

# Core Principles for Systemically Important Payments Systems and Their Application in Canada

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- *Payments systems are at the centre of domestic and international financial infrastructure. While they operate virtually unnoticed, they are essential to the smooth functioning of a modern market-based economy such as Canada's.*
- *Of particular significance are payments systems that are systemically important. These are systems that, because of the size or the type of the payments they process, could trigger or transmit serious shocks across domestic or international financial systems or markets if they are insufficiently protected against risk.*
- *This article reviews an international initiative that established a set of core principles for the safe and efficient operation of systemically important payments systems.*
- *The article also looks at the role of central banks in overseeing major payments systems and in applying the core principles, focusing on the Bank of Canada's oversight responsibilities under the Payment Clearing and Settlement Act.*
- *Canada's systemically important payment system—the Large Value Transfer System—has been assessed as being in compliance with the core principles.*

**P**ayments systems are at the centre of both the domestic and international financial infrastructure. They are the means by which financial institutions transfer funds among themselves on their own behalf or on behalf of their customers. While they operate virtually unnoticed, they are essential to the smooth functioning of a modern market-based economy such as Canada's because they transfer monetary value, often in association with transactions involving goods and services or financial instruments. Canada's two payments systems are the Large Value Transfer System (used for large-value or time-sensitive payments) and the Automated Clearing and Settlement System (used to process and settle all other payments—such as paper cheques and small-value electronic funds transfers).

Of particular significance for the financial system are systemically important payments systems—systems that because of the size or the nature of the payments they process could trigger or transmit serious shocks across domestic or international financial systems or markets if they were insufficiently protected against risk. This is often referred to as systemic risk. Poorly protected systems could be disrupted by the insolvency of one participant in the system or by serious operational problems. Similarly, such systems might spread, and possibly amplify, difficulties elsewhere in the financial sector. Thus, robust payments systems are critically important to financial stability.

Over the past few years, a broad international consensus has emerged on the need to develop sound principles and practices in areas that are key to promoting

and maintaining robust financial systems.<sup>1</sup> One area in which such principles did not exist was the design and operation of payments systems. The financial difficulties experienced by a number of emerging-market economies during the 1990s gave added impetus to work in this area, when serious flaws were revealed in their financial infrastructure, including payments systems. In addition, the increasing value of payments associated with the growing volume of financial transactions has led many countries to re-examine their payments systems and to develop plans for significant changes. There has been a particularly strong demand from emerging-market economies for advice on the development and implementation of these plans.

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*Payments systems, especially those that handle large values, are essential to the smooth functioning of Canada's modern market-based economy.*

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Central banks, and particularly central banks from the Group of Ten (G-10) countries, have played a critical role in both domestic and worldwide initiatives to improve the safety and efficiency of payments systems.<sup>2</sup> In May 1998, the G-10 central banks' Committee on Payment and Settlement Systems (CPSS) established a task force to develop an overall framework of core principles for the design, operation, and oversight of payments systems in all countries. The principles were to represent a broad international consensus but were not intended to impose a single payments-system model, since it was recognized that economies and institutional arrangements within countries vary considerably. To help achieve a broad consensus, the task force included not only representatives from the G-10 central banks and the European Central Bank, but also representatives from 11 other central banks in countries at different stages of economic and financial-sector development, along with representatives from

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1. The development of such principles and practices is a major component of the concerted international strategy developed by an ad hoc working committee established in 1997 to foster financial stability in countries experiencing rapid economic growth and undergoing substantial changes in their financial system (Group of Ten 1997).

2. The work of the G-10 central banks in this area is published by the Bank for International Settlements. See the BIS Web site ([www.bis.org](http://www.bis.org)) for a complete listing of these publications.

the International Monetary Fund (IMF) and the World Bank (see the box on page 30 for a full list of task force participants.) The task force also consulted extensively with groups of central banks in Africa, Asia, the Pacific Rim, Europe, and the Americas.

The final report of the task force was published in January 2001 (Committee on Payment and Settlement Systems 2001b). Part 1 of the report outlines 10 core principles and four central bank responsibilities in applying those core principles. Part 2 of the report provides guidance on the interpretation and use of the core principles. It is addressed to designers, operators, and overseers of systemically important payments systems to help them make judgments about the policy and technical choices they face in building or operating such systems. It provides examples of how the principles have been implemented in particular countries but makes clear that the core principles are not a blueprint for the design or operation of any individual system. The diversity of national, social, economic, and payment infrastructures means that there is no universal prescription. The core principles are thus deliberately expressed in general terms so that they can be useful in all countries, for a long time.

