



Policy and
Infrastructure
Developments

Introduction

The financial system and all of its various components (institutions, markets, and clearing and settlement systems) are supported by a set of arrangements, including government policies, that influence its structure and facilitate its operation. Taken together, these arrangements form the financial system's infrastructure. Experience has demonstrated that a key determinant of a robust financial system is the extent to which it is underpinned by a solid well-developed infrastructure. This section of the Review highlights work in this area, including that related to relevant policy developments.

Every day, individual Canadians, businesses, and governments use various payment instruments to purchase goods and services and to make financial investments. For these transactions to be completed, financial institutions need a way to transfer funds and other assets among themselves on behalf of their customers or on their own accounts. The arrangements used to make these transfers among financial institutions constitute a clearing and settlement system. For a number of reasons, the Bank of Canada has a strong interest in the safe and efficient operation of major clearing and settlement systems. In the article, "The Bank of Canada's Role in the Oversight of Clearing and Settlement Systems," Walter Engert and Dinah Maclean set out the Bank's mandate for regulatory oversight of clearing and settlement systems, the strategy that is followed, and the key activities relevant to the conduct of oversight.

The Bank of Canada's Role in the Oversight of Clearing and Settlement Systems

Walter Engert and Dinah Maclean

Every day, individual Canadians, businesses, and governments use various payment instruments to purchase goods and services and to make financial investments. These instruments include cash, cheques, debit and credit cards, e-money, and large-value electronic payment orders. All of these payment instruments, except cash, involve a claim on a financial institution such as a bank, credit union, or *caisse populaire*. And for all of these transactions to be completed, financial institutions need a way to transfer funds among themselves on behalf of their customers, or on their own account.

The arrangements used to make these transfers among financial institutions constitute a clearing and settlement system for these payments. More generally, a clearing and settlement system is the set of instruments, rules, and technologies that facilitate the transfer of funds and other assets among the system participants.

The Bank of Canada has a strong interest in the safe and efficient operation of major clearing and settlement systems, for a number of reasons. For instance, the system used to settle large-value payments among financial institutions is also the mechanism used to implement monetary policy in Canada.¹

In addition, since clearing and settlement systems underpin virtually all of the transactions undertaken in the economy, their safe and efficient operation is important to the sound functioning of the economy. Disruptions in major systems can have serious implications for participants, which can extend to the financial system and to the economy more generally.

As a result of these various considerations, the Bank of Canada oversees those clearing and settlement systems that are judged to have the potential to generate systemic risk. This article sets out the Bank's mandate for such oversight, the strategy that is followed, and the key activities relevant to the conduct of oversight.

The Bank's Oversight Mandate

The Payment Clearing and Settlement Act (PCSA) was proclaimed by Parliament in July 1996. This legislation gives the Bank of Canada responsibility and authority for the oversight of major clearing and settlement systems operating in Canada, for the purpose of controlling systemic risk. In this context, systemic risk is defined as the risk that the default of one participant in a clearing and settlement system could lead, through the activities of the system, to the default of other institutions or systems.

A clearing and settlement system brings together various financial system participants in a common arrangement, such as a clearing house, where the participants are explicitly interlinked so that the behaviour of one participant can have implications for others. In such an arrangement, each participant could face potentially significant risks and liabilities depending on the behaviour of other participants and on the design of the system. As a result, spillover or domino effects with broader economic consequences can occur if the system is not properly designed and operated.

The PCSA is the government's recognition of the essential role of major clearing and settlement systems in the Canadian economy, and of the importance of their regulatory oversight. Canada was the first G-10 country to adopt legislation that specifically requires the central bank to

1. For a discussion of the implementation of monetary policy in the large-value payments system in Canada, see Howard (1998).

oversee the control of systemic risk in major clearing and settlement systems.

