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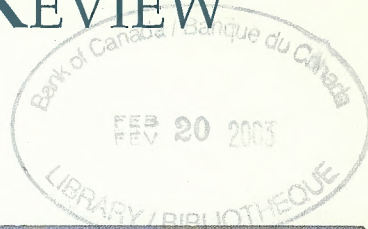
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# BANK OF CANADA REVIEW

Winter 2002-2003



## Information and Complaint.

PROVINCE OF CANADA,  
County of Huron, (one of the United Counties  
of Huron and Bruce.)

The Information and Complaint of *Arthur Knot* of *the Township of Hullett* taken this *twentieth* day of *December* in the year of our Lord 1862, before the undersigned, *one* of Her Majesty's Justices of the Peace, in and for the Counties aforesaid, who saith that *two persons by the name of John Shannon and Matthew Duffy* upon the *twentieth* Inst. at *Holl* gate number 8 in the Township of *Hullett* offer and try to pass for the payment of *one* dollar, bill of the *Commercial Bank of Canada* its denomination being altered to a *five*, and when said bill was challenged by this deponent, as had another bill upon the *Western Bank of Canada* denominating a *five* was offered for payment, which was had also, by the same parties, contrary to the Statute in such case made and provided and this deponent further moveth with and saith that *Patrick McElwain* and *Archie Knot* are notarial witnesses in behalf of this complainant

*Arthur Knox*

Sworn before me the day and year first above mentioned, at *Clinton*

*George Brown J.P.*



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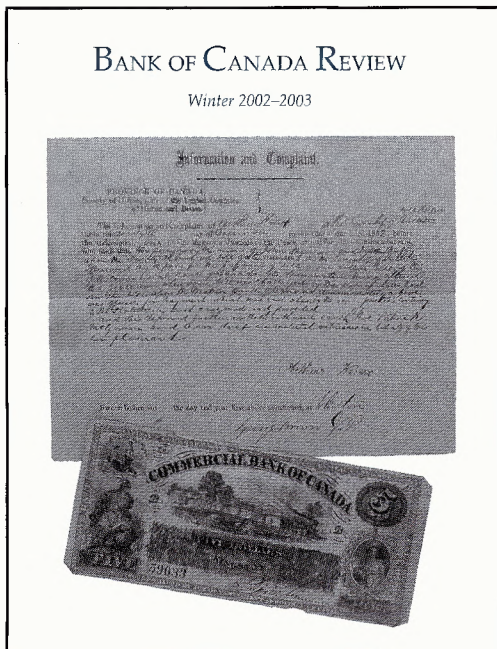
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ISSN 0045-1460  
5061

Printed in Canada on recycled paper



# Bank of Canada Review

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## A Nineteenth-Century Court Case

Money attracts its share of interest from those eager to make a quick, if dishonest, profit. In the past, scam artists have manufactured counterfeit notes, circulated genuine-looking notes drawn on fictitious banks—even issued large quantities of genuine, non-redeemable notes from institutions under their control. One devious means of defrauding individuals in the nineteenth century was to increase a note's apparent value by changing the numbers indicating its denomination. These doctored notes were said to have been "raised."

The quality of the raised note was sometimes so good that it escaped detection; at other times, as with the note depicted on our cover, the fraud was discovered, with unenviable results for the counterfeiter. The National Currency Collection is fortunate to number among its holdings documents from a nineteenth-century court case in southwestern Ontario that illustrate how some raised notes were offered into circulation as well as the process followed to convict those charged with passing them. The evidence includes a \$1 note of the Commercial Bank of Canada raised to a \$5 note, the complaint made out against the accused (both shown on the cover), recognizances of two witnesses, the arresting officer's deposition, and the final judgment.

Together, these documents tell the tale of an attempt to pass a raised note at toll booth Number 8 in Hullett Township in December 1862. Boothkeeper Arthur Knox recognized the attempted fraud and brought charges. The local constabulary questioned the

accused at a local tavern and searched the stoop, where they uncovered a quantity of questionable notes. Historical records show that at least one of the would-be counterfeiters was arrested and put on trial in April 1863 at the Spring Assizes and found guilty. We have no record of what sentence he received, but equally serious attempts at counterfeiting often drew lengthy sentences of hard labour in one of the province's jails.

The raised note that formed part of the evidence to convict is a genuine note whose centre has been scraped and painted green to remove indications of its true denomination. Large numerals or words called counters have been glued over the original counters in the note's upper right and lower left corners with the deliberate intention of creating a higher-value note. Unfortunately for the accused, however, the design of the two notes was different. A genuine \$5 note included vignettes showing a surveyor and a man with a pick and shovel, not the native and young girl pictured on the altered \$1 note.

This case serves as a reminder that even today it is important to be well informed and observant with respect to the money that we handle.

The note and court document shown on the cover form part of the National Currency Collection, Bank of Canada.

Photography by Gord Carter, Ottawa.

The *Bank of Canada Review* is published quarterly. The *Banking and Financial Statistics* are published monthly. Subscriptions are available to both publications.

### **Bank of Canada Review (quarterly)**

Delivery in Canada	CAN \$25
Delivery to the United States	CAN \$25
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Delivery in Canada	CAN \$55
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# Recent Changes to Canada's Financial Sector Legislation

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*Fred Daniel, Department of Monetary and Financial Analysis*

- *Canada's federal financial-institutions legislation is reviewed at least every five years. The most recent update took place in October 2001 with the coming into force of Bill C-8.*
- *The legislation maintains the principle of wide ownership of large banks.*
- *The legislation provides a holding company option that could give banks and life insurance companies additional flexibility in the way they structure their organizations.*
- *A process has been established to review merger proposals among large banks.*
- *The Financial Consumer Agency of Canada has been created, with responsibility for enforcing the consumer-related provisions of statutes governing federal financial institutions.*
- *The new Canadian Payments Act makes changes to the Canadian Payments Association as well as the access to, and governance of, the payments system.*

Since 1992, when significant changes were made to the statutes governing federal financial institutions,<sup>1</sup> the practice of reviewing the legislation governing Canada's banks on a regular basis was extended to reviewing the legislation governing all federal financial institutions. Most recently, on 24 October 2001, Bill C-8, the legislation to reform Canada's financial sector, was implemented with the coming into force of some of the key technical regulations that are essential to the operation of the Act.<sup>2</sup> Bill C-8, which capped a process that began in 1996, addressed the legislative framework for the financial sector, which includes domestic and foreign banks, insurance companies, trust companies, the credit union system, and other financial institutions.

This article chronicles the significant legislative developments that have occurred in the financial services sector over the past decade and gives an overview of some of the key provisions contained in Bill C-8. The first part of the article provides background information on some of the major restructuring trends that have taken place in the sector since the early 1990s. The next section reviews the legislative changes that affected federal financial institutions over the period 1992–2001, including financial-institution supervision and deposit insurance, and oversight of payments

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1. For a description of how the institutional framework of Canada's financial sector evolved up to the early 1990s, as well as a more complete discussion of the 1992 financial sector legislation, see Daniel, Freedman, and Goodlet (1992–93).

2. Bill C-8, "An Act to establish the Financial Consumer Agency of Canada and to amend certain Acts in relation to financial institutions." The legislation was introduced in Parliament in June 2000 as Bill C-38, but that legislation died on the Order Paper when Parliament was dissolved with the call of the 2000 federal election.

and other clearing and settlement systems. This is followed by an outline of the process that led to the 2001 financial sector legislation and an examination of some of the important measures it contains. Finally, the new Canadian Payments Act, including broadening access to the payments system, is discussed.

## Financial Sector Restructuring

Canada's financial sector experienced significant changes over the past decade as it responded to such factors as technological innovation, globalization, and a low and stable rate of inflation. Shifting demographics also exerted important effects, as Canada's aging population increased its focus on retirement savings and asset accumulation. This change in savings behaviour contributed to a convergence of functions among financial institutions as they sought ways to position themselves to maximize their share of the asset- and wealth-management business.

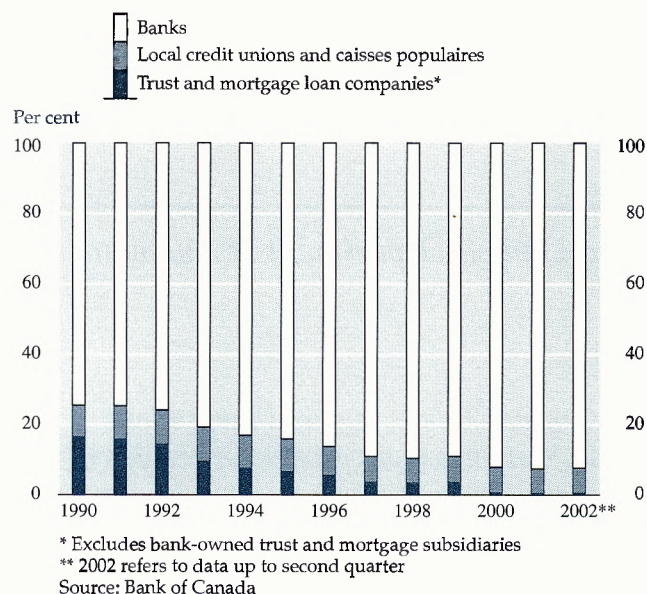
Some important legislative developments also facilitated the changes in the financial sector. Over the years, legislative amendments have accommodated the desire of financial institutions to diversify their activities, resulting in the continued blurring of distinctions between the various types of financial institutions. As well, large financial groups or conglomerates that offer a variety of financial products and services have been created. This trend has been particularly evident in the banking sector, where some institutions own specialized subsidiaries that provide different financial service products.<sup>3</sup> Another feature of the restructuring in recent years has been the demutualization of several large life insurance companies (discussed on p. 6).

In addition, considerable consolidation has occurred during the past 15 years in the deposit-taking sector through mergers and acquisitions. With the acquisition of several large trust companies by chartered banks, non-bank-owned trust companies now constitute a relatively small segment of the deposit-taking industry (see Chart 1). The life insurance sector has not only been affected by merger and acquisition

3. For example, since 1987, federal financial institutions have been allowed to own securities dealers. Since then, the major banks have made substantial investments in the securities business by buying existing investment dealers or by creating their own securities operations. Currently, bank-owned securities dealers dominate the integrated, full-service market, while several smaller securities dealers offer niche services to retail and institutional clients.

Chart 1

### Canadian Deposit-Taking Institutions: Total Assets

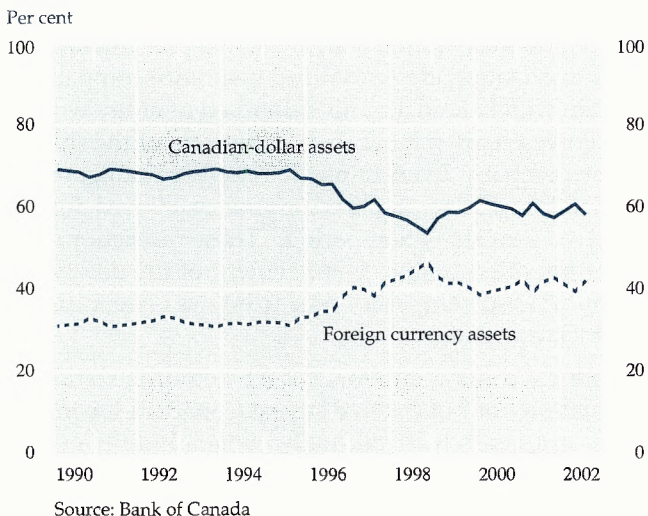


activity, but has also experienced a number of withdrawals resulting from foreign insurers selling their operations to Canadian insurance companies as well as some company failures. Cross-sector acquisitions between deposit-taking institutions and insurance companies have not played a major role in the consolidation of the financial sector in Canada.

With regard to their geographical reach, Canadian banks have long had extensive foreign operations, booked primarily in foreign currencies. This reflects Canada's important trade activities, as well as the sophistication of Canada's banks and their efforts to seek growth opportunities outside the country. Foreign currency assets account for roughly 40 per cent of total Canadian bank assets (see Chart 2). Some Canadian banks have adopted a market strategy that focuses on North America and involves such business activities as wealth management, corporate and investment banking, and electronic banking. The international operations of Canadian life insurance companies have also become increasingly important. More than one-half of their total premium income currently derives from foreign sources, compared with slightly more than one-third in 1990 (see Chart 3).

Chart 2

**Canadian Banks: Trend in Canadian-Dollar Assets versus Foreign Currency Assets**



**Legislative Developments, 1992–2001**  
**Legislation governing federal financial institutions**

In 1992, the process of updating the regulatory framework for federal financial institutions<sup>4</sup> was made more formal when the government incorporated sunset clauses in the relevant acts requiring that the legislation be reviewed at five-year intervals.<sup>5</sup> The primary statutes forming this framework are the Bank Act, the Insurance Companies Act, the Trust and Loan Companies Act, and the Cooperative Credit Associations Act.

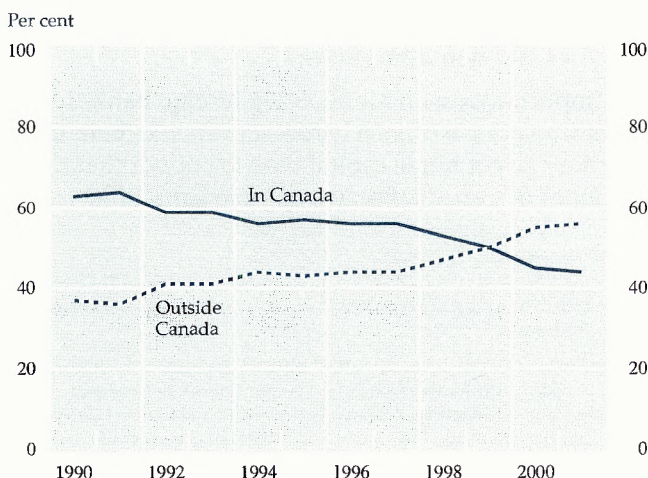
**1992 amendments**

The 1992 legislation continued the process of removing the legal barriers separating the activities of various types of financial institutions. It involved significant changes to the statutes governing banks, trust companies, and insurance companies and dealt with the powers of financial institutions, ownership, and ways of managing self-dealing<sup>6</sup> and conflicts of interest.

The amendments gave federal financial institutions the power to diversify into new lines of business through financial-institution subsidiaries, as well as through increased in-house powers.<sup>7</sup> Institutions without the power to provide fiduciary services (e.g., trustee, executor, and administrator services), such as banks and life insurance companies, were allowed to own trust companies. Similarly, banks and trust and loan companies were permitted to own insurance companies. Finally, widely held, regulated, non-bank financial institutions were permitted to own Schedule II

Chart 3

**Canadian Life and Health Insurers: Premium Income**



Source: *Canadian Life and Health Insurance Facts, 2002*  
 Figures are for both federally and provincially incorporated companies

4. In Canada, banks are under exclusive federal jurisdiction, while trust and loan companies and life insurance companies can be incorporated under either federal or provincial legislation. The cooperative credit union system operates almost entirely under provincial jurisdiction, although the Credit Union Central of Canada, which is a national organization that provides credit unions with technical and financial support services, is incorporated under federal legislation.

5. This practice sets Canada apart from most other countries. Of course, the government can revisit the legislation prior to the five-year reviews, if necessary, to address any immediate concerns. Among the various statutes regulating financial institutions before 1992, only the Bank Act contained a sunset clause that called for a review of that legislation every 10 years.

6. Self-dealing refers primarily to transactions between a financial institution and either its controlling ownership group or non-financial and unregulated financial affiliates controlled by the owner.

7. There were certain limitations to these powers, in particular, restrictions on the networking of most types of insurance through branches of federal deposit-taking institutions and the prohibition on federal financial institutions from engaging in car leasing or owning a car-leasing company.

banks, i.e., closely held banks, without the requirement that applies to other entities for divestiture of significant positions within 10 years.<sup>8</sup> As for in-house powers, life insurance companies were generally given full consumer and commercial lending powers, and banks were permitted to offer portfolio-management advice. As a result of the 1992 amendments, Canadian financial institutions were able to develop into conglomerates operating in a variety of financial areas. But limitations on investments in non-financial businesses meant that they could not become universal banks with downstream links to commercial companies.

The 1992 legislation also addressed the competitive equity aspect of imposing non-interest-bearing reserve requirements on banks and not on other deposit-taking institutions. Reserve requirements on banks were phased out over two years, removing the unequal treatment of institutions competing for the same business.

### **1997 amendments**

The primary objective of the 1997 review of financial-institutions legislation was to determine whether the substantial changes implemented in 1992 were functioning as intended. In the event, it was felt that the legislative framework was generally working well, and only minor changes were implemented to update and fine-tune the legislation. The 1997 amendments also included provisions to deal with consumer privacy and tied selling.

### **Demutualization of life insurance companies**

Legislation in March 1999 allowed Canada's largest mutually owned life insurance companies (i.e., those owned by insurance policyholders) to convert to public stock companies owned by shareholders, through a process known as demutualization. The legislation set out the procedures required to demutualize, including the requirement to secure the approval of the converting company's policyholders with voting rights. The regime also contained a number of safeguards to protect policyholder interests throughout the demutualization process. For companies choosing to demutualize, there are many benefits. Policyholders can realize on the value of their company through the shares they receive upon demutualization, the firm can have increased and more flexible access to markets to raise capital, the firm's common shares can be used as an acquisition currency in purchasing other financial

8. For a more detailed description of Schedule II banks, see footnote 23, below.

service firms, and the firm can use options and share-purchase plans to attract and keep highly skilled employees. At the same time, demutualized companies can become potential takeover targets.

The legislation required that, in the two years following demutualization, demutualized insurance companies remain widely held, i.e., no individual or entity would be allowed to own more than 10 per cent of the shares of the company. In addition, no mergers among, or acquisitions of, demutualized firms were allowed during this two-year transition period.<sup>9</sup> These restrictions were intended to give management of the newly demutualized companies time to adjust to operating as stock companies.

