

**Payment systems in  
Canada**



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## List of abbreviations

ABM	automated banking machine
ACSS	Automated Clearing Settlement System
ACV	Aggregate Collateral Value
ASE	Alberta Stock Exchange
ASO	additional settlement obligation
ATB	Alberta Treasury Branches
ATS	alternative trading system
BEA	Bills of Exchange Act
BNDS	Bank Note Distribution System
BoC	Bank of Canada
CDCC	Canadian Derivatives Clearing Corporation
CDN	Canadian Dealing Network
CDNX	Canadian Venture Exchange
CDS	Canadian Depository for Securities
CIPF	Canadian Investor Protection Fund
CLS	continuous linked settlement
CLSB	Continuous Linked Settlement Bank
CP Act	Canadian Payments Act
CPA	Canadian Payments Association
CSA	Canadian Securities Administrators
CUCC	Credit Union Central of Canada
CVMQ	Commission des valeurs mobilières du Québec
DCS	Debt Clearing Service
DTCC	Depository Trust & Clearing Corporation
IDA	Investment Dealers Association of Canada
IDB	inter-dealer broker
IDP	Interac Direct Payment
IFIC	Investment Funds Institute of Canada
LVTS	Large Value Transfer System
MFDA	Mutual Fund Dealers Association of Canada
NASD	National Association of Securities Dealers Inc.
NYSE	New York Stock Exchange
OSFI	Office of the Superintendent of Financial Institutions
PAC	Payments Advisory Committee
PCSA	Payment Clearing and Settlement Act
SAC	Stakeholder Advisory Council
SCD	Shared Cash Dispensing
SRO	self-regulatory organisation

*Canada*

SSS        Securities Settlement Service  
TSE-RE    Toronto Stock Exchange Regulation Services Inc  
VSE        Vancouver Stock Exchange

## Introduction

Regulatory responsibility for payments in Canada is shared by the Bank of Canada and the Ministry of Finance. The Bank of Canada has responsibility for oversight of payment and other clearing and settlement systems for the purpose of controlling systemic risk. The Minister of Finance has oversight powers respecting the Canadian Payments Association as well as payment, clearing and settlement systems that it designates for oversight. The two bodies coordinate oversight activities through a non-statutory body called the Payments Advisory Committee (PAC).

The Canadian Payments Association (CPA), established in 1980, is a not-for-profit organisation with membership open to deposit-taking and non-deposit-taking financial institutions. The CPA has a mandate to establish and operate systems for clearing and settling payments, to interact with other such systems and to facilitate the development of new payment technologies. Under this mandate, the CPA owns and operates the two national payment systems: the Large Value Transfer System (LVTS) and the Automated Clearing Settlement System (ACSS).

The LVTS, Canada's principal system for clearing large-value and time-sensitive payments, began full operations in February 1999. It is an electronic credit transfer system that provides real-time net processing and intraday finality for payments. The risk management arrangements in place ensure that payments are final and irrevocable in the event of a default by one participant, the largest net debtor, or more participants.

The ACSS was introduced in 1984 to succeed the previous system. With the introduction of the LVTS, it is now primarily a retail payment oriented system. The ACSS is a deferred net settlement system that clears and settles electronic payments and paper-based payments, such as cheques, in Canada.

For both the LVTS and the ACSS, access to the systems is tiered, with CPA members entering through those members that participate directly in the systems. Settlement occurs across accounts maintained by these direct participants at the Bank of Canada. The LVTS is by far the larger system by value, accounting for approximately 84% of the total value of payments cleared and settled.

Canadians have a wide variety of options to make cashless payments. Cheques continue to be important although their usage for large-value payments has declined significantly since the commencement of the LVTS. On the retail level, cheques continue to be used but there has also been strong growth in electronic payment methods, such as paying bills over the telephone or internet, and in debit and credit card payments.

In Canada, the most prevalent credit card networks are the Visa and MasterCard schemes. The only Canadian nationwide debit card network is offered by the Interac Association. Interac offers two services: a shared network for cash dispersion from automated banking machines (ABMs), and a shared network to allow debit cardholders to pay for purchases at the point of sale (EFTPOS). Both services are widely used and accepted by Canadians.

There are two main equity markets in Canada, both of which use electronic trading systems: the Toronto Stock Exchange and the TSX Venture Exchange (TSX). The Toronto Stock Exchange is a modified auction order-driven market focused on "senior" equity issues. It is the largest exchange in Canada. The TSX Venture Exchange is a small market focused primarily on small and emerging companies. The Bourse de Montreal, a continuous auction order-driven market, is Canada's principal market for exchange-traded derivatives products.

The fixed income market in Canada is highly decentralised and institutional in nature. Trading between dealers and clients is typically quote-driven, taking place bilaterally over the telephone. The inter-dealer market is dominated by four brokers.

Regulation of the securities industry is carried out by provincial securities authorities. Some aspects of regulation are delegated to self-regulatory organisations. The most important are the exchanges already mentioned and a national body of investment dealers called the Investment Dealers Association (IDA).

There are two systems for clearing and settling securities transactions: the Debt Clearing Service (DCS) and the Securities Settlement Service (SSS). Both are owned and operated by the Canadian Depository for Securities Limited (CDS), which is itself owned by commercial banks, members of the IDA, and the Toronto Stock Exchange. By value, the DCS is the larger of the two systems.

The DCS facilitates the clearing and settlement of all Canadian dollar-denominated debt securities. It can be described as a model 2 delivery versus payment mechanism: transactions are settled with

securities ownership moving on a gross basis in real time while funds positions are calculated and settled at the end of the day via the LVTS. The risk containment arrangements in place ensure that the DCS is able to settle given the failure of the participant with the single largest net obligation to CDS.<sup>1</sup> The system is designated for oversight by the Bank of Canada.

The SSS facilitates the clearing and settlement of equity and US dollar-denominated debt securities. It is by far the smaller of the two systems with respect to the value of transactions handled. The system completes three cycles each day. At the end of each cycle, securities positions are moved on a gross basis and cash payments are netted and completed via designated paying agencies. Canadian funds settlement is completed through the ACSS while US funds settlement is completed through Fedwire. The SSS does not operate in real time and does not have risk containment arrangements as robust as those in the DCS. Plans are currently under way to move the clearing and settlement of these items to an enhanced DCS in 2003.

The Bank of Canada interacts in the payment and securities, clearing and settlement systems in various ways. First, the Bank of Canada oversees the LVTS, the DCS and the Canadian dollar leg of CLS Bank operations for their potential to pose a systemic risk. Second, the Bank provides a settlement account to each of the CPA members that participate directly in the ACSS and the LVTS. Settlement is completed across these accounts. Third, the Bank provides collateralised overdrafts to these same participants to fund end-of-day obligations in these systems if necessary. Fourth, the Bank accepts collateral and provides various collateral services in support of LVTS intraday operations, and advances. Fifth, the Bank acts as the settlement agent for CDS with respect to the DCS, making and receiving payments on CDS's behalf through the LVTS. The Bank also acts as banker for CLS Bank, providing it too with a settlement account and making and receiving LVTS payments on its behalf. Finally, the Bank of Canada is a member of the CPA and participates directly in the LVTS and the ACSS. The Bank is also a participant in the DCS.

Overall, the Bank of Canada has a responsibility towards promoting the economic and financial welfare of Canada. In doing so, the Bank contributes to the regulation of payment and other clearing and settlement systems in order to control risk to the Canadian financial system and to promote its efficiency and stability.

## **1. Institutional aspects**

### **1.1 The general institutional framework**

The general legal and regulatory framework governing the payment and other clearing and settlement systems is discussed first followed by a description of those institutions eligible to participate in the Canadian payment system.

#### **1.1.1 The legal and regulatory framework**

The general legal framework for the Canadian payment system involves "public" laws as well as "private" laws. Public laws are rules that have compulsory application by statute and are designed to promote the public interest. They include the Canadian Payments Act, the Payment Clearing and Settlement Act, the Bank of Canada Act, the Bank Act, the Bills of Exchange Act, provincial securities laws, federal insolvency laws, and federal and provincial consumer protection laws.

Private laws are those rules that establish the legal framework of voluntary arrangements and are created to define and promote individual responsibilities and rights. These laws include property law, commercial law and contract law. They relate, among other things, to the autonomy of contracting parties, the liability for contractual commitments, and good faith in mutual relations. For example, the deposit agreements and payment service contracts between individuals and their deposit-taking institutions, as well as the membership criteria, by-laws, procedural rules and operating standards of

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<sup>1</sup> See Section 4.2.1. The DCS will settle even given the failure of the largest extender of credit in the system.

Interac, Visa and SWIFT, are legally validated through private law. However, the by-laws and procedural rules of the CPA, which is a statutory body, are defined under both public and private laws.

The most relevant laws and voluntary standards are discussed below.

#### *The Canadian Payments Act (CP Act)*

The CP Act establishes the role of the Canadian Payments Association (CPA) and the Minister of Finance in the Canadian payment system. The Act gives certain oversight powers to the Minister of Finance respecting the payment systems and the CPA. See Section 1.3.1 for more on the role of the Minister of Finance.

The legislation gives the CPA board of directors the power to make by-laws (which require the approval of Governor in Council) and rules that set out the procedures and standards governing the daily operations of participants in its national clearing and settlement systems. Among the items covered in the by-laws are the organisational structure of the clearing systems; the general procedures for the clearing of payments and their subsequent settlement on the books of the Bank of Canada; the description of which classes of items are eligible for clearing in the national system; and the definition of the rights and responsibilities of member institutions. These rules and by-laws can be considered to form the operational backbone of the national clearing and settlement system. See Section 1.3.2 for more information on the CPA.

#### *The Payment Clearing and Settlement Act (PCSA)*

The PCSA, which was proclaimed in July 1996, gives the Bank of Canada responsibility for the oversight of payment and other clearing and settlement systems in Canada for the purpose of controlling systemic risk. The Bank designates those systems with the potential to create systemic risk as being subject to the PCSA and oversees designated systems on a continuing basis for the appropriate control of systemic risk.<sup>2</sup> The PCSA also contains provisions that, when combined with federal insolvency legislation, reinforce the legal enforceability of netting in designated systems. In addition, the PCSA contains provision to ensure that the settlement rules of designated systems are immune to legal stays or other challenges, even in cases where a participant in one of these systems fails. Thus, the PCSA increases the certainty surrounding the legal arrangements governing the operations of designated clearing and settlement systems.