In establishing the oversight role of the Bank of Canada with regard to the design and operation of clearing and settlement systems, the PCSA:

- provides for the collection of information from clearing and settlement systems to determine their eligibility for oversight, and to determine whether the operation of an eligible system has the potential to create systemic risk;
- empowers the Bank to designate an eligible system as being subject to Bank of Canada oversight, where the Governor is of the opinion that such a system may be operated in a manner that could pose a systemic risk;²
- requires the Bank to satisfy itself that designated clearing and settlement systems have appropriate risk controls in place to deal with potential systemic-risk concerns;
- requires every designated system to provide the Bank of Canada with reasonable notice in advance of any change to be made that is of a significant nature in relation to the designated system;
- provides the Bank with the authority to approve the participation of authorized foreign banks in a designated system;
- provides the Governor of the Bank with the power to issue written directives to the operator of a designated system to refrain from actions that, in the opinion of the Governor, are likely to result in systemic risk being inadequately controlled, or to take actions to remedy a situation in which, in the opinion of the Governor, systemic risk is likely being inadequately controlled;³ and
- provides that failure to comply with the Act, with a request for information from the Bank, or with a directive, can lead to legal proceedings and court orders to comply and to the assessment of penalties.

2. For such designation to take effect, the Minister of Finance must agree that it is in the public interest to designate the clearing and settlement system.

3. For such a directive to take effect with regard to a system established by federal statute, the Minister of Finance must agree with the issuance of the directive.

The Bank's Oversight Strategy

The Bank of Canada has stressed several key principles to frame its oversight strategy and to guide the conduct of its oversight activities.

- The Bank judges whether a designated clearing and settlement system meets its minimum standards (see below), but the Bank does not specify or decide how a system should meet these standards. System owners and operators determine how to meet the Bank's standards, which leads to efficient solutions.
- The Bank promotes a co-operative approach for voluntary action by a designated system to meet its concerns.
- The Bank stresses transparency. The Bank aims to develop policies that are well founded, clear, and publicly available.

Essentially, the Bank's oversight strategy is to establish minimum standards that condition the behaviour of designated systems to control systemic risk. Private sector system operators, in turn, find the most efficient way of meeting these constraints. In addition, as a system evolves, Bank staff review the design and rule changes proposed by system operators to satisfy themselves that systemic risk continues to be well controlled. The Bank also periodically confirms that systems are operating as expected to mitigate systemic risk; for example, through audits.

The private sector's central role in designing and operating systems, subject to minimum standards established by the Bank of Canada, is important for achieving both safe and efficient systems. For example, significant private sector involvement is an important reason why Canada's large-value payments system is based on the netting of payment orders, as opposed to real-time gross settlement (RTGS) principles.⁴

4. RTGS refers to the continuous (real-time) settlement of funds or securities transfers individually, on an order-by-order basis. Netting refers to a process whereby individual obligations among system participants are offset against one another (over a day, for example) to produce a single net payable or receivable balance for each participant. This considerably reduces the number and value of obligations to be settled, which, in turn, can reduce risks and costs. However, netting systems are more complex analytically and from a legal perspective, compared with RTGS-based systems. For more on netting and risk management, see Engert (1993).

More generally, the Bank's approach to oversight provides incentives for the safe and efficient operation and evolution of systemically important clearing and settlement systems.

Implementing Oversight

Governance

Responsibility for decision making on oversight issues rests ultimately with the Governor and deputy governors of the Bank. Under the PCSA, the Governor has specific responsibilities for key oversight decisions, such as the designation of systems and the issuance of directives.

In practice, the Governor has delegated some decision-making powers to the Deputy Governor responsible for Financial Stability and to the Bank's Adviser for Regulatory Policy—the key operational officer for oversight at the Bank. Strategic considerations, such as policy development, are also discussed by the Bank's Financial System Committee, a committee that includes all of the Bank's deputy governors.

A number of important activities are required to support the Bank's oversight role, and the main ones are described in the rest of this section.

Establishing minimum standards

As noted above, the Bank establishes minimum standards for designated clearing and settlement systems, and system operators determine how to best meet those standards. The Bank's *Guideline Related to Bank of Canada Oversight Activities under the Payment, Clearing and Settlement Act* sets out the general risk-control framework for designated systems. The *Guideline* also provides the specific minimum standards that designated systems are expected to meet so as to control systemic risk. (The *Guideline* is available on the Bank of Canada's website at <http://www.bankofcanada.ca/en/financial/guide2002.html>.)

The Bank's minimum standards incorporate the principles and recommendations contained in the following reports, prepared collaboratively by central banks and securities markets regulators to guide the development of oversight policy around the world.

- *Core Principles for Systemically Important Payment Systems*, Committee on Payment and Settlement Systems (CPSS), January 2001.
- *Recommendations for Securities Settlement Systems*, Report of the CPSS-IOSCO Joint Task Force on Securities Settlement Systems, November 2001. (IOSCO refers to the International Organization of Securities Commissions.)
- *Recommendations for Central Counterparties*, Report of the CPSS-IOSCO Joint Task Force, November 2004.