Before the coming into force of the demutualization legislation, four of the five largest Canadian life insurance companies were mutually owned. Within a year of implementing the legislation, Canada's five largest life insurance companies were stock companies.<sup>10</sup>

### **Entry of foreign bank branches into Canada**

In June 1999, legislation was passed allowing foreign banks to establish operations in Canada without having to set up Canadian-incorporated subsidiaries.<sup>11</sup> Foreign banks can establish full-service branches or lending branches. Full-service branches are not permitted to take deposits of less than \$150,000, while lending branches are not permitted to take any deposits from the public and are restricted to borrowing only from other financial institutions.<sup>12</sup> Except for these restrictions on deposit-taking, foreign bank branches have essentially the same business powers as foreign bank subsidiaries and domestic banks.

An important reason for allowing foreign banks to enter Canada via branch banks is to enable them to use their larger home capital base to support lending activities in Canada. Because foreign bank branches

9. The 2001 financial sector legislation set a common end-date of 31 December 2001 for the two-year transition periods of the demutualized insurance companies (see p. 10, below).

10. The following companies demutualized after the legislation came into force: Canada Life Insurance Company, Manufacturers Life Insurance Company, Sun Life Assurance Company of Canada, and Clarica Life Insurance Company (formerly The Mutual Life Assurance Company of Canada).

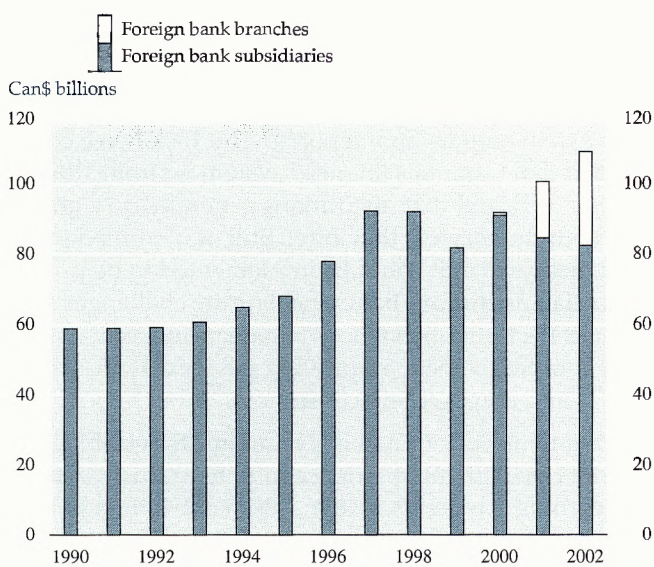
11. In February 1997, the government announced its intention to allow foreign banks to branch into Canada. It issued a public consultation paper on foreign bank entry policy later that year.

12. One reason for restricting retail deposit-taking by foreign bank branches is that it would entail prudential risks if deposit insurance were provided to entities where the primary regulator was in a foreign jurisdiction and where there was no legal corporate entity in Canada.



are not permitted to take retail deposits, they also face somewhat lighter Canadian regulatory requirements than foreign bank subsidiaries. Overall, the foreign bank entry regime offers foreign banks greater flexibility with respect to how they provide financial services in Canada. Foreign banks that are interested in entering Canada primarily to provide commercial banking services may wish to enter Canada as foreign bank branches; those that want to engage in retail deposit-taking also have the option of establishing a separate subsidiary in Canada for that purpose. (Total assets of foreign bank subsidiaries and foreign bank branches are shown in Chart 4.)<sup>13</sup>

Chart 4  
**Foreign Bank Subsidiaries and Foreign Bank Branches: Total Assets**



Source: Office of the Superintendent of Financial Institutions

in, and resolution of, institutions experiencing financial difficulty.<sup>14</sup> The review culminated in legislation in June 1996 that gave the Office of the Superintendent of Financial Institutions (OSFI), which is responsible for the prudential supervision of federal financial institutions, a clearer statutory mandate. OSFI's mission includes safeguarding policyholders and depositors from undue loss. It also promotes and administers a regulatory framework that provides for the early identification and resolution of compliance or operational issues that could threaten the safety and soundness of financial institutions. There will be times when OSFI has to intervene to protect policyholders and depositors, but it is not OSFI's role to provide a failure-proof system; rather, the ultimate responsibility for running safe and sound institutions rests with the management and board of directors of each institution. To enhance the transparency of the intervention process, OSFI and the Canada Deposit Insurance Corporation (CDIC) jointly developed a guide setting out what measures they will take if the condition of a financial institution deteriorates. In addition, to reduce losses to depositors, policyholders, and creditors, the legislation was amended to make it easier for the Superintendent to close an institution in financial difficulty while it still has some capital.

The 1996 legislation also allowed the CDIC, which had a system of flat-rate deposit-insurance premiums, to develop a system of risk-based premiums, i.e., a premium system that is differentiated on the basis of the risk profiles of individual deposit-taking institutions. The main objective of using risk-based premiums is to provide an incentive for deposit-taking institutions to follow more prudent policies in the conduct of their business. In March 1999, the CDIC introduced a differential premium system. Under this system, CDIC member institutions are classified into one of four premium categories, with the classification based on a system that scores institutions according to certain quantitative and qualitative factors.

The 1997 amendments to the financial sector legislation allowed banks that accept only wholesale deposits (\$150,000 or more), but do not take retail deposits, to opt out of CDIC coverage. Institutions opting out can thus avoid the reporting and other requirements associated with CDIC membership. CDIC bylaws on opting out were put in place in October 1999.<sup>15</sup>

14. Canada (1995).

15. Since 1999, 12 foreign bank subsidiaries have chosen to opt out of CDIC membership.

## Financial-institution supervision and deposit insurance

Following the failure and near-failure of a number of non-bank financial institutions in the late 1980s and early 1990s, the federal government undertook a review of the prudential regulation and supervision of Canada's financial sector. The government emphasized the importance of a policy of early intervention

13. As of December 2002, 68 banks were operating in Canada, of which 15 were domestic banks, 33 were foreign bank subsidiaries, 17 were full-service foreign bank branches, and 3 were foreign bank lending branches.

## Oversight of the payments and other clearing and settlement systems

The 1996 legislation to strengthen the supervisory and regulatory framework for federal financial institutions also established the Payment Clearing and Settlement Act (PCSA), giving the Bank of Canada responsibility for the oversight of payments and other clearing and settlement systems in Canada for the purpose of controlling systemic risk.<sup>16</sup> Under the PCSA, systems that have the potential to create systemic risk are designated as being subject to the PCSA. The Bank of Canada oversees designated systems on a continuing basis for the appropriate control of systemic risk. In addition, the PCSA contains provisions which, when combined with federal insolvency legislation, reinforce the legal enforceability of netting in designated clearing and settlement systems. Other PCSA provisions make the settlement rules of designated systems immune to legal stays or other legal challenges, even in cases where a participant in one of these systems fails.<sup>17</sup> Thus, the PCSA increases the certainty that the legal arrangements governing the operations of a clearing and settlement system will produce the expected outcome in periods of financial stress.

A consequence of the June 1999 legislation permitting foreign bank-branching in Canada was an amendment to the PCSA regarding the participation of foreign banks in major clearing and settlement systems. A provision was added to the PCSA to allow the Governor of the Bank of Canada to prohibit or impose conditions on the participation of a full-service branch or a lending branch of a foreign bank in a clearing and settlement system designated under the PCSA if the Governor is of the opinion that its participation poses, or is likely to pose, a systemic risk or an unacceptable risk to the Bank of Canada. If the Governor does not prohibit their participation, the legislation permits both types of branches to participate in designated clearing and settlement systems, provided they meet the requirements of those systems.

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16. Systemic risk refers to domino or spillover effects, whereby the inability of one financial institution to fulfill its payment obligations in a timely fashion results in the inability of other financial institutions to fulfill their obligations in that clearing and settlement system or in other systems, or in the failure of that clearing house or other clearing houses. For a discussion of the PCSA, see Goodlet (1997).

17. In June 2002, the PCSA was amended to clarify that similar legal protections apply to certain securities and derivatives clearing houses that are not designated under the PCSA.

## Background to the 2001 Legislation

In 1996, the government released a discussion paper emphasizing the important changes occurring in the financial sector that reflected the globalization of financial services markets, technological advances, and a changing competitive landscape.<sup>18</sup> The government also established the Task Force on the Future of the Canadian Financial Services Sector to undertake a comprehensive review of Canada's financial sector and to provide advice on public policy issues related to the development of an appropriate framework. The work of the Task Force would help to shape the next round of amendments to the financial sector legislation, scheduled to take place no later than five years after the 1997 legislation was passed.

The Task Force had a broad mandate to address issues facing Canada's financial services industry and to make recommendations on any public policy issues that affect the environment within which the providers of such services operate. In September 1998, after nearly two years of study and consultation, the Task Force delivered its final report.<sup>19</sup> The Task Force concluded that Canada's financial system is strong, that it works well, and that institutions generally do a good job with the services they offer. Still, it identified several measures that could be implemented to help financial institutions better meet future challenges and offered 124 recommendations for enhancing competition and competitiveness, improving the regulatory framework, and empowering consumers.<sup>20</sup>

A Payments System Advisory Committee established by the Department of Finance in 1996 to study issues concerning payments systems also contributed to the work of the Task Force. Co-chaired by the Department of Finance and the Bank of Canada, the committee's purpose was to analyze the implications of broadening access to the payments system, and to analyze whether modifications to its governance framework

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18. Canada (1996). This document was also the basis for the 1997 amendments to the financial-institutions legislation.

19. "Change, Challenge, Opportunity," Report of the Task Force on the Future of the Canadian Financial Services Sector (Canada 1998). The report is supported by 5 background papers and 18 research studies commissioned by the Task Force. The report, background papers, and research studies are available at the Task Force's Web site ([http://finservtaskforce.fin.gc.ca/index\\_e.htm](http://finservtaskforce.fin.gc.ca/index_e.htm)).

20. The Appendix highlights a few of the recommendations contained in the report of the Task Force and the relevant initiatives in the 2001 financial sector legislation.

were needed for it to continue to develop in the public interest.<sup>21</sup> Discussions in the committee focused on three public policy objectives for the payments system: efficiency, safety, and the consideration of consumer interests. It did not make recommendations but discussed alternative legislative and regulatory arrangements for the various elements of the payments system and the trade-offs involved in choosing among them.

After the Task Force had completed its review, the government released a policy paper setting out the policy framework that became the basis for the 2001 financial sector legislation.<sup>22</sup>

## The 2001 Legislation

The 2001 financial sector legislation was wide-ranging. Its objectives were to promote the efficiency and growth of the financial sector, foster greater domestic competition, improve the regulatory environment, and empower and protect consumers. Certain provisions in the legislation broaden the scope of investments that are permitted for federal financial institutions in-house or through subsidiaries, thereby providing them with opportunities to innovate and bring new products to customers. The legislation also makes it easier for these institutions to have significant partners in joint ventures and enhances the ability of regulated financial institutions to meet increasing technological and competitive challenges from, for example, unregulated and "monoline" firms specializing in a single line of business.

The remainder of this section discusses some of the major reform initiatives, including the ownership regime, the holding company regime, investment powers, merger-review policy, accommodating structural flexibility in the credit union system, regulatory streamlining, and provisions relating to consumers.

### Ownership regime

#### *Banks*

Since 1967, Canada's bank-ownership regime has been based on the principle of wide ownership of

major banks.<sup>23</sup> This policy has facilitated Canadian control of domestic banks and is one approach that can be used to address the prudential concerns related to the potential for solvency-threatening self-dealing. The 2001 legislation maintained the widely held ownership regime for banks but amended the Bank Act to provide for an ownership regime that is based on size. According to the legislation, banks are classified by size to be

- large (greater than \$5 billion in equity)
- medium (\$1 billion to \$5 billion in equity), or
- small (less than \$1 billion in equity)

Large banks are required to be widely held, as they were before the new legislation.<sup>24</sup> To give them the flexibility to enter into alliances or joint ventures, however, the definition of "widely held" was expanded to allow an individual investor to own up to 20 per cent of any class of voting shares and 30 per cent of any class of non-voting shares of a large bank.<sup>25</sup> Any transaction where an investor applies to acquire a significant interest of a large bank, i.e., more than 10 per cent, would require the approval of the Minister of Finance and would be subject to a "fit and proper" test and assessed against a guideline designed to prevent these institutions from becoming de facto closely held. The legislation allows medium-sized banks to be closely held, although they are required to

23. Prior to the 2001 legislation, the ownership regime made a distinction between Schedule I and Schedule II banks. Schedule I banks, which included the six largest domestic banks, were required to be widely held, with no single shareholder or group of associated persons holding more than 10 per cent of any class of shares. Schedule II banks could be closely held and commercially linked for the first 10 years of their existence, after which they were required to become widely held. Foreign banks and other eligible foreign and domestic financial institutions that themselves were widely held were permitted to hold Schedule II banks indefinitely in a closely held fashion.

24. Under the legislation, the widely held rule can be met by having the bank held by a bank holding company that itself is widely held.

25. Although the National Bank of Canada, the Laurentian Bank of Canada, and Canadian Western Bank each have equity of less than \$5 billion, the new legislation treats these banks as entities with equity of more than \$5 billion. Thus, these banks are subject to the ownership rules applicable to large banks. The Minister of Finance can revoke this treatment, in which case the bank would not have to be widely held. The government's policy is that the widely held requirement will not be revoked unless the Minister receives an application from the bank in question. Any request would be considered on its own merits and would take into account a number of factors, including safety and soundness, the prospects for the institution in the context of the global marketplace, the needs of consumers, the best interests of Canadians, and where the institution operates principally in a certain region, the best interests of those living in that region.

21. The committee considered four discussion papers prepared and issued by the Department of Finance and the Bank of Canada between March 1997 and January 1998. The papers are available at the Department of Finance Web site ([www.fin.gc.ca](http://www.fin.gc.ca)) and the Bank of Canada Web site ([www.bank-banque-canada.ca](http://www.bank-banque-canada.ca)). Following the deliberations of the committee, the Department of Finance released a final discussion paper in July 1998, which is available at the Department of Finance Web site.

22. Canada (1999).

have a public float of at least 35 per cent of their voting shares. Small banks are not subject to any ownership restrictions. For the first time, the legislation permits commercial entities to own indefinitely, on a closely held basis, banks with less than \$5 billion in equity.

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*Large banks are required to be widely held.*

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To introduce greater organizational flexibility, the new legislation allows banks to incorporate one or more Canadian banking subsidiaries. For example, a bank can establish a retail bank subsidiary or commercial bank subsidiary, and these subsidiaries could have significant outside investors.

### ***Non-bank financial institutions***

In contrast to the ownership regime for banks, traditionally there has not been a widely held rule for federally regulated trust and loan companies or insurance companies owned by shareholders. For these companies, approval from the Minister of Finance has been required for any shareholding in excess of 10 per cent.

The 2001 amendments to the Insurance Companies Act clarified the transitional rules regarding ownership restrictions affecting demutualized life insurance companies (discussed above, on p. 6). A common end-date of 31 December 2001 was set for the two-year transition period of these companies, during which no mergers among, or acquisitions of, demutualized firms were allowed. Following the transition period, merger restrictions applying to demutualized insurers with equity under \$5 billion were lifted and these firms also became eligible to be closely held.<sup>26</sup> In addition, the government announced a policy whereby large demutualized companies with over \$5 billion in equity are required to continue to be widely held; that is, no person may own more than 20 per cent of the company's voting shares or more than 30 per cent of

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26. After the transition period expired, Sun Life Financial Services of Canada Inc. (which had equity of more than \$5 billion) acquired Clarica Life Insurance Company (which had equity of less than \$5 billion). The transaction created the largest life insurance company in Canada, and one of the top five publicly traded North American life insurance companies, measured by market capitalization.

any class of its non-voting shares.<sup>27</sup> In addition, as a matter of policy, large banks are not permitted to acquire or merge with large demutualized insurance companies, and vice versa. This restriction also applies to large bank holding companies and large life insurance holding companies.

The legislation also raised, from \$750 million to \$1 billion, the threshold above which trust companies, stock life insurance companies, and property and casualty insurance companies must have a 35 per cent public float.

### **Holding company regime**

The 2001 legislation introduced a holding company regime for Canadian banks and insurance companies that permits the creation of regulated non-operating holding companies. The holding company regime does not expand the powers of banks or insurance companies—rather, its aim is to give institutions more flexibility in the way they structure their organizations, e.g., making it possible to shift various activities of the bank into different parts of the organization. For instance, a bank holding company could have a banking subsidiary, an insurance subsidiary, a securities subsidiary, and a subsidiary for its unregulated businesses. This type of organizational structure might be more understandable for investors and give the organization more flexibility to react to changes in the competitive landscape. It might also relieve unregulated activities from some regulatory oversight. The holding company structure would also permit a bank to separate various banking activities (e.g., consumer- or business-lending activities, or its credit card business) into separate affiliates.

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*The 2001 legislation introduced a holding company regime for Canadian banks and insurance companies.*

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27. Unlike the restrictions on bank ownership, the ownership restrictions on life insurance companies were not placed in the legislation governing these institutions. The Minister of Finance has the authority to withdraw the ownership constraints that apply to large demutualized insurance companies.

Under the legislation, bank holding companies are regulated under the Bank Act and are required to have an investment in at least one bank. Likewise, insurance holding companies are regulated under the Insurance Companies Act and are required to have an investment in at least one life insurance company. The investments that are permitted in the case of a bank holding company are the same investments in permitted entities that a bank may make under the Bank Act. Similarly, investments permitted for an insurance holding company are the same as those permitted for a life insurance company under the Insurance Companies Act. Holding companies are subject to consolidated supervision by OSFI.

Market participants have expressed support for the government's initiative in introducing a holding company regime for banks and life insurance companies. However, they have also indicated that the extent to which institutions might adopt a holding company structure will depend on various factors, including whether it, in fact, results in lighter regulation for the less-regulated affiliated companies in the holding company group, how complex the self-dealing rules applied in the case of affiliated companies would be, and what capital rules would be applied to holding companies by OSFI.<sup>28</sup>

### Permitted investments

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*A broader range of investments is permitted, including expanded opportunities for investment in the area of e-commerce.*

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The 2001 legislation has continued the approach of limiting financial-institution investments in commercial enterprises. However, within this general limitation, the new rules do provide some relaxation of the investment regime. A broader range of investments is permitted, including expanded opportunities for investment in the area of e-commerce. The legislation

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28. OSFI has been consulting with industry associations on a framework for capital adequacy for holding companies. At the time of writing, these consultations had not yet been finalized.

broadens the range of information-processing activities that federally regulated financial institutions can engage in to include data transmission systems, information sites, communication devices, and information platforms or portals. As a general principle, under the new legislation any activity permitted to be carried out in-house by a financial institution can also be carried out through a subsidiary of the financial institution or its holding company. This change is intended to give banks and insurance companies greater choice and flexibility in the way they structure their operations. For example, allowing banks to have additional subsidiaries could facilitate alliances and joint ventures.