The core principles do not advocate the use of any particular technology. Indeed, they recognize that technological change offers many new opportunities to enhance the safety or increase the efficiency of systemically important payments systems. For example, new technologies are changing the range of possibilities in the areas of security and operational reliability. Technological developments are also enabling new payments-system design.

## **The Core Principles**

### **Systemically important payments systems**

The core principles focus on systemically important payments systems. A payments system is defined as a system that comprises a set of instruments, procedures, and rules for the transfer of funds among system participants. Such systems are typically based on an agreement among the participants in the system and the system operator, and funds are transferred using an agreed-upon technical infrastructure.<sup>3</sup>

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3. The core principles may be useful in considering the design and operations of systems involving the settlement of transfers of other financial assets, such as securities. These systems may, however, raise other financial stability concerns in their own right. A separate task force, established by the CPSS and the International Organization of Securities Commissions, has been examining the particular issues involved in securities settlement and has recently published a consultative report (Committee on Payment and Settlement Systems 2001a).

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*The core principles establish the key characteristics that all systemically important payments systems should satisfy.*

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Systemic importance is determined mainly by the size or nature of the individual payments or by their aggregate value. Not only systems that transfer large-value payments may be considered systemically important, however. Systems that carry predominantly small-value payments but involve some larger-value payments might also be judged to be systemically important. In practice, determining which systems are systemically important may not be easy, and the report provides some guidance on identifying such systems. The core principles are intended for all systemically important payments systems, whether they are operated by a central bank or by another entity. The task force focused on systemically important systems because it concluded that the creation of core principles applicable to all payments systems regardless of their size or impact on the financial sector would result in a set of principles that would not be strong enough to be effective in promoting financial stability.

### **Public policy objectives for systemically important payments systems**

Reflecting the essential contribution of systemically important payments systems to financial stability, the report states that public policy objectives for these systems should be their safety and efficiency.<sup>4</sup> Safety is a key objective since poorly designed systems could spread shocks from one participant to another and could seriously disrupt financial markets, imposing significant costs on participants in these markets. But they must also be efficient for users, since there is little to be gained from having a very safe system if large-value payments are processed elsewhere. Individual system participants have an interest in the safety and efficiency of these systems, and market forces will typically support these objectives. But these forces may

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4. Safety and efficiency are not the only public policy objectives for payments systems. Other objectives such as crime prevention, competition policy, and consumer protection can play a role in the design of systemically important payments systems, but these objectives were considered beyond the scope of the report.

not be sufficient to completely achieve the objectives of safety and efficiency, since not all the risks and costs associated with the operation of a payments system are borne by those who create them. System operators and participants may not have adequate incentives to minimize the consequences of their own failure or the failure of another participant. The core principles also recognize that there may be some trade-off between achieving safety and efficiency, and they encourage system designers, operators, and overseers to explicitly recognize these trade-offs in their decision-making.

### **The core principles and payments-system risk**

The task force identified various risks associated with payments systems:

- **Credit risk:** the risk that a participant in the system will be unable to fully meet its financial obligations within the system when due or at any time in the future.
- **Liquidity risk:** the risk that a participant in the system will have insufficient funds to meet financial obligations within the system when due, although it may be able to do so at some time in the future.
- **Legal risk:** the risk that a poor legal framework or legal uncertainties will cause or exacerbate credit or liquidity risks.
- **Operational risk:** the risk that operational factors such as technical malfunctions or operational mistakes will cause or exacerbate credit or liquidity risks.

These risks can have systemic consequences. That is, the inability of a system participant to meet its obligations when due, or a disruption in the system itself, could result in the inability of other participants or of financial institutions in other parts of the financial system to meet their obligations when due. Such a failure could cause widespread liquidity or credit problems, which could threaten the stability of the financial system.

The core principles (Box 1) address these risks. The first seven core principles address the management of various risks in payments systems. The other three address the efficiency, access, and governance arrangements of payments systems. By far the most influential piece of earlier work in the development of the core principles was the Lamfalussy Report (Group of Ten 1990). The standards in this report were originally

## Box 1

### Core Principles for Systemically Important Payments Systems

- I. The system should have a well-founded legal basis under all relevant jurisdictions.
  - II. The system's rules and procedures should enable participants to have a clear understanding of the system's impact on each of the financial risks they incur through participation in it.
  - III. The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain those risks.
  - \*IV. The system should provide prompt and final settlement on the day of value, preferably during the day and at a minimum at the end of the day.
  - \*V. A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.
  - VI. Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.
  - VII. The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.
  - VIII. The system should provide a means of making payments which is practical for its users and efficient for the economy.
  - IX. The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.
  - X. The system's governance arrangements should be effective, accountable, and transparent.
- \* Systems should seek to exceed the minima included in these two core principles.