Bank staff participate actively in the international committees that establish and review these standards for systemically important systems.⁵

Designation as systemically important

Under the PCSA, the Bank of Canada reviews eligible clearing and settlement systems for their potential to pose systemic risk. A system is eligible for review by the Bank if

- it has three or more participants, one of which is a bank;
- it clears or settles Canadian-dollar payment obligations; and
- the payment obligations are ultimately settled through accounts at the Bank of Canada.

If the Governor of the Bank forms the opinion that a system has the potential to pose systemic risk, the system may be designated as subject to the PCSA, provided the Minister of Finance agrees that this is in the public interest.

When deciding if a system should be designated under the PCSA, the Bank considers

- the size of individual payment obligations and the aggregate value of payment obligations processed by the system on any given day;
- the size of payment obligations owed to and by participants in the system relative to each participant's capital; and

5. These reports are available on the Bank for International Settlements website at <http://www.bis.org/cpss/index.htm>. For a discussion of the development of these international standards and their application in Canada, see Goodlet (2001).

- the role played by the system in supporting transactions in financial markets or in the economy more generally.

Systems that handle small-value payments (either as individual payments or aggregate payment obligations) are unlikely to be designated, since they typically do not pose systemic risk. Nevertheless, the Bank monitors such systems for changes in their situation. Systems that handle large-value payment obligations are much more likely to generate systemic risk, and so are much more likely to be designated.

The following clearing and settlement systems have been designated as being subject to the PCSA:

- the Large Value Transfer System, which clears and settles large-value payments;
- CDSX, which clears and settles securities transactions; and
- CLS Bank, which clears and settles foreign currency transactions.

Box 1 provides brief descriptions of major clearing and settlement systems in Canada.

Assessment and review of systems

Following designation, and central to the oversight process, the Bank assesses whether a designated system meets the minimum standards set out in the *Guideline*. Such assessments are made at the time that the system is initially designated and when significant changes are proposed by the operators of the system.⁶

Bank staff also conduct ongoing reviews of designated clearing and settlement systems so as to be aware of current and emerging trends. Importantly, as systems evolve and develop, the Bank assesses proposed changes and must be satisfied that systemic risk remains controlled.

An important part of the Bank's oversight program is an annual audit of designated systems. In the case of the LVTS and CDSX, this audit is conducted in accordance with provisions of the Canadian Institute of Chartered Accountants Handbook

6. Bank of Canada staff were also involved in discussions regarding the design of the three designated systems (the LVTS, CDSX, and CLS Bank) during their development, with a particular interest in adequate risk containment in these systems.

regarding opinions on control procedures at a service organization. The Bank of Canada can influence the scope of the audit and can discuss the results with the auditors.

Given the global nature of CLS Bank, oversight is conducted according to a co-operative arrangement involving 20 central banks (Box 1). Since the operating organization of CLS Bank is incorporated under U.S. and New York State laws, the U.S. Federal Reserve is the primary supervisor and lead overseer of CLS Bank.⁷

The Federal Reserve supervises CLS Bank partly on behalf of the co-operative oversight group of central banks. This group meets regularly (at least twice a year) to consider issues related to foreign-exchange-settlement risk and to the oversight of CLS Bank. In this context, the Federal Reserve provides an annual supervisory report on CLS Bank, as well as information regarding significant developments affecting CLS Bank. More generally, the Federal Reserve responds to concerns and questions from members of the oversight group, as needed. In its conduct of oversight, the Federal Reserve applies the principles and recommendations developed collaboratively by the G-10 central banks and securities regulators (noted above).

Managing relations with system operators

An important part of carrying out the Bank of Canada's oversight mandate is fostering effective, co-operative relations with the operators of designated systems. System operators have ongoing legal obligations to provide advance information on proposed changes to rules or to system design, and to co-operate with regard to annual audits. For its part, the Bank is responsible for making its requirements and expectations clear, for responding to system developments promptly, and for raising any concerns expeditiously.

Both the Bank and the system operators benefit from co-operative and timely interaction. And

7. Given that CLS Bank is incorporated under U.S. laws as an Edge Act Corporation (a special-purpose bank), and that the vast majority of foreign currency trades involve the U.S. dollar, which has implications for U.S.-dollar markets, the Federal Reserve has strong incentives for ensuring the sound oversight of CLS Bank.

