Bank of Canada do to promote higher productivity and rising real incomes?

An increase in real incomes is a key component of the good overall economic performance that the Bank aims at through a policy focused on low inflation. The Bank supports initiatives to improve productivity by delivering a climate of low and stable inflation that encourages well-informed, long-term business decisions, including decisions to invest in new high-tech machinery, equipment, and software.

. . . ensuring that Canada's financial system and markets work efficiently

The Bank also concerns itself with another factor in supporting good economic performance—a sound, innovative, and efficient financial sector. A stable, highly developed financial sector helps to channel savings into investments and allocates capital efficiently.

This is particularly important in these times of rapid technological change, when we want companies that plan to adopt new technologies to have access to proper financing. But of course, we also want to ensure that this is done in a way that preserves the stability of the financial sector. Appropriate safeguards and sound policies aimed at fostering financial stability improve overall economic performance.

The Bank of Canada is helping to promote financial stability in a number of ways. Here at home, we oversee major payments systems and provide ordinary and emergency liquidity to the financial system. We also work with other federal entities and provincial securities commissions to ensure that financial markets function well. And through international organizations, such as the Bank for International Settlements

and the International Monetary Fund, we work with other central banks and financial regulators around the world to promote global financial stability.

There are other medium-term issues that we could usefully spend time discussing. But given that time is limited, I would now like to turn to the current economic situation and the near-term challenges for monetary policy.

Current Economic Situation and Near-Term Policy Challenges

Even before last month's events in the United States, evidence had begun to accumulate that the economic slowdown in that country would be deeper and last longer than had been widely expected. By mid-summer, economic activity outside North America had also begun to show more clearly the effects of weaker U.S. growth and of the ongoing global retrenchment in the information and telecommunications sectors. At the same time, there were signs that domestic demand in Canada, which had held up well through the first part of the year, was softening and that the inventory adjustment, particularly in the electrical and electronic sectors, still had some way to go.

This evidence, which had been accumulating through the summer, led the Bank to scale back its previous expectations for economic growth during the second half of 2001 and the first half of 2002. Consequently, on 28 August, we lowered interest rates to support domestic demand growth and to keep inflation near the target of 2 per cent over the medium term.

The events of 11 September, and their repercussions around the world, added a further major element of uncertainty to the near-term prospects for the global economy and for Canada. Because of this heightened uncertainty, the Bank took the exceptional step of lowering interest rates by one-half of a percentage point on 17 September, outside our regular schedule of fixed announcement dates. We also moved immediately after the attacks, as did other major central banks, to provide additional liquidity to the financial system to ensure its smooth functioning. At times like these, a key factor in preserving confidence in the prospects for our economy is a financial system that continues to work effectively.

The ongoing economic effects of last month's shock are very difficult to assess. We know that there was a clear and immediate impact on certain sectors (such as air transportation and tourism) and on those industries that rely on cross-border, just-in-time delivery. But how large the total impact will be and how long it will last are very difficult to gauge. What is even more difficult to evaluate at this stage are the implications for consumer and business attitudes. The recent events are unlike anything we have ever experienced in North America. So it will take some time before we can fully understand their consequences.

When we take into account the direct effects of the terrorist actions in the United States, their immediate negative impact on business and consumer confidence, and the adjustments necessary to deal with increased security risks, it is now clear that economic growth in Canada in the second half of 2001 will be close to zero or slightly negative. This means average growth for the year as a whole of about 1 1/2 per cent.

How quickly growth will resume will depend crucially on geopolitical developments and on how soon consumer and business confidence return to normal. By their very nature, geopolitical developments are not easily predictable, although they will likely be more turbulent than usual for some time. Also difficult to predict is the evolution of consumer and business confidence. One could think of a scenario where confidence would be restored quickly. In such a case, fairly robust growth could resume by the second quarter of 2002. On the other hand, consumer and business confidence in North America could stay weak for quite some time. In these circumstances, growth could remain anemic through most of 2002. While the timing of a rebound in economic activity is unclear, we are confident that, once the uncertainty stemming from terrorist actions dissipates, healthy growth in output, investment, and employment will resume, given Canada's sound economic fundamentals.

Under either of these scenarios, there will be less pressure on capacity through the balance of this year and during 2002 than we had thought earlier. Indeed, by the end of 2002, the economy will still be operating below potential. With less pressure on capacity, core inflation is expected to move below 2 per cent in early 2002, and to stay below through the remainder of the year. As for total CPI inflation, it will likely drop to about 2 per cent by the end of 2001 and move below that during 2002, if energy prices remain at or below their levels of early September.

Based on these considerations, yesterday, on our preset announcement date, we cut our key policy interest rate—the target for the overnight rate—by 3/4 of a percentage point. It is now at 2 3/4 per cent—a full

3 percentage points lower than at the beginning of the year. This action aims to further support economic growth in Canada and to keep inflation close to our 2 per cent target over the medium term.