intended for a very specific type of system (i.e., cross-border and multicurrency netting arrangements). They have, however, been adapted and applied beyond their originally intended scope to a wide variety of payment and other clearing and settlement arrangements.<sup>5</sup> Six of the 10 core principles of the task force are based on the Lamfalussy standards, either in their original form or with some modification.<sup>6</sup>

5. Indeed, the Bank of Canada adapted the Lamfalussy standards when establishing the minimum standards that must be met by clearing and settlement systems that are subject to the Bank's oversight under the Payment Clearing and Settlement Act.

6. Five of the six Lamfalussy standards addressed risk concerns. These standards are incorporated in Core Principles I, II, III, V, and VII.

Core Principle I seeks to minimize legal risks. Payments systems should be legally robust; that is, the rules and procedures should be enforceable, and their consequences should be predictable. This is especially important in systems where there are cross-border elements (such as participation by foreign banks, where the laws of several jurisdictions may apply). A wide range of laws may have to be considered, including general laws related to contracts, securities, banking, or insolvency, as well as more specific laws applicable only to payments systems. In addition, case law, contracts, and rules governing a system's operations also need to be considered. This is a very difficult area for payments systems to address adequately, and considerable resources are likely to be needed to implement this principle.

Core Principles II and III address the financial risks (credit and liquidity) in a system. The system operator and the participants should clearly understand the financial risks in the system and who bears them. The rules and procedures must clearly define how these risks are to be managed and how the responsibility for managing these risks is to be shared between the system operator and the participants. There must also be sufficient incentives and capabilities for the parties to manage and contain these risks. The report discusses various ways in which risks can be addressed, including the ongoing monitoring of the risks that participants may pose to the system, the use of limits on the amount of exposures created by participants, or the collateralization or prefunding of payment obligations. A key element in risk containment is that the payment-processing and risk-management processes operate in real time.<sup>7</sup>

Core Principles IV and VI go beyond the Lamfalussy standards and require systemically important payments systems to provide prompt final settlement on the day of value for all payments accepted by the system.<sup>8</sup> The assets used for settlement should carry little or no credit or liquidity risk. Thus, the preferred asset to use for settlement purposes is a claim on the central bank (that is, domestic currency account balances held at the central bank by the system participants). The implication of Core Principle VI is that those systems in which all participants settle directly with each other using accounts at the central bank provide a greater degree of safety to the participants. In certain systems, however, some participants (often known as “indirect participants”) settle their obligations using accounts held with “direct participants” that settle directly using central bank accounts. These indirect participants may be exposed to greater credit and liquidity risks than would be the case if they used central bank accounts. Nevertheless, these so-called tiered arrangements can be significantly more efficient than those in which all payments-system participants must use central bank accounts. They allow greater competition among participants for the business of third parties, and they can reduce the liquidity and operational costs for all participants by pooling and netting payment flows between a direct participant and its indirect

participants. Designers and operators of systemically important payments systems must carefully consider the trade-off between safety and efficiency in their own specific circumstances.

These two principles are intended to reduce the risks that system participants might face if a system did not settle the positions among participants in a timely manner. Core Principle IV carries both a minimum standard—settlement should occur at the end of the day of value—and a “best-practice” statement—that payments should settle during the day, rather than at the end of the day. Settling payments among participants as quickly as possible reduces the time that participants are exposed to, and must manage, the risks that they bear. The minimum standard seeks to avoid having these exposures carried over into the next business day. The best-practice statement seeks to have a system that will provide real-time final settlement for each payment immediately after it is accepted by the system. This has already been achieved in many countries that have recently introduced new large-value payments systems.

Core Principle V incorporates the fourth, and probably the most important and influential Lamfalussy standard. Unlike the other principles, it addresses only a specific type of systemically important payments system—namely, one that uses multilateral netting,<sup>9</sup> which typically involves deferring settlement until the end of the day. In such systems (and in the absence of appropriate risk controls), if a participant is unable to settle its obligations at the end of the day, the other participants can face unexpected credit and liquidity risks at the time of settlement, which can be much larger than the net amounts involved. These risks can be controlled through measures such as real-time processing of payments and the use of limits and collateral, which can be designed so that a netting system will be able to settle even if the participant with the single largest obligation to the system were to fail. Systems designed in this manner would, however, meet only the minimum standard. Such systems and their participants would still be exposed to financial risks if more than one institution were to fail during the same business day. Thus, this core principle also contains a best-practice statement—modern, well-designed multilateral netting systems should be able to settle even if there are multiple participant defaults.