Box 1**Major Clearing and Settlement Systems in Canada¹**

The **Large Value Transfer System (LVTS)** is an electronic transfer system that processes large-value Canadian-dollar payments. Average daily number of transactions processed: about 18,000. Average daily value of transactions: \$145 billion. Owned and operated by the Canadian Payments Association. Designated by the Bank of Canada for oversight.

CDSX clears and settles securities transactions in Canada. Average daily number of trades settled: about 300,000. Average daily gross value of trades settled: \$200 billion. Owned and operated by The Canadian Depository for Securities Limited. Designated by the Bank of Canada for oversight.

CLS Bank is a global system that clears and settles foreign exchange transactions. Average daily number of trades settled: about 220,000. Average daily value of trades settled: US\$2.6 trillion. Owned by a consortium of major international banks through CLS Group Holdings AG (London); operated by CLS Bank International in New York. Overseen cooperatively by a group of central banks whose currencies are settled by CLS Bank. The U.S. Federal Reserve is the lead supervisor and oversight agency. Canadian-dollar operations have been designated by the Bank of Canada for oversight.

The **Automated Clearing Settlement System (ACSS)** processes paper-based and electronic payment items, largely retail (small-value) payments. Average daily number of transactions processed: about 20 million. Average daily value of transactions: \$18 billion. Owned and operated by the CPA. Not designated for oversight by the Bank of Canada.

The **Canadian Derivatives Clearing Corporation (CDCC)** is a clearing house for derivative instruments traded on the Montreal Stock Exchange, which is also the owner of CDCC. Not designated for oversight by the Bank of Canada.

1. For more information on these systems, see the Bank of Canada's website: <www.bankofcanada.ca/en/financial/payments.html>.

the Bank seeks to establish arrangements whereby it receives advance information on proposed rule and system changes. This provides opportunities for discussion early in the design-change process, so that any concerns can be dealt with efficiently. To this end, the PCSA authorizes the Bank to enter into an agreement with the operators of a designated system to establish a framework for interaction on matters related to the control of systemic risk.

Primary responsibility for the reliable day-to-day functioning of a designated clearing and settlement system rests with the system's operator and participants. The Bank, in carrying out its oversight responsibilities, does not ordinarily get involved in the operations of designated systems. The Bank does, however, provide regular operational services to clearing and settlement systems, which are discussed in Box 2.

Coordination

The Bank also needs to coordinate its oversight activities with other involved agencies. For instance, the federal Department of Finance oversees the activities of the Canadian Payments Association (CPA) generally, following from provisions of the Canadian Payments Act (2001). The CPA also owns and operates the LVTS, which is subject to oversight by the Bank of Canada. Accordingly, the Department of Finance and the Bank of Canada routinely consult and exchange views with regard to CPA activities of mutual interest. As well, the Bank provides advice to the Department of Finance on the development of federal policy more generally regarding payments system issues in Canada. To facilitate such interaction, officials of the Bank and the Department of Finance meet regularly (as the Payments Advisory Committee).⁸

The Bank of Canada coordinates its oversight of CDSX with the Ontario Securities Commission and the Quebec Autorité des marchés financiers. In addition, as discussed above, the Bank participates in a co-operative oversight arrangement regarding CLS Bank, with other central banks around the world.

The Bank of Canada has additional roles that are associated with its oversight responsibilities.

8. The Bank of Canada is also involved in the governance of the CPA (Box 3).

Box 2

Bank of Canada Operational Roles in Clearing and Settlement Systems

As well as oversight, the Bank of Canada has operational roles related to clearing and settlement systems.

- The Bank of Canada provides settlement assets, through Bank of Canada accounts and standing liquidity facilities, for LVTS participants.¹
- The Bank takes pledges of collateral from LVTS participants to facilitate risk management in that system.
- The Bank acts as settlement agent for CDSX. In this regard, the Bank provides a settlement account to CDSX to eliminate “banker risk” for this system. The Bank receives, through the LVTS, payments from CDSX participants that owe funds to CDSX, and the Bank subsequently makes payments to participants entitled to receive funds from CDSX.
- Similarly, the Bank acts as settlement agent for CLS Bank, by providing a settlement account to CLS Bank and by receiving and then making Canadian-dollar payments through the LVTS as agent on behalf of CLS Bank.
- To mitigate major disruptions caused by operational failure of the LVTS, the Bank is prepared to assist, if necessary, by entering payments directly across participants’ settlement accounts with the Bank of Canada. A similar contingency service is provided for CDSX.
- Similarly, to mitigate major disruptions caused by operational failure of a Canadian settlement member of CLS Bank, the Bank of Canada is prepared to assist, if necessary, by entering payments directly across CLS Bank’s and participants’ settlement accounts with the Bank of Canada.
- The Bank is the banker for the federal government, and for some foreign central banks and intergovernmental organizations, and processes large-value transactions on their accounts.