I do not have to tell you that, because of the many unknowns in the global economic environment, and because of the uncertainty surrounding domestic demand in Canada, we will continue to monitor developments very closely.

Concluding Thoughts

To conclude, as we in Canada find ourselves in the middle of economic difficulties, and especially as businesses, governments, and individuals struggle to come to grips with last month's tragedy, our main preoccupation is, naturally, with near-term issues. That is understandable. But, at the same time, it is critically important that we maintain a sense of perspective—that we step back and look past current developments, focusing also on the longer-term trends in our economy and its potential.

Over the past decade, Canada has made remarkable progress in strengthening its economic foundations. This should stand us in good stead, no matter what economic turbulence and near-term uncertainties we face. And it gives us a firm basis to stand on as we embark on new initiatives to improve our longer-term economic performance and meet the challenges of the twenty-first century.

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Summary Tables

A1 Summary of Key Monetary Policy Variables

Monthly		Inflation-control target (12-month rate)			Policy instrument			Monetary conditions			Monetary aggregates (12-month growth rate)			Inflation indicators					
		Target range	CPI	Core CPI*	Operating band for overnight rate (end of month)		Overnight money market rate	Monetary conditions index (January 1987=0)	90-day commercial paper rate	C-6 trade-weighted exchange rate (1992=100)	Gross M1	M1++	M2++	Yield spread between conventional and Real Return Bonds	Total CPI excluding food, energy, and the effect of changes in indirect taxes	CPIW	Unit labour costs	IPPI (finished products)	Average hourly earnings of permanent workers
					Low	High													
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1998	J	1-3	1.1	1.5	4.50	5.00	4.28	-6.10	4.56	84.07	14.2	5.5	6.0	1.70	1.1	1.4	1.7	3.3	1.7
	F	1-3	1.0	1.6	4.50	5.00	4.71	-4.88	4.96	86.16	12.6	4.2	5.5	1.72	1.4	1.4	1.6	3.2	1.6
	M	1-3	0.9	1.5	4.50	5.00	4.68	-4.68	4.84	87.01	12.1	3.5	4.9	1.67	1.2	1.3	0.2	1.8	1.4
	A	1-3	0.8	1.2	4.50	5.00	4.73	-5.12	5.04	85.35	13.0	3.8	5.4	1.81	1.0	1.2	2.2	1.9	1.3
	M	1-3	1.1	1.3	4.50	5.00	4.74	-5.48	5.04	84.42	12.0	3.5	5.5	1.71	1.2	1.3	1.5	2.5	1.4
	J	1-3	1.0	1.1	4.50	5.00	4.74	-5.71	5.06	83.80	10.7	2.7	5.5	1.67	0.8	1.3	1.4	3.3	1.9
	J	1-3	1.0	1.2	4.50	5.00	4.77	-6.39	5.14	81.92	10.6	3.6	5.8	1.74	1.1	1.3	2.1	3.8	1.3
	A	1-3	0.8	1.2	5.50	6.00	4.72	-7.51	5.22	79.00	9.5	3.3	5.9	1.73	1.2	1.3	1.5	3.8	1.4
	S	1-3	0.7	1.1	5.25	5.75	5.73	-6.87	5.38	80.16	11.8	3.8	6.1	1.30	1.2	1.3	0.7	3.5	1.6
	O	1-3	1.0	1.2	5.00	5.50	5.23	-7.65	5.22	78.68	10.2	3.2	5.9	1.38	1.2	1.3	2.1	5.0	1.8
	N	1-3	1.2	1.5	4.75	5.25	4.95	-7.70	5.09	78.87	7.9	1.8	6.0	1.30	1.4	1.5	1.9	4.3	1.7
	D	1-3	1.0	1.3	4.75	5.25	5.11	-8.00	5.02	78.32	7.8	1.5	5.7	1.12	1.4	1.3	2.2	3.6	1.6