7. Real-time processing is the processing of payment instructions on an individual basis at the time they are received by the system rather than at some later time, such as at the end of the day.

8. A payment is accepted by a system once it has passed all the relevant risk-control tests.

9. Multilateral netting refers to arrangements in which three or more parties net their obligations to a single position for each party.

The last risk addressed by the core principles is operational risk. Core Principle VII requires that a systemically important payment system should have a high degree of security and operational reliability appropriate to the nature and value of the payment transactions involved. What is appropriate will change over time as technology and practices evolve and as the demand for payment services changes. Operational reliability not only means having reliable and adequately backed-up hardware, software, and network facilities, but also having effective business procedures as well as trained, competent, and trustworthy personnel who can operate the system safely and efficiently.

### **The promotion of efficiency in systemically important payments systems**

To address the broad area of efficiency, the task force incorporated the remaining Lamfalussy standard and added two new principles. Efficiency is a particularly complex issue and raises many difficult conceptual and measurement issues. Core Principle VIII emphasizes the need for a payments system to satisfy the day-to-day needs of both system participants and their customers. It is important that system designers and operators consider how to provide the services and features demanded by the market, while at the same time minimizing risks in the system. The report notes that little would be gained by making a system so safe that it became too difficult or costly to use, leading participants and their customers to seek other, perhaps riskier, ways to make their payments. Thus, this principle specifically acknowledges the possible trade-off between the objectives of limiting the resource costs incurred in operating a payments system and enhancing the system's safety.

The report recognizes that a system must consider the structure of the local market, its history, and conventions, and reflect the current and prospective costs of resources needed to design, build, and operate the system. What works for one country will not necessarily be the best choice for another. Systems should be designed and operated so that they can adapt to the development of the markets for payment services both domestically and internationally, and to new technologies and procedures. The report suggests an analytical cost/benefit framework that can be used by countries in considering efficiency issues.

Core Principle IX incorporates another Lamfalussy standard and extends it to all systemically important payments systems. It recognizes that access criteria that facilitate competition among participants will

promote the provision of efficient and low-cost payment services to end-users. Nevertheless, the benefit of this competition may have to be weighed against the need to protect systems and their participants from the direct participation in the system by institutions that would expose participants to excessive risks. Any restrictions on access should be explicit, objective, and based on appropriate risk criteria. They should also be publicly available. The report states that criteria restricting access should be assessed in terms of their justification for safety and for efficiency. Consideration should be given to using forms of risk management that will be the least restrictive to competition.

Core Principle X addresses the governance arrangements for systemically important payments systems. Governance arrangements encompass the relationships between the payments system's management, its governing body, its owner, and its other stakeholders. Governance is particularly important because of the nature of the payments that systemically important systems handle (large-value and often time-critical), the significant interdependencies created among system participants, and because of the system's potential to affect the economy. Good governance arrangements will promote confidence in the system and trust in its operators. Governance arrangements should be effective (that is, provide sufficient incentives for the system management to pursue objectives that are in the interests of the system, its participants, and the public more generally), should provide for accountability to the owners and to the broader community served by the system, and should be transparent, providing all affected parties with access to information about decisions affecting the system and how they are taken.

Effective governance arrangements are likely to include the use of external parties, such as external auditors, to help provide the system's management or governing body with information on the effectiveness of the system's internal control system and on the system's operational efficiency.

### **The Role of Central Banks in Applying the Core Principles**

Various public sector agencies may pursue different aspects of the public policy objectives of safety and efficiency for systemically important payments systems. Central banks have a key role to play in the application of the core principles because of their strong interest in and responsibilities for financial

## Box 2

### Responsibilities of the Central Bank in Applying the Core Principles

- A. The central bank should define clearly its payment system objectives and should disclose publicly its role and major policies with respect to systemically important payment systems.
- B. The central bank should ensure that the systems it operates comply with the Core Principles.
- C. The central bank should oversee compliance with the Core Principles by systems it does not operate and it should have the ability to carry out this oversight.
- D. The central bank, in promoting payment system safety and efficiency through the Core Principles, should co-operate with other central banks and with any other relevant domestic or foreign authorities.

stability, their role in providing settlement accounts for payments-system participants, their ability to create liquidity for the financial system, and their responsibility for the implementation of monetary policy. Indeed, in some countries central banks have been given specific responsibilities for systemically important payments systems. The Bank of Canada, under the Payment Clearing and Settlement Act (PCSA), is responsible for the oversight of payments systems that could pose systemic risk.<sup>10</sup> The task force recognized this key role for central banks and developed four specific responsibilities for central banks in applying the core principles (Box 2).