### New merger-review policy

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*The government introduced guidelines setting out a review process for merger proposals among large banks.*

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The government has acknowledged that large-bank mergers can be a viable business strategy.<sup>29</sup> Two issues that are relevant for public policy are determining the size an institution needs to be to compete in the global marketplace, and the importance of not unduly concentrating economic power or significantly reducing competition domestically. Along with the 2001 financial sector legislation, the government introduced guidelines setting out a review process for merger proposals among large banks and bank holding companies with over \$5 billion in equity.<sup>30</sup> The review process includes a formal mechanism for public input.

Under the merger-review policy, the merger partners are required to prepare a public interest impact assessment (PIIA). This assessment covers various effects of the merger, such as job losses and branch closures, as well as the impact the transaction may have on the structure of the banking industry and the international competitiveness of Canadian banks. In the PIIA, the merger partners would also set out any remedial or

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29. Canada (2001a).

30. Canada (2001b).

mitigating steps they would be prepared to take (such as divestitures, service guarantees, and other commitments) in respect of public interest concerns that they identify. The matter would then be referred to the House of Commons Standing Committee on Finance and the Standing Senate Committee on Banking, Trade, and Commerce for consideration and public hearings. Each of these committees would report to the Minister on the broad public interest issues raised by the proposed merger.<sup>31</sup>

The Competition Bureau and OSFI would also review the merger proposal and report to the Minister of Finance their views on the competitive and prudential aspects, respectively, of the proposed transaction. The Minister would make these reports public.

The Minister of Finance, after taking into account the various factors, would decide whether the proposal would be allowed to proceed in light of any prudential, competition, and other public interest concerns. If the Minister considered these concerns too great to be remedied, the transaction would be denied. Or, if these concerns could be addressed, the process would enter the negotiation of remedies stage.

The Competition Bureau would negotiate the competition remedies, and OSFI, the prudential remedies with the merger applicants, and the two agencies would work with the Department of Finance to coordinate a complete set of public interest remedies. Following successful negotiations, the Minister of Finance would approve the transaction with terms and conditions that reflect those remedies.

Proposed mergers involving demutualized insurance companies that have \$5 billion or more of equity will not be subjected to the formal merger-review policy. Nevertheless, in any merger involving demutualized companies, the Minister is authorized to consider the Superintendent's opinion as to whether the newly merged company would present supervisory or regulatory concerns. In addition, the Competition Bureau can assess the transaction.

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31. In October 2002, the Minister of Finance and the Secretary of State (International Financial Institutions) asked the House of Commons Standing Committee on Finance and the Standing Senate Committee on Banking, Trade, and Commerce for their views on the major considerations that would apply in determining whether a merger proposal between large banks is in the public interest. The Senate committee issued its report on this matter in December, and the House of Commons committee is expected to issue its report in early 2003.

## **Accommodating structural flexibility in the credit union system**

The 2001 legislation enables the credit union system, if it wishes to do so, to move from the current three-tiered structure—local credit unions, provincial credit union centrals, and the national credit union central—to a two-tiered structure consisting of local credit unions and a national services entity. This could provide a mechanism for participating credit unions to take advantage of economies of scale, reduce costs, eliminate duplication and overlap, and promote stronger coordination with an enhanced national presence. To date, no initiatives from the credit union system involving the new provisions have been finalized.<sup>32</sup>

## **Streamlining regulatory approvals**

The 2001 legislation made two improvements to streamline the regulatory-approval process and reduce the burden of compliance on federal financial institutions. First, several applications formerly requiring ministerial approval are now subject to OSFI approval. Second, OSFI has implemented a deemed approvals process in order to speed up the supervisory approvals required for certain corporate actions. Under this process, when institutions file an application with OSFI, the Superintendent has a 30-day period in which to raise concerns, seek further information, or indicate that there will be a delay. If none of these actions is taken, the transaction is deemed to have been approved. The Superintendent can also explicitly approve or deny the transaction before the end of the 30-day period.

## **Provisions relating to consumers**

Consumer-related issues were an important focus of the 2001 financial sector legislation. A significant initiative was the establishment of the Financial Consumer Agency of Canada (FCAC). The purpose of the FCAC is to enforce the consumer-oriented provisions of the federal financial institution statutes, monitor the financial services industry's self-regulatory initiatives to protect the interests of consumers and small businesses, promote consumer awareness, and respond to

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32. The Credit Union Central of British Columbia and the Credit Union Central of Ontario have announced their intention to explore a merger. The two provincially chartered credit union centrals provide a range of financial services to credit unions in their respective provinces, including liquidity management, wholesale lending, and settlement of cheques and electronic payment items. The proposed merger envisions creating a single, federally regulated organization to perform these functions.

general consumer inquiries. The FCAC consolidates the oversight of consumer-protection measures in the federally regulated financial sector, which previously had been dispersed among a number of federal entities. The FCAC can impose monetary penalties in cases of contravention or non-compliance with consumer-related statutes. The FCAC reports to the Minister of Finance.

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*The FCAC consolidates the oversight of consumer-protection measures in the federally regulated financial sector.*

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The legislation also requires institutions to be members of a third-party dispute-resolution mechanism. The government initially indicated that it would work with financial institutions to establish the Canadian Financial Services Ombudsman (CFSO), which banks would be required to join. Non-bank financial institutions could join either the CFSO or a different system for resolving third-party disputes. In December 2001, the government announced that it was suspending its plan to establish the CFSO, but that it would support a private sector initiative to develop a National Financial Sector Ombudservice (NFSO) that would handle consumer complaints involving various types of financial institutions. Work has proceeded on establishing this consumer-assistance service, now called the Financial Services OmbudsNetwork.

Another government initiative aims at making basic financial services accessible to all individuals. Under the legislation, the federal government has the authority to make regulations regarding the provision by banks of a low-cost account to customers. Currently, the government has chosen not to regulate low-cost accounts through legislation; instead, it is relying on the banks' commitment to provide such accounts through a self-regulatory approach.<sup>33</sup> The FCAC monitors banks to

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33. In February 2001, the government announced the signing of memoranda of understanding with several banks regarding the features that these low-cost accounts will offer. See Canada (2001c).

ensure that such accounts are offered and that they meet certain standards. Should the self-regulatory approach be unsuccessful, the government has the option of imposing regulations.

## **The Canadian Payments Act and Access to the Payments System**

As part of the 2001 legislative package, the Canadian Payments Association Act has been renamed the Canadian Payments Act (CP Act). The CP Act contains some important changes for the Canadian Payments Association (CPA), a non-profit association created by an Act of Parliament in 1980. The CPA owns and operates Canada's two domestic currency payments systems through which all non-cash payments ultimately settle. The Large Value Transfer System (LVTS) is the principal system for clearing large-value and time-sensitive payments. The Automated Clearing Settlement System (ACSS) handles all other payments, such as paper cheques, automated bill payments, and debit card transactions. The CPA develops, implements, and updates the rules that govern the clearing and settlement of payments through the LVTS and the ACSS.

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*The CP Act extends eligibility for CPA membership to life insurance companies, securities dealers, and money market mutual funds.*

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Before the 2001 legislation was enacted, CPA membership was limited to the Bank of Canada; the other banks, trust and loan companies, credit unions and caisses populaires centrales; and other deposit-taking institutions. The CP Act extends eligibility for CPA membership to life insurance companies, securities dealers, and money market mutual funds. Under the previous legislation, the CPA had a twofold mandate to establish and operate the national clearing and settlements system and to plan the evolution of the national payments system. Under the CP Act, the statutory objectives of the CPA have been amended and are now as follows:

- (i) to establish and operate national systems for the clearing and settlement of payments and other arrangements for the making or exchange of payments
- (ii) to facilitate the interaction of the CPA's systems with others involved in the exchange, clearing, and settlement of payments, and
- (iii) to facilitate the development of new payment methods and technologies.

In pursuing these objectives, the CPA promotes the efficiency, safety, and soundness of its clearing and settlement systems, taking into account users' interests.

The CP Act has increased the size of the CPA's Board of Directors from 11 to 16 members.<sup>34</sup> The increased size reflects the broader range of entities that are eligible for CPA membership as well as three new independent board members appointed by the Minister of Finance. In addition, the Stakeholder Advisory Council, which was established in 1996, has been enshrined in the CP Act. Its mandate is to provide advice to the CPA Board on the payments system from the perspectives of a variety of interest groups. The Stakeholder Advisory Council is made up of two CPA directors and up to 18 other members who are appointed by the CPA Board of Directors in consultation with the Minister of Finance.

The CP Act provides the Minister of Finance with certain oversight powers in relation to the CPA. All CPA rules and standards, including any amendments, are subject to a 30-day review period by the Minister of Finance, who can disallow any rule that is not deemed to be in the public interest. The Minister also has the authority to issue a directive to the CPA to make, amend, or repeal a bylaw, rule, or standard.

Under the CP Act, the Minister also has the authority, if it is considered to be in the public interest, to designate a particular payments system that is national in scope or that plays a major role in supporting transactions in the Canadian financial markets or the Canadian economy. In designating such a payments system, the Minister would consider the level of financial safety provided by that payments system to the participants and users, the efficiency and competitiveness of payments systems generally in Canada, and the best inter-

ests of the Canadian financial system. The Minister can issue directives to such payments systems with respect to the conditions for becoming a participant in the system, the operation of the payments system, its interaction with other Canadian payments systems, and the relationship of the system with users. To date, the Minister has not designated any system under the CP Act.

To facilitate the coordination of the Bank of Canada's oversight responsibilities under the Payment Clearing and Settlement Act and the Minister's oversight activities under the CP Act, as well as to address payment system issues in general, a non-statutory body called the Payments Advisory Committee (PAC) was formed. PAC is co-chaired by senior officers of the Department of Finance and the Bank of Canada.

As mentioned above, under the CP Act, life insurance companies, securities dealers, and money market mutual funds are eligible for membership in the CPA. Permitting these types of financial entities to join the CPA enables them to offer a wider range of services to their clients, thus promoting increased competition for the consumer's business. For example, life insurance companies would be able to offer payment services with features broadly similar to those of deposit accounts offered by banks.

The CPA had considered removing the minimum volume criterion as an eligibility requirement for participation as a direct clearer in the ACSS, which requires that at least 0.5 per cent of total payments volume in the ACSS be cleared by a direct clearer, but this criterion has been retained pending further study and consultation with the Bank of Canada and the Department of Finance on the implications of eliminating it. The study will identify issues that presently motivate this restriction and also examine alternative conditions that might be more effective and efficient than those currently in place. Meanwhile, the government has requested the CPA in its relevant bylaw to restrict the participation of life insurance companies and money market mutual funds to the status of indirect clearers; that is, these entities would be required to have a direct clearer acting as their agent in the ACSS clearing and settlement process.<sup>35</sup> As regards the LVTS, the newly eligible CPA members could become direct

34. The chair of the Board of Directors continues to be an officer of the Bank of Canada.

35. In its policy paper (Canada 1999, p. 41) the government explained that the legal framework within which these organizations operate is significantly different from those of other CPA members, and consequently their participation as direct clearers could impact the degree of risk assumed by other participants in the event of a default.



participants in the LVTS by complying with the criteria set out by the CPA.<sup>36</sup>

## Conclusion

Significant changes have occurred in Canada's financial services sector during the past decade. While many factors were involved, amendments to legisla-

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36. To become a direct participant in the LVTS, an institution must be a member of the CPA, have certain operational capabilities, have a settlement account at the Bank of Canada, and enter into agreements relating to taking loans from the central bank and to pledging the appropriate collateral. To date, none of the institutions recently made eligible for CPA membership has applied to become a member in the CPA.

tion governing the sector facilitated the process of change by accommodating developments in the financial services industry. The result has been the creation of a more competitive, innovative, and efficient financial sector. At the same time, changes to the framework for the prudential supervision of financial institutions and the oversight of clearing and settlement systems have also contributed to public confidence in a strong financial system. Given the evolutionary nature of Canada's financial sector, the government and the financial industry will soon begin planning and preparing for the next legislative review required by the five-year sunset clauses.

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## Appendix

In 1996, the Task Force on the Future of the Canadian Financial Services Sector was given the mandate to make recommendations on any public policy issues that affect the environment within which Canada's private sector financial services providers operate. The recommendations contained in the 1998 report of the Task Force provided important input into the 2001 financial sector legislation. In some cases, initiatives recommended by the Task Force were implemented by the government prior to the 2001 financial sector legislation. For example, in 1999, legislation was passed regarding the demutualization of large life insurance companies as well as legislation allowing the entry of foreign bank branches into Canada. Overall, the 2001 legislative changes included several major recommendations proposed by the Task Force. In some cases, initiatives contained in the 2001 legislation were consistent with those recommended by the Task Force, although the provisions for implementation may have differed from those suggested by the Task Force.

With regard to the efficiency and growth of the financial sector, the 2001 financial sector legislation incorporated the Task Force recommendations that the definition of the widely held rule be broadened to provide for greater flexibility in setting up strategic alliances; a holding company regime be established to provide for greater structural flexibility; and a large bank merger-review process be created to examine whether merger proposals would be consistent with the public interest.

As to fostering competition, the Task Force suggested that there be direct access to the payments system for life insurance companies, mutual funds, and investment dealers. In this regard, the new Canadian Payments Act makes these entities eligible to become members in the Canadian Payments Association (CPA).<sup>1</sup> The Task Force also recommended that credit

1. As noted in this article, the CPA, the Department of Finance, and the Bank of Canada have agreed to study the impact of the elimination of the institutional restrictions and the volume requirement for direct participation in the Automated Clearing Settlement System.

unions be permitted to form cooperative banks. Although a cooperative bank initiative was not included in the 2001 financial sector legislation, in April 2002 the government launched a consultation process to determine whether there is sufficient consensus to move forward with legislation implementing a cooperative bank model. The recommendation of the Task Force to allow banks and trust companies to offer insurance and auto leasing to their customers through their branches was not adopted in the legislation. Similarly, the legislation did not provide for the integration of deposit insurance for banks and compensation plans for life insurance companies, for reasons of competitive equity, as suggested by the Task Force.

The 2001 legislation followed up on the recommendations of the Task Force to streamline the process for regulatory approvals, although the suggestion that regulatory overlap be reduced by transferring the regulatory responsibilities of CDIC to OSFI was not adopted.

As for consumer-related issues, several initiatives contained in the report of the Task Force were included in the 2001 financial sector legislation, such as the establishment of an ombudsman. The Financial Consumer Agency of Canada (FCAC), which was created for the purposes of educating consumers on their rights and overseeing compliance by institutions with federal consumer-protection measures, is also consistent with the Task Force objective of empowering consumers. The 2001 financial sector legislation addressed the Task Force proposal regarding the provision of access to low-cost accounts to low-income individuals. In implementing this initiative, the government is relying on banks to use a self-regulatory approach (the government has also retained the option of imposing regulations), rather than adopting the Task Force's suggestions such as having the government enter into indemnity agreements with financial institutions regarding regular payments to low-income individuals, which would eliminate the need for holds on government cheques.

# Exchange Rate Regimes in Emerging Markets

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- *A series of major international financial crises in the 1990s, coupled with the recent introduction of the euro in Europe, have led to renewed interest in alternative exchange rate systems.*
- *The choice of exchange rate regime is particularly relevant for emerging-market countries, because other countries are perceived either as having no alternative to their current exchange rate arrangement or as highly unlikely to make a significant change.*
- *This article examines the evolution of exchange rate regimes in emerging markets over the past decade and compares the strengths and weaknesses of the various available systems.*
- *Experience suggests that intermediate regimes, such as the adjustable pegged exchange rate that was popular throughout much of the post-war period, are prone to instability and several other deficiencies.*
- *Some observers have suggested that, in a world of increasing international capital mobility, only the two extreme exchange rate regimes—either a permanently fixed or a freely floating exchange rate regime—are likely to be sustainable. However, these extreme regimes often pose serious problems for emerging-market economies.*
- *Two recently proposed alternatives may warrant serious consideration. The Managed Floating Plus (MFP) and the Baskets, Bands, and Crawling Pegs (BBC) regimes try to combine the best elements of both the flexible and fixed exchange rate systems. The more promising of these two alternatives from an emerging-market perspective would seem to be the MFP.*

The choice of exchange rate regime has been a subject of ongoing debate in international economics. This debate has been renewed in recent years because of two main factors.

First, unsustainable exchange rate regimes were widely perceived to have been one of the causes in a series of economic crises, including the Exchange Rate Mechanism (ERM) crisis in 1992, the Mexican peso crisis in 1994–95, and the Asian crisis in 1997–98. This has led some economists to suggest that, in a world of increasing international capital mobility, only the two extreme exchange rate regimes are likely to be sustainable—either a permanently fixed exchange rate regime (i.e., a “hard fix”) such as a currency board or monetary union, or a freely floating exchange rate regime. This proposition, known as the hollowing-out hypothesis, or the bipolar view, is gaining popularity. It is not, however, universally accepted. Indeed, some economists believe that intermediate regimes such as the adjustable pegged exchange rate will continue to be a viable option, especially for emerging markets. Second, certain experiments with new arrangements over the past decade, such as the European Economic and Monetary Union (EMU), dollarization in Ecuador and El Salvador, and currency boards in Hong Kong and Estonia, have reinforced the view that hard fixes may be the best exchange rate arrangement for some countries.

Although the choice of exchange rate regime is a topic of interest for all countries, it is considered particularly relevant for emerging markets, because other countries are perceived either as having no alternative to their current exchange rate arrangement or as highly unlikely to make a significant change. The former group, those with no viable alternative, includes countries that are either too small or too underdeveloped to entertain other options; the latter, those who are unlikely to change, are mainly industrialized countries that have tended to settle at one of the two extremes—

either opting for a freely floating currency or moving to a common currency such as the euro.