1999	J	1-3	0.6	0.9	4.75	5.25	4.99	-7.35	5.01	79.89	8.4	1.9	5.5	1.13	1.0	1.1	1.1	3.1	1.8
	F	1-3	0.7	0.9	4.75	5.25	5.00	-6.62	5.04	81.59	8.2	2.5	5.4	1.30	0.9	1.1	1.7	2.3	1.9
	M	1-3	1.0	1.1	4.50	5.00	4.99	-7.07	4.85	80.96	8.1	2.7	6.0	1.20	1.2	1.3	1.4	4.8	2.4
	A	1-3	1.7	1.3	4.50	5.00	4.78	-6.34	4.80	82.88	7.1	3.1	5.3	1.32	1.4	1.6	1.8	3.2	2.5
	M	1-3	1.6	1.4	4.25	4.75	4.59	-6.25	4.71	83.32	6.8	3.7	5.3	1.50	1.4	1.5	2.6	2.2	2.4
	J	1-3	1.6	1.5	4.25	4.75	4.60	-6.07	4.86	83.41	7.0	3.9	5.2	1.60	1.7	1.5	1.4	1.7	2.3
	J	1-3	1.8	1.6	4.25	4.75	4.61	-7.04	4.91	80.88	6.0	4.1	4.9	1.72	1.6	1.6	2.0	2.3	3.0
	A	1-3	2.1	1.6	4.25	4.75	4.62	-6.78	4.87	81.61	7.1	4.7	5.3	1.65	1.6	1.6	1.5	1.8	3.3
	S	1-3	2.6	1.9	4.25	4.75	4.58	-6.22	4.83	83.08	5.3	4.9	5.3	1.86	1.9	1.9	0.9	2.3	2.8
	O	1-3	2.3	1.6	4.25	4.75	4.61	-6.20	5.05	82.61	5.8	5.3	5.1	2.31	1.6	1.7	1.4	0.6	2.8
	N	1-3	2.2	1.4	4.50	5.00	4.77	-6.05	5.05	82.98	7.9	5.8	5.0	2.06	1.5	1.7	0.5	-	2.9
	D	1-3	2.6	1.4	4.50	5.00	4.76	-5.46	5.27	83.90	9.5	6.8	5.5	2.22	1.6	1.7	1.5	1.3	3.2
2000	J	1-3	2.3	1.2	4.50	5.00	4.77	-5.09	5.25	84.87	8.9	6.0	5.6	2.25	1.3	1.5	1.6	0.7	3.5
	F	1-3	2.7	1.3	4.75	5.25	4.97	-5.54	5.31	83.58	11.2	7.6	6.2	1.91	1.6	1.6	2.3	2.1	3.1
	M	1-3	3.0	1.4	5.00	5.50	5.25	-5.16	5.46	84.17	12.5	8.9	6.4	2.04	1.5	1.7	1.3	1.5	3.0
	A	1-3	2.1	1.1	5.00	5.50	5.26	-5.37	5.62	83.23	14.7	9.5	7.2	2.28	1.2	1.3	5.5	2.2	3.7
	M	1-3	2.4	1.1	5.50	6.00	5.75	-5.48	5.98	82.08	13.5	8.2	6.6	1.82	1.3	1.4	0.6	3.2	3.2
	J	1-3	2.9	1.3	5.50	6.00	5.75	-5.32	5.89	82.70	15.6	9.3	7.2	1.84	1.4	1.6	1.2	3.2	2.9
	J	1-3	3.0	1.2	5.50	6.00	5.73	-4.88	5.88	83.83	16.7	9.2	7.6	1.90	1.5	1.7	1.2	2.5	3.0
	A	1-3	2.5	1.2	5.50	6.00	5.75	-5.05	5.90	83.34	15.8	8.5	7.1	1.84	1.5	1.6	1.5	2.3	3.4
	S	1-3	2.7	1.0	5.50	6.00	5.74	-5.45	5.83	82.53	17.3	9.3	7.0	2.07	1.3	1.5	4.0	2.4	4.0
	O	1-3	2.8	1.3	5.50	6.00	5.75	-5.70	5.85	81.87	17.5	9.6	7.6	2.09	1.5	1.6	1.9	3.5	3.7
	N	1-3	3.2	1.5	5.50	6.00	5.75	-6.22	5.89	80.49	15.9	9.5	7.6	2.00	1.8	1.8	2.8	4.8	3.3
	D	1-3	3.2	1.8	5.50	6.00	5.80	-5.92	5.71	81.66	15.8	10.2	8.0	2.14	1.9	2.0	2.6	3.0	3.2
2001	J	1-3	3.0	1.8	5.25	5.75	5.49	-6.06	5.29	82.36	14.3	9.0	7.8	2.36	2.0	2.0	3.2	3.7	3.0
	F	1-3	2.9	1.7	5.25	5.75	5.49	-6.94	5.05	80.78	14.3	8.6	7.8	2.27	2.0	1.9	3.3	3.8	3.5
	M	1-3	2.5	1.8	4.75	5.25	4.99	-7.93	4.66	79.35	13.5	7.9	7.5	2.34	1.7	1.9	3.7	3.8	3.7
	A	1-3	3.6	2.3	4.50	5.00	4.74	-7.71	4.49	80.28	11.1	7.2	7.2	2.36	1.9	2.4	-0.2	4.3	3.5
	M	1-3	3.9	2.3	4.25	4.75	4.67	-7.60	4.49	80.54	11.4	8.7	7.8	2.45	2.0	2.5	2.9	3.8	4.0
	J	1-3	3.3	2.3	4.25	4.75	4.49	-7.03	4.38	82.21	9.8	7.7	7.2	2.36	1.9	2.4	3.1	2.8	3.8
	J	1-3	2.6	2.4	4.00	4.50	4.24	-7.70	4.22	80.97	9.4	8.0	7.0	2.28	2.1	2.4		2.6	3.3
	A	1-3	2.8	2.3	3.75	4.25	4.17	-8.28	3.96	80.18	8.9	8.5	7.1	1.99	2.1	2.3		2.5	2.5
	S	1-3	2.6	2.3	3.25	3.75	3.49	-9.69	3.19	78.65	11.6	10.8	7.8	2.18	2.0	2.3		3.4	2.3
	O	1-3	1.9	2.2	2.50	3.00	2.74	-10.59	2.45	78.28	12.1	11.0	8.0	1.71	1.8	2.1		1.3	2.5
	N	1-3	0.7	1.7	2.00	2.50	2.60	-10.78	2.17	78.50	13.9	13.3		1.91	1.5	1.7		0.6	3.0
	D				2.00	2.50	2.24	-10.94	2.08	78.33				1.93					