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As with the core principles, the development of the four responsibilities for central banks draws heavily

10. Oversight focuses on the safety and efficiency of a *system*, as opposed to the safety and efficiency of individual participants or of the financial markets that the system serves. See Goodlet (1997) for a more detailed description of the PCSA.

on the Lamfalussy Report, which developed principles for co-operative central bank oversight. The task force added to these responsibilities and extended their application to domestic systems.

Whether oversight of payments systems by central banks is legislatively based or not, designers and operators of payments systems, as well as participants and other users, need to have a clear understanding of the central bank's role, responsibilities, and objectives in relation to these systems. Responsibility A requires a central bank to clearly define its objectives for a payments system and to publicly disclose its role and major policies. This will enable all interested parties to operate in a predictable environment and to act in a manner that is consistent with those objectives and policies. Such disclosure may be part of a legislative framework, but it will also likely involve the use of guidelines, other more or less formal publications, and speeches by senior officials. Canada uses all of these disclosure mechanisms. The PCSA forms the basis for the Bank of Canada's oversight. The Bank has published a guideline indicating how it will carry out its oversight responsibilities.<sup>11</sup> It reports on its oversight activities in its *Annual Report*, through speeches by senior officials of the Bank, and in published

11. With the publication of the final report of the task force (which included acceptance by the G-10 central bank governors), the Bank is in the process of modifying its current guideline.

papers. The *Canada Gazette* is used to formally disclose the systems that are designated as being subject to the Bank's oversight. Finally, the Bank consults with interested parties regarding its oversight activities. These efforts are intended to build public support for, and understanding of, the Bank's policies and to help avoid any unintended consequences for the private sector or for participants in the payments system.

The task force's requirement regarding public disclosure was developed in parallel with the IMF's work on its Code of Good Practices on Transparency in Monetary and Financial Policies. The IMF code identifies desirable transparency practices for central banks and other financial agencies in their conduct of payments-system oversight, among other things. The code requires agencies with oversight responsibility of payments systems to publicly disclose their role and to promote the timely public disclosure of general policy principles that affect the robustness of systemically important payments systems.

In late 1999, the IMF carried out an assessment of the Bank of Canada's compliance with the code in its role as the oversight agency of systemically important payments systems. The IMF assessed the Bank's activities in four major areas: (i) clarity of roles, responsibilities, and objectives; (ii) open process for formulating and reporting decisions; (iii) public availability of information on oversight policies; and (iv) accountability and assurance of integrity. The IMF considers the Bank's practices in all of these areas to be fully consistent with the code.<sup>12</sup>

In many countries, the central bank operates at least one systemically important payments system. In these circumstances, the central bank can and should take whatever actions are necessary to bring about compliance with the core principles (Responsibility B).

In other countries, such as Canada, the central bank is not the system operator, and the central bank's responsibility is to oversee compliance with the core principles. In these countries, the task force recognized that some oversight regimes are based on custom and practice, while other countries have established a statutory basis for central bank oversight by assigning

specific tasks, responsibilities, and powers to the central bank. It recommends serious consideration of the potential benefits of a statute-based approach to oversight for countries that are establishing or significantly revising an oversight regime for systemically important payments systems. Responsibility C states that central banks should oversee compliance with the core principles by systemically important systems that they do not operate and that they should have the ability to carry out this oversight. In Canada, the PCSA defines which systems are eligible for central bank oversight, the criteria for determining whether such systems should be subject to the Bank's oversight, and the powers to effectively carry out this oversight. The Bank's oversight activities are intended to result in the reduction or appropriate control of systemic risk.

The report of the task force also notes that central banks should exercise their responsibilities in the context of the overall financial infrastructure in the country, since there can be significant interactions between any one system and other elements of the financial infrastructure. For example, payments made in the system may be important for the settlement of obligations in a securities-settlement system. The PCSA is again helpful in this regard because it requires the Bank to exercise oversight not only for systemically important payments systems, but also for other clearing and settlement systems that could pose systemic risks (such as a clearing and settlement system for securities or foreign exchange).