Emerging markets are also regarded as an interesting group by those who hold the bipolar view because these markets are in the process of integrating into global capital markets and are thus viewed as potentially being drawn towards one of the two poles. The choice of exchange rate regime for emerging markets is thus receiving more attention, both in the literature and in policy circles. In this article, we review the evolution of exchange rate regimes in emerging markets over the past decade, discussing the factors that determine how such countries make their choices and examining the available options.

## Evolution of Exchange Rate Regimes in Emerging Markets

Proponents of the bipolar view, including Obstfeld and Rogoff (1995) and Eichengreen (1998), predict that countries that have integrated, or are integrating, their domestic capital markets with global capital markets will be unable to sustain intermediate regimes and will be forced to choose one of the two extremes: either a hard fix or a freely floating exchange rate regime. In their opinion, the middle ground—made up of adjustable (soft) pegs—will eventually vanish for countries that are open to international capital flows. Other authors, however, disagree. Williamson (2000), for example, believes that intermediate regimes are, and will continue to be, a viable option for emerging markets. Masson (2001) has tested the bipolar hypothesis directly, using historical data, and finds that intermediate regimes are no more likely to disappear than freely floating or firmly fixed exchange rate systems. This section reviews the evidence supporting the bipolar hypothesis, looking at the evolution of exchange rate regimes in emerging markets over the past decade.

Fischer (2001) documented the case for the bipolar view by examining the evolution of exchange rate regimes in a large sample of countries over the 1990s. His evidence identifies a trend away from intermediate regimes and towards floating regimes, but does not go so far as to suggest that the middle is vanishing, except for industrialized countries.<sup>1</sup> Of the 185 countries in the sample, one-third had intermediate regimes in 1999, down from nearly two-thirds (62%) in 1991. Yet

despite this substantial decrease in the number of countries with intermediate regimes throughout the 1990s, there is currently no evidence to suggest that they are about to disappear. Hard fixes also became more popular throughout the 1990s, largely due to the creation of the EMU. Notwithstanding this unique event, hard fixes only increased from 16 per cent to 24 per cent of total regimes over the 1990s. In emerging-market countries, intermediate regimes declined from 64 per cent to 42 per cent, whereas floating regimes increased from 30 per cent to 48 per cent; the remaining 10 per cent were hard fixes. Thus, in 1999, there were almost as many intermediate regimes as there were floating regimes in emerging markets.

Fischer's work, like most of the studies in this literature, is based on the so-called "official classification" of exchange rate regimes. The official classification uses information collected by the International Monetary Fund (IMF) and relies on self-identification by member countries.<sup>2</sup> No effort is made, however, to ensure that this *de jure* classification is consistent with actual practice. As a consequence, the official classification suffers from important measurement problems that have been well documented in the literature. Levy-Yeyati and Sturzenegger (1999), for example, found that 26 per cent of the countries they examined follow an exchange rate arrangement that is different from their *de jure* regime. Calvo and Reinhart (2002), using more traditional economic analysis and taking into account movements in commodity prices, arrive at a similar conclusion. They focus on countries that officially claim to be on a floating exchange rate regime, and find that, in most cases, these countries have not allowed their exchange rate to float freely. They interpret their findings as evidence of "fear of floating."

Bailliu, Lafrance, and Perrault (2001) developed an alternative classification scheme that they believe better reflects the degree of exchange rate flexibility in emerging markets. This classification scheme is based on volatility in the observed nominal exchange rate and takes into account external shocks and revaluations. They, too, find substantial differences in how exchange rate regimes are classified, depending on which methodology is used. Finally, Reinhart and Rogoff (2002) reclassify exchange rate regimes by focusing on market-determined parallel exchange rates; their results also suggest the presence of measurement error in the official classification. In general,

1. Indeed, as is discussed in more detail on p. 21, almost all industrialized countries have exchange rate regimes at one of the two extremes.

2. The IMF publishes this classification every year in its *Annual Report(s) on Exchange Arrangements and Exchange Restrictions* (IMF 1960–2000).

studies using alternative classification schemes tend to find less hollowing out of the intermediate regimes than studies based on the official classification.

In summary, although the evidence to date shows that the popularity of intermediate regimes declined in the 1990s, it is unclear at this point whether they are in the process of becoming extinct. In our view, the strongest evidence for the bipolar view comes from the industrialized countries, where most have adopted exchange rate regimes at one of the two extremes. For emerging markets, however, intermediate regimes remain a popular choice—though less so than a decade ago. Of course, any analysis of the evolution of exchange rate regimes in emerging markets must be interpreted with caution, given the measurement problems noted above.<sup>3</sup>

## Choice of Exchange Rate Regime in Emerging Markets

Central to the debate over the choice of exchange rate regime is the question of whether countries are free to choose any regime they want, or whether they are instead forced to adopt a particular regime or to choose among a limited number of options. Various factors may influence which options are available to a particular country. The literature examining the determinants of the choice of exchange rate regime in emerging markets has emphasized the following factors: international financial market integration, macroeconomic performance, financial sector development, and political economy considerations.

A recurring theme in the literature is that countries with important links to global financial markets cannot sustain a pegged exchange rate and must choose either a hard fix or a floating exchange rate regime. This belief is linked to the “impossible trinity,” which stipulates that a country can choose any two of the following goals, but not all three: a pegged exchange rate, monetary policy independence, and international financial market integration. A country that tries to achieve the impossible trinity will eventually be forced off its pegged exchange rate or have to sacrifice one of the other two elements. In the 1990s, many countries with fixed but adjustable exchange rate regimes were forced to abandon them because the regimes had become unsustainable, and a costly

currency crisis ensued. The economic and social consequences of these crises have been considerable, particularly when the currency crisis was associated with a banking crisis.<sup>4</sup> In this regard, it is important to note that emerging markets that maintained greater exchange rate flexibility generally fared better than those with pegged arrangements (IMF 2000: 21).

The desirability of an exchange rate regime, however, should be based on how it performs throughout good times and bad, and not just during a crisis. Although economic theory suggests that the nature of the exchange rate regime may influence macroeconomic performance, the theory yields few clear-cut predictions. Empirical research in this area has focused on the possible effects of exchange rate regimes on output variability, inflation performance, and economic growth. Ghosh et al. (1997) found no systematic differences in growth rates or output volatility across exchange rate regimes in a sample of 136 countries over the period 1960–90. Inflation, in contrast, tended to be lower and less volatile in fixed as opposed to flexible exchange rate regimes<sup>5</sup>—a result confirmed by the IMF (1997) when it extended the period of analysis to the mid-1990s.<sup>6</sup> Two recent papers that develop alternative classification schemes, however, find evidence linking exchange rate regimes and growth. Bailiu, Lafrance, and Perrault (2001), in their study of 25 emerging-market economies over the period 1973–98, uncovered evidence that more flexible exchange rate arrangements are associated with higher economic growth, but only for countries that are relatively open to international capital flows and, to a lesser extent, have well-developed financial markets. Similarly, Levy-Yeyati and Sturzenegger (2001) found that less-flexible exchange rate regimes are associated with slower growth in developing countries; for industrialized countries, they found that the regime type has no significant impact on growth.

4. By one estimate, the direct financial cost to governments of resolving banking crises in developing countries over the period 1980–95 amounted to approximately US\$250 billion (Honohan 1997). In more than a dozen of these cases, the cost to the public sector to resolve the crisis amounted to 10 per cent or more of the country's GDP, and exceeded this level for the countries most affected by the Asian crisis (Goldstein et al. 2000, 2). The macroeconomic costs of currency crises have also been significant. Goldstein et al. (2000, 88) found that it can take from two to three years for economic growth to return to its pre-crisis average.

5. Whether this is because fixed exchange rates reduce volatility, or simply that low-volatility countries tend to choose fixed exchange rates, is unclear.

6. The latter study, however, did not control for other determinants of growth.

3. The IMF's recognition that there are problems with the official classification is reflected in their recent efforts to revise it (IMF 1999).

All of these studies are based on a tripartite classification scheme that distinguishes between fixed, intermediate, and flexible exchange rate regimes. In this classification scheme, however, two of the categories (intermediate and flexible) characterize only the exchange rate regime, whereas the third (fixed) characterizes *both* the exchange rate regime and the monetary policy framework because, in the latter, the exchange rate is the target of monetary policy. The failure to account for this discrepancy may result in an inaccurate assessment of the effects of alternative exchange rate regimes on macroeconomic performance. Laidler (1999, 2002) has written extensively on this issue and notes that a floating exchange rate, in itself, does not constitute a “coherent monetary order.” Absent a nominal anchor, such as a medium-term inflation target, there is nothing to ground inflation expectations or to condition monetary policy actions. It is therefore not surprising in these situations that floating exchange rates fail to deliver some of the expected benefits.

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Bailliu, Lafrance, and Perrault (2002) addressed this issue by refining their classification scheme to account for different monetary policy frameworks. They examined the impact of exchange rate arrangements on growth using a panel-data set of 60 countries over the period 1973–98 and found that it is the presence of a strong monetary policy framework, rather than the type of exchange rate regime per se, that is important for economic growth.

The literature has also focused on financial sector development as an important determinant in the choice of exchange rate regime. A sound and well-developed financial sector is often considered an important precondition for any country that wants to float, since flexible exchange rates are generally

associated with increased volatility in the nominal exchange rate. And the latter can have damaging effects on the real economy unless the financial sector is able to absorb exchange rate shocks and provide agents with appropriate hedging instruments.<sup>7</sup>

Many emerging-market economies have shallow capital markets, and thus may find it difficult to manage a flexible exchange rate regime. Indeed, some authors (Aizenman and Hausmann 2000) argue that, because of the state of their financial markets, the gains from fixing the exchange rate may be greater for emerging markets than for industrialized countries. However, the combination of an underdeveloped financial sector and a fixed exchange rate regime can also be problematic, since it can result in a banking crisis. As Chang and Velasco (2000) argue, a hard fix may make a balance-of-payments crisis less likely only by making a banking crisis more likely. Eichengreen and Hausmann (1999) suggest that financial markets characterized by “original sin” can be problematic under both fixed and flexible exchange rate regimes. The term original sin is used to denote a country that is unable to borrow abroad (or even long term in its own domestic market), using instruments denominated in its domestic currency, owing to a history of poor macroeconomic policies (hence the original sin). As a result, all long-term domestic investments in such an economy will be characterized either by a currency mismatch or a maturity mismatch. Eichengreen and Hausmann recommend that economies characterized by original sin may want to consider dollarization.<sup>8</sup>

Political economy considerations are sometimes also a factor in the choice of exchange rate regime. Political economy theories suggest that a country lacking political stability has an incentive, *ceteris paribus*, to let its exchange rate float, since it will be difficult for the government to gather support for the unpopular measures that may be required to defend a peg (Poirson 2001). On the other hand, some countries may be forced to fix to or adopt a hard currency if they have lost all credibility in conducting monetary policy. This argument was put forward by those in favour of dollarization in the Ecuadorean case. In cases like this,

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7. Bordo and Elandreau (2001) find evidence for the post-Bretton Woods period that suggests that countries with more developed financial systems tend to have floating exchange rate regimes.

8. Dollarization is the modern term for arrangements where the currency of a major industrial country (e.g., the United States) is used as the national currency, serving as a unit of account, medium of exchange, and store of value.

the best, and sometimes the only, option may be to “tie the hands” of the central bank or government by importing the credible monetary policy of another country.

## What Options Are Available?

### Lessons from industrialized countries

One strategy that emerging markets might consider in choosing an exchange rate system is to trade on the experience of industrialized countries. Guidance from these countries’ experiences concerning the most promising alternatives might allow emerging markets to avoid some of the pitfalls that the industrialized countries encountered in their search for a viable system.

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The principal lesson that a country might take from such an exercise is that intermediate solutions are no longer practicable, and that only the two extremes should be considered. Indeed, with the exception of Denmark, every country currently classified by the IMF as industrialized now operates under either a freely floating exchange rate system or a full currency union. Canada, Japan, the United Kingdom, and the United States are prime examples of the former, while the 12 European countries constituting the EMU are obvious examples of the latter. The middle ground, as represented by the system of adjustable pegs established under the Bretton Woods system, has been shown to be inherently unstable. While it was originally viewed as a promising compromise that combined the best elements of fixed and flexible exchange rate systems, it was ultimately shown to offer the worst of both worlds. Necessary adjustments in parity values were

invariably delayed, imposing significant costs on the deficit country and its trading partners, and in addition invited one-sided, destabilizing speculation.

Although many emerging markets appear to have opted for similar, Bretton Woods-style solutions, pegged exchange rates have few defenders. They are viewed by many as—at best—a useful stop-gap measure, suitable only for countries that ultimately hope to shift to a more stable and permanent arrangement. Rogoff (1998) has likened pegged exchange rate systems to “lightning rods” that attract financial crises. He, and several other authors, have noted that the half-life of a pegged exchange rate is typically less than a year, and that few survive longer than three years without a major collapse. In short, intermediate regimes based on the concept of fixed yet adjustable parities do not appear very promising, except as a temporary expedient.

### Lessons from very small economies

Although the earlier experiences of industrialized countries are instructive, some observers have suggested that they have limited applicability for other economies. Some developing economies, for example, are so small and open that they have very little choice with regard to the exchange rate system under which they operate. They lack the institutions and infrastructure necessary to conduct an effective monetary policy, and they are also unable to benefit from the insulating properties of a flexible exchange rate, owing to the specialized nature of their output and their dependence on imports. The microeconomic advantages that these economies realize from a fixed exchange rate, in the form of lower transactions costs and reduced exchange rate risk, more than outweigh any macroeconomic benefits they might gain from a flexible exchange rate in terms of increased monetary policy independence and protection from external shocks.

Economies in this situation almost always opt for dollarization (see footnote 8), which is an extreme form of exchange-rate fixing. At latest count, more than 50 small economies, dependencies, and protectorates now operate under dollarization (Rose 2000). Frankel and Rose (2002) suggest that the net benefits of adopting another country’s currency can be substantial, as measured by the resulting growth in international trade and national income. Although their results have been questioned by several authors, and are mainly applicable to economies that are extremely

small,<sup>9</sup> Frankel and Rose found that dollarized economies had bilateral trade flows that were, on average, 300 per cent higher than economies that continued to use their own currencies.

### The dangers of a hard fix: Dollarization and currency boards

Based on this experience, a strong case could be made for firmly fixing the exchange rates of all emerging countries—if not completely dollarizing the entire developing world. Unfortunately, there is reason to believe that the payoffs from pursuing such a strategy would be substantially smaller than those reported by Frankel and Rose—especially for emerging markets that are larger and more developed than those described above. These economies, unlike the ones studied by Frankel and Rose, have more discretion with regard to the currency arrangement they choose; it is not forced upon them. They also have more to lose, in terms of forgone independence and insulation from external shocks, if they opt for a firmly fixed exchange rate.

As far as the possibility of a monetary union is concerned, few emerging markets have the kind of political or economic influence that the 12 members of the EMU do, which allows the latter to operate as full partners in a monetary union, sharing in policy decisions as well as the seigniorage that accrues from issuing currency.<sup>10</sup> Hence dollarization is the only “hard fix” option that most emerging markets have available. Emerging markets that decide to dollarize, however, lose any monetary policy independence they might have had under more flexible arrangements. Interest rate and credit decisions will be made by the lead country, taking its own economic interests into account, and ignoring any adverse consequences these decisions might have for those who have chosen to use its money. This does not represent a serious cost, if policy independence has been abused in the past and the domestic authorities have lost all credibility. In situations like this, the loss of independence and the ability to “import” someone else’s policy is an obvious benefit.

9. Many of the economies in the Frankel and Rose study have populations of less than 100,000.

10. While a number of developing countries have formed their own currency unions (for example, the Communauté Financière Africaine [CFA] franc zone in Africa or the Eastern Caribbean Currency Union in the Caribbean), they have no effective control over monetary policy within the union because their currencies are tied to the currency of a major trading partner outside the currency union.

The difficulty associated with reversing the dollarization regime is both one of its major attractions and its largest cost. Although the immediate improvement in policy credibility and the reduction in currency risk can be significant, the dollarized economy effectively forfeits any right to regain control of its own monetary destiny. The resulting increase in macroeconomic adjustment costs could be substantial. The short-run cyclical movements of the industrialized country whose currency has been imported are likely to be quite different than those of the emerging market. In addition, the two economies are, by definition, at very different stages of development and will have to confront different structural pressures over time. Without a floating exchange rate to accommodate these tensions and to offset some of the shocks, the burden of adjustment will fall largely on domestic prices and wages, which are seldom sufficiently flexible (at least in a downward direction) to ease the adjustment process.<sup>11</sup>

The emerging market also sacrifices any seigniorage it would have earned in future years by issuing its own currency (a form of zero-interest debt), as well as its ability to serve as an effective lender of last resort. Many countries without an efficient tax system rely on seigniorage for a significant part of their government revenue, and unless the industrialized country is willing to share its seigniorage, other measures will have to be introduced to make up the shortfall. Without the ability to generate liquidity on demand, the emerging economy will also find it difficult to provide emergency assistance to its domestic banks and financial markets when they face speculative pressures. Its only alternative will be to draw down existing foreign reserves, or issue additional debt in the foreign currency. If the emerging market has a solid credit rating, this might be sufficient. Otherwise, the domestic financial system will be vulnerable to speculative attack and unanticipated shocks.