* New definition for core CPI as announced on 18 May 2001: CPI excluding the eight most volatile components: fruit, vegetables, gasoline, fuel oil, natural gas, intercity transportation, tobacco, and mortgage-interest costs, as well as the effect of changes in indirect taxes on the remaining CPI components

A2 Major Financial and Economic Indicators

Rates of change based on seasonally adjusted data, percentage rates unless otherwise indicated

	Year, quarter, and month	Money and credit									Output and employment				
		Monetary aggregates					Business credit		Household credit		GDP in current prices	GDP volume (millions of chained 1997 dollars, quarterly)	GDP by industry (millions of 1997 dollars, monthly)	Employment (*Labour Force Information*)	Unemployment rate
		Gross M1	M1+	M1++	M2+	M2++	Short-term business credit	Total business credit	Consumer credit	Residential mortgages					
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	1989	2.7	6.5	9.9	14.0	11.6	12.5	11.4	11.9	15.8	7.3	2.6	2.2	2.2	7.5
	1990	1.4	5.1	8.0	11.8	9.2	7.8	9.8	9.5	14.4	3.4	0.2	0.2	0.8	8.1
	1991	2.7	5.0	3.0	8.6	7.6	1.0	3.4	2.3	8.2	0.8	-2.1	-1.5	-1.8	10.3
	1992	6.9	4.3	0.2	5.8	7.1	-3.4	1.7	1.7	8.4	2.2	0.9	1.1	-0.7	11.2
	1993	9.1	5.1	-0.8	4.2	6.6	-6.3	0.7	2.3	7.6	3.9	2.4	2.4	0.8	11.4
	1994	12.9	8.4	1.3	1.8	6.8	1.6	4.8	7.7	6.4	5.9	4.7	4.6	2.0	10.4
	1995	7.0	0.9	-2.4	3.9	4.1	5.7	5.1	7.4	3.7	5.1	2.8	2.7	1.9	9.4
	1996	11.8	8.1	3.1	4.4	6.8	1.5	5.2	7.0	4.1	3.3	1.6	1.4	0.8	9.6
	1997	16.3	11.0	6.9	0.9	7.1	7.3	8.9	10.1	5.3	5.5	4.3	4.5	2.3	9.1
	1998	11.0	7.4	3.4	-0.8	5.7	11.7	10.9	10.6	4.8	3.5	3.9	3.8	2.7	8.3
	1999	7.3	6.2	4.1	3.2	5.3	1.0	5.7	7.5	4.5	6.5	5.1	4.8	2.8	7.6
	2000	14.7	10.8	8.8	6.0	7.0	6.4	7.0	11.9	4.6	8.3	4.4	4.7	2.6	6.8
	2001														7.2