The final responsibility (Responsibility D) recognizes the need for co-operation between the central bank (in its capacity as overseer or operator) and other authorities. Finance ministries, banking regulators, and competition authorities may also have an interest in this area. The oversight of payments systems, the surveillance of financial markets, and the supervision of financial institutions are complementary activities, and central banks should co-operate with all relevant authorities. Central banks should also co-operate with other central banks and with foreign authorities in promoting the safety and efficiency of systemically important payments systems, particularly where a system has cross-border characteristics. The principles for co-operative central bank oversight in these circumstances were set out in Part D of the Lamfalussy Report.

An important mechanism for the Bank of Canada to facilitate co-operation with other relevant agencies is the Financial Institutions Supervisory Committee (FISC). This federal committee was established in 1987

12. Although its activities in this regard are fully consistent with international best practices, the Bank plans to enhance its Web site to provide more comprehensive information on its oversight activities in a more readily accessible form. Information will include relevant legislation, descriptions of systemically important clearing and settlement systems subject to Bank of Canada oversight and their risk-containment arrangements, and links to other relevant Web sites, as well as the guidelines and relevant speeches and papers that are already available.



at the same time as the consolidation of two federal supervisory agencies into the Office of the Superintendent of Financial Institutions, and is composed of the Superintendent of Financial Institutions (the chairperson), the Deputy Minister of Finance, the Chairman of the Canada Deposit Insurance Corporation, and the Governor of the Bank of Canada. The purpose of the FISC is to exchange information and consult on issues relating to the supervision of financial institutions. The Bank uses this forum to discuss developments related to systemically important clearing and settlement systems with the other agencies. In addition, under the PCSA, if the Governor judges that a payments system could pose systemic risk and that it should be designated under the Act, the Minister of Finance must be of the opinion that such designation is in the public interest. This arrangement fosters consultation and co-operation between the Bank and the Department of Finance in this area.<sup>13</sup>

## The Application of the Core Principles to Canada's Large Value Transfer System

The first step in applying the core principles is to determine which of a country's payments systems are systemically important. While all payments systems are no doubt important to their users, systemically important systems are distinguished by their capability to trigger disruptions or transmit serious shocks across the financial system domestically or even internationally.

The Large Value Transfer System (LVTS) is owned and operated by the Canadian Payments Association. It processes large-value or time-sensitive electronic payment messages quickly and continuously throughout the day, transferring funds among its participants, either on their own behalf or on behalf of their customers.<sup>14</sup> On a typical day, the LVTS handles about 13,000 payment messages, transferring approximately \$100 billion of value.

In Canada, the Governor of the Bank of Canada, acting in accordance with the PCSA, has formed the

opinion that the LVTS could be operated in a manner that might pose systemic risk and, consequently, the LVTS was designated for oversight by the Bank of Canada. The Minister of Finance was of the opinion that it was in the public interest to take that action. In reaching this opinion, the Governor considered factors such as the large value of individual payments and the significant aggregate value of all payments handled by the system on a daily basis, the size of these payments relative to the resources of the system's participants, and the fact that it is used to settle financial transactions from other major clearing and settlement systems. (For example, the Debt Clearing Service operated by The Canadian Depository for Securities Ltd. uses the LVTS to settle payment obligations with its participants.)

### Does the LVTS comply with the core principles?

*Principle I: The system should have a well-founded legal basis under all relevant jurisdictions.*

This principle is probably one of the most difficult to apply to systemically important payments systems since it is very difficult to come to definitive conclusions. The LVTS is considered to have a well-founded legal basis. There are well-developed laws in Canada governing such areas as contracts, insolvency, and anti-competitive behaviour that have general application to individuals, institutions, and markets in the economy. There are also laws that are specifically applicable to the LVTS. The Canadian Payments Association (CPA), operator of the LVTS, is a body incorporated by an Act of Parliament, with the authority to operate payments systems and to create rules governing the operation of such systems. The arrangements governing the relationships among the direct participants in the LVTS are in the form of bylaws or rules. Once passed by the Board of Directors of the CPA and approved by the federal Cabinet, bylaws have the force of law.

The designation of the LVTS under the PCSA reinforces its legal basis. For example, the PCSA protects the participants in the LVTS by preventing creditors of any failed participants from challenging any of the LVTS rules or the outcomes arising from the application of those rules. This contributes to the certainty that the LVTS will settle in all circumstances as envisioned in its rules, and this certainty of settlement in turn permits participants to offer their clients intraday irrevocable and unconditional access to funds received via the LVTS.

13. Proposed financial institution legislation (Bill C-8) would result in the Minister of Finance also assuming some oversight responsibilities for payments systems. Arrangements are being established between the Department of Finance and the Bank of Canada to avoid any overlap or duplication of activities or actions.