This is not to say that there are no benefits associated with dollarization. Currency risk vis-à-vis the new medium of exchange is effectively eliminated, as are any currency conversion costs and the need for hedging. It is important to realize, however, that in a world

11. This happened in Argentina after it slipped into a recession in the late 1990s following a series of negative external shocks. Most of the adjustment came through price deflation—a very slow and painful process, given that labour markets in Argentina are quite rigid. Ultimately, the process was too slow, and Argentina was forced to abandon its currency board and allow its currency to float. (The concept of currency boards is discussed on p. 23.)



where the three major currencies—the U.S. dollar, the Japanese yen, and the euro—continue to float, any emerging market that decides to tie itself to one of them is, by definition, floating against the others. Any currency risk and conversion costs related to the other two currencies will therefore remain. For countries like Panama, whose international trade is concentrated in one major country (the United States), this does not pose a problem. For other countries with more diversified trading patterns, such as Ecuador, the implications could be serious. Both of these countries have dollarized, with differing degrees of success. While Ecuador's decision to adopt the dollar is quite recent, the results to date have not been encouraging. Panama's experience with dollarization goes back to 1904 and has, by most accounts, been more favourable.<sup>12</sup>

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Some of these problems can be avoided by establishing a currency board as opposed to dollarizing. A currency board involves a firm commitment, often embedded in legislation or even in the country's constitution, to permanently fix the external value of the domestic currency to another country's currency. In addition, the emerging economy promises to make its domestic currency and the foreign currency freely convertible. In order to ensure the credibility of the regime, the emerging economy also promises to tie the domestic money base to its reserve holdings of foreign currency. This arrangement shares many of the features of full dollarization, except that the domestic currency continues to circulate, thereby allowing the emerging economy to keep its seigniorage. A currency board system is also somewhat easier to reverse or exit than

12. Edwards (2001) presents a much less positive picture for Panama and for most other countries that have either dollarized or set up currency boards.

a fully dollarized system. The last feature can prove something of a handicap, however, and can undermine the credibility of the arrangement, especially in the midst of a financial crisis.<sup>13</sup> The recent experience of Argentina suggests that the protection provided by a currency board can indeed be very limited.

### Fear of floating

If hard fixes are not the answer, perhaps a freely floating exchange rate might represent a more promising alternative. Unfortunately, post-war experience with freely floating exchange rates indicates that this extreme arrangement can also suffer from certain deficiencies, at least in the context of emerging markets. Some observers, in fact, have suggested that very few economies—either industrial or emerging—truly float.<sup>14</sup> As discussed earlier, many of the countries that are officially classified as operating under a flexible exchange rate display an evident fear of floating. They regularly intervene to help stabilize their exchange rate and appear willing to subvert other domestic objectives, such as price stability and full employment, in order to maintain a particular exchange rate level. Moreover, the problems seem more severe, and the deviations from true flexibility more egregious, in the case of emerging-market economies. Observed movements in the exchange rates of supposed "floaters" are often similar in size and general behaviour to countries operating under a pegged exchange rate, and in some instances display even less variability.

The reasons for this fear of floating can be linked to three factors, according to Calvo and Reinhart (2002). The first factor is a deep-seated distrust of markets, which many emerging-market economies believe move in perverse and unpredictable ways. The second factor is that depreciations in these countries tend to be associated with economic contractions rather than expansions. Instead of stabilizing growth and employment in response to an external shock, therefore, the resulting exchange rate movements tend to exacerbate the pressures, leading to more severe economic dislocation. This is due in part to the absence of a credible mechanism, such as an inflation target, with which to anchor expectations.<sup>15</sup> In addition, a significant

13. A currency board can also raise risks for financial stability, since there is a reduced incentive to hedge foreign currency positions under such a regime. Should the currency board collapse, this currency mismatch can cause serious problems, as in Argentina.

14. See Calvo and Reinhart (2002).

15. See Laidler (1999, 2002).

portion of government and private sector debt in many of these economies is often denominated in a foreign currency, causing debt-servicing costs to rise every time the domestic currency depreciates. The third factor concerns the demonstrated inability of many emerging economies to conduct effective, countercyclical monetary policies. In many cases, the monetary policy independence that a floating exchange rate confers has simply led to chronic inflation. Monetary conditions tend to tighten, therefore, in reaction to any economic weakness or exchange rate depreciation, rather than easing to help offset the shock.<sup>16</sup>

Since floating exchange rates are perceived as offering few benefits in terms of effective macroeconomic insulation, Calvo and Reinhart argue that it is natural for emerging-market economies to place greater importance on exchange rate stabilization. The sizable gains realized through lower transactions costs and reduced currency risk in these open economies are believed to easily outweigh any advantages that might be realized from enhanced policy independence. Indeed, the latter is often regarded as a cost rather than a benefit.

If pegged exchange rates have a checkered history and lead to inevitable collapse, and the extremes of fully fixed or freely floating exchange rates are considered problematic, what viable alternatives do emerging markets have? Is there any exchange rate regime that might be regarded as either desirable or feasible?

### **New intermediate solutions**

Two proposals have recently been advanced for emerging-market economies that try to overcome the problems noted above. Both involve a return to the middle and try to provide a degree of policy and exchange rate flexibility along with greater exchange market stability.

#### ***Baskets, bands, and crawling pegs***

The first proposal, baskets, bands, and crawling pegs (BBC), is most closely associated with Williamson (2000) and is actually a synthesis and extension of some ideas that he and others promoted in the 1970s and early 1980s. It consists of three key elements. The first is similar in spirit to the failed Bretton Woods system, but with one important difference. Each emerging market under the Williamson proposal would be encouraged to peg its currency to a *basket* of foreign currencies, as opposed to the currency of a single trading partner. This element is expected to reduce

the tensions that invariably arise when the major currencies begin to move in opposite directions.

As part of the second element, emerging markets would be asked to ensure that their pegged exchange rates stayed within a set of symmetric, and reasonably wide, *bands*. This is designed to provide the market with some guidance as to the allowable limits of exchange rate movements, while giving the central bank a fair degree of monetary independence, provided the exchange rate is well within the bands. How protective or aggressive the central bank wants to be in defending the bands would be up to the authorities, but some flexibility might be encouraged in order to avoid the sort of destabilizing one-way speculation that characterized the Bretton Woods system.

The third element in Williamson's proposal concerns the midpoint of the target band, which would be allowed to *crawl* gradually over time, reflecting the authorities' best judgment about the fundamental forces that might be driving the real exchange rate. This "crawling peg" would help relieve the tensions that might otherwise arise, owing to shifting fundamentals, and give the market some useful medium-term guidance as to where the exchange rate might be expected to go, thereby preventing persistent misalignments.

Critics suggest that, while the BBC proposal sounds good in theory, it would inevitably confront many of the same problems that plagued the Bretton Woods system and all its latter-day variants. Decisions concerning the appropriate midpoint of the band and the future level of the crawling peg are inherently difficult, in the absence of any reliable model of the forces that determine the equilibrium exchange rate. Moreover, the same issues of one-way speculation and difficult policy choices would have to be dealt with as soon as the exchange rate approached the upper or lower limits of the band. Softening the commitment to defend these bands might reduce these pressures, but at the risk of increasing market uncertainty about where the authorities thought the rate should be and what action they were prepared to take once the limits were reached. In the limit, the system would simply revert to a loosely managed float—little different than what many of the emerging markets already have. Only a few countries, such as Chile, Colombia, and Israel, have successfully employed a system similar to the BBC. In all three cases, however, it served simply as a transition to a more flexible system based on inflation targeting and full monetary policy independence.

16. The term "monetary conditions" refers to the combined effect of the exchange rate and interest rates on economic activity.

## *Managed floating plus*

Goldstein (2002) has also championed a new exchange rate system for emerging markets, called managed floating plus, or MFP. This system approaches the problem from a slightly different angle than Williamson's BBC, but shares many of its objectives. Like the BBC, the MFP tries to identify a viable middle ground that would give the monetary authorities some policy independence, while eliminating (or at least moderating) some of the excessive volatility that might otherwise be associated with a completely free float.

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*Monetary authorities . . . would still be allowed to intervene in the foreign exchange market and manage the external value of their currency, but only to the extent that their actions did not compromise the achievement of their inflation objective.*

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Unlike the BBC proposal, which gives prominence to the exchange rate, the MFP proposal uses a domestic inflation target as the nominal anchor for monetary policy and gives greater attention to stabilizing the domestic economy than to fixing the exchange rate. Monetary authorities, under Goldstein's proposal, would still be allowed to intervene in the foreign exchange market and manage the external value of their currency, but only to the extent that their actions did not compromise the achievement of their inflation objective. Whenever a conflict arose between these two objectives, exchange rate considerations would be forced to give way to domestic price stability.

To minimize the problems of excessive asset-price volatility and vulnerability to financial crises, emerging-market economies would be encouraged to establish comprehensive reporting systems to monitor the level of outstanding public and private debt and the extent of foreign currency exposure. Greater effort would also be made in the context of an MFP to promote the development of domestic capital markets and reduce the economy's dependence on foreign currency borrowing. In addition, emerging markets would be advised to take a measured approach to capital-

market liberalization, leaving some capital controls in place until an adequate supervisory and regulatory infrastructure had been established. This sequential strategy to market opening would limit exposure to external shocks and sudden changes in investor sentiment. Capital controls would be treated as a temporary and regrettable expedient, however, and not as a permanent feature of the economy.

Beyond the acceptance of capital controls as a necessary short-term palliative, Goldstein's MFP seems to bear a close resemblance to the floating-rate system many industrialized countries currently have in place. Pure floats, as Calvo and Reinhart have correctly observed, are the exception rather than the rule. Many floaters regularly intervene. The only thing that differentiates them from other, more actively managed regimes is the frequency and scope of their interventions. In the extreme, of course, the MFP becomes indistinguishable from the BBC—it is simply a question of how much emphasis the exchange rate is given. The two intermediate proposals start from opposite ends of the spectrum of exchange rate systems, but can be defined in such a way that they essentially overlap.

## **Conclusions**

For an emerging market that is integrated with global financial markets, neither of the two exchange rate extremes seems to offer an attractive alternative. While the major industrialized countries have indicated a marked preference for either strong fixes or free floats, both of these solutions pose serious problems for countries with less-developed financial markets, limited credibility, and rudimentary supervisory systems. On the other hand, traditional pegged exchange rates based on a fixed parity and narrow fluctuation bands have been shown to be inherently unstable and an open invitation to speculative attacks.

The most promising alternatives for most emerging markets would therefore seem to be the two new intermediate schemes. This is not to suggest that they are equally attractive, however. The MFP exchange rate regime would have to be viewed as the more promising because it combines the desirable features of a flexible exchange rate regime (i.e., monetary policy independence and shock-absorbing properties) with a framework designed to address the major problems that have complicated the implementation of such a regime in emerging markets (i.e., lack of a nominal anchor and vulnerability to sudden exchange rate

movements). In addition, this type of regime has already had some early success with countries such as Brazil, Chile, Mexico, and South Africa. Currency boards and dollarization are mostly useful as a last resort for countries suffering from original sin or too small to be able to have their own currency. Monetary union is a possibility for a few emerging markets, mainly the transition economies in Europe, but this set is rather small. Other options, such as the BBC exchange rate regime, might also be useful, but only

as a transition regime, and should only be adopted with a clear exit strategy in mind.

In closing, it is worth emphasizing that no exchange rate system is best for all countries or for all times, and that no regime can act as a substitute for good policies and strong institutions. Indeed, the exchange rate regime should be viewed as part of a coherent monetary order, which is itself an integral part of a sound macroeconomic framework.

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# Transparency and the Response of Interest Rates to the Publication of Macroeconomic Data

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- *It is now widely recognized that greater transparency facilitates the smooth implementation of monetary policy and increases its effectiveness.*
- *The response of interest rates to the publication of macroeconomic data depends on the degree of transparency in the conduct of monetary policy. In an efficient market, interest rates could rise or fall following the publication of macroeconomic data as a reflection of the market's revised expectations of monetary policy.*
- *To the extent that market participants are able to anticipate monetary policy decisions, announcements of changes to the target overnight rate should not normally cause pronounced fluctuations in the short-term interest rate.*
- *Since the implementation of fixed announcement dates for the target overnight interest rate, the response of interest rates to the publication of macroeconomic data and to changes to the target overnight rate are an indication of how well financial markets now understand the factors taken into account by the Bank of Canada in its conduct of monetary policy.*

Since the early 1990s, the Bank of Canada has taken various steps to increase the transparency of its monetary policy in order to help financial markets to identify the information on which the Bank bases its monetary policy decisions. Transparency should thus cause financial markets to adjust their interest rate expectations as soon as macroeconomic data are published, in advance of any action by the central bank. This article<sup>1</sup> examines this aspect of transparency in monetary policy by examining the response of interest rates to the periodic publication of macroeconomic indicators.

## Definition, Benefits, and Practice of Transparency

We define transparency as the outcome of all measures taken by the central bank to allow financial markets and economic agents in general to acquire a thorough knowledge and understanding of the factors taken into account in the formulation of monetary policy.<sup>2</sup>

It is widely recognized today that transparency in monetary policy yields many benefits. First, by announcing its inflation targets, the central bank helps economic agents to form their expectations of future inflation. Thus, the formation of inflation expectations when credible targets exist will attenuate rather than exacerbate the effect of unanticipated shocks on inflation. Second, transparency allows financial markets to better anticipate the measures that the central bank will implement, and to account for them in their operations.

1. This article is an extension of the work of Gravelle and Moessner (2002), which contains a detailed description of the assumptions used here. However, as is explained in note 9, the econometric methodology used in this article is slightly different.

2. The information and analysis for monetary policy decisions are described in Macklem (2002).

Thus, the central bank can change its target for the overnight rate without provoking too much market volatility.

During the 1990s, the Bank of Canada implemented several initiatives that were intended, among other things, to make monetary policy more transparent.<sup>3</sup> These measures included the establishment in 1991 of the inflation-control targets, the semi-annual publication, as of 1995, of the *Monetary Policy Report* and, beginning in 1996, the issuing of press releases explaining monetary policy decisions. More recently, in December 2000, the Bank of Canada instituted a schedule of fixed dates for announcing changes to the target overnight rate.

## Market Efficiency and the Impact of Transparency

To determine the degree of monetary stimulus required to achieve the inflation target midpoint of two per cent, the Bank of Canada monitors many macroeconomic indicators, including monthly release of the GDP and CPI data. When financial markets properly understand the factors that affect inflation, how the Bank evaluates them, and the steps it will likely take to deal with them, interest rates should instantly adjust to the information provided by new macroeconomic data. The theory of efficient markets predicts that the prices of financial instruments will always reflect all available information. If markets are efficient, interest rates should adjust virtually instantaneously after the release of data that modify financial markets' expectations concerning monetary policy.

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*Clearly, it is impossible to perfectly predict the decisions of the central bank, since they are not simple mechanical reactions but are taken in the context of economic uncertainty.*

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In a context of perfect transparency and symmetric information, changes to the overnight rate announced by the Bank of Canada would thus be completely anticipated by the markets, and consequently would

3. See Thiessen (2000).

not result in any changes to the yield curve. The opposite would be true if monetary policy were poorly understood or if markets did not share the Bank's evaluation of the state of the economy. Clearly, it is impossible to perfectly predict the decisions of the central bank, since they are not simple mechanical reactions but are taken in the context of economic uncertainty.<sup>4</sup> For that reason, judgment remains critical to the decision-making process. Nevertheless, even if the conduct of monetary policy continues to be characterized by some uncertainty, increased transparency should yield a closer correlation between how the Bank and markets interpret economic developments.

Before December 2000, uncertainty associated with monetary policy sprang partly from the fact that markets did not know precisely when the Bank would change the overnight rate. Understanding the role of Canadian macroeconomic data in the decision-making process shed little light on this issue, so market participants put limited effort into understanding the possible impact this data might have on monetary policy. In addition, since participants always had to position themselves in markets with an eye to a possible change in the overnight rate, trading slowed to a snail's pace on mornings when the announcement of a change to the overnight rate was expected. This uncertainty sometimes lasted for several consecutive days. The new system was meant to allow financial markets to better anticipate changes to the interest rate and to encourage them to pay closer attention to the economic and monetary environment in Canada.<sup>5</sup> One of our specific purposes here is to determine whether these goals have been met.

## Modelling Factors That Affect Interest Rates

For the purposes of our analysis, we used a model that allowed us to measure the impact that the "surprise" component of published macroeconomic data and changes to the overnight rate have on short-term rates. This model is based on simple linear regressions and is written as follows:

$$\Delta y_t = \alpha + \sum_{i=1}^n \beta_i (x_{i,t} - x_{i,t}^e) + \eta \Delta r_t + \sum_{i=1}^m \lambda \Delta y_{t-i} + \varepsilon_t,$$

4. See Jenkins and Longworth (2002).

5. See Dodge (2002).



where the dependent variable,  $\Delta y_t$  represents the daily change in the interest rate for a given term,<sup>6</sup>  $\alpha$  is a constant,  $x_{i,t}$  reflects the value of macroeconomic indicator  $i$  published on day  $t$ ,  $n$  is the number of macroeconomic indicators,  $x_{i,t}^e$  captures market expectations for this indicator,<sup>7</sup>  $\Delta r$  is the change in the target for the overnight rate, and  $\Delta y_{t-i}$  is the lagged value of the dependent variable.

Financial markets' expectations are given by the median of the responses from Standard & Poor's MMS survey conducted before each release of data. On days when no announcements are made,  $x_{i,t} - x_{i,t}^e$  is equal to zero. The coefficients of each regression are estimated using ordinary least squares.<sup>8</sup> Including the change in the overnight rate allowed us to verify whether changes to this rate were anticipated by the markets. The closing rates on futures contracts for three-month bankers' acceptances (BAX contracts), as well as yields on two-year benchmark bonds issued by the Government of Canada, were our dependent variables. We used BAX futures rather than another money market instrument because they tend to react more rapidly than other financial instruments to macroeconomic announcements. Harvey (1996) explains that, "The higher degree of flexibility provided by the BAX market may encourage participants to deal in the BAX market before dealing in the spot market when new information is available."

We used both Canadian and U.S. economic indicators in our study. Since Canada is an open economy closely linked to the economy of the United States, we expected the U.S. data to affect the Canadian yield curve. We therefore used 10 explanatory variables from the U.S. economy in addition to Canadian macroeconomic data. The Canadian indicators are the consumer price index (CPI); the CPI excluding food,

energy, and the effects of changes in indirect taxes; the producer price index; wage settlements; employment; the unemployment rate; retail sales; the merchandise trade balance; GDP; and the current account. The U.S. macroeconomic indicators are non-farm payrolls, the unemployment rate, the CPI, the producer price index, housing starts, retail sales, the index produced by the National Association of Purchasing Management (NAPM, recently renamed ISM), industrial production, trade in goods and services, and the GDP.

## Empirical Evidence

To evaluate the Bank's success in achieving greater transparency, we estimated the model for two periods. The first ran from February 1996, when the Bank began to issue press releases explaining the reasons underlying each monetary policy decision, until November 2000, i.e., immediately before the establishment of the system of fixed announcement dates. The second period began in December 2000 and ended in September 2002. We used this second period to determine whether the new system appears to have focused the attention of market participants more on the Canadian economy. Clearly, care must be taken in evaluating the results of this process, since the second sample is very short.