Annual rates	1997 IV	12.6	10.6	6.2	-1.8	5.9	18.2	15.8	12.5	4.3	4.2	3.4	3.7	2.2	8.8
	1998 I	9.5	7.3	3.4	-1.7	5.2	11.2	9.8	13.9	5.1	3.8	4.2	3.7	1.6	8.6
	II	10.4	4.6	1.5	-0.8	6.0	10.6	10.5	9.2	4.4	1.4	1.6	1.9	2.9	8.3
	III	10.2	6.7	3.2	2.6	6.7	8.1	10.8	7.6	5.2	0.9	4.6	3.3	3.2	8.2
	IV	4.5	3.1	0.7	3.1	5.5	0.1	3.7	3.9	5.9	6.3	6.4	5.8	3.0	8.1
	1999 I	8.0	5.1	4.1	3.3	4.3	0.2	3.1	6.2	3.7	7.3	6.4	5.8	2.4	7.9
	II	5.3	8.5	6.2	2.9	4.4	-5.2	4.1	8.6	3.2	8.9	2.8	3.2	2.7	7.9
	III	6.7	9.4	7.3	5.2	6.4	1.3	9.0	10.5	5.7	9.6	5.9	6.7	2.6	7.5
	IV	11.0	7.3	6.3	4.8	5.7	3.3	6.7	12.4	3.5	6.8	5.3	5.3	3.1	7.0
	2000 I	21.0	12.1	10.3	8.0	7.7	9.3	5.6	14.9	5.1	10.8	6.1	6.0	3.6	6.8
	II	20.2	15.3	12.1	6.9	8.1	12.5	10.2	11.0	5.7	8.4	1.9	3.0	1.7	6.7
	III	14.6	9.1	7.4	5.5	7.4	4.6	5.0	11.5	3.4	6.6	4.5	4.1	1.0	6.9
	IV	10.1	11.6	9.4	4.9	7.7	12.7	7.3	8.0	4.0	2.7	1.6	0.9	3.0	6.9
	2001 I	11.5	7.2	5.2	6.7	7.5	-2.3	2.7	3.8	4.2	7.2	1.7	0.1	0.9	7.0
	II	7.0	10.3	9.6	7.7	7.1	-19.1	-0.2	6.3	3.8	-0.3	0.6	1.2	1.1	7.0
	III	11.4	8.6	12.4	6.1	6.9	-0.1	7.0	9.1	8.2	-5.6	-0.8	-1.6	-0.5	7.1
	IV														
Last three months		25.2	19.2	24.1	8.1	8.4	11.3	7.9	7.1	8.6			-2.2	0.4	7.5
Monthly rates	2000 D	1.7	1.3	1.4	0.9	1.2	0.9	0.5	0.2	0.2			-	0.2	6.8
	2001 J	-0.3	-0.8	-0.9	-0.1	0.1	-0.1	0.2	0.7	0.5			0.1	-	6.9
	F	2.4	1.8	1.3	1.3	0.9	-1.4	-0.1	0.3	0.3			-0.1	-0.2	6.9
	M	1.0	0.9	0.9	0.7	0.5	-2.4	-0.3	-0.7	0.3			-	0.2	7.0
	A	0.1	0.6	0.5	0.6	0.6	-2.0	-0.2	0.9	0.1			0.3	0.2	7.0
	M	-0.1	1.2	1.1	0.4	0.5	-1.0	0.5	0.8	0.5			0.2	0.1	7.0
	J	0.5	-0.3	-	0.4	0.5	-1.8	0.4	1.2	0.5			-0.2	-0.1	7.0
	J	0.8	0.7	1.0	0.5	0.5	-	0.4	0.5	0.8			-	-0.1	7.0
	A	0.3	0.4	0.7	0.4	0.5	1.4	1.0	0.7	0.6			-	-0.1	7.2
	S	4.0	3.0	3.2	1.2	1.0	1.9	0.8	0.4	0.8			-0.8	0.1	7.2
	O	1.0	0.3	1.0	1.0	0.9	0.6	0.4	-	0.6			0.3	-	7.3
	N	1.6	2.2	2.4			-1.5	0.1						0.1	7.5
	D														