14. For a detailed description of the design and operation of the LVTS, see Dingle (1998), Freedman and Goodlet (1998), and Goodlet (1997, 1999).

*Principle II: The system's rules and procedures should enable participants to have a clear understanding of the system's impact on each of the financial risks they incur through participation in it.*

*Principle III: The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and participants and which provide appropriate incentives to manage and contain those risks.*

The LVTS bylaw and associated rules created by the CPA give participants a clear understanding of the risks they incur by participating in the system. The system's design and procedures provide incentives for the participants to manage and contain these risks. For example, the system operates in real time with message-by-message processing. Each payment message must pass risk-control tests before being accepted by the system. Participants can decide whether they wish to grant intraday credit to other participants or not. If they grant such credit, they have strong incentives to manage this exposure carefully because they must collateralize the largest intraday credit position that they have granted. Participants that do not receive any intraday credit from other participants can continue to operate in the system by pledging their own assets. Collateral to support the use of intraday credit in the making of payments is pledged directly to the central bank, ensuring immediate access to liquidity, if necessary. The relevant bylaw and rules cover participant withdrawal both in normal and abnormal situations and are available to all interested parties.

*Principle IV: The system should provide prompt final settlement on the day of value, preferably during the day and at a minimum at the end of the day.*

*Principle V: A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.*

The LVTS provides final settlement at the end of the day—between 18:30 and 20:00—(defined as the time of debiting and crediting of participants' accounts at the Bank of Canada to settle their net positions) and thus meets the minimum standard. The LVTS also meets the more demanding best practice (i.e., intraday settlement) because once a payment message is

accepted by the system (i.e., has passed the risk-control tests), it is certain to settle (that is, those participants expecting to receive funds over the system will, in fact, receive them at the time expected). This certainty of settlement is possible because, no matter what else happens, the risk-control arrangements ensure that net LVTS positions will be settled on the books of the Bank of Canada. Certainty of settlement means that funds received over the LVTS are available to LVTS participants (and their customers) intraday on an irrevocable and unconditional basis. This is sometimes referred to as intraday receiver finality.

Bilateral and multilateral limits control the exposures that any one participant can create in the LVTS. The single largest exposure created by any one participant is fully collateralized by the participants. In the extremely unlikely case of failures of more than one participant occurring within the same LVTS business day, the Bank of Canada guarantees that the system will settle. Collateral pledged by private sector participants would be used before the Bank of Canada guarantee would be invoked.

*Principle VI: Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.*

The LVTS uses claims on the Bank of Canada to settle net payment obligations among those participants that participate directly in the system. The design of the LVTS ensures that sufficient balances will be available at the central bank for settlement purposes under all circumstances.

*Principle VII: The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.*

The LVTS is a highly secure system. It uses the secure and reliable SWIFT communication arrangements for the transmission of payment instructions. Controls ensure that only authorized users can access the LVTS. The LVTS has a secondary operation site, in a different part of the country. Backup processing capacity is regularly tested. Emergency committees exist to deal with any operational problems either in the LVTS or in other systems critical to the functioning of the LVTS (for example, the Debt Clearing Service, which is used by LVTS participants to pledge collateral to the Bank of Canada). Contingency plans are well developed, and the system's arrangements for controlling various

operational risks are examined annually by an independent auditing firm. The Bank of Canada, as oversight agency, participates in the latter process. LVTS operations are administered by experienced CPA management and staff.

*Principle VIII: The system should provide a means of making payments which is practical for its users and efficient for the economy.*

This principle is difficult to assess. The LVTS was developed by private sector financial institutions under the auspices of the CPA. It fully addresses the Bank of Canada's concerns about systemic risk. The private sector participants also focused on creating the least costly arrangement for processing large-value or time-sensitive payments. The system minimizes the amount of collateral necessary to support the use of intraday credit, while delivering real-time processing of payment messages, certainty of settlement, and intraday receiver finality.

There do not appear to be any signs of system inefficiencies. For example, standards exist for payment messages, messages are processed promptly by the system, pricing to participants is based on cost recovery, participants can, and do, influence the hours of operation and other design issues to meet their needs and the needs of their customers. Payments are processed individually as they are entered into the LVTS; there have been no cases of payments being queued for prolonged periods or remaining in queues at the end of the day and not being processed. The system has the capacity to handle significant growth in payment volumes.