#### *The Bank of Canada Act (BoC Act)*

The BoC Act, by governing the powers and activities of the central bank, has an important influence on the institutional framework of the Canadian payment system. Under the BoC Act, the Bank is the sole issuer of notes in Canada. The Bank may open accounts for commercial banks and other members of the CPA, and these accounts are used to effect the final settlement of payment liabilities in the national systems. The Bank of Canada is authorised to make loans or advances, on a secured basis, to banks and other members of the CPA. In this way, the Bank serves as an ultimate source of liquidity for the payment system.<sup>3</sup>

#### *Acts governing exchange*

The Bills of Exchange Act sets out the statutory framework governing cheques, promissory notes and other bills of exchange. The Act deals with matters such as what constitutes a valid bill of exchange and the rights and obligations of various parties to a bill, including provisions establishing liability in the event of fraud or forgery, and responsibilities in the event of the loss of an instrument.

The Depository Bills and Notes Act allows clearing houses or depositories to transfer depository bills or notes, such as bankers' acceptances, from seller to buyer through book-entry transfers.

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<sup>2</sup> The PCSA directs the Bank to be concerned with the oversight of clearing and settlement systems, rather than the regulation of a particular financial market or the supervision of the affairs of individual financial institutions that may be members of these systems. Any matter that is not directly related to an institution's participation in a designated clearing and settlement system is not subject to the Bank's oversight under the PCSA.

<sup>3</sup> In addition to banks and members of the CPA, the Bank can make loans to a designated clearing house under the PCSA.

### *Federal and provincial financial institutions statutes*

The federal financial institutions statutes (Bank Act, Trust and Loan Companies Act, Cooperative Credit Associations Act and Insurance Companies Act), coupled with legislation governing provincially incorporated financial institutions, provide the statutory underpinnings of the Canadian financial system. These statutes regulate such things as corporate ownership and business powers, and define many aspects of the relationships between financial institutions and their customers, the government and some government agencies.

Governed by the Office of the Superintendent of Financial Institutions Act, the Office of the Superintendent of Financial Institutions (OSFI) is responsible for regulating and supervising federally chartered financial institutions, which includes many of the financial intermediaries which provide payment services. OSFI administers the various federal financial institutions statutes and, in carrying out its responsibilities, OSFI identifies institution-specific risks and intervenes in a timely manner to minimise losses to depositors and policyholders.

The various provincial securities commissions regulate and oversee different aspects of the securities industry and capital markets in Canada. For example, the Ontario Securities Commission administers and enforces the Ontario Securities Act, and the Commission des valeurs mobilières du Québec administers and enforces the Quebec Securities Act. Some provincial securities commissions are involved in the oversight of certain clearing and settlement systems, such as the Canadian Depository of Securities and the Canadian Derivatives Clearing Corporation.

### *The Code of Practice for Consumer Debit Card Services (the Code)*

The Code of Practice for Consumer Debit Card Services is voluntary and not legally binding on those organisations that endorse the Code. The Code was developed through consultation among consumer groups, financial institutions, retailers and government, with the intent of establishing minimum levels of consumer protection in debit card arrangements. The Code applies to services that use debit cards and personal identification numbers (PINs) to access automated banking machines, point of sale terminals and debit card terminals. The Code outlines the responsibilities of card and PIN issuers; establishes content guidelines for cardholder agreements and standards for record-keeping and the recording of transactions; contains provisions dealing with security and liability for loss in the event of unauthorised use; and defines procedures for the resolution of disputes.

### **1.1.2 Financial intermediaries providing payment services**

Traditionally, access to membership in the CPA, and hence to the payment system, in Canada has been restricted to deposit-taking financial institutions. These institutions typically accept deposits that are transferable by order to a third party, ie chequable deposit accounts. The deposit-taking sector consists of commercial banks, cooperative credit institutions, trust and loan companies, and governmental savings institutions. Non-deposit-taking financial institutions had been users of the payment services provided by the deposit-taking institutions rather than providers of payment services themselves. However, as of November 2001, the list of organisations eligible for CPA membership under the CP Act was expanded to include: life insurance companies; securities dealers that are members of the Investment Dealers Association of Canada or the Bourse de Montreal; and money market mutual funds.<sup>4</sup>

### *Commercial banks*

Commercial banks, originally called "chartered" banks, were established early in the 19th century primarily to serve the commercial, industrial and governmental sectors of the Canadian economy. During the past 35 years, they have competed aggressively with other financial institutions in the market for personal financial services.

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<sup>4</sup> On 1 June 1992, a new legislative framework for federal financial institutions came into force with the proclamation of the Bank Act, the Cooperative Credit Associations Act, the Trust and Loan Companies Act, and the Insurance Companies Act. Under the new legislation, federal financial institutions are now able to offer most kinds of financial services either directly through subsidiaries, or as an agent through a networking relationship. For an overview of this legislative framework, see Daniel, F, C Freedman and C Goodlet (1992-93): "Restructuring the Canadian financial industry", *Bank of Canada Review*, Winter.

As of December 2001, there were 14 domestic banks, 33 foreign bank subsidiaries, and 14 foreign bank branches in Canada. The six largest domestic banks account for approximately 90% of the banking industry's assets, and operate on a nationwide basis and internationally. The remaining banks primarily concentrate on serving the needs of either a particular region or a particular sector of the economy, and are mostly wholly owned subsidiaries of foreign banks.

All commercial banks are federally incorporated and operate under the provisions of the Bank Act. This federal act regulates various aspects of the organisation and activities of the banks, such as their incorporation, ownership, corporate governance, and business powers. Under the Act, the federal government is responsible for the regulation of the banking sector and OSFI is the federal agency responsible for supervising all banks in Canada.

Commercial banks accept various types of deposits in domestic and foreign currency from the public, including: accounts payable on demand; personal savings deposits - both chequable and non-chequable - non-personal notice deposits; and fixed-term deposits. Banks make loans to businesses and consumers, make residential mortgage loans and hold a portfolio of securities. Banks also deal in foreign exchange, provide safekeeping facilities and perform various other services. In the instance of the largest banks, these operations are, for the most part, carried out through their extensive network of branches.

### *Cooperative credit institutions*

#### *(a) Local credit unions and caisses populaires*

Local credit unions and caisses populaires are cooperative financial institutions owned and controlled by their members. Their ownership and corporate governance are based on cooperative principles and their main purpose is to provide deposit, loan and other financial services to their owner-members. These institutions range in size from small, community-based institutions to large multi-branch operations. As of 30 September 2001 there were 1,635 local credit unions and caisses populaires.

Local credit unions and caisses populaires are incorporated and operate under provincial legislation as autonomous organisations. The legislation typically prescribes the types of investment permitted, required liquidity reserves and other guidelines. In some provinces, an annual audit of the operations of a local credit union or caisse populaire must be performed by outside auditors. Moreover, regular inspections are carried out by provincial government departments or their agents to ensure that local credit unions and caisses populaires are complying with the provisions of the applicable legislation.

Local credit unions and caisses populaires were originally established to encourage saving and to provide loans to members who had difficulty obtaining credit elsewhere. Today, most have adopted a full-service approach and offer a variety of chequing and savings accounts, personal and mortgage loans, small business loans,<sup>5</sup> commercial credit, traveller's cheques, safekeeping facilities, and automated banking machines.

#### *(b) Provincial centrals*

Centrals have been established by local credit unions and caisses populaires as second-tier organisations of the credit union movement to increase the stability of, and provide services to, local member credit unions and caisses populaires.

Centrals are incorporated or registered under provincial legislation - typically a credit union act - and are owned primarily by their member local credit unions and caisses populaires. (A small number of local credit unions and caisses populaires are not, however, members of a central). Each central is also an entity independent of other centrals, whether located in the same or another province, though it might have operational links with them.

The primary functions of centrals are: to provide member local credit unions and caisses populaires with services they could not otherwise provide for themselves; to assist local credit unions and caisses populaires in increasing the efficiency of their operations; and to enhance the effectiveness and usefulness of local credit unions and caisses populaires to their own members. These functions

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<sup>5</sup> For more on the cooperative credit system in Canada, see O'Connor, S (1989): "The evolution of the cooperative credit system in Canada", *Bank of Canada Review*, February.

involve, among other things, the investment of surplus funds of local credit unions and caisses populaires and the lending of funds to those institutions when they cannot meet the local demand for loans, the administration of online computer systems, and the provision of clearing services. Local credit unions and caisses populaires are permitted to invest and deposit their statutory liquidity reserves and other surplus funds with their central, and many do so. To accommodate these funds, centrals offer a range of demand and fixed-term deposit accounts. Funds that are required by a central beyond those provided by its member local credit unions or caisses populaires are obtained by borrowings either from commercial banks or from the national central.

As of 31 December 2001 there were 11 centrals in Canada.

(c) *Federations of centrals*

Two “third-tier” organisations exist to provide centrals and other cooperative organisations with coordinated financial and support services similar to those offered by centrals themselves to their member local credit unions and caisses populaires. The most important service provided by each with respect to payments is that they are members of the CPA, thereby providing their members with access to the Canadian payment system.

The Credit Union Central of Canada (CUCC) was incorporated in 1953 as the Canadian Cooperative Credit Society Limited under the federal Cooperative Credit Associations Act, which is now administered by OSFI. Membership in the CUCC is open to centrals and to other cooperative organisations that meet pre-established criteria.

The Fédération des caisses Desjardins du Québec is incorporated under a law of that province. In 1999, Desjardins consolidated its structure, merging the 11 federations and the Confédération des caisses populaires et d'économie Desjardins du Québec into a single federation.

*Trust and loan companies*

Trust companies can perform both financial intermediary and fiduciary functions. Under the financial intermediary function, trust companies can accept funds from the public in exchange for their own instruments, such as savings and chequing deposits and guaranteed investment certificates. This aspect of their business is often referred to as the “guaranteed funds portion” and differs little from the deposit-taking business of other deposit-taking institutions. Trust companies are the only corporations in Canada with the power to conduct fiduciary business. Under this function, they act as executors, as trustees and administrators under wills or by appointment, as transfer agents for stock and bond issues, as trustees for bond issues, and in a variety of other agency and trustee capacities.

In June 1992, legislation was passed which permitted banks and federal insurance companies to own trust company subsidiaries. Subsequently, several large trust companies were acquired by chartered banks with the result that the non-bank-owned trust companies now constitute a relatively small segment of the industry.