A2 (Continued)

Capacity utilization rate		Prices and costs				Wage settlements		Bank of Canada commodity price index (unadjusted)		Securities mid-market yield			Year, quarter, and month
Total non-farm, goods-producing industries	Manufacturing industries	CPI	Core CPI*	GDP chain price index	Unit labour costs	Public sector	Private sector	Total	Non-energy	Treasury bills 3-month	Canada 10-year benchmark bonds	Canada 30-year Real Return Bonds	
(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	
84.4	80.8	5.0	4.3	4.6		5.2	5.2	5.9	3.1	12.23	9.56		1989
81.5	77.8	4.8	3.5	3.2		5.6	5.7	0.6	-5.2	11.51	10.34		1990
78.8	74.4	5.6	2.8	3.0		3.4	4.3	-11.2	-11.8	7.43	8.32	4.45	1991
78.4	76.0	1.5	1.8	1.4		2.0	2.6	-0.3	0.6	7.01	7.86	4.62	1992
80.2	79.7	1.8	2.1	1.5		0.6	0.8	0.5	3.0	3.87	6.57	3.78	1993
82.6	83.2	0.2	1.8	1.1		-	1.2	3.3	7.5	7.14	9.07	4.92	1994
81.7	83.2	2.2	2.3	2.3		0.7	1.4	8.3	11.1	5.54	7.11	4.42	1995
81.6	82.4	1.6	1.7	1.7		0.5	1.8	3.8	-1.2	2.85	6.37	4.09	1996
83.0	83.7	1.6	1.9	1.2		1.1	1.8	-3.7	-4.3	3.99	5.61	4.14	1997
82.6	83.7	0.9	1.3	-0.4	1.6	1.6	1.9	-15.3	-12.6	4.66	4.89	4.11	1998
83.5	84.5	1.7	1.4	1.4	1.5	1.9	2.7	6.7	1.5	4.85	6.18	4.01	1999
85.5	85.8	2.7	1.3	3.7	2.2	2.5	2.3	18.4	3.5	5.49	5.35	3.42	2000
								-6.0	-6.3	1.95	5.44	3.76	2001
83.5	84.2	0.5	0.8	0.8	-0.2	1.6	1.9	-11.0	-23.9	3.99	5.61	4.14	1997 IV
83.1	84.1	1.9	2.0	-0.4	3.5	2.1	2.3	-29.2	-16.3	4.59	5.34	4.03	1998 I
82.7	83.8	0.5	0.8	-0.4	2.5	1.7	1.7	-4.8	1.3	4.87	5.35	3.85	II
81.9	82.5	0.4	1.0	-3.6	0.3	1.2	1.8	-16.9	-17.4	4.91	4.95	4.02	III
82.5	84.3	1.2	1.4	-	1.7	1.7	2.0	-11.7	-13.1	4.66	4.89	4.11	IV
82.6	83.8	1.2	1.0	0.8	0.7	1.3	2.2	5.9	10.0	4.63	5.05	4.16	1999 I
82.7	84.0	3.6	2.1	6.2	4.6	2.4	2.5	32.9	13.6	4.56	5.46	4.03	II
84.1	85.2	2.7	2.1	3.2	-0.7	2.3	2.4	34.2	13.8	4.66	5.77	4.05	III
84.7	85.1	1.9	0.5	1.6	0.6	2.1	3.8	14.5	1.4	4.85	6.18	4.01	IV
85.7	86.0	2.5	0.6	4.4	3.3	2.3	2.8	30.1	20.0	5.27	6.03	3.80	2000 I
85.8	85.9	2.8	1.4	6.4	5.8	2.5	2.4	4.7	-4.9	5.53	5.93	3.77	II
85.7	86.3	3.5	1.8	1.9	-1.2	2.6	1.9	5.8	-17.6	5.56	5.75	3.60	III
84.9	85.1	3.6	2.2	1.1	2.8	3.1	2.2	17.0	-7.6	5.49	5.35	3.42	IV
83.6	82.7	1.6	1.9	5.4	5.9	3.7	2.4	5.4	-2.2	4.58	5.41	3.45	2001 I
83.2	82.0	5.2	3.1	-0.7	-0.2	2.9	2.9	-14.3	24.8	4.30	5.73	3.53	II
		0.6	2.2	-4.8				-36.2	-23.9	3.05	5.32	3.68	III
								-43.4	-33.5	1.95	5.44	3.76	IV
		-0.9	1.0		-0.2			-43.4	-33.5	1.95	5.44	3.76	
		0.3	0.3		0.7			2.5	0.1	5.49	5.35	3.42	2000 D
		-0.3	-		0.3			6.9	-0.3	5.11	5.39	3.36	2001 J
		0.3	0.1		0.7			-8.3	-0.8	4.87	5.36	3.39	F
		0.2	0.3		-			-4.7	0.9	4.58	5.41	3.45	M
		0.7	0.3		-0.3			1.7	1.6	4.43	5.66	3.61	A
		0.5	0.2		-0.1			3.9	7.0	4.34	5.96	3.58	M
		-	0.2		0.3			-5.3	-2.9	4.30	5.73	3.53	J
		-0.2	0.3					-7.2	-5.8	4.07	5.76	3.66	J
		0.2	0.1					0.8	0.3	3.80	5.36	3.68	A
		0.1	0.2					-5.5	-3.9	3.05	5.32	3.68	S
		-0.3	-					-10.3	-6.8	2.34	4.86	3.60	O
		-0.6	-0.2					1.9	-0.3	2.07	5.36	3.68	N
								-3.4	-1.1	1.95	5.44	3.76	D

* New definition for core CPI as announced on 18 May 2001: CPI excluding the eight most volatile components: fruit, vegetables, gasoline, fuel oil, natural gas, intercity transportation, tobacco, and mortgage-interest costs, as well as the effect of changes in indirect taxes on the remaining CPI components

A2 (Continued)