*Principle IX: The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.*

The criteria for becoming a direct participant in the LVTS are stated in the LVTS bylaw and allow all CPA members to become LVTS participants.<sup>15</sup> There are no restrictions related to volume or value of payments processed by a direct participant.

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15. An LVTS participant must be a CPA member, must have entered into appropriate deposit, loan, and security agreements with the Bank of Canada, and must possess the technical proficiency to be able to meet its responsibilities as an LVTS participant—that is, be able to operate according to certain specified standards (such as SWIFT participation) and have adequate backup and resources in place to be able to operate in a technically smooth fashion.

CPA members that choose not to be direct participants in the LVTS can still make payments through the LVTS on their own account and on behalf of their customers by using the services of a direct participant.

Restrictions may be placed on the ability of foreign bank branches to become direct participants in the LVTS if there are legal concerns arising from the jurisdiction in which the foreign banks are incorporated or in which they operate.

Foreign banks currently operating in the LVTS do so through their Canadian subsidiaries. These subsidiaries are incorporated under Canadian law, and they and their creditors are therefore subject to all Canadian laws including the PCSA. Beginning in 2000, foreign banks were able to operate in Canada using branches. Foreign banks will be eligible to become direct participants in the LVTS (through their branches) provided they can satisfy the Bank that their participation would not jeopardize the operation of the LVTS measures to control systemic risk (for example, the use of netting and collateral). Where such concerns arise, the Governor of the Bank of Canada may limit the ability of a foreign bank to operate as a direct participant in the LVTS, or in the extreme, may prevent them from becoming direct participants.

*Principle X: The system's governance arrangements should be effective, accountable, and transparent.*

The LVTS is owned and operated by the CPA. There are no separate governance arrangements for the LVTS, although separate committees composed of the direct participants (including the Bank of Canada) exist to address various operational and design issues. The CPA operates under an Act of Parliament, which specifies membership criteria, the composition of the board of directors, public-disclosure requirements, and other requirements. The CPA Board is responsible for the operation of the LVTS. Plans and objectives are documented, and progress is assessed. Major decisions are taken after consultation with interested parties, and decisions are communicated promptly. The Cabinet of the federal government must approve all bylaws. The Bank of Canada oversees the LVTS for systemic-risk concerns, and its dealings with the CPA in this regard are publicly disclosed.

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When assessed against the 10 core principles, the LVTS is in full compliance and exceeds the minimum requirements set out in Core Principles IV and V.

## International Use of the Core Principles

The task force published two consultative drafts of its report and consulted widely with many countries at different stages of economic development from all parts of the world. The responses to the draft reports and the consultations have indicated strong and widespread support for the core principles. This strong consensus makes the core principles a potentially powerful tool in encouraging the development of well-risk-proofed payments systems. The report has been recognized by the Financial Stability Forum<sup>16</sup> as a significant contribution to efforts to strengthen financial systems. The core principles were being widely used to analyze payments systems and

16. The Financial Stability Forum was established by the Group of Seven (G-7) countries to promote information exchange and to coordinate activities of national authorities, international institutions, and international regulatory or expert groups with responsibilities for various aspects of financial stability. Canada is represented by the Department of Finance, the Office of the Superintendent of Financial Institutions, and the Bank of Canada.

to guide oversight and reform activities even before the final report was published, and it appears likely that they will continue to play a key role in contributing to financial stability in the years to come. In this regard, in late 1999, Canada participated in a pilot project administered by the IMF and the World Bank that involves assessing a country's compliance with a number of international standards and codes. This included an assessment of the LVTS with the core principles for systemically important payments systems, and the IMF concluded that the LVTS is in full compliance. These assessments are part of what is known as a Financial Sector Assessment Program (FSAP). The results of the assessment are published in a Report on the Observance of Standards and Codes and are available on the IMF Web site ([www.imf.org](http://www.imf.org)). The assessments are typically made by experts from other countries who are members of a team led by the IMF. The Bank of Canada has participated in the assessment of other countries' payments systems as part of IMF missions.

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National Bank of Belgium  
Banco Central do Brasil  
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Bank of France  
Deutsche Bundesbank  
Hong Kong Monetary Authority  
National Bank of Hungary  
Bank of Italy  
Bank of Japan  
Bank of Negara Malaysia  
Bank of Mexico  
Netherlands Bank

Central Bank of the Russian Federation  
Saudi Arabian Monetary Agency  
Monetary Authority of Singapore  
South African Reserve Bank  
Sveriges Riksbank  
Swiss National Bank  
Bank of England  
Board of Governors of the Federal Reserve System  
Federal Reserve Bank of New York  
Central Bank of West Africa States  
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