- The Bank of Canada is also a participant in the LVTS, ACSS, and CDSX, processing a small number of transactions on its own behalf.

These operational roles are conducted separately from oversight activities. But operational expertise can inform oversight decisions when assessing aspects of proposed changes in a designated system.

1. For more on these arrangements, see Daniel, Engert, and Maclean (2004–05).

Box 3**The Bank of Canada and Governance of the Canadian Payments Association**

The Canadian Payments Association (CPA) is a non-profit organization created by an Act of Parliament in 1980. Its mandate is to establish and operate national payments systems, to facilitate the interaction of the CPA's systems with others involved in the exchange, clearing, and settlement of payments, and to facilitate the development of new payment methods and technologies.

The CPA also has public-policy objectives to promote the efficiency, safety, and soundness of its clearing and settlement systems and to take into account the interests of its users.

The CPA is governed by a 16-person Board of Directors, three of whom are appointed by the Minister of Finance. As well, a senior officer of the Bank of Canada is the Chair of the CPA's Board of Directors.

Since the CPA operates the LVTS, which has been designated for oversight by the Bank of Canada, the CPA Chair and the Bank's oversight responsibilities are separated within the Bank, and an arm's-length relationship is maintained. Accordingly, there are separate reporting lines for these roles within the Bank. The CPA Chair does not have any oversight role or responsibilities, and the CPA Chair never represents or speaks for the Bank with regard to oversight matters.

For example, the Bank participates in the Financial Institutions Supervisory Committee (FISC), a forum of federal agencies that facilitates the exchange of information related to the supervision of federally regulated financial institutions.⁹ The Bank has a responsibility to inform its FISC partners about key developments in clearing and settlement systems that could affect risks faced by individual institutions and by the financial system more generally.

Finally, the Bank has a number of broader international responsibilities that arise from its oversight role. These include participating in the Committee on Payment and Settlement Systems (CPSS), as indicated above. The CPSS is the central bank committee that collaboratively sets standards that guide oversight policies around the world. As well, the CPSS conducts analysis and research on a range of issues relevant to clearing and settlement systems. (For more on the CPSS, see <http://www.bis.org/cpss/index.htm>.)

Research

Research by Bank of Canada staff on risk issues, specific clearing and settlement systems, and the more general payments environment is important for developing the knowledge required to provide policy advice for oversight. This research also helps support the Bank's contributions to international committees, including those that develop standards for systemically important systems. A challenging research agenda is also important for attracting and retaining staff and for staff development.¹⁰

9. The Bank also has a broad interest in the FISC, owing to the Bank's role in the financial safety net as the lender of last resort. The FISC is comprised of the Superintendent of Financial Institutions, the Governor of the Bank of Canada, the Chair of the Canada Deposit Insurance Corporation, the Deputy Minister of Finance, and the Commissioner of the Financial Consumer Agency of Canada. For more on the FISC and related matters, see Engert (2005) and Daniel, Engert, and Maclean (2004–05).
10. For recent examples of such research, see Northcott (2002); McPhail and Vakos (2003); McVanel (2005, 2006); Arjani (2005, 2006); Chande, Lai, and O'Connor (2006); and Garcia and Gençay (2006).

Concluding Remarks

Much of the Bank of Canada's analysis of clearing and settlement systems is provided through its various publications, such as the *Bank of Canada Review* and, especially, the *Financial System Review*. In addition, the Bank's website presents substantial information on clearing and settlement systems, with emphasis on the Bank of Canada's roles and activities. Staff working papers provide related analysis and research. Comments on all of these documents are welcomed.

In the past, the Bank of Canada has provided a high-level annual summary of its oversight activities in its *Annual Report*. Starting in this issue of the *Financial System Review*, a more detailed annual summary will be provided as an article in the Policy and Infrastructure Developments section to allow for a fuller account of the year's activities.

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