	Year, quarter, and month	Government surplus or deficit (-) on a national accounts basis (as a percentage of GDP)		Balance of payments (as a percentage of GDP)		U.S. dollar, in Canadian dollars, average noon spot rate
		Government of Canada	Total, all levels of government	Merchandise trade	Current account	
		(28)	(29)	(30)	(31)	(32)
	1989	-4.2	-4.6	1.2	-3.9	1.1842
	1990	-4.9	-5.8	1.6	-3.4	1.1668
	1991	-5.4	-8.3	1.0	-3.7	1.1458
	1992	-5.1	-9.1	1.3	-3.6	1.2083
	1993	-5.4	-8.7	1.8	-3.9	1.2898
	1994	-4.5	-6.7	2.6	-2.3	1.3659
	1995	-3.9	-5.3	4.4	-0.8	1.3726
	1996	-2.0	-2.8	5.1	0.5	1.3636
	1997	0.7	0.2	2.9	-1.3	1.3844
	1998	1.0	0.5	2.5	-1.3	1.4831
	1999	0.8	1.6	3.9	0.2	1.4858
	2000	1.8	3.2	5.6	2.5	1.4852
	2001					1.5484
Annual rates	1997 IV	1.6	1.3	2.3	-1.5	1.4084
	1998 I	0.8	0.4	2.2	-1.6	1.4301
	II	1.2	0.7	2.1	-1.6	1.4470
	III	1.0	0.4	2.9	-1.2	1.5140
	IV	1.0	0.4	2.8	-1.0	1.5423
	1999 I	0.7	0.6	3.5	-0.4	1.5116
	II	-0.2	1.2	3.5	-0.1	1.4730
	III	1.2	2.6	4.5	0.7	1.4860
	IV	1.7	2.0	4.1	0.4	1.4726
	2000 I	2.0	2.5	5.2	2.4	1.4538
	II	1.1	3.3	5.3	2.1	1.4808
	III	2.4	3.8	5.6	2.6	1.4822
	IV	1.9	3.3	6.4	3.2	1.5258
	2001 I	1.9	3.6	7.8	5.0	1.5280
	II	1.7	3.4	6.2	3.3	1.5409
	III	1.1	2.3	4.7	2.1	1.5453
	IV					1.5803
Last three months						1.5803
Monthly rates	2000 D					1.5224
	2001 J					1.5032
	F					1.5218
	M					1.5585
	A					1.5575
	M					1.5415
	J					1.5244
	J					1.5304
	A					1.5402
	S					1.5677
	O					1.5712
	N					1.5924
	D					1.5775

Notes to the Tables

Symbols used in the tables

R Revised

– Value is zero or rounded to zero.

Note:

Blank spaces in columns indicate that data are either not available or not applicable.

A horizontal rule in the body of the table indicates either a break in the series or that the earlier figures are available only at a more aggregated level.

A1

(1) In February 1991, the federal government and the Bank of Canada jointly announced a series of targets for reducing inflation to the midpoint of a range of 1 to 3 per cent by the end of 1995. In December 1993, this target range was extended to the end of 1998. In February 1998, it was extended again to the end of 2001.

(2-3) Year-to-year percentage change in consumer price index (Table H8). The core CPI is the CPI excluding the eight most volatile components: fruit, vegetables, gasoline, fuel oil, natural gas, intercity transportation, tobacco, and mortgage-interest costs, as well as the effect of changes in indirect taxes on the other CPI components

(4–5) The *operating band* is the Bank of Canada's 50-basis-point target range for the average overnight rate paid by investment dealers to finance their money market inventory.

(6) The *overnight money market financing rate* is an estimate compiled by the Bank of Canada. This measure includes funding of the major money market dealers through general collateral buyback arrangements (repo) including special purchase and resale agreements with the Bank of Canada and funding through call loans and swapped foreign exchange funds. Prior to 1996, data exclude all repo activity with the exception of those arranged directly with the Bank of Canada. These latter have been included in the calculation since 1995.

(7) The *monetary conditions index* is a weighted sum of the changes in the 90-day commercial paper rate and the C–6 trade-weighted exchange rate (see technical note in the Winter 1998–1999 issue of the *Bank of Canada Review*, pages 125 and 126). The index is calculated as the change in the interest rate plus one-third of the percentage change in the exchange rate. The Bank does not try to maintain a precise MCI level in the short run. See *Monetary Policy Report*, May 1995, p.14.

(8) *90-day commercial paper rate.* The rate shown is the Bank of Canada's estimate of operative market trading levels on the date indicated for major borrowers' paper.

(9) The C–6 exchange rate is an index of the weighted-average foreign exchange value of the Canadian dollar against major foreign currencies. (See technical note in the Winter 1998–1999 issue of the *Bank of Canada Review*, pages 125 and 126.) Weights for each country are derived from Canadian merchandise trade flows with other countries over the three years from 1994 through 1996. The index has been based to 1992 (i.e., C–6 = 100 in 1992). The C–6 index broadens the coverage of the old G–10 index to include all the countries in the EMU.

(10) Gross M1: Currency outside banks plus personal chequing accounts plus current accounts plus adjustments to M1 described in the notes to Table E1 *(Bank of Canada Banking and Financial Statistics).*

(11) M1++: M1+ plus non-chequable notice deposits held at chartered banks, trust and mortgage loan companies, and credit unions and caisses populaires less interbank non-chequable notice deposits plus continuity adjustments.

(12) M2++: M2+ plus Canada Savings Bonds plus cumulative net contributions to mutual funds other than Canadian dollar money market mutual funds (which are already included in M2+).