Loan companies may also accept deposits from the public and issue both short- and long-term debentures. Many loan companies are subsidiaries of commercial banks.

Trust and loan companies may be incorporated under either federal or provincial legislation. Federally incorporated companies are supervised by OSFI. Provincially incorporated trust and loan companies are regulated and supervised by their respective provincial governments, although arrangements are in place for some provincial institutions to be reviewed by OSFI. Trust and loan companies, whether federally or provincially incorporated, must be licensed in each province in which they operate.

As of 31 December 2001 there were 41 trust companies and 11 loan companies in Canada.

*Government savings institutions*

There are two government savings institutions in Canada - ATB Financial and the Province of Ontario Savings Office.

(a) *ATB Financial (formerly the Alberta Treasury Branches)*

The Alberta Treasury Branches were established in 1938 under the Provincial Treasury Branches Act to provide savings and loan services. The Act established the “Province of Alberta Treasury Branches” as a division of the provincial Treasury Department. However, the Treasury Branches were kept separate from the other operations of the Department.

In October 1997, Alberta Treasury Branches became ATB Financial, a provincial crown corporation, under the authority of the Alberta Treasury Branches Act Chapter A-37.9, 1997 and Treasury Branches Regulation 187/97. ATB Financial operates under a board of directors, and has investment, liquidity and risk standards comparable to other financial institutions.

ATB Financial provides a wide range of financial services to its customers. These services include: chequing and savings accounts; loans; safekeeping facilities; traveller's cheques; money orders and drafts; foreign remittances and money transfers; and mutual funds.

*(b) Province of Ontario Savings Office*

The Province of Ontario Savings Office was established in 1921. The legislation empowers the Treasurer of Ontario to borrow money by means of deposits in any amounts and from any persons. The Treasurer may open offices for this purpose anywhere in Ontario. The provincial Cabinet may fix the conditions as to interest and repayments that will govern deposits.

The Province of Ontario Savings Office offers chequing and savings accounts, term deposits and germinated investment certificates to its customers. The Savings Office also offers other services, including safekeeping facilities, traveller's cheques and money orders.

*Life insurance companies*

The Canadian life and health insurance industry provides individual and group life insurance, private sector health insurance (to complement public insurance plans) and annuities (which include private pensions). While the insurance sector has traditionally been focused on life and health insurance products, there is now an increasing focus on wealth management and retirement products.

As of August 2001, Canada's life and health insurance industry comprised 117 firms - 107 stock companies (owned by shareholders) and 10 mutual companies (owned by policyholders), down from a total of 168 companies in 1990.

The federal and provincial governments share jurisdiction over life and health insurance companies. However, federally incorporated companies account for over 90% of the total premium income for the industries. Federal supervision is administered by OSFI. The majority of provinces have agreements with the federal regulator to carry out prudential supervision of provincially incorporated companies on their behalf.

In June 2001, the government passed legislation reforming the regulatory framework governing the financial services industry. It included measures that will allow life and health insurance companies access to the Canadian payment system by becoming members of the CPA. This will also allow them to offer payment services to customers, similar to those offered by banks. Although legally not permitted to issue deposits, life and health insurance companies offer their clients "deferred annuities" which are structured to operate very similarly to term deposits or guaranteed investment certificates.

*Securities investment dealers*

The Canadian securities industry plays a key role in Canada's financial system, providing a mechanism for raising capital, whether in the form of debt or equity, and a means to channel savings into portfolio investments.

Until the late 1980s, most Canadian securities firms were closely held independent entities. Since the 1987 removal of the restrictions on the ability of federal financial institutions to own securities dealers, commercial banks have acquired all of the large securities firms in Canada and control over 90% of the capital of the securities industry. At the end of 1999 there were 188 securities firms operating in Canada.

All Canadian securities firms are registered by the provincial and territorial securities regulators, which are responsible for the regulation of the industry. The Canadian Securities Administrators is the forum where the provincial securities regulators meet to further the goals of regulatory harmonisation and mutual recognition of standards. The provincial securities regulators delegate some authority to the self-regulatory organisations (SROs), which have a long history of regulating and supervising market intermediation in Canada. The well recognised SROs are the Toronto Stock Exchange, the Bourse de

Montreal, the TSX Venture Exchange and the Investment Dealers Association of Canada (IDA), whose membership includes the majority of firms actively engaged in securities trading in Canada.<sup>6</sup>

Securities firms have traditionally offered their clients “deposit-like” products to facilitate the management of liquid balances and typically pay a competitive rate of interest. These firms can now become members of the CPA and provide payment services to their customers.

### *Money market mutual funds*

The Canadian investment funds industry has been one of the fastest-growing financial sectors in Canada. Over the past 25 years, mutual funds have become a very popular investment vehicle, providing Canadians with the opportunity to participate in the ownership of a diversified range of financial assets, while providing liquidity and ease of administration. The rapid growth in the mutual fund market through much of the 1990s was in response to declining interest rates and attractive returns being posted on equity-related investments.

The first Canadian mutual fund appears to have been established in 1931.<sup>7</sup> The instrument appears to have evolved from the investment trusts popular in the United Kingdom in the 19th century, and the closed-end investment companies which were popular in the United States early in the 20th century. However, the majority of mutual funds existing in Canada today are structured as trusts and are sold on an open-end basis. Reflecting the portfolio in which the fund invests, mutual funds can broadly be classified into three categories: money market funds, fixed income funds and equity funds.<sup>8</sup>

In Canada, mutual funds are regulated by provincial securities commissions. Some commissions have delegated some supervision to a self-regulatory organisation called the Mutual Fund Dealers Association of Canada (MFDA).

Money market mutual funds, which invest in short-term commercial paper, bankers’ acceptances and treasury bills,<sup>9</sup> are now eligible for membership in the CPA and can thereby offer payment services to customers.

## **1.2 The role of the central bank**

### **1.2.1 Operational roles**

The Bank of Canada does not own or operate any payment or other clearing and settlement systems, although it is a member of the CPA and a participant in CDS. The Bank does, however, provide the following services.

#### *Provision of a settlement asset*

The CPA’s Large Value Transfer System (LVTS) and the Automated Clearing Settlement System (ACSS) use claims on the Bank of Canada to settle net payment obligations among those participants that participate directly in these systems.<sup>10</sup> This is supported through the provision of domestic currency settlement accounts by the Bank of Canada to participants.

#### *Standing liquidity facility*

The Bank of Canada provides collateralised advances to the direct participants in the LVTS and the direct clearing members of the ACSS. These advances offer a source of immediate liquidity should they need to fund their end-of-day payment obligations.

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<sup>6</sup> See Section 4.1 for more on the Canadian securities exchanges.

<sup>7</sup> For an overview of the development of the industry, see Fine, E and M Zelmer (1992): “The mutual fund market in Canada”, *Bank of Canada Review*, Winter.

<sup>8</sup> Other types of managed funds such as hedge and pension funds also exist.

<sup>9</sup> Treasury bills typically have a maximum average term of 180 days.

<sup>10</sup> See Section 3 for more on the LVTS and the ACSS.

An LVTS advance is a secured loan provided by the Bank of Canada to a participant in the LVTS to cover a net amount owed by the institution in its end-of-day LVTS position. The interest rate on the one-business-day loan is set at the upper limit of the Bank of Canada's 50 basis point operating band for the overnight interest rate - the Bank Rate. Positive balances are paid interest at the bottom of the operating band.

ACSS advances (also secured) are provided to the direct clearing members of the CPA to cover net amounts owed by the institution arising from the ACSS. The interest rate charged for these advances is set at 150 basis points above the operating band. Positive balances are paid interest equal to the bottom of the operating band minus 150 basis points.

#### *Collateral services*

The Bank of Canada performs several functions respecting the collateral pledged to it in support of overnight advances and participants' use of the LVTS. The Bank establishes the types of assets acceptable for pledging, values the securities that are pledged, and reports the valuations to the LVTS system operator.

#### *Settlement agent services*

The Bank of Canada acts as settlement agent, or "banker", for the Debt Clearing Service (DCS), which is operated by The Canadian Depository for Securities Limited (CDS). The DCS clears trades of virtually all debt securities and reports the net payment obligations owed to (and from) the participants resulting from these trades.<sup>11</sup> CDS receives payments into its account at the Bank of Canada from participants that owe money to CDS and makes payments to participants entitled to receive money from it. The Bank of Canada incurs no liquidity or credit risk from carrying out this function since the LVTS is used to make end-of-day DCS payments and the Bank will make an LVTS payment on behalf of CDS only if there is a sufficient balance in CDS's own CDS settlement account to cover the amount of the payment.

The Bank of Canada also acts as banker for CLS Bank, providing it with a settlement account and making and receiving payments on its behalf in the LVTS.

### **1.2.2 Oversight**

Under the Payment Clearing and Settlement Act, the Bank of Canada reviews all eligible payment and other clearing and settlement systems for their potential to pose a 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 a systemic risk, the system may be designated as subject to the PCSA, provided that the Minister of Finance is of the opinion that this is in the public interest. Once designated, a system has to satisfy the Bank that it has mechanisms in place to manage and control systemic risk. The Governor may issue directives to the system operators or to participants in a designated system in extreme situations where the Governor judges that systemic risk is being inadequately controlled. The Bank has designated the LVTS, the DCS and the Canadian dollar operations of CLS Bank under the PCSA.

The Bank has issued the Guideline Related to Bank of Canada Oversight Activities under the Payment Clearing and Settlement Act.<sup>12</sup> The Guideline describes how the Bank operates under the PCSA, particularly in gathering information to identify eligible systems and in determining whether eligible systems will be designated. The Guideline also indicates the minimum standards that the Bank applies to designated systems. These minimum standards incorporate the Core Principles for Systemically

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<sup>11</sup> See Sections 1.3.3 and 4.2.1.

<sup>12</sup> Available on the Bank of Canada's website ([www.bank-banque-canada.ca](http://www.bank-banque-canada.ca)).