One striking result from the analysis of the first period is the significant impact that changes to the overnight rate had on interest rates (see Table 1). This result is consistent with our expectations, since the higher levels of uncertainty that existed before the implementation of the fixed announcement dates made predicting monetary policy much harder. The opposite result

Table 1  
The Response of Interest Rates to Changes in the Overnight Rate

	BAX contracts	Two-year interest rates
Coefficient of the variation in the overnight rate (from February 1996 to November 2000)	0.450	0.161
(p-value)	(0.001)	(0.011)
Coefficient of the variation in the overnight rate (from December 2000 to September 2002)	0.082	0.022
(p-value)	(0.298)	(0.764)

Note: When the p-value is less than 0.01, the coefficient of the variable is significantly different than 0 at the 1 per cent level.

6. Ideally, one would measure interest rate variations occurring within minutes of the publication of data. Indeed, Ederington and Lee (1993) and Fleming and Remolona (1999) show that price reactions to an anticipated publication of economic data are exhausted after one or two minutes. In many empirical studies, however, the researcher does not have access to high-frequency data—for example, minute-by-minute observations. Consequently, the interest rate variations we used in this study reflect changes in the closing rate observed between two consecutive working days.

7. According to the theory of efficient financial markets, interest rates should react exclusively to the unanticipated element of announcements. If announcements perfectly reflect the participants' expectations, then interest rates do not react to this information.

8. A covariance matrix adjusted by the Newey-West method yields unbiased estimates in the case of heteroscedasticity and serial correlation of the residuals (Newey and West 1987).

was evident when the same estimation was performed on data from the period following the establishment of the new system, suggesting that the system of fixed announcement dates improved market participants' ability to predict monetary policy measures.

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*With regard to the importance assigned to macroeconomic data, results from the first period indicate that Canadian interest rates did not measurably react to the publication of Canadian data.*

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With regard to the importance assigned to macroeconomic data, results from the first period indicate that Canadian interest rates did not measurably react to the publication of Canadian data. Aside from employment data, which significantly affected the two-year rate at the 5 per cent level, no release of Canadian macroeconomic data affected interest rates before the implementation of fixed announcement dates.<sup>9</sup> Moreover, our results reveal that, taken together, the Canadian data did not have a significant impact on interest rates (see Table 2). During the period preceding the adoption of the fixed announcement dates, U.S. indicators significantly explained the changes in Canadian interest rates. In fact, several coefficients of U.S. indicators are significant and have the expected sign. Four U.S. indicators had an impact on both the two-year interest rates and the BAX futures: industrial production, the ISM index, non-farm payrolls, and retail sales. Comments from market participants and analysts confirm that these four variables are indeed likely to affect markets.<sup>10</sup>

Given the size of the U.S. market and the level of openness of the Canadian economy, we would expect Canadian interest rates to be affected by the economic

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9. At the 1 per cent level, no coefficient associated with Canadian announcements is significantly different than zero. Gravelle and Moessner (2002) obtain the same result. Their model is similar, except that they do not include lagged values for the dependent variable.

10. U.S. GDP also counts among the variables with a significant impact on the BAX, but it does not have the expected positive sign.

Table 2

### Tests for Exclusion of Canadian Data

	BAX contracts	Two-year interest rates
<i>p</i> -value associated with a Wald test (sample February 1996 to November 2000)	0.238	0.370
<i>p</i> -value associated with a Wald test (sample December 2000 to September 2002)	0.000	0.000

Note: When the *p*-value is less than 0.01, the assumption that Canadian data have no significant impact at the 1 per cent level is rejected.

developments observed in the United States. However, Canadian data should also have an impact on short-term interest rates, since the Bank's monetary policy is clearly targeting, first and foremost, the Canadian economy. The fact that, taken together, Canadian data were not significant prior to the implementation of the new system raises important questions.

According to Gravelle and Moessner (2002), the results showing that Canadian interest rates principally reacted to American data before the adoption of the fixed announcement dates can be explained by the considerable convergence in the business cycles of the two countries, which gives rise to substantial correlation in their monetary policies. During the first of the sample periods, one-quarter of the decisions taken by the Bank of Canada to raise or lower the overnight rate were made the day following a meeting of the FOMC (Open Market Committee of the Federal Reserve). Moreover, these changes were in the same direction, and of the same magnitude, as those of the Federal Reserve. Given the impossibility of predicting exactly when the overnight rate would be changed by referring only to data published in Canada, Canadian financial markets focused on developments within the U.S. business cycle. Comments gathered from Canadian market participants further confirm that they believed that the U.S. business cycle was a good indicator of Canadian monetary policy.

The results obtained from the period following the adoption of the fixed announcement dates reveal a radical change. First, it appears that Canadian macroeconomic data now play a greater role in short-term interest rate fluctuations in Canada. In particular, retail sales and the unemployment rate affect both the two-year rates and the BAX rate. Moreover, the producer price index and the GDP also affect BAX futures, and all the coefficients associated with these variables

have the expected sign.<sup>11</sup> In addition, the number of U.S. indicators having a significant impact on the interest rate has declined, though some U.S. data retain their importance. This result confirms the assumption that market participants assigned far too much weight to announcements made in the United States when Canadian data did not allow for precise forecasts of the timing of interest rate changes in Canada.<sup>12</sup> Note that U.S. data, taken together, remain significant at the 1 per cent level after the establishment of the new system.

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*This result confirms the assumption that market participants assigned far too much weight to announcements made in the United States when Canadian data did not allow for precise forecasts of the timing of interest rate changes in Canada.*

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We have already established that, since the institution of the fixed announcement dates, changes to the overnight rate have not had a significant impact on the short-term interest rates, since financial markets are generally able to anticipate these changes. However, we know that on some occasions under the new system the Bank did surprise financial markets. To measure the impact of these surprises, we replaced the variable for changes to the target overnight rate in the preceding model with the unexpected portion of the changes.<sup>13</sup> Our results indicate that these surprises

11. The coefficient of the current account is also significant when the two-year interest rate is the dependent variable, but it does not have the expected positive sign. When the current account is excluded from our equation, the Canadian data, taken together, remain significant, and our results are unaltered.

12. In order to test different specifications, we re-estimated all the equations omitting the lagged dependent variables, as in Gravelle and Moessner (2002). Overall, our results were unaffected.

13. To measure surprises, we needed to determine the markets' expectations, which we did with a model based on money market instruments and our estimate of a term premium. For the entire period following the adoption of the fixed announcement dates, the mean surprise associated with changes to the Bank's target rates was a little less than 10 basis points. On 3 of a total of 15 announcement dates, the Bank strongly surprised markets, the announced decision being at least 25 basis points greater or less than what was expected by the markets.

Table 3

**The Response of Interest Rates to Surprise Changes in the Overnight Rate**

Post-fixed announcement dates

	BAX contracts	Two-year interest rates
Coefficient associated with the surprise (p-value)	0.699 (0.000)	-0.036 (0.881)

did not have the same impact on the BAX rate as on the rate for the two-year benchmark bonds (see Table 3). In fact, they seem to have had a significant effect on the BAX futures, while having none at all on the two-year rates. This may be explained by the fact that BAX contracts are shorter-term instruments and more likely to react to a surprise because their rates are tightly linked to the overnight rate. On the other hand, two-year interest rates more closely reflect the overall direction of monetary policy. That these rates do not significantly react to a surprise occurring on a predetermined date suggests that financial markets did not adjust their expectations regarding the direction of monetary policy in the medium term. Financial markets are thus able to accurately anticipate general trends in interest rates, even if they are sometimes surprised on a given date by a specific announcement.

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*Financial markets are thus able to accurately anticipate general trends in interest rates, even if they are sometimes surprised on a given date by a specific announcement.*

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While there is some indication that market participants now pay more attention to the economic and monetary environment in Canada, it is difficult to determine whether this change is exclusively attributable to the system of fixed announcement dates or whether other factors also play a role. We may, in particular, be inclined to believe that, if a shock affected the Canadian and U.S. economies differently—for example, the recent bursting of the speculative bubble

in the hi-tech sector—the monetary authorities of the two countries would need to take different steps. According to market participants, it would thus become necessary to attribute greater importance to developments in the Canadian economy. In any event, considering that the system of fixed announcement dates has only been in place for a relatively short time, the estimations of these models should be repeated in the future to determine whether they bear out the current conclusions.

## Conclusions

Our research indicates that, first, changes made to the overnight rate before the establishment of the system

of fixed announcement dates created some volatility in interest rates; and, second, the publication of Canadian macroeconomic data appears not to have had a major impact on interest rates. Under the new system, the impact of the publication of Canadian macroeconomic data on short-term interest rates has increased. This observation suggests that financial markets now have a greater understanding of the elements that contribute to the conduct of monetary policy, and that the Bank of Canada's efforts to increase transparency have yielded the desired results.

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# Conference Summary: Financial Market Structure and Dynamics

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by Charles Gaa and Peter Thurlow, Financial Markets Department

*The Bank of Canada conference on "Financial Market Structure and Dynamics," held 29 and 30 November 2001, brought together academics, market participants, and policy-makers to examine the contributions that recent research in financial markets, and particularly market microstructure research, can make to central banking. This article summarizes the papers presented at the conference and points the way for future directions.*

The topic of this conference was selected to highlight some of the current research on financial markets.<sup>1</sup> Most of the papers presented could be considered to fall within the literature on "market microstructure," a relatively new branch of financial economics that seeks to explain how latent supply and demand for financial assets are transformed into transactions, and how this process drives asset-price dynamics. Market microstructure research investigates the institutional structure of financial markets, including patterns of distributing information and the incentives structure they create for market participants. Understanding these patterns and structures, in turn, helps to explain the behaviour of the participants, the markets, and the resulting asset-price discovery process. The study of market microstructure can make important contributions to central banking, which suggests that it should be a core area of central bank research.

When implementing monetary policy, central banks should be aware of the market's expectations of upcoming policy developments. Consequently, the first way in which market microstructure research can support central banks is by creating a deeper understanding of how markets operate and how they react to and encapsulate economic news and shocks.

Central banks have long considered issues related to the stability of the elements that make up their financial system (financial markets, financial institutions, and clearing and settlement systems). Recently, a

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1. Titles and summaries of the papers presented at the conference are published in the volume of conference proceedings. See the list of Bank of Canada publications on p. 53 of this issue of the *Review*.

number of central banks have taken a more integrated and focused interest in financial stability.<sup>2</sup> This interest is based on several factors: the importance of the financial system in a modern economy, the recognition of the high degree of interrelatedness among its components, and the role of central banks in supporting a well-functioning financial system (for example, through short-term lending to solvent financial institutions with temporary liquidity problems). Given the growing importance of financial markets, a deep understanding of how these markets operate, particularly in times of stress, is of fundamental importance to financial stability.

Central banks engage in certain financial market operations for many reasons: to implement monetary policy, to reinforce financial stability, or to conduct other business. These operations could benefit from a more structured analysis of the relevant markets. For example, many central banks manage foreign exchange (FX) reserves and intervene in the FX market. While it is known that FX intervention generally seems to have had little effect, market microstructure research has yielded suggestions that could increase its effectiveness. In addition, central banks operating as their government's fiscal agent have an active interest in improving both the functioning and the liquidity of government securities markets. As well, with falling levels of government debt, many central banks are contemplating holding alternative asset classes, which has implications for the degree of liquidity and credit risk that they bear. These activities could benefit from the insights that market microstructure research could yield on the determinants and dynamics of market liquidity.

The market microstructure research program at the Bank of Canada has developed, in part, in recognition of how this line of research could make a contribution to financial market structures and stability. In addition, it is a response to the rapid rate of change in financial markets caused by technological innovations and regulatory reform. It is important for the Bank of Canada to have a profound grasp of the requirements for well-functioning financial markets as market structures evolve.

While the goal of the conference was to examine issues related to market structure and the dynamics of

markets, the panellists noted that at least two leitmotifs were at play throughout. John Chant pointed out that at the heart of all of the papers and discussions was the role of *information* in the market. Thus, market structure influences how information is incorporated into prices, during normal and stressful times; market design is influenced by informational issues; and technological change has altered the ways of processing information and the institutional evolution of the market. More specifically on the same theme, many of Richard Lyons' comments focused on order-flow information. He pointed out the property-rights issues associated with order-flow information and the value of order-flow data in driving business decisions. He asked how transparent markets should be with respect to order-flow information and suggested a number of significant research questions regarding the role of this information in asset-price dynamics. Dino Kos explored the theme of liquidity, particularly why central banks should care about it, the challenges it presents at this time, and what, if anything, central banks could do to enhance it.

The following discussion of the papers presented at the conference is organized around two broad themes: financial market structure and asset-price dynamics, followed by the key lessons drawn from each session. We conclude with several important questions that arose out of the discussions.

## Financial Market Structure

The structural characteristics of a market affect its efficiency, stability, and capacity to function well in the event of increased stress. Markets that are liquid, efficient, and that feature good price discovery (in short, markets that exhibit "good operating characteristics") will be relatively resilient and robust in the face of shocks. Financial stability can be enhanced through policies that promote appropriate (or, at least, not inappropriate) market structures.

One aspect of market structure that is considered important for liquidity is the extent to which markets are centralized. Network economics tells us that a market that brings together the maximum number of potential counterparties will be the most liquid. Fragmentation occurs when a large, liquid market is broken up into smaller pieces (through competition, for instance). On the other hand, in relatively decentralized markets such as most fixed-income markets, network economics may not be the primary factor determining liquidity, and sweeping regulatory

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2. Here we define financial stability as a situation in which there is no meaningful risk that financial system failure would result in significant macroeconomic costs.

measures to limit market fragmentation may be inappropriate.

The flow of information in markets is another structural characteristic thought to have important implications for liquidity. A high level of transparency is often considered a key component in achieving fair, efficient, and liquid markets. Transparency seems to play a different role in different markets, however, and certain types of transparency in markets that are characterized by infrequent and “lumpy” order flow may actually introduce perverse, trade-limiting incentives for participants.

### “Optimal” market structure

The wide variety of market structures confronts policy-makers with a significant challenge as they try to determine which structures may be optimal from a societal perspective. In particular, regulation that is uniform across markets, which implicitly assumes that differences in market structure are evidence of market failure, can be problematic.

**Toni Gravelle** compares and contrasts market structures and practices in multiple-dealer equity markets with those in government securities markets and demonstrates that there are subtle and important differences between the two (at first glance, quite similar) types of dealership markets. Intrinsic differences in the two types of securities, the nature of the investors, the degree of centralization, and transparency regimes are highlighted. The author suggests that these structural differences are likely to significantly affect the activities of market-makers and therefore the amount of liquidity that they provide.

**Nicolas Audet, Toni Gravelle, and Jing Yang** approach the question of optimal market structure by developing a model in which customers choose to trade in either a dealership or a limit-order-book market. Their findings suggest that a dealership market will be preferred by investors who operate in an environment where customer trading is relatively thin and “lumpy,” or who are subject to relatively large liquidity shocks. This is consistent with the observation that markets dominated by a relatively small number of institutional investors tend to be organized as dealership markets.

*Market structures develop to meet the (often idiosyncratic) needs of market participants. This suggests that there is no one structural form that is optimal for every market or for every participant in a given market.*

### The impact of changes in market structure on market quality

Market structure, which describes the behaviours of participants and the trading architectures or protocols in a market, has an important effect on the quality of markets. Given the observation that different structures may be appropriate for different markets in a static setting, the following papers investigate the impact of a change in structure. The first paper studies an actual change with respect to transparency requirements, and the second examines the potential effect of consolidation.

**Ananth Madhavan, David Porter, and Daniel Weaver** investigate the effect on market liquidity of an increase in pre-trade transparency on the Toronto Stock Exchange that occurred in April 1990. Contrary to the assumption that higher transparency would lead to higher-quality markets, the authors find evidence that market liquidity suffered as a result of the change.

**Chris D’Souza and Alexandra Lai** examine another potential source of change to market structure: consolidation among market-makers. The authors demonstrate that if the merged entity has a greater risk-bearing capacity than the original pre-merger entities (through a greater degree of diversification among its business lines), consolidation may lead to a net increase in the amount of risk capital allocated to market-making activities, improving market liquidity and investor welfare.

*The potential effects on market quality of a change in market structure may be counterintuitive. Such questions require careful analysis.*

### Technology and the evolution of market structure

Far from being static, market structure is in a constant state of flux. For example, improvements in information technology, particularly the advent of electronic trading, are having a dramatic impact on market structure. It is important to understand these changes and their implications for market quality.

**Ian Domowitz** examines the relationship between trading costs, technology, and the role of intermediaries in financial markets. He shows that the pursuit of lower trading costs has led to the introduction of new, automated trading mechanisms and venues, resulting in potential disintermediation for some intermediaries

(traditional retail brokers and stock exchanges, for instance). The move towards limit-order-book markets is discussed. The paper suggests, however, that this new landscape brings with it a fresh set of challenges, such as liquidity management for participants, which create opportunities for disintermediated entities to reinvent or “reintermediate” themselves.

**Allison Holland** describes the phenomenon of electronic trading in the U.K. debt markets. She outlines the Debt Management Office’s (DMO) policy response to the challenges raised. The DMO’s decision to introduce a central, committed interdealer market, while leaving the customer market and the overall level of transparency in the gilt market essentially unchanged, was taken on the basis of an assessment of the fundamental differences between the various market segments.

*Technological innovation is fundamentally changing financial markets and the roles of participants, raising potential issues regarding competition, fragmentation, and transparency. If a policy response is considered necessary, it must also address the differential impact that these forces will have on various markets and market segments.*

## Asset-Price Dynamics

Policy-makers are interested in discovering how and why financial market crises originate and propagate across markets. An understanding of how market participants interact with each other, and the incentives that they face, will illuminate these issues. In this context, market-price dynamics are perceived as the sum total of the multitude of path-dependent trading decisions made by individual market participants during every minute of the trading day. Seemingly inconsequential details of how markets are structured and how participants interact may therefore have important implications for the behaviour of market prices. High-frequency, even tick-by-tick, trading data are often necessary to test market microstructure hypotheses. With the advent of electronic trading, this level of detailed data is becoming increasingly available.