(13) Yield spreads between *conventional* and *Real Return Bonds* are based on actual mid-market closing yields of the selected long-term bond issue. At times, some of the change in the yield that occurs over a reporting period may reflect switching to a more current issue. Yields for Real Return Bonds are mid-market closing yields for the last Wednesday of the month and are for the 4.25% bond maturing 1 December 2026. Prior to 7 December 1995, the benchmark bond was 4.25% maturing 1 December 2021.

(14–15) CPI excluding food, energy, and the effect of changes in indirect taxes. CPIW adjusts each of the CPI basket weights by a factor that is inversely proportional to the component's variability. For more details, see "Statistical measures of the trend rate of inflation." *Bank of Canada Review,* Autumn 1997, 29–47

(16) *Unit labour costs* are defined as aggregate labour income per unit of output (real GDP at basic prices).

(17) IPPI: Industrial product price index for finished products comprises the prices of finished goods that are most commonly used for immediate consumption or for capital investment.

(18) Data for average hourly earnings of permanent workers are from Statistics Canada's *Labour Force Information* (Catalogue 71-001).

A2

The majority of data in this table are based on, or derived from, series published in statistical tables in the *Bank of Canada Banking and Financial Statistics.* For each column in Table A2, a more detailed description is given below, as well as the source table in the *Banking and Financial Statistics,* where relevant.

Data for capacity utilization rates, columns 15 and 16, are obtained from the Statistics Canada quarterly publication *Industrial Capacity Utilization Rates in Canada* (Catalogue 31-003), which provides an overview of the methodology. *Non-farm goods-producing industries* include: logging and forestry; mines, quarries, and oil wells; manufacturing; electric power and gas utilities; and construction.

(1) Gross M1: Currency outside banks plus personal chequing accounts plus current accounts plus adjustments to M1 described in the notes to Table E1.

(2) M1+: Gross M1 plus chequable notice deposits held at chartered banks plus all chequable deposits at trust and mortgage loan companies, credit unions, and caisses populaires (excluding deposits of these institutions) plus continuity adjustments.

(3) M1++: M1+ plus non-chequable notice deposits held at chartered banks, trust and mortgage loan companies, and credit unions and caisses populaires less interbank non-chequable notice deposits plus continuity adjustments.

(4) M2+: M2 plus deposits at trust and mortgage loan companies and government savings institutions, deposits and shares at credit unions and caisses populaires, and life insurance company individual annuities and money market mutual funds plus adjustments to M2+ described in notes to Table E1.

(5) M2++: M2+ plus Canada Savings Bonds plus cumulative net contributions to mutual funds other than Canadian dollar money market mutual funds (which are already included in M2+).

(6) Short-term business credit (Table E2)

(7) Total business credit (Table E2)

(8) Consumer credit at monthly reporting institutions (Table E2)

A2 (continued)

(9) Residential mortgage credit (Table E2)

(10) Gross domestic product in current prices (Table H1)

(11) Gross domestic product in chained 1997 dollars (Table H2)

(12) Gross domestic product by industry (Table H4)

(13) Civilian employment as per labour force survey (Table H5)

(14) Unemployment as a percentage of the labour force (Table H5)

(15) Capacity utilization rates, non-farm goods-producing industries

(16) Capacity utilization rates, manufacturing

(17) Consumer price index (Table H8)

(18) Consumer price index excluding the eight most volatile components: fruit, vegetables, gasoline, fuel oil, natural gas, intercity transportation, tobacco, and mortgage-interest costs, as well as the effect of changes in indirect taxes on the other CPI components. (Table H8)

(19) Gross domestic product chain price index (Table H3)

(20) Unit labour costs are defined as aggregate labour income per unit of output (real GDP at basic prices).

(21–22) The data on wage settlements are published by Human Resources Development Canada and represent the effective annual increase in base wage rates for newly negotiated settlements. These data cover bargaining units with 500 or more employees. Contracts both with and without cost-of-living-allowance clauses are included.

(23–24) Bank of Canada commodity price indexes: Total and total excluding energy (Table H9)

(25) *Treasury bills* are mid-market rates for typical quotes on the Wednesday shown.

(26–27) *Selected Government of Canada benchmark bond yields* are based on actual mid-market closing yields of selected Canada bond issues that mature approximately in the indicated term areas. At times, some of the change in the yield occurring over a reporting period may reflect a switch to a more current issue. Yields for *Real Return Bonds* are mid-market closing yields for the last Wednesday of the month and are for the 4.25% bond maturing 1 December 2026. Prior to 7 December 1995, the benchmark bond was 4.25% maturing 1 December 2021.

(28-29) The data on the government surplus or deficit on a national accounts basis are taken from Statistics Canada's *National Income and Expenditure Accounts* (Catalogue 13-001), where the government surplus or deficit is referred to as "net lending."

(30) Merchandise trade balance, balance of payments basis (Table J1)

(31) Current account balance, balance of payments basis (Table J1)

(32) U.S. dollar in Canadian dollars, average noon spot rate (Table I1)