Important Payment Systems issued by the Committee on Payment and Settlement Systems (CPSS).<sup>13</sup> The LVTS, Canada's principal system for large-value payments, has been assessed by the Bank of Canada as being in full compliance with these core principles. In addition, in June 2000, the International Monetary Fund and the World Bank published their Report on the Observance of Standards and Codes in Canada (prepared in the context of the Financial Sector Assessment Program), which concluded that the LVTS is in full compliance with the CPSS Core Principles.<sup>14</sup>

The PCSA also provides the Bank of Canada with a number of powers that it could exercise in its dealings with payment and other clearing and settlement systems. Two noteworthy powers are the ability to provide a guarantee of settlement to particular systems, and the ability to pay interest on special deposits accepted from the participants in particular systems. With regard to the former power, the Bank of Canada has provided a guarantee that the LVTS will settle in the extremely unlikely circumstance that more than one participant fails during the LVTS operating day. The guarantee could only be called on in extremely rare circumstances where all of the following conditions held: there is an unanticipated failure of more than one participant on the same day during LVTS operating hours, the failing participants have a net owing position vis-à-vis the system, and the amount owed by the failing participants exceeds the value of collateral that has been pledged to the Bank of Canada.<sup>15</sup>

### **1.3 The role of other private and public bodies**

#### **1.3.1 Ministry of Finance**

The Minister of Finance has oversight powers respecting the Canadian Payments Association (CPA) and payment systems under the new Canadian Payments Act. These include approval and directive powers regarding by-laws, rules and standards set out by the CPA, or any other payment system designated for such oversight under the CP Act.

As both the Bank of Canada and the Minister of Finance have the ability to designate payment systems, a non-statutory body called the Payments Advisory Committee (PAC) has been formed to coordinate oversight activities and to advise the Minister of Finance and the Governor of the Bank of Canada on relevant issues. The group is co-chaired by senior officers of the Department of Finance and the Bank of Canada.

#### **1.3.2 The Canadian Payments Association (CPA)**

The Canadian Payments Association is a not-for-profit organisation created by an Act of Parliament in 1980 under the Canadian Payments Association Act. The Act was modified in 2001 to the Canadian Payments Act (the CP Act).

##### *Mandate and services*

The mandate of the Association under the CP Act is threefold and, in fulfilling this mandate, the CPA has the public policy objective to "... promote the efficiency, safety and soundness of its clearing and settlement systems and take into account the interests of users". The mandate of the CPA is to:

- establish and operate national systems for the clearing and settlement of payments and other arrangements for the making or exchange of payments;
- facilitate the interaction of its clearing and settlement systems and related arrangements with other systems or arrangements involved in the exchange, clearing or settlement of payments; and
- facilitate the development of new payment methods and technologies.

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<sup>13</sup> See Goodlet, C (2001): "Core principles for systemically important payments systems and their application in Canada", *Bank of Canada Review*, Spring.

<sup>14</sup> This document is available on the IMF website ([www.imf.org](http://www.imf.org)).

<sup>15</sup> See Section 3.1 for more on the LVTS.

In carrying out its mandate, the CPA owns and operates the two national payment systems in Canada, the Automated Clearing Settlement System (ACSS) and the Large Value Transfer System (LVTS). The Association, through its board of directors, sets by-laws, rules and standards that govern members' participation in these systems and outlines operational procedures. Through a network of committees representing its members and stakeholders, the Association interacts with other payment systems operating in the Canadian environment and actively investigates emerging payment technologies.

#### *Membership and governance*

Membership in the Association includes the Bank of Canada, all banks, and authorised foreign banks. Other deposit-taking institutions such as credit union centrals and trust and loan companies have been eligible for membership since 1980. The new Act in 2001 opened membership to certain types of non-deposit-taking financial institutions namely life insurance companies, securities dealers and money market mutual funds.

The CPA is managed by a 16-person board of directors, the chair of which is a representative of the Bank of Canada. Three further positions on the board are appointed by the Minister of Finance and the rest are elected by members, with half of the seats dedicated to "bank" class members and half dedicated to "non-bank" members. Also contributing to the mandate of the CPA is the Stakeholder Advisory Council (SAC), which provides advice to the board on payment, clearing and settlement issues. The group consists of no more than 20 persons including two board members and is broadly representative of the users of the CPA's services and the service providers.

The CPA operates under the authority of the 2001 Canadian Payments Act. The board of directors administers the proprietary payment systems and fulfils its mandate on behalf of its member institutions. All CPA by-laws are approved by Cabinet.<sup>16</sup> CPA rules and standards, including amendments to such, are subject to a 30-day review period by the Minister of Finance, who has the power to disallow any rule in whole or in part that is not deemed to be in the public's interest. The Minister also has the authority to direct the CPA to make, amend or repeal a by-law, rule, or standard.

### **1.3.3 The Canadian Depository for Securities (CDS)**

#### *Services*

The Canadian Depository for Securities Limited (CDS) is the securities settlement system operator in Canada. CDS provides three main services: a depository service and two securities clearing and settlement systems, the Debt Clearing Service (DCS) and the Securities Settlement Service (SSS).

The depository service provides facilities to deposit and withdraw depository-eligible securities, manage related ledger positions, and use these positions for various business functions. Major depository accountabilities are the safe custody and movement of securities, accurate record-keeping, and the collection and distribution of the entitlements associated with the securities.

In both securities clearing and settlement systems, CDS participants can report, confirm and settle securities trades. The SSS handles both domestic and foreign securities, and the DCS currently handles only domestic clearing. See Section 4.2 for more details on these systems.

In 2001, CDS migrated domestic longer-term provincial and private sector securities from the SSS to the DCS and intends to migrate all remaining securities in the SSS to an enhanced DCS by the end of 2003.

#### *Membership and governance*

CDS was incorporated in 1970 under federal law as a private company. CDS is owned by major Canadian commercial banks, members of the Investment Dealers Association of Canada (IDA), and The Toronto Stock Exchange Inc. Participant admission to CDS is outlined in CDS's participant agreement and service rules. Participation eligibility may be from one of the following categories: Regulated Financial Institution, Canadian Investment Institution, Foreign Institution, Government Body,

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<sup>16</sup> That is, approved by the executive branch of the federal government.

and the Bank of Canada. Members may participate in one or more of the CDS services: equity, debt, and money market instruments.

The CDS board of directors consists of 14 directors: nine shareholder directors, one from CDS management, one from the TSX Venture Exchange, and three independent directors from outside the securities industry.

### *Regulation*

CDS, its clearing systems and its participants are subject to legislation and regulations of different jurisdictions. At the federal level, the Bank of Canada oversees the DCS, which is a designated system under the PCSA. At the provincial level, CDS is regulated by the Ontario Securities Commission under the Ontario Securities Act and the Commission des valeurs mobilières du Québec under the Quebec Securities Act. CDS also works with the Alberta and British Columbia securities commissions as needed. In addition, CDS reports as required to the Canadian Securities Administrators (CSA). Finally, CDS cooperates with federal and provincial financial institution regulators, which oversee CDS participants.

### **1.3.4 Interac<sup>17</sup>**

Interac is the principal nationwide provider of shared network services for cash withdrawals at automated banking machines and debit card at the point of sale.

### *Services*

Interac provides two basic services, Interac Direct Payment (IDP) and Shared Cash Dispensing (SCD).<sup>18</sup> The SCD service has been operating nationally since 1986. It enables cardholders to withdraw cash from the ABM of any other member or associated institution using a debit or credit card. The service uses a shared network, the Interac Inter-Member Network, to connect the proprietary networks of the members for the routing of transactions. In a similar way, since its introduction in 1990, the IDP service uses the Interac Inter-Member Network to connect proprietary EFTPOS networks to allow consumers to use their debit card to pay for purchases. For both services, the cardholder validates the payment instruction through the use of a personal identification number (PIN), which is verified by the issuer online and in real time for each transaction.

In support of these two basic services, each Interac Association member carries out one or more of four basic operations. Issuers issue cards for access to Interac services and have traditionally been deposit-taking institutions, in line with the requirements for access to membership in the CPA. However, Interac has committed to updating its rules to extend card-issuing eligibility to life insurance companies, securities dealers and money market mutual funds in order to be consistent with the new CPA member eligibility criteria under the CP Act. Acquirers operate the devices that accept Interac-eligible cards, transmit the transaction data to the relevant party, and provide the consumer with an access point to the Interac service. Such devices include ABMs and point of sale (POS) terminals in stores. Direct connectors that provide access to the Interac network for indirect connectors are called "connection service providers". Finally, settlement agents settle the financial obligations arising through the shared networks through the Automated Clearing Settlement System.

### *Membership and corporate governance*

In 1984 the Interac Association was founded by five financial institutions with the goal of facilitating the exchange of electronic transactions that arise from the use of shared ABM networks. By 1986, membership in the association had grown to 10 members and included the largest banks in Canada. Since 1996 every incorporated entity operating in Canada has been eligible for membership.

There are two basic types of members: direct and indirect connectors. Direct connectors connect to each other through the Inter-Member Network. Indirect connectors access the network through a direct connector. As of February 2002 there were 130 members.

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<sup>17</sup> The main written source for this section is Interac (2000): *Interac - a backgrounder* ([www.interac.org](http://www.interac.org)).

<sup>18</sup> See Section 2.2.3 for more on these services.

The Interac Association is governed by a 14-member board of directors which is appointed annually by members based on transaction volumes and subject to certain constraints: at least two must be appointed by non-financial institution direct connectors, three are appointed by indirect connectors, and no more than nine can be appointed by financial institution direct connectors.

#### *Organisational structure*

The role of Interac is to facilitate the development of shared services that support electronic banking and payment services offered by its member institutions. Three separate organisations contribute to this mandate. The Interac Association is an unincorporated association which facilitates members' transactions under a common set of rules and markets the two services provided, namely Interac Direct Payment and Shared Cash Dispensing. The Interac trademarks and the software licensing is managed by a not-for-profit company, Interac Inc. Finally, the interface software that facilitates the exchange of financial transactions among members is owned by Acxsys Corporation, which then provides an exclusive licence for that software to Interac Inc.

## **2. Payment media used by non-banks**

### **2.1 Cash payments**

The Bank of Canada is the sole issuer of Canadian banknotes under the Bank of Canada Act. Denominations currently printed and issued are the CAD 5, 10, 20, 50 and 100 banknotes. The CAD 1,000 banknote, although still in circulation, ceased to be issued on 12 May 2001. The Bank of Canada distributes notes according to the demand of financial institutions through the Bank Note Distribution System. Notes no longer fit for circulation are returned to the Bank of Canada.