### Understanding dynamics in light of market microstructure

**Martin Evans** and **Richard Lyons** estimate the price impact of wholesale trades in foreign exchange markets, and they find strong evidence of temporary and (economically significant) persistent price effects from portfolio rebalancing. They also find that these effects are greater when the flow of macroeconomic news is

strong. With respect to intervention in currency markets, these findings imply that intervention trades will have a significant price impact if they are sterilized, secret, and provide no policy signal, and will have the strongest impact when markets are reacting to macroeconomic news. Within this specialized model, the paper presents a methodology for estimating the impact of such action.

### Price dynamics in markets under stress

Focusing on the interdealer U.S. Treasury market during the Long-Term Capital Management crisis in the autumn of 1998, **Craig Furfine** and **Eli Remolona** examine how differently price discovery operates in a market under stress. They find that trade flows have an increased impact on prices during periods of heightened trading activity and when market depth is asymmetric. Their findings also suggest that trading has a greater price impact during the crisis, even after controlling for the effects of heightened activity and asymmetric depth.

**Toni Gravelle**, **Maral Kichian**, and **James Morley** develop a model-based technique for identifying periods of high and low variance by the study of “shift contagion,” where correlations between market prices systematically increase during crisis periods. Their methodology has the added advantage that the source of a crisis need not be known. The authors find evidence of shift contagion in the currency markets of developed countries, but not in the bond markets of emerging-market economies.

*Markets may behave in a significantly different way when under stress than they do during normal times. Research and policy must take account of the “state-dependent” nature of price dynamics and market behaviour.*

## Some Continuing Questions

While the research presented led to a number of conclusions, the discussions stimulated several important questions that point to possible directions for future research.

- Are there public-good aspects to market liquidity? If so, what are the implications?
- While markets generally evolve towards good and workable structures, can the existence of multiple equilibria impede the development of first-best solutions? How can first-best solutions be identified? Can policy-makers move markets to first-best optima? Should they?



- What drives market stress? Are there different types of stress, and if so, how are they characterized? Can and should central banks act to alleviate stress? If so, when and how?
- Where are technological developments taking financial markets? Will they make financial markets more efficient? More stable? More resilient? If so, to what degree? Are there costs? And if so, what are they? How far will consolidation go? What are the implications?



# Speeches

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## Introduction

In a speech given to the Calgary Chamber of Commerce in November 2002, which is featured in this issue of the *Review*, the Governor explained how the central bank promotes Canada's economic and financial welfare. He announced the impending publication of the new *Financial System Review* and said that further removal of monetary stimulus will be necessary before the economy reaches its level of full capacity during the second half of 2003.

The full text of other speeches given by the Governor can be found on the Bank's Web site at: <<http://www.bankofcanada.ca>> and include:

12 November	Remarks by David Dodge, Governor of the Bank of Canada, during a panel discussion at the Banco de México Mexico City, Mexico
17 October	Remarks to the Chambre de Commerce de Québec, Québec, Quebec
31 August	Remarks to a symposium sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming
24 July	Opening Statement for the release of the <i>Monetary Policy Report Update</i>
24 May	Convocation address to the graduating class of the Faculty of Engineering, Queen's University
9 May	Remarks at a luncheon at the Canadian Consul General's residence, Chicago Illinois
30 April	Opening Statement before the Senate Committee on Banking, Trade, and Commerce
26 April	The Donald Gow Lecture to the School of Policy Studies, Queen's University
24 April	Opening Statement for the release of the <i>Monetary Policy Report</i>
12 March	Presented to <i>la Chambre de Commerce France-Canada</i> and <i>Les Canadiens en Europe</i> . The Governor's first major speech outside North America, in which he reviewed some of the crucial choices that Canada has made in establishing its monetary policy framework.



# Promoting Canada's Economic and Financial Welfare

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*Remarks by David Dodge  
Governor of the Bank of Canada  
to the Calgary Chamber of Commerce  
Calgary, Alberta  
18 November 2002*

**G**ood afternoon, and thank you for inviting me here today. It's been a difficult year for many sectors of the Alberta economy. Certainly, the severe drought hurt many western farmers, and investment in the energy sector was held back by low oil and gas prices. In addition, the slump in the telecom sector has affected Calgary. This said, we believe that the outlook is positive for the province's economy, and I would be very interested to hear your views about this in our discussion later.

In a few minutes, I will spend some time talking about the Canadian economy and its prospects. But first, I want to discuss something that has preoccupied business leaders and public officials for most of this year—the need to restore trust in financial markets, in corporations that raise funds in these markets, and in the financial professionals who monitor them.

## **Restoring Confidence in Financial Markets**

Let me tell you why the Bank of Canada is concerned about these issues. The Bank is not a regulator of financial institutions or markets. But we do have a responsibility to promote financial stability and to oversee systemically important clearing and settlement systems. And we are the fiscal agent of the

government, so we are actively involved in the functioning of fixed-income markets. Therefore, we have a keen interest in the efficiency with which financial markets operate.

Confidence is key to the efficient operation of financial markets. In the United States, that confidence has been shaken by Enron, WorldCom, and other corporate and accounting scandals. Despite the fact that problems of that magnitude have not emerged in Canada, confidence in Canadian markets, and markets worldwide, has been affected by events in the United States. That is why we are watching closely the current efforts to restore confidence and trust in corporate reporting and in financial markets more generally. It seems that there have not been exactly the right incentives in place for corporate management, boards, and their auditors and investment bankers to disclose all relevant information and to always act in a manner that is fully conducive to fair and open markets.

The market itself will provide some of the solutions to the problems currently undermining investor confidence. But others may best be dealt with by regulation.

The market does impose its own discipline. It rewards firms that successfully maintain investor confidence, and punishes those that have abused investor trust or are not sufficiently transparent. I have been impressed by how seriously the private sector has responded to the challenges raised by the events of this year. Accounting bodies and regulatory agencies are also seeking ways to improve practices and restore confidence. They are re-examining the role and the responsibilities of external auditors to boards and shareholders—and how these can differ from other duties that auditors are sometimes asked to carry out by management. And they are asking if shareholders and

boards have the tools and the power to hold management accountable.

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*It's important that we continue to work on these issues and, moreover, that we are seen to be working on them.*

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It's important that we continue to work on these issues and, moreover, that we are seen to be working on them. We live in a world where impressions matter and where capital markets are increasingly global. Canadian issuers will be judged not only against our own standards, but also against the worldwide standards for accounting, disclosure, and governance.

At the same time, we must be careful not to impose an overly onerous burden of processes and paper on businesses, particularly on smaller firms, given their importance to the Canadian economy. Let me be clear: the same principles must apply to all public companies. While all businesses must abide by the spirit of the new standards, it may well be appropriate that larger, more widely held firms should face more detailed requirements than smaller firms whose shares are not as widely held.

The challenge of developing an appropriate Canadian formula is made more difficult because we do not have a single lead securities regulator, as do the United States, the United Kingdom, and Australia. I'm not here to argue whether or not Canada should have a single lead regulator. The point is we need to improve our current system, and we need to do it now. If we don't, we risk damaging our reputation in world capital markets.

In sum, the best way to restore investor confidence is to put in place a system of incentives that encourages managers and boards to always act in the best interests of shareholders. Disclosure is key. In every case, shareholders are best protected with full, fair, and accurate disclosure of information. To quote a recent C.D. Howe report, "if reforms cannot help investors distinguish good and bad investment prospects, there is no avenue for improving confidence."

This brings me to an important issue for the Bank. We have a shared responsibility to promote a sound finan-

cial system—together with the Department of Finance, the Office of the Superintendent of Financial Institutions, the Canada Deposit Insurance Corporation, as well as provincial and other regulatory bodies. For years, the Bank has been conducting analysis and research related to the Canadian financial system, much of which has been published in the *Bank of Canada Review*, and in technical reports and working papers. We are now prepared to take a further step in the interest of making the information about our financial system more widely available. I am pleased to announce that the Bank of Canada will introduce a new semi-annual publication, the *Financial System Review (FSR)*. We are planning for the first issue to be available late next month. In it, we will publish some of the Bank's ongoing work in monitoring financial system developments and analyzing the direction of financial sector policy. The *FSR* aims to promote knowledge of, and discussion about, changes and developments in the Canadian financial system. I would point out that we are not the only central bank to publish such a document. For example, the Bank of England, the Swedish Riksbank, and the International Monetary Fund also produce similar reports.

## **Promoting Economic Welfare through Inflation Control**

While we work to promote financial stability in conjunction with other agencies, we alone are responsible for monetary policy. The foundation for that policy is the inflation-targeting system. How this system works may be familiar ground for some of you, but it is worth discussing again, especially during these uncertain economic times.

The Bank of Canada Act calls on us "to promote the economic and financial welfare of Canada." We want strong and sustainable economic and employment growth. The best way we can help to achieve that is to promote confidence among Canadians in the future purchasing power of their currency. In other words, we want Canadians to be confident that inflation will remain low, stable, and predictable.

For over a decade, following a joint agreement with the federal government, the Bank has operated with a system of inflation-control targets. Under the current terms of the agreement, the Bank aims to keep the trend of consumer price inflation at the 2 per cent midpoint of a 1 to 3 per cent range.

Since we instituted the agreement, inflation expectations have become firmly anchored on our 2 per cent

target. Well-anchored expectations promote economic growth and stability. Why? Investors can better assess the future value of their investments. Savers can be more confident that their future purchasing power will not be unexpectedly eroded by inflation. Debtors can better assess the real burden of their interest payments. Wage and financial contracts can be set for longer terms. All of this is possible because people are confident that inflation will stay around 2 per cent over the medium term.

## Inflation and the “Output Gap”

Our inflation-targeting system also helps to smooth the peaks and valleys of the business cycle and to avoid the boom-and-bust pattern seen in earlier decades. We do this by acting in a symmetrical manner; that is, we pay equal attention to any significant movement in inflation away from the 2 per cent target, whether above or below.

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*The crucial task in controlling inflation is to judge how the economy is performing relative to its economic potential.*

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The crucial task in controlling inflation is to judge how the economy is performing relative to its economic potential. Economic potential is a very important concept, so I want to take a minute to describe it. Potential output, or production capacity, is the amount of goods and services that can be produced without putting pressure—in either direction—on inflation. When the economy is producing less than its potential, economists say there is an output gap. That gap tends to put downward pressure on inflation, so the Bank will ease monetary policy to stimulate growth. We do this by lowering our target for the overnight interest rate. When the economy is operating above its potential, excess demand builds. This puts upward pressure on inflation, and the Bank will tighten monetary policy to try to cool the economy, bring it back down to its level of production potential, and return inflation to the target.

Keep in mind that changes in our policy rate work their way through the economy slowly. It takes up to

two years for a change in interest rates to have its full impact on demand, output, and ultimately, on prices and inflation. So we have to be forward-looking in our interest rate decisions. At our fixed announcement dates, we are not trying to affect today's inflation. What we are aiming at is future inflation and acting pre-emptively to achieve a balance in supply and demand going forward.

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*We have to be forward-looking in our interest rate decisions. At our fixed announcement dates, we are not trying to affect today's inflation. What we are aiming at is future inflation.*

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This may sound easy in theory, but the reality is complicated. For one thing, it is impossible to measure the economy's potential with precision. All economists can do is to make their best estimate—a highly educated estimate, I might add, but an estimate nonetheless—of the level of economic activity that represents full capacity. And since one cannot measure potential with precision, it is impossible to measure the exact size of the output gap or the amount of excess demand.

So the Bank looks at a wide variety of indicators to assess how much pressure there is on capacity. We monitor Statistics Canada reports on how closely factories are operating relative to their capacity. We survey businesses across the country to see where firms are feeling production constraints. We look at data from the labour market, as well as figures on input costs and wages. We look at real estate market indicators. And, of course, we pay careful attention to financial market developments.

We also measure inflation and inflation expectations. One key indicator is core inflation, which strips out the eight most volatile components of the consumer price index, along with the effects of changes in indirect taxes on the remaining components. We have found that this measure gives a good indication of the trend of future inflation. Indeed, it has done a better job of predicting the path of total inflation than the CPI itself. All of this gives us a comprehensive view of

how the economy is operating relative to its capacity, now and in the future. And I should point out that on the Bank's Web site, you can now find the latest data on the indicators that we look at when we assess capacity pressures.

## Canada's Current Growth Prospects

Let me now turn to our economic outlook, and tell you how our views have evolved over the year. In last April's *Monetary Policy Report*, we projected that economic growth would be in a range of 3 to 4 per cent, at annual rates, from the second half of this year to the end of next year. Excess capacity in the economy was expected to be eliminated in the second half of 2003. And we noted that since we had taken our policy interest rates down to historically low levels in 2001, we would have to raise interest rates in a timely and measured way. So we began to tighten monetary policy, raising our target for the overnight rate three times between April and July, by a total of three-quarters of a percentage point.

By late summer, however, uncertainties stemming from beyond our borders were beginning to mount. We noted that slower growth in demand in the United States was likely to hurt our exports in the short run. We also noted that global financial headwinds could affect spending by Canadian businesses and households. Finally, we said that concerns about corporate governance and the unsettled geopolitical situation could cause some firms and households to delay their spending.

By October, the cumulative impact of slower global growth and the financial headwinds led us to reduce our near-term growth projection for Canada. In our latest *Monetary Policy Report*, we say that we expect growth to average slightly less than 3 per cent, at annual rates, through to the middle of 2003. But assuming that the financial headwinds and geopolitical concerns dissipate in the second half of next year, we should see a strengthening of domestic and foreign demand and the resumption of above-potential growth in Canada.

It is interesting to note that our current view on the level of economic activity in Canada by the middle of next year is not far from where it was back in April, although the quarterly growth profile has changed. We still project that the small amount of excess supply remaining in the economy should be taken up as output growth moves above potential growth in the second half of 2003.

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*Our current view on the level of economic activity in Canada by the middle of next year is not far from where it was back in April, although the quarterly growth profile has changed.*

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Finally, let me say a few words on inflation. In our October *Monetary Policy Report*, we noted that core inflation over the next few months would likely be higher than had been previously anticipated. We cited some specific, one-off movements in relative prices, including insurance premiums and the effects of changes in the structure of Ontario's electricity market. We also said that core inflation would likely move still higher in the fourth quarter of this year, because of the "echo effect" of the price discounting that took place in 2001 following the 11 September terrorist attacks. But we said that core inflation should return to 2 per cent in the second half of next year. We are still of that view. However, because of the change in electricity pricing in Ontario, the monthly pattern of price movements will likely be different than earlier expected.

In October, we had indicated that higher crude oil prices could continue to push total CPI significantly above the target range at the end of this year. But crude oil prices have moderated in recent weeks. Should this moderation continue, total CPI will likely peak at a lower level than we thought in October.

We also continue to expect that the total CPI will converge with the core rate, around 2 per cent, in the second half of next year. However, we will continue to watch this closely, to make sure that the one-off influences I mentioned earlier do not feed into prices more generally.

To conclude, let me repeat what we said in our last *Monetary Policy Report*. As we go forward, we will need to remove some of the monetary stimulus now in place before the economy reaches its level of full potential. The pace of this action will continue to depend on the balance of domestic and external developments and on their implications for pressures on capacity and inflation in Canada.