The Royal Canadian Mint is a crown corporation and operates under the Royal Canadian Mint Act. It is responsible for issuing Canadian coin. Denominations of coins currently issued are the 1, 5, 10 and 25 cent pieces and the 1 and 2 dollar pieces. Both banknotes issued by the Bank of Canada and coins issued by the Royal Canadian Mint are legal tender.

### **2.2 Non-cash payments**

Canadians have a variety of cashless payment options. These can be generally divided into paper-based or electronic payments depending on how the underlying instruction is processed. Paper-based payments are cleared through the ACSS. Electronic payments are cleared in both the ACSS and LVTS.

#### **2.2.1 Paper-based payments**

Paper-based payments are cleared and settled through the ACSS. The framework surrounding their exchange is set out in the CPA's by-laws, rules and standards.<sup>19</sup>

##### *Cheques*

A cheque is a bill of exchange drawn on a member of the CPA and is payable upon demand of the person/institution to whom the item is directed. The statutory framework for cheques is provided by the Bills of Exchange Act (Section 1.1.1) and they are subject to the by-laws and rules of the CPA.

Cheques have traditionally been the means of choice for making cashless payments. However, with the commencement of the LVTS, the use of cheques for large-value payments has decreased substantially as payments have moved to this well risk-proofed, electronic credit transfer system. In addition, for small retail transactions at the point of sale, the use of cheques has begun to give way to

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<sup>19</sup> See Section 1.3.2.

other methods such as debit and credit cards. Nevertheless, cheques continue to be a popular way to make payments. In December 2001, they represented 26% of the volume and 81% of the value cleared through the ACSS.

#### *Other debit-pull payment items*

Other paper items such as bank drafts, money orders and traveller's cheques, issued by various institutions, account for a very small portion of total non-cash payment transactions. These items are cleared in the same manner as cheques through the ACSS.

#### *Account holder initiated transfers*

This method of payment allows the account holder to initiate one-time credit-push type payments to corporate entities, such as utility and phone companies, through a bank branch teller or an automated banking machine. Although currently only representing a small share of the payments cleared through the ACSS, payment of bills by this method has grown substantially since it was introduced in 1996. As of December 2001, this method accounted for 1.3% of the volume cleared in the ACSS.<sup>20</sup>

### **2.2.2 Electronic transfers**

Direct debits, direct credits and account holder initiated transfers are cleared and settled through the ACSS and are subject to the applicable CPA by-laws, rules and standards.

#### *Direct debit and direct credit*

Direct debits are payments preauthorised by the payer and payable at regular repeating intervals for obligations such as rent or mortgage payments, organised savings programmes, bill payments and tax payments. They may also be sporadic payments subject to certain authorisation and notification requirements. The transfer process is initiated each interval by payment instructions from the payee.

Direct credit transfers are payments transferred on a prearranged basis directly into the payee's account at regular repeating intervals. Each transfer is initiated by payment instructions from the payer to its bank to debit its account and forward the payment to the payee's account at its deposit-taking institution. Credit transfers include such payment items as direct payroll deposit, and regular government transfer payments.

Since 1995, the volume of non-cash payments in Canada using direct debit and credit transfer has been growing. In December 2001 they represented 16% of the volume and 14% of the value in the ACSS.

#### *Account holder initiated transfers*

Home banking, including telephone and internet banking, is becoming increasingly popular. Most payment providers have websites allowing customers to carry out various transactions such as credit or balance transfers, account balance verification, and monthly bill payments with participating retailers, as well as to manage their asset portfolio. Similar services are offered via the telephone.

Account holder initiated transfers via internet or telephone home banking encompass both customer-to-corporate and corporate-to-corporate payments and are on an ad hoc, as opposed to repeating, basis. Together, these types of payments accounted for 1.8% of both volume and value in the ACSS in December 2001.

#### *Credit transfers through the LVTS*

The LVTS facilitates large-value and time-sensitive credit transfers between direct participants in the system who may act on their own and their clients' behalf. CPA by-laws, rules and standards govern the exchange of these payment instructions. Since the LVTS began operations in 1999, the electronic

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<sup>20</sup> The process for settling these transactions changed in the spring of 2001. The ACSS calculates the bilateral net positions for each direct clearer vis-à-vis each other direct clearer. The bilateral net obligations are settled by each direct clearer making (and receiving) payment through the LVTS.

transfers through this well risk-proofed system have grown to account for 84% of all payment value exchanged through CPA-operated systems.

### 2.2.3 Payment cards

#### *Automated Banking Machines (ABMs)*

The first cash dispenser was installed in Canada by a large chartered bank in 1969. The first automated banking machine followed in 1972. Today ABMs are almost ubiquitous and offer a range of services from simple cash withdrawal to banking services such as deposits, account balance viewing, bill payments and transfers between accounts owned by the same person within the same institution.<sup>21</sup> Bill payments and cash withdrawals from ABMs branded by an institution other than the card issuer are cleared and settled through the ACSS. To access the remaining services, cardholders must typically use an ABM branded by the same institution as their card and the transactions are usually processed as “on-us” items within the institution.

Any corporate entity operating in Canada can own, and provide, ABM services. Proprietary networks typically connect to a shared network such as Interac<sup>22</sup> so that cardholders can use machines branded by companies other than those of the card issuer. Although the majority of ABMs continue to be owned by deposit-taking institutions, ABM networks owned and operated by non-deposit-taking companies that offer cash-dispensing services are showing strong growth.

With respect to pricing, surcharges may be charged by the ABM owner, the “acquirer”, to the cardholder for the use of the ABM. Although the use of these fees is rising, they tend to be applied on machines in remote locations and those not labelled by a deposit-taking institution.

As of December 2001, there were 35,632 ABMs across Canada.

#### *Debit cards*

Generally, debit cards offer two main services to the cardholder. They allow cardholders to pay a vendor through an electronic funds transfer at the point of sale (EFTPOS), and provide access to the ABM networks with which the card issuer is affiliated. With respect to the latter, such networks include the card issuer’s proprietary network, and shared networks such as Interac, Cirrus and PLUS. Interac offers the principal nationwide network for ABM transactions and EFTPOS.<sup>23</sup>

Interac (Section 1.3.4) provides two services. The Shared Cash Dispensing (SCD) service allows customers to withdraw cash from ABMs other than those branded by the institution that issued their card. The Interac Direct Payment (IDP) service allows customers to pay for purchases at the point of sale (EFTPOS). Both services are very well accepted and used by Canadians. In 2001, the IDP service was offered by 328,009 merchants and approximately 2.2 billion transactions were processed through the system for a total approximate value of CAD 94.9 billion. The SCD service processed approximately 375 million transactions with a total value of about CAD 33 billion. Obligations between Interac members arising from these services are cleared and settled through the ACSS.<sup>24</sup>

There are various fees associated with the IDP and SCD services. Association switch fees are the only fees collected by the Interac Association. Interac calculates the costs of operating the system and sets a “per transaction” fee sufficient to cover its costs. Throughout the year, the fee may be adjusted as needed and on average it is less than 1 cent per transaction. This fee is the same for all members regardless of the volume of transactions they perform. There are no access or licence fees.

<sup>21</sup> These make up a portion of what are often called “me-to-me” payments.

<sup>22</sup> Other networks such as the Visa affiliated PLUS network or MasterCard’s Cirrus network also operate in Canada.

<sup>23</sup> Transactions through proprietary networks are typically cleared as “on - us” transactions within the card issuer. See section 3.2 for more on how shared network transactions are cleared and settled.

<sup>24</sup> Besides Interac, other schemes do exist in particular locations. For example, MasterCard has recently begun providing an offline debit card in selected parts of Canada.

Interchange fees for the SCD service are paid by the issuer to the acquirer for each completed transaction and are set by the Interac Association. However, interchange fees for the POS service have been set at CAD 0.00 since the service began.

Card issuers set fees charged to cardholders for access to the shared ABM network and the EFTPOS service. These are often bundled with other account service fees. Additional fees are often charged when the cardholder uses the ABM of a member other than its card issuer.

For POS transactions, acquirers set fees charged to merchant clients. These fees are typically based on a number of issues such as volume and the relationship between the merchant and acquirer. Typically, the fee is bundled with other services such as credit card processing and terminal and PIN pad rental.

#### *Credit cards*

Credit cards may be issued by deposit-taking institutions, financial non-deposit-taking institutions, and retailers. Cards issued by retailers that are not connected to a network such as Visa, MasterCard or American Express are typically for use within their own stores only and are generally referred to as "retailer" cards.

Credit cards, including charge cards, provide holders with uncollateralised borrowing (almost always subject to a prespecified credit limit) for either a cash advance (eg, through an ABM) or for purchases at a participating merchant. Payments to merchants can be made face-to-face at the point of sale, by mail, or over the telephone and internet. Depending on the merchant, card authorisation may be either online or offline. Cards may also provide other services such as insurance products and loyalty programmes. Cardholders are billed monthly and, depending on the terms of the card, may pay the whole balance or a partial amount. Interest is charged on the unpaid portion. There is typically a minimum monthly payment.

Depending on the card and the services provided by the cardholder's financial institution, outstanding balances can be paid at bank branches through a teller or ABM, at the retailer issuing the card, by cheque, by direct debit, or by an account holder initiated credit. For Visa and MasterCard, obligations arising among issuers and acquirers are settled through the LVTS.

Regarding the Visa and MasterCard networks, the most pervasive arrangements in Canada, as of the end of 2001 there were 19 principal issuers, 44.1 million cards in circulation, and 1.2 million merchant outlets. The average transaction grew from CAD 67.22 in 1990 to CAD 99.16 by the end of 2001.<sup>25</sup>

#### *Stored value cards*

There are no large-scale, fully implemented stored value (also called e-money or electronic purse) arrangements operating in Canada. Only two major e-money schemes have been running pilot projects over the past year: Visa Cash and Mondex. While the Visa Cash pilot continues, Mondex stopped issuing value on 31 May 2001.

Mondex e-money value was issued by the Mondex Originator, which was a joint venture comprised of Mondex member financial institutions that issued Mondex value. Its last pilot project was initiated in Sherbrooke, Quebec on 26 August 1999. The cards, issued by the Royal Bank and le Mouvement des caisses Desjardins, combined the traditional debit card function, via a magnetic stripe, with an e-money application offered on a MULTOS platform. The card could be loaded through automated teller machines, specialised loading machines, Mondex-compatible phones and the internet with value transferable between Mondex cards. The load limit on cards was determined by the individual financial institution but an informal survey indicated a CAD 500 load limit was the norm across institutions. The project wound down in 2001. The Mondex Originator stopped issuing value on 31 May 2001, with customers able to redeem value left on the chip until approximately the end of October 2001. The Originator is due to close operations on 30 June 2002 and Mondex operations will cease in Canada pending the establishment of a broader smartcard infrastructure that will allow for a national rollout of smartcard applications, including Mondex electronic cash.

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<sup>25</sup> Statistics for Visa and MasterCard in Canada can be seen on the Canadian Bankers Association website ([www.cba.ca](http://www.cba.ca)).

Visa Cash launched a pilot in Barrie, Ontario, in 1997 involving reloadable cards with multiple payment features issued by the Bank of Nova Scotia. The card's chip facilitates a variety of functions: stored e-money value, customer loyalty plans and an automated transit fare collection function for Barrie Transit. The cards also include a traditional debit function via a magnetic stripe.

Stored value on the cards is loaded in one of two ways: through specialised units that transfer value from the user's bank account to the card through a network operated by the Interac Association, and through the internet via the Bank of Nova Scotia computer banking site. Increasingly, payment services offered through loyalty plans and automated fare collection are gaining importance, as opposed to the stored value function.

### 2.3 Recent developments

The internet has opened up many payment opportunities. As already discussed, bill payments over the internet through the website of a financial service provider are established and growing. There are also initiatives to deliver customers' bills electronically (electronic bill presentment and payment, EBPP). There are two main developments in Canada, neither with extensive reach as of yet, and the bill payment portion continues to be provided through the website of the customer's financial service provider.

To capitalise on the e-commerce opportunities presented by the internet, many different initiatives have been developed to facilitate internet payments. However, most are still in a developmental stage, or are offered on a limited basis only.

Investigations are currently under way, both within individual institutions and through the CPA, to facilitate account aggregation and me-to-me payments over the internet between two different financial institutions. Finally, various options for cross-border payments continue to be an interesting area of study for payment providers and the CPA.

## 3. Interbank exchange and settlement systems

The Canadian Payments Association (CPA) owns and operates Canada's two national payment systems, the Large Value Transfer System (LVTS) and the Automated Clearing Settlement System (ACSS). The LVTS is the larger of the two by value. These systems are described in the following two sections followed by an outline of the options for clearing cross-border payments.

### 3.1 The Large Value Transfer System

The Large Value Transfer System (LVTS) started its activities on 4 February 1999.<sup>26</sup> It is an electronic credit transfer system that provides real-time processing and intraday finality of payments, and ensures end-of-day settlement. The LVTS is Canada's primary system for clearing and settling large-value Canadian dollar transactions and is designated under the PCSA for Bank of Canada oversight.<sup>27</sup>

In December 2001, the daily average payment volume was 15,982 and the daily average payment value was CAD 118 billion, which represents 84% of the total value in the Canadian national payment systems.

#### 3.1.1 Operational rules

The Canadian Payments Act gives the CPA the right to establish by-laws, rules and standards regarding the operation and governance of its systems. The LVTS by-law and associated rules and

<sup>26</sup> For more information, see Dingle, J (1998): "The LVTS - Canada's large-value transfer system", *Bank of Canada Review*, Autumn, pp 39-55.

<sup>27</sup> See Section 1.3.2 for information on the CPA and Section 1.1.1 for information on the PCSA and the CP Act.

standards govern all aspects of the LVTS. These rules are publicly available.<sup>28</sup> It is on the basis of these documents that the CPA oversees both the daily operations of the LVTS and compliance with transaction rules. Both the Governor of the Bank of Canada and the Minister of Finance are given, by the CP Act and the PCSA, certain regulatory powers with respect to CPA rules and by-laws.<sup>29</sup>

### **3.1.2 Participants**

The CPA sets out the requirements for financial institutions to be direct participants in the LVTS. To become a direct participant, a financial institution must first be a member of the CPA. It must also:

- maintain a settlement account at the Bank of Canada;
- have access to SWIFT in Canada; and
- have the technical capability for its LVTS operations.

Beyond these requirements, the LVTS is an open system that does not require financial institutions to maintain a minimum value or volume of transactions to become a direct participant. Foreign bank branches that are members of the CPA are eligible to become direct participants. However, the Governor of the Bank of Canada has the right to prohibit such a participant if he or she is of the opinion that such a participant poses or is likely to pose an unacceptable risk to the Bank of Canada or the LVTS. Financial institutions that are not direct participants must use the services of a direct participant to carry out transactions in the LVTS.

As of December 2001 there were 14 direct participants in the LVTS, consisting of 10 commercial banks, two federations of credit union centrals, one government savings institution and the Bank of Canada.

### **3.1.3 Types of transactions**

The LVTS is an electronic credit transfer system for the unconditional transfer of large-value or time-sensitive Canadian dollar payments. It is used to facilitate a range of transfers such as commercial transactions, payment obligations arising from the Visa and MasterCard networks, payment obligations arising from the Debt Clearing Service (DCS),<sup>30</sup> CLS Bank and the Canadian dollar leg of other foreign exchange transactions, as well as for the transfers relating to the auction of federal government funds. Although designed to process large-value transfers, no minimum value threshold is set in the LVTS.

Participants send their payments through one of two streams; tranche 1 or tranche 2. Tranche 1 is a fully collateralised “defaulter pays” mechanism. Tranche 2 uses collateral in a “survivors pay” arrangement. Tranche 2 payments account for the majority of LVTS volume since the cost of collateral supporting these payments is less.<sup>31</sup>

### **3.1.4 Settlement procedure**

The LVTS is a real-time net settlement system that provides intraday finality for recipients. Each payment instruction is subject to real-time risk control tests. If the tests are passed, funds are made available to the recipient on an unconditional and irrevocable basis intraday. Each participant’s position is calculated in real time on a payment by payment basis. Participants can use one of two streams (tranche 1 and tranche 2) to send their payments; both are subject to caps which make up part of the LVTS risk controls. The specific risk control mechanism depends on the tranche used.

Within each tranche, payment instructions are netted and the netted amounts must be within the pre-established caps. Once a payment passes the LVTS risk controls, it is irrevocable. The risk control mechanisms provide intraday finality to the recipients of funds transfers.

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<sup>28</sup> On the CPA website ([www.cdnpay.ca](http://www.cdnpay.ca)).

<sup>29</sup> See Sections 1.1.1, 1.3.1 and 1.2.2.

<sup>30</sup> See Section 4.2.1.

<sup>31</sup> Section 3.1.5 describes the risk control mechanisms in more detail.

At the end of the daily cycle, the participant's tranche 1 and tranche 2 positions are merged and the final multilateral net positions are settled across settlement accounts at the Bank of Canada. These entries are final. After the settlement period, the Bank of Canada lifts its security interest on the amounts pledged as LVTS collateral.

### **3.1.5 Credit and liquidity risks and their management**

The LVTS has risk control mechanisms that enable payments to be final and irrevocable even in the unlikely event of a default by one or more participants. In aggregate, the amount pledged by participants to the Bank of Canada is sufficient to ensure settlement in the event of a failure of the participant with the largest possible multilateral net debit position.

The main risk control mechanisms are:

- Participants determine their own tranche 1 multilateral net debit caps, which must be fully collateralised. Therefore, in the event of one or more participant defaults, since tranche 1 payments are fully collateralised, sufficient liquidity will be available to settle all tranche 1 payments.
- For tranche 2 payments, each participant extends a bilateral net credit line to each other participant, thereby controlling the amount of exposure it is willing to take on with respect to each participant. Further collateral is pledged by each participant to support tranche 2 payments. The amount pledged is a set portion (called the "system-wide percentage") of the largest limit it grants to any counterparty. This is called the maximum additional settlement obligation (max ASO). Participants may adjust the bilateral credit limits they extend throughout the day. However, although such an adjustment may increase the required collateral, the required collateral will not decrease intraday, regardless of the adjustment made.

In the event of a default, the defaulter's tranche 2 collateral is used first. Any remaining shortfall is made up by survivors on a pro-rated basis based on the bilateral credit limit extended to the defaulter. However, the maximum any survivor will be allotted is their maximum settlement obligation, thereby capping their exposure.

- For tranche 2, each participant has a multilateral net debit cap which is the sum of all the bilateral credit limits granted to it multiplied by the system-wide percentage.
- The combination of bilateral and multilateral caps and the pledged collateral ensures that the system can handle the failure of the participant with the largest net debit position.

Finally, the Bank of Canada guarantees settlement.<sup>32</sup> However, given the design of the risk controls, this guarantee would only be called upon in the extremely rare circumstance that more than one direct participant defaults within the same LVTS day, and a defaulter has an overall net debit position in tranche 2, and there is not enough collateral to complete settlement.

### **3.1.6 Operation of the transfer system and transaction processing environment**

Between 12.30 am and 1 am (Eastern time) participants set their own net debit cap for tranche 1 and the bilateral credit limits they granted to each of the other direct participants. Based on the bilateral credit lines they granted, the maximum additional settlement obligation (max ASO) is calculated for each participant. Collateral is pledged to the Bank of Canada in an amount sufficient to cover both the tranche 1 net debit cap and the calculated max ASO, that is collateral supporting tranche 2 payments. The total amount of pledged collateral is often greater than the required amount to allow for intracycle adjustments.

From 1 am to 6 pm the participants send transfers on their own behalf and on behalf of their clients. Participants can adjust their tranche 1 net debit cap throughout this period and change the bilateral lines they extend to other direct clearers with collateral increased accordingly. Also during this period

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<sup>32</sup> This is a residual guarantee, only invoked once the defaulter's and survivor's collateral have been used.

payment obligations arising from the banknote settlement, the daily auction of federal government funds, the Debt Clearing Service, and CLS Bank settle through the LVTS.

The transfer period is followed by a half-hour presettlement period to allow participants to transact with each other for the purpose of reducing their short or long position, thus reducing the amount they may have to borrow from, or have on deposit with, the Bank of Canada overnight. The period from 6.30-7.30 pm is the final settlement period.

### **3.1.7 Provision of credit facilities**

The Bank of Canada provides intraday credit to participants in the sense that collateral is pledged to the Bank of Canada in support of final settlement. Participants that have a net debit position in the LVTS at the end of the day close out their position by taking a fully collateralised overnight advance from the Bank of Canada for which they pay the Bank Rate.