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# Summary Tables

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# 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 <sup>*</sup>	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)	
1999	J	1-3	0.6	0.9	4.75	5.25	4.99	-7.35	5.01	79.89	8.0	1.8	5.4	1.13	1.0	1.1	0.1	3.1	1.8
	F	1-3	0.7	0.9	4.75	5.25	5.00	-6.62	5.04	81.59	8.0	2.5	5.4	1.30	0.9	1.1	0.6	2.3	1.9
	M	1-3	1.0	1.1	4.50	5.00	4.99	-7.07	4.85	80.96	8.3	2.8	6.0	1.20	1.2	1.3	0.9	4.8	2.4
	A	1-3	1.7	1.3	4.50	5.00	4.78	-6.34	4.80	82.88	7.6	3.4	5.3	1.32	1.4	1.6	0.9	3.2	2.5
	M	1-3	1.6	1.4	4.25	4.75	4.59	-6.25	4.71	83.32	7.5	4.0	5.4	1.50	1.4	1.5	0.9	2.2	2.4
	J	1-3	1.6	1.5	4.25	4.75	4.60	-6.07	4.86	83.41	7.7	4.3	5.3	1.60	1.7	1.5	-0.1	1.7	2.3
	J	1-3	1.8	1.6	4.25	4.75	4.61	-7.04	4.91	80.88	6.8	4.5	5.0	1.72	1.6	1.6	0.1	2.3	3.0
	A	1-3	2.1	1.6	4.25	4.75	4.62	-6.78	4.87	81.61	7.6	5.0	5.4	1.65	1.6	1.6	0.6	1.8	3.3
	S	1-3	2.6	1.9	4.25	4.75	4.58	-6.22	4.83	83.08	5.6	5.0	5.3	1.86	1.9	1.9	0.7	2.3	2.8
	O	1-3	2.3	1.6	4.25	4.75	4.61	-6.20	5.05	82.61	6.2	5.5	5.1	2.31	1.6	1.7	0.3	0.6	2.8
	N	1-3	2.2	1.4	4.50	5.00	4.77	-6.05	5.05	82.98	8.2	5.9	4.9	2.06	1.5	1.7	-0.1	-	2.9
	D	1-3	2.6	1.4	4.50	5.00	4.76	-5.46	5.27	83.90	9.8	6.8	5.5	2.22	1.6	1.7	1.1	1.3	3.2
2000	J	1-3	2.3	1.2	4.50	5.00	4.77	-5.09	5.25	84.87	9.3	6.3	5.7	2.25	1.3	1.5	1.9	0.7	3.5
	F	1-3	2.7	1.3	4.75	5.25	4.97	-5.54	5.31	83.58	11.3	7.7	6.2	1.91	1.6	1.6	2.8	2.1	3.1
	M	1-3	3.0	1.4	5.00	5.50	5.25	-5.16	5.46	84.17	12.3	8.9	6.4	2.04	1.5	1.7	2.2	1.5	3.0
	A	1-3	2.1	1.1	5.00	5.50	5.26	-5.37	5.62	83.23	14.5	9.5	7.2	2.28	1.2	1.3	5.8	2.2	3.7
	M	1-3	2.4	1.1	5.50	6.00	5.75	-5.48	5.98	82.08	13.4	8.1	6.6	1.82	1.3	1.4	2.1	3.2	3.2
	J	1-3	2.9	1.3	5.50	6.00	5.75	-5.32	5.89	82.70	15.5	9.3	7.2	1.84	1.4	1.6	3.3	3.2	2.9
	J	1-3	3.0	1.2	5.50	6.00	5.73	-4.88	5.88	83.83	16.8	9.3	7.6	1.90	1.5	1.7	3.0	2.5	3.0
	A	1-3	2.5	1.2	5.50	6.00	5.75	-5.05	5.90	83.34	15.9	8.6	7.1	1.84	1.5	1.6	3.9	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	5.2	2.4	4.0
	O	1-3	2.8	1.3	5.50	6.00	5.75	-5.70	5.85	81.87	17.6	9.7	7.5	2.09	1.5	1.6	4.2	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	7.5	2.00	1.8	1.8	5.1	4.8	3.3
	D	1-3	3.2	1.8	5.50	6.00	5.80	-5.92	5.71	81.66	15.6	10.1	7.9	2.14	1.9	2.0	4.7	3.0	3.2
2001	J	1-3	3.0	1.8	5.25	5.75	5.49	-6.06	5.29	82.36	14.5	9.2	7.8	2.36	2.0	2.0	4.5	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	7.7	2.27	2.0	1.9	4.2	3.8	3.5
	M	1-3	2.5	1.8	4.75	5.25	4.99	-7.93	4.66	79.35	13.3	7.8	7.4	2.34	1.7	1.9	4.3	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	0.4	4.3	3.5
	M	1-3	3.9	2.3	4.25	4.75	4.67	-7.60	4.49	80.54	11.6	8.8	7.7	2.45	2.0	2.5	3.4	3.8	4.0
	J	1-3	3.3	2.3	4.25	4.75	4.49	-7.03	4.38	82.21	10.0	7.9	7.2	2.36	1.9	2.4	3.0	2.8	3.8
	J	1-3	2.6	2.4	4.00	4.50	4.24	-7.70	4.22	80.97	9.6	8.2	6.9	2.28	2.1	2.4	3.4	2.6	3.3
	A	1-3	2.8	2.3	3.75	4.25	4.17	-8.28	3.96	80.18	9.2	8.7	7.0	1.99	2.1	2.3	2.5	2.5	2.5
	S	1-3	2.6	2.3	3.25	3.75	3.49	-9.69	3.19	78.65	11.7	10.8	7.5	2.18	2.0	2.3	1.9	3.5	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	7.8	1.71	1.8	2.1	2.7	1.4	2.5
	N	1-3	0.7	1.7	2.00	2.50	2.60	-10.78	2.17	78.50	13.8	13.2	8.5	1.91	1.4	1.7	2.1	0.6	3.0
	D	1-3	0.7	1.6	2.00	2.50	2.24	-10.94	2.08	78.33	14.3	13.9	7.4	1.93	1.3	1.6	2.4	1.0	3.3
2002	J	1-3	1.3	1.8	1.75	2.25	1.99	-10.82	2.07	78.63	14.5	15.6	7.8	1.95	1.4	1.8	2.0	2.0	3.5
	F	1-3	1.5	2.2	1.75	2.25	1.99	-11.07	2.16	77.84	12.6	15.5	7.3	1.96	1.4	2.1	0.7	1.5	3.4
	M	1-3	1.8	2.1	1.75	2.25	1.99	-10.61	2.36	78.45	12.2	15.7	6.8	2.30	1.8	2.1	1.0	1.1	3.2
	A	1-3	1.7	2.2	2.00	2.50	2.24	-10.07	2.46	79.48	11.5	15.3	6.7	2.29	1.9	2.1	0.7	0.6	2.8
	M	1-3	1.0	2.2	2.00	2.50	2.25	-9.31	2.68	80.79	11.8	14.4	6.5	2.24	2.0	1.9	1.9	-0.3	2.4
	J	1-3	1.3	2.1	2.25	2.75	2.50	-9.12	2.78	80.99	13.5	15.9	6.7	2.32	2.1	1.9	1.7	0.6	2.7
	J	1-3	2.1	2.1	2.50	3.00	2.74	-10.40	2.88	77.71	13.9	15.0	6.7	2.28	2.1	2.0	1.3	0.5	2.8
	A	1-3	2.6	2.5	2.50	3.00	2.74	-9.68	3.09	78.90	14.4	15.4	6.7	2.18	2.2	2.4	1.9	1.3	3.0
	S	1-3	2.3	2.5	2.50	3.00	2.74	-10.27	2.90	77.97	11.2	12.7	6.2	2.18	2.3	2.3	1.3	0.9	2.8
	O	1-3	3.2	2.5	2.50	3.00	2.74	-10.06	2.83	78.63	11.8	12.5	5.7	2.18	2.5	2.4	2.1	2.7	2.7
	N	1-3	4.3	3.1	2.50	3.00	2.74	-10.21	2.85	78.24	9.9	10.3		2.15	3.1	3.0	1.7	2.5	2.5
	D	1-3			2.50	3.00	2.74	-9.80	2.83	79.24				2.09					1.9

\* 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 ( <i>Labour Force Information</i> )	Un-employment 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)		
1990	1.4	5.1	8.0	11.8	9.2	7.8	9.8	9.5	14.4	3.4	0.2		0.8	8.1	
1991	2.6	5.0	3.0	8.6	7.6	1.0	3.4	2.3	8.2	0.8	-2.1		-1.8	10.3	
1992	7.0	4.3	0.2	5.8	7.1	-3.4	1.8	1.7	8.4	2.2	0.9		-0.7	11.2	
1993	9.5	5.2	-0.7	4.2	6.6	-6.4	0.7	2.3	7.6	3.8	2.3		0.8	11.4	
1994	13.2	8.5	1.4	1.9	6.8	1.6	4.7	7.7	6.4	6.0	4.8		2.0	10.4	
1995	6.6	0.8	-2.6	3.8	4.1	5.6	5.1	7.4	3.7	5.1	2.8		1.9	9.4	
1996	12.2	8.2	3.3	4.4	6.8	1.4	5.2	7.0	4.2	3.3	1.6		0.8	9.6	
1997	16.9	11.4	7.2	0.9	7.2	7.5	9.1	10.2	5.6	5.5	4.2		2.3	9.1	
1998	10.3	7.0	3.1	-1.1	5.5	11.6	11.0	10.3	4.9	3.7	4.1	3.8	2.7	8.3	
1999	7.6	6.0	4.3	3.6	5.3	1.6	6.0	7.5	4.5	7.2	5.4	5.2	2.8	7.6	
2000	14.7	10.6	8.9	5.9	7.0	5.9	6.9	12.7	4.8	8.6	4.5	4.7	2.6	6.8	
2001	12.1	10.3	9.7	6.5	7.5	-1.1	5.3	6.5	4.2	2.6	1.5	1.6	1.1	7.2	
2002													2.2	7.7	
Annual rates															
1998 IV	4.1	2.6	-0.2	3.5	5.2	-1.8	2.6	3.8	5.7	6.8	6.8	6.4	3.0	8.1	
1999 I	9.0	6.7	5.7	3.1	4.4	0.7	3.6	6.1	3.7	9.0	6.1	5.8	2.5	7.9	
II	6.9	7.1	7.0	3.7	4.9	0.5	6.8	8.8	3.7	8.9	4.5	4.8	2.6	7.9	
III	6.7	8.3	7.1	6.5	6.5	0.1	8.0	10.0	5.6	9.9	5.9	6.6	2.8	7.5	
IV	9.8	6.2	4.5	4.6	4.9	0.5	5.6	14.0	4.7	7.4	6.3	6.3	3.2	7.0	
2000 I	21.1	13.7	12.0	7.2	8.2	8.4	4.8	18.0	6.2	10.8	4.2	4.6	3.5	6.8	
II	21.0	14.9	12.4	6.6	8.5	15.5	11.0	10.1	5.5	8.7	2.9	3.1	1.5	6.7	
III	15.1	9.5	7.5	6.0	7.4	3.4	6.4	11.6	1.8	7.7	5.1	4.6	1.3	6.9	
IV	8.7	10.2	7.3	3.3	6.6	7.8	7.0	8.5	3.7	2.9	1.9	2.0	3.0	6.9	
2001 I	11.6	8.6	7.1	6.5	8.0	-2.3	3.6	4.3	3.9	5.5	0.6	0.8	0.6	6.9	
II	8.2	9.8	10.1	7.9	7.5	-14.6	2.6	5.4	4.5	0.1	0.3	1.3	0.8	7.0	
III	12.2	9.2	12.4	6.3	6.5	-2.0	6.5	5.1	6.0	-5.4	-0.5	-1.0	-0.2	7.2	
IV	22.0	17.6	21.7	12.9	9.6	0.5	4.8	3.4	6.3	-1.6	2.9	1.7	0.5	7.7	
2002 I	10.5	14.7	18.5	6.7	5.6	-10.5	0.9	3.0	7.5	9.4	5.7	6.1	2.8	7.8	
II	5.1	4.6	8.6	4.1	4.9	-3.7	3.0	9.7	8.0	12.0	4.4	3.9	3.7	7.6	
III	15.7	9.3	9.3	7.8	5.9	-2.3	2.0	11.8	7.3	4.9	3.1	3.6	3.4	7.6	
IV													3.3	7.6	
Last three months	10.4	7.5	6.3	7.4	5.5	1.1	2.1	11.8	6.8			3.4	3.3	7.5	
Monthly rates															
2001 D	1.5	1.5	1.6	0.8	0.2	-0.8	0.3	0.4	0.9			0.4	-0.1	8.0	
2002 J	0.9	1.3	1.7	0.5	0.8	-1.3	-0.1	-0.1	0.6			0.8	0.5	7.9	
F	-0.1	0.4	0.8	0.2	0.2	-0.3	0.1	0.6	0.3			0.5	-	7.9	
M	0.5	0.7	0.9	-0.1	0.1	-0.2	0.2	0.3	0.9			-	0.6	7.7	
A	-0.3	-0.1	0.5	0.5	0.6	0.1	0.5	1.1	0.6			0.6	0.2	7.6	
M	0.7	0.1	0.2	0.3	0.4	-0.9	0.1	0.8	0.7			0.1	0.2	7.7	
J	2.3	1.7	1.8	1.0	0.7	-0.8	0.1	0.8	0.5			0.2	0.4	7.5	
J	1.2	0.3	0.3	0.6	0.4	-0.6	0.1	0.9	0.8			0.5	0.1	7.6	
A	0.8	1.0	1.0	0.6	0.5	1.2	0.3	1.2	0.5			0.3	0.4	7.5	
S	0.5	0.4	0.1	0.3	0.3	-0.1	0.2	0.7	0.2			0.1	0.3	7.7	
O	1.6	0.9	0.9	0.7	0.5	-0.2	0.2	0.6	0.9			0.3	0.2	7.6	
N	-0.1	0.3	0.1			-0.3	-						0.3	7.5	
D													0.4	7.5	

# 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 industrial	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)	
81.6	78.2	4.8	3.5	3.2		5.6	5.7	0.6	-5.2	11.51	10.34		1990
78.3	74.2	5.6	2.8	2.9		3.4	4.3	-11.2	-11.8	7.43	8.32	4.45	1991
78.2	76.4	1.5	1.8	1.3		2.0	2.6	-0.3	0.6	7.01	7.86	4.62	1992
80.0	79.9	1.8	2.1	1.4		0.6	0.8	0.5	3.0	3.87	6.57	3.78	1993
82.4	83.5	0.2	1.8	1.1		-	1.2	3.3	7.5	7.14	9.07	4.92	1994
81.6	83.9	2.2	2.3	2.3		0.7	1.4	8.3	11.1	5.54	7.11	4.42	1995
81.2	82.8	1.6	1.7	1.6		0.5	1.8	3.8	-1.2	2.85	6.37	4.09	1996
82.5	83.6	1.6	1.9	1.2		1.1	1.8	-3.7	-4.3	3.99	5.61	4.14	1997
83.3	84.3	0.9	1.3	-0.5	1.0	1.6	1.7	-15.3	-12.6	4.66	4.89	4.11	1998
84.2	85.8	1.7	1.4	1.7	0.5	2.0	2.7	6.7	1.5	4.85	6.18	4.01	1999
85.4	86.2	2.7	1.3	3.9	3.7	2.5	2.4	18.4	3.5	5.49	5.35	3.42	2000
81.8	81.1	2.6	2.1	1.0	2.9	3.2	2.9	-6.0	-6.3	1.95	5.44	3.76	2001
								-7.2	-5.8	2.63	4.88	3.33	2002
83.1	84.9	1.5	1.6	-	0.6	1.7	2.2	-11.7	-13.1	4.66	4.89	4.11	1998 IV
83.7	85.5	1.5	1.0	2.9	-0.7	1.3	2.2	5.9	10.0	4.63	5.05	4.16	1999 I
83.3	85.4	3.0	2.1	4.5	2.7	2.4	2.5	32.9	13.6	4.56	5.46	4.03	1999 II
84.6	86.2	2.4	1.9	3.6	-0.7	2.3	2.4	34.2	13.8	4.66	5.77	4.05	1999 III
85.1	86.2	2.7	0.8	1.2	0.5	2.2	3.8	14.5	1.4	4.85	6.18	4.01	1999 IV
85.5	86.5	2.7	0.6	6.4	6.9	2.3	3.0	30.1	20.0	5.27	6.03	3.80	2000 I
85.5	86.2	1.8	1.3	5.5	8.6	2.5	2.6	4.7	-4.9	5.53	5.93	3.77	2000 II
85.5	86.4	3.6	1.5	2.3	0.4	2.6	1.9	5.8	-17.6	5.56	5.75	3.60	2000 III
85.0	85.7	4.3	2.7	0.8	3.1	3.0	2.3	17.0	-7.6	5.49	5.35	3.42	2000 IV
83.3	82.7	1.6	1.7	5.0	5.4	3.8	2.4	4.8	-3.0	4.58	5.41	3.45	2001 I
82.9	82.1	4.7	3.0	-	0.3	2.7	3.0	-14.1	25.0	4.30	5.73	3.53	2001 II
80.8	80.2	0.2	2.1	-5.1	1.6	3.5	3.2	-36.0	-23.5	3.05	5.32	3.68	2001 III
80.0	79.4	-1.9	0.6	-4.5	2.3	3.1	2.4	-42.5	-33.3	1.95	5.44	3.76	2001 IV
81.6	81.9	3.3	2.6	3.5	0.7	3.1	2.0	17.3	19.2	2.30	5.79	3.68	2002 I
82.5	83.5	3.0	3.1	7.4	1.1	2.7	2.5	31.0	-1.4	2.70	5.37	3.42	2002 II
83.3	84.6	3.9	3.0	1.9	1.9	3.2	2.4	2.3	-0.2	2.83	4.92	3.25	2002 III
								10.4	-5.2	2.63	4.88	3.33	2002 IV
		4.1	2.9		1.9			10.4	-5.2	2.63	4.88	3.33	
		0.3	0.3		0.8			-1.7	-0.8	1.95	5.44	3.76	2001 D
		0.5	0.2		-0.1			2.1	2.5	1.96	5.42	3.73	2002 J
		0.3	0.4		-0.3			1.3	2.8	2.05	5.31	3.73	2002 F
		0.3	0.2		0.1			6.5	2.2	2.30	5.79	3.68	2002 M
		0.5	0.3		-0.2			2.5	-2.4	2.37	5.64	3.63	2002 A
		-0.2	0.2		0.8			0.8	-	2.60	5.49	3.54	2002 M
		0.2	0.1		-			-2.5	-0.8	2.70	5.37	3.42	2002 J
		0.6	0.3		-0.2			1.5	1.8	2.81	5.23	3.45	2002 J
		0.4	0.6		0.5			-0.4	-1.7	2.96	5.14	3.40	2002 A
		0.1	-		-			2.2	-0.6	2.83	4.92	3.25	2002 S
		0.4	0.2		-			0.2	-0.1	2.73	5.16	3.45	2002 O
		0.5	0.4					-0.3	-0.8	2.71	5.18	3.43	2002 N
								3.6	0.8	2.63	4.88	3.33	2002 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)
1990	-4.9	-5.8	1.6	-3.4	1.1668
1991	-5.4	-8.4	1.0	-3.7	1.1458
1992	-5.1	-9.1	1.3	-3.6	1.2083
1993	-5.5	-8.7	1.8	-3.9	1.2898
1994	-4.6	-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	0.8	0.1	2.6	-1.2	1.4831
1999	0.8	1.7	4.1	0.2	1.4858
2000	1.7	3.1	5.8	2.6	1.4852
2001	1.0	1.8	5.9	2.8	1.5484
2002					1.5704
Annual rates					
1998 IV	0.9	0.3	2.9	-0.9	1.5423
1999 I	0.6	0.5	3.6	-	1.5116
II	-0.3	1.3	3.7	0.2	1.4730
III	1.3	2.9	4.7	1.0	1.4860
IV	1.7	2.2	4.3	-0.4	1.4726
2000 I	1.8	2.4	5.3	2.1	1.4538
II	1.2	3.4	5.5	2.3	1.4808
III	2.2	3.5	5.9	2.7	1.4822
IV	1.6	3.0	6.6	3.4	1.5258
2001 I	1.4	2.8	7.8	4.7	1.5280
II	1.7	2.7	6.1	3.0	1.5409
III	1.0	1.4	4.7	1.6	1.5453
IV	0.1	0.3	4.8	1.6	1.5803
2002 I	0.3	0.7	5.0	1.9	1.5946
II	0.8	1.0	4.7	1.7	1.5549
III	0.8	1.1	4.9	1.8	1.5628
IV					1.5698
Last three months					1.5698
Monthly rates					
2001 D					1.5775
2002 J					1.6003
F					1.5958
M					1.5870
A					1.5814
M					1.5497
J					1.5317
J					1.5459
A					1.5679
S					1.5758
O					1.5778
N					1.5714
D					1.5593



# Notes to the Tables

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## 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. In May 2001, it was extended to the end of 2006.
- (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 plus all non-chequable deposits at trust and mortgage loan companies, 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.

- (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 plus all non-chequable deposits at trust and mortgage loan companies, 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)
- (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)
- (15–16) Data for capacity utilization rates 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.
- (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)