### **3.1.8 Pricing**

Under the Canadian Payments Act, the Canadian Payments Association charges its members dues for their participation, or level of activity, in the system. The development costs as well as the operating costs are entirely covered by the LVTS direct participants. The pricing method used by the CPA can be characterised as “cost recovery”. The proportion of the total costs charged to each participant depends on its share of the total volume sent and received through the LVTS. New direct participants are charged a proportion of the unamortised development costs and operating costs depending on the volume they send and receive through the LVTS.

Although the Bank of Canada has the right to recover costs for the settlement services it provides to CPA members, it does not presently charge fees beyond the interest charges applied to overdraft loans.<sup>33</sup>

## **3.2 The Automated Clearing Settlement System**

The Automated Clearing Settlement System (ACSS), introduced in 1984 as the successor to the commercial bank system then in place, is owned and operated by the CPA. This deferred net settlement system clears and settles electronic payments and all paper-based payments in Canada.

### **3.2.1 Operating rules**

Under the CP Act, the CPA sets the ACSS by-law and supporting rules which govern all aspects of the operation of the ACSS. All by-laws must be approved by Cabinet and are published in the Canada Gazette. The rules are written in support of the by-law and the Minister of Finance has the right to disallow any new rule or amendment within 30 days. Both the ACSS by-law and the associated rules are available on the website of the CPA.

### **3.2.2 Participants**

All members of the CPA can participate in the ACSS.<sup>34</sup> Direct clearers enter transactions directly into the system and settle for the net value of payment items drawn on or payable by it through their settlement accounts at the Bank of Canada. They can also act as clearing agents for indirect clearers. In order to be eligible to become a direct clearer, an institution must:

- be a member of the CPA;
- be a deposit-taking institution or a securities dealer;
- process payment items the volume of which is at least 0.5% of the total national volume of payment items;

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<sup>33</sup> The Bank of Canada pays interest on deposits at a rate below the target overnight rate.

<sup>34</sup> See Section 1.1.2 for a complete description of institutions eligible for CPA membership.

- establish and maintain a settlement account at the Bank of Canada; and
- satisfy the operational requirements of the ACSS.

Indirect clearers are members of the CPA that enter into the ACSS through the services provided by a direct clearer. Items drawn on it or payable by it are settled through a settlement account at a direct clearer.

As of December 2001 there were 12 direct clearers in the ACSS, consisting of eight commercial banks, two federations of credit union centrals, one government savings institution, and the Bank of Canada. There were 98 active indirect clearers.

### **3.2.3 Types of transactions**

Canadian dollar-denominated interbank payments not processed by the LVTS are handled through the ACSS. Paper-based items include debit items such as cheques, postal money orders and traveller's cheques as well as credit-push type items such as account holder initiated transfers (Section 2.2.1). Electronic payment items include direct debit and direct credit items, account holder initiated payments, electronic funds transfers initiated at the point of sale (EFTPOS) and cash disbursements through shared ABM networks such as Interac.<sup>35</sup>

All items must meet specifications and standards set out in the ACSS rules according to the type of payment item. For this purpose, the items are grouped into "streams" that share the same rules and procedures. The board of directors of the CPA has approved a CAD 25 million cap on the value of individual paper cheques that can be cleared through the system. This cap will be implemented in February 2003. There are no value restrictions on other types of payment in the system.

### **3.2.4 Operation: transaction processing environment and settlement**

Payment items exchanged throughout the day are processed overnight and settled the next day for value as of the day before. The specifics of the exchange and clearing of the items vary depending on the item, for example, whether exchanged on paper or via electronic data transmission. Nevertheless, all items follow a similar path.

Clearing is handled through six regional settlement points across the country and the specifics differ according to the type of payment item. Generally, items collected at CPA members previous to and throughout the value day (V) are forwarded to a local data centre operated, or contracted, by a direct clearer. The items are sorted at the data centre, paper items by high-speed computerised reader/sorter equipment, according to the institutions on which they are drawn. Once sorted, the items drawn on other institutions are delivered to the data centres of the appropriate direct clearer in the same regional clearing area. The delivering direct clearer enters the information on the exchanged items, including the volume and value of items with a "stream" identifier, into its ACSS terminal. This information can be checked by the receiving direct clearers' data centre and disputed if necessary. The next day, the payment items are returned to the branches of the institutions on which they are drawn according to the type of payment item. For cheques, most are returned no later than two days after they are deposited.

This exchange of items, entering of information into the ACSS terminals and, potentially, contesting of entries continues on the value day until the final closing time, which is 11 pm ET for all regional settlement points. The ACSS calculates net position across all "streams" for each of the direct clearers. By 8 am the next morning (V+1), the financial institutions have typically finished making adjustments to their clients' accounts; debiting payers' accounts and crediting payees' accounts. At approximately 9.30 am, initial net balances are available to all the direct clearers and bilateral reopenings of the clearing may occur to correct errors if both counterparties agree. By 11 am, the final multilateral positions of the direct clearers are calculated and made known to the Bank of Canada.

Direct clearers' net positions are settled by adjustments to their settlement accounts at the Bank of Canada. This is typically completed by 12.00 ET on V+1. Direct clearers in a net debit position receive a fully collateralised overdraft for an amount equal to their net debit position. Direct clearers in a net

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<sup>35</sup> See Section 2.2 for a more detailed description of the various payment types.

credit position have the funds credited to their account and value is returned to them through an LVTS payment on V+1. Note that although settlement is completed on V+1, clients receive value as of day V.

### **3.2.5 Credit and liquidity risks and their management**

The ACSS is a survivors pay, uncollateralised, deferred net settlement system. The settlement entries in the direct clearers' accounts at the Bank of Canada are considered to be final. However, the ACSS does not legally support settlement finality, intraday or at the end of the day.

Participants take on credit risk throughout the day as value is credited to client accounts in anticipation of receiving funds through settlement the next day. However, there are circumstances under which this value may not be received. For instance, some types of payments may be reversed when an item presented is drawn on an account with insufficient funds or if the item is subject to a stop payment order. CPA rules govern the process for the reversal of these payment items. Also, value may not be received in the rare event that a direct or indirect clearer defaults on its settlement obligation. In this situation the CPA rules outline the procedure for a partial unwind of items respecting the defaulter and new multilateral net positions are cast. In this event, a loss allocation may also be assessed on surviving direct clearers.

Some degree of liquidity risk is experienced daily through the uncertainty related to the final net settlement obligation due at 12.00 ET. For both credit and liquidity risk, participants cannot use real-time risk management tools to control their exposure. For example, there are no bilateral or multilateral credit limits.

### **3.2.6 Pricing**

The CPA recovers its operating costs through dues charged to its members. Each year, the total assessment is determined based on the costs of operating the system. The amount each member pays is based on its proportional share by volume of the ACSS payment items it sent and received compared to the total volume of items sent and received. At a minimum, each member pays at least 0.0625% of the total assessment. The dues are payable in two instalments.

As with the LVTS, the Bank of Canada does not charge fees for its settlement services beyond the interest charges applied to overdraft loans.<sup>36</sup> The interest charge for ACSS-induced overdrafts is above that applied to LVTS-induced overdrafts.

### **3.2.7 Future developments**

#### *Legislative changes*

The Canadian Payments Act of 2001 introduced many changes for the CPA and the systems it operates. One of the most important changes was the expansion of membership from deposit-taking institutions to non-deposit-taking financial institutions.<sup>37</sup>

#### *Migration of large-value payments to the LVTS*

Prior to the implementation of the LVTS in February 1999, the ACSS was the only multilateral system for interbank payments in Canada. Since then, the ACSS has increasingly become a retail payment system as a growing proportion of large-value payments are cleared and settled through the LVTS. This trend is expected to continue, supported by the soon-to-be imposed cap of CAD 25 million on cheques.

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<sup>36</sup> As with the LVTS, the Bank of Canada pays interest on deposits at a rate below the target overnight rate.

<sup>37</sup> See Section 1.1.2.

### 3.3 Cross-border and multicurrency payments, clearing and settlement

CLS Bank, which began commercial operations on 9 September 2002, is the most significant recent initiative in the area of cross-border multicurrency payments. The Canadian dollar is one of seven currencies initially settling through the system and the LVTS is the CLS Bank approved payment system for the Canadian dollar.

Currently only one Canadian bank is participating in CLS Bank as a settlement member although others are expected to become settlement members in the future. Several LVTS participants provide nostro services to CLS Bank members. There are currently two Canadian dollar liquidity providers.

The Bank of Canada has designated the Canadian dollar operations of CLS Bank under the PCSA. The Bank also acts as banker for CLS Bank by providing it with a settlement account and by making and receiving payments on its behalf through the LVTS.<sup>38</sup>

Outside of CLS Bank, cross-border payments are settled in a variety of ways. Corresponding banking arrangements are important for both electronic and paper-based payments such as cheques. Correspondent arrangements are typically organised as either “in-house” arrangements where the foreign correspondent for the Canadian clearing bank is its branch or banking subsidiary in the foreign country, or as “club” arrangements, where a group of individual institutions in different payment jurisdictions agree to offer one another indirect access to the domestic clearing system in which they participate.

ABM networks offer access to cash for payments, both to foreigners visiting Canada and to Canadians travelling abroad. Customers can obtain local currency through ABMs via the Cirrus or PLUS networks. The cross-border payment obligation of the card-issuing institution to the cash-dispensing institution is cleared and converted into a US dollar obligation through the MasterCard International or Visa system, respectively. The Canadian leg of the obligation is settled through the LVTS. For example, if a Canadian resident uses a foreign ABM to obtain local currency, the card-issuing institution in Canada settles its obligation to the cross-border cash-dispensing institution through an LVTS payment to the MasterCard (or Visa) settlement bank in Canada. This settlement bank then settles through its nostro account with an international settlement bank serving MasterCard (or Visa). The clearing and settlement process for cross-border Visa and MasterCard credit card payments, as well as for MasterCard offline debit card transactions, is essentially the same process.

There are two cross-border electronic batch payment systems currently operating in Canada: the US Federal Reserve’s International Automated Clearing House (IACH) Service and the European Transferts Interbancaires de Paiements Automatisés Network (TIPANET).

Following a pilot project that began in 1999, FedACH established the IACH Service in July 2001 to send cross-border debit and credit ACH payments to Canada. Currently, the service only facilitates payments originating in the United States for delivery in Canada.<sup>39</sup> The IACH involves a club arrangement of correspondent banks for bulk direct credit and debit transfers with a “gateway” operator for each national payment system. One Canadian commercial bank provides the gateway into this system from the Canadian side while the Federal Reserve Bank of Minneapolis is the gateway operator for the US side.

ACH payments initiated in the United States for delivery in Canada are originated by a FedACH member bank and delivered through the FRB Minneapolis to the Canadian gateway operator. For payments originated in the United States, settlement of the US leg is through FedACH at the end of day T. If payable in Canadian dollars, the Canadian gateway operator converts the payment from US dollars on T+1 and formats the payment instruction to be cleared and settled through the ACSS by noon of T+2. If payment is payable in US dollars, it is cleared and settled through the US Bulk Exchange, which will be discussed further.

Payments cleared through this system conform, on the US leg, to the Federal Reserve’s Operating Circular 4 and to NACHA’s Rules for Cross-Border Payments and, on the Canadian leg, to the CPA

<sup>38</sup> For more details see Miller, P and C A Northcott (2002): “CLS Bank: Managing foreign exchange settlement risk”, *Bank of Canada Review*, Autumn, pp 13-25.

<sup>39</sup> Although it also has the capacity to handle payments originating in Canada for delivery to the United States.

rules for the clearing of such payments. Both gateway operators satisfy NACHA's gateway operator requirements as defined in the Cross-Border Payment Operating Rules.

The Transferts Interbancaires de Paiements Automatisés Network (TIPANET), operated by TIPA Group SC, is a club arrangement involving shareholder cooperative banks in various countries, one of which is Canada's Caisse centrale Desjardins. TIPANET facilitates the clearing of cross-border retail payments through the SWIFT FIN messaging system and it complies with the EC Directives on cross-border payments. Payments are converted to local currency by the receiving TIPANET partner bank with each leg cleared and settled by the originators and receivers in their respective national payment systems. Cross-border settlement is via the correspondent banking arrangements between TIPA partners.

Finally, the CPA owns and operates the US Bulk Exchange System (USBES) to facilitate the clearing of US dollar-denominated payments, both cheques and certain types of electronic payments, between members of the CPA. The USBES clears payments, calculating the multilateral net positions for each of the 11 directly participating CPA members. The net positions are settled through CHIPS via either the Canadian participants' branch or subsidiary acting in CHIPS, or via correspondent arrangements.

## **4. Securities settlement systems**

There are currently two main markets for equity securities in Canada, each of which use electronic trading systems. The Toronto Stock Exchange is the largest and primarily handles senior equity issues. The TSX Venture Exchange lists primarily small and emerging companies and has a market capitalisation approximately 1% of that of the Toronto Stock Exchange. Some Canadian securities dealers who are also members of the US National Association of Securities Dealers have direct access to the US Nasdaq market. The Bourse de Montreal is Canada's principal market for derivative securities. The fixed income market is a decentralised market with trading taking place bilaterally between dealers and clients or through screen-based voice brokers. Regulation of the securities industry is conducted through provincial securities commissions, with some aspects delegated to self-regulatory organisations.

The Canadian Depository for Securities (CDS) has two systems for the clearing and settlement of securities transactions. The Debt Clearing Service (DCS), a well risk-proofed system, facilitates the clearing and settlement of all Canadian dollar-denominated debt. Equities and US dollar-denominated debt securities are cleared and settled through the Securities Settlement Service (SSS). Derivatives contracts are cleared and settled through the Canadian Derivatives Clearing Corporation (CDCC).

### **4.1 Trading**

#### **4.1.1 Regulation<sup>40</sup>**

The securities industry is regulated in each province by a government body, a securities commission, that oversees a provincial or territorial securities act. The provincial and territorial bodies communicate and coordinate through a forum called the Canadian Securities Administrators (CSA).

Some of the provincial securities commissions delegate some aspects of regulation to self-regulatory organisations (SROs). The stock exchanges (outlined below) each have responsibilities with respect to their particular market and members. The Investment Dealers Association (IDA) is both a trade association and a self-regulatory organisation for the securities industry, exercising member regulation over the business activities of member securities firms. In February 2002, Market Regulation Services Inc. was recognised as a self-regulatory organisation in order to provide market regulation services to alternative trading systems and exchanges.

Investors are safeguarded by the Canadian Investor Protection Fund (CIPF), a private trust fund established to protect customers (up to CAD 1 million) in the event of the insolvency of a member of

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<sup>40</sup> Information taken from the IDA ([www.ida.ca](http://www.ida.ca)) and MFDA ([www.mfda.ca](http://www.mfda.ca)) websites.

any of the above-mentioned SROs. Finally, the Mutual Fund Dealers Association (MFDA) is a self-regulatory organisation consisting of mutual fund dealers. It is responsible for regulating the sales and distribution of mutual funds by its members in Canada, except in Quebec where the Bureau des services financiers assumes these responsibilities.

#### 4.1.2 Equity markets

The existence of stock exchanges in Canada can be traced back more than 125 years. The Montreal Stock Exchange (now known as the Bourse de Montreal or “Bourse”) was the first to incorporate in 1874, while the Toronto Stock Exchange was founded in 1878. Other exchanges followed in the early years of the 20th century, but, by 1999, four main stock exchanges were operating in Canada - the Bourse de Montreal, the Toronto Stock Exchange, the Alberta Stock Exchange (ASE) and the Vancouver Stock Exchange (VSE).<sup>41</sup>

The Toronto Stock Exchange is Canada’s principal market for equity trading; in 1998 its share of equity trading reached almost 90%. In March 1999, the four main stock exchanges announced an agreement to restructure the Canadian markets into areas of specialisation. The agreement was implemented at the end of 1999 and in early 2000. As a result, the trading of senior equities was consolidated on the Toronto Stock Exchange, derivatives trading was transferred to the Bourse de Montreal, and the ASE and VSE, after merging to become the Canadian Venture Exchange (CDNX), specialised in the trading of junior securities.<sup>42</sup> The CDNX became a wholly owned subsidiary of the Toronto Stock Exchange in 2001 and was renamed as the TSX Venture Exchange in early 2002.

As SROs, each of Canada’s exchanges (with the exception of Nasdaq Canada - see below) have been delegated responsibility by their securities regulator for the regulation and surveillance of market activity. Participating domestic organisations (ie Canada-based brokers and dealers) and their employees are regulated by the IDA or the Bourse de Montreal. Each exchange is overseen by a board of directors.

##### *Toronto Stock Exchange*

A modified electronic auction/order-driven market for “senior” equity, the Toronto Stock Exchange is by far the largest exchange in Canada. The Toronto Stock Exchange’s market structure can be characterised as a modified continuous auction market because of the role played by two groups to support the trading process: registered traders and investment dealers. Investment dealers play a key role in what is called the “upstairs market”, quote-driven block trading between securities dealers and institutional investors. The upstairs market has been estimated to account for 50% or more of the Toronto Stock Exchange’s trading volume. The growth of “upstairs trading” can be attributed to many factors, including the growing importance of institutional investors since the 1970s, concentration among investment dealers and institutional investors, regulatory changes, and technological progress that allows participating organisations to perform upstairs trading with small retail trades. On 5 April 2002, the Toronto Stock Exchange launched POSIT Canada, a non-attributed, electronic order matching system (a periodic call market) aimed at the institutional upstairs market for equity securities.

In terms of market capitalisation of domestic companies, as of December 2001 the Toronto Stock Exchange was the seventh largest equity exchange in the world. In 2001, the Toronto Stock Exchange accounted for 99.5% of the value of trading on Canadian exchanges and the total quoted market value of outstanding shares was approximately CAD 982 billion.<sup>43</sup>

The Toronto Stock Exchange demutualised its ownership structure in June 1999, and is now a “for-profit” entity owned by its shareholders, although presently those shares are held exclusively by former member firms. The Toronto Stock Exchange is a part of the TSX group of companies, which also includes Canada’s junior equity market (the TSX Venture Exchange), TSX Markets (a wholly

<sup>41</sup> Other smaller exchanges were also present: the Winnipeg Stock Exchange, The Winnipeg Commodity Exchange and the Toronto Futures Exchange. The Canadian Dealing Network (CDN) was recognised as a quotation and trade-reporting system.

<sup>42</sup> Additional information regarding the exchanges can be found at [www.tse.com](http://www.tse.com), [www.me.org](http://www.me.org), [www.cdnx.com](http://www.cdnx.com) and [www.international.nasdaq.com/Nasdaq-Canada/NasdaqCanada.asp](http://www.international.nasdaq.com/Nasdaq-Canada/NasdaqCanada.asp).

<sup>43</sup> International Federation of Stock Exchanges ([www.fibv.com](http://www.fibv.com)).

owned subsidiary which provides trading and market data services), and Market Regulation Services Inc. (an independent not-for-profit corporation which was created in equal partnership with the IDA following the demutualisation in order to separate the Toronto Stock Exchange's market regulation function from its other business lines).

#### *TSX Venture Exchange*

An electronic modified order-book market very similar to the Toronto Stock Exchange, the Canadian Venture Exchange, then known as the CDNX, officially commenced trading on 29 November 1999. Given its focus on small and emerging companies, at the end of 2001 the equity capitalisation of the 2,688 listed firms was around CAD 10.6 billion, approximately 1% of that of the Toronto Stock Exchange. The CDNX became a wholly owned subsidiary of the Toronto Stock Exchange in 2001, and is now known as the TSX Venture Exchange. Shareholders of both exchanges voted in favour of the merger in May 2001, and regulatory approval was granted in late July.

#### *Bourse de Montreal (Bourse)*

Since the restructuring of the Canadian exchanges, the Bourse (also an electronic, continuous auction/order-driven market) has been the market for derivatives products. Futures and options contracts on interest rates (eg the 10-year Government of Canada Bond), indices (ie the S&P/TSX composite and its sub-indices) and on individual stocks are now offered by the Bourse de Montreal.<sup>44</sup> Since 1999, the Bourse has been a member of the GLOBEX Alliance - an international electronic trading network offering access to several of the world's most actively traded financial futures products. For the year 2001, the volume of trading for the Bourse's main products was close to 12.7 million contracts.

The Bourse de Montreal demutualised its ownership in October 2000 (although, as with the Toronto Stock Exchange, all shares are currently almost exclusively privately held by the former mutual owners) and is an SRO overseen by the Quebec Securities Commission (QSC).<sup>45</sup>

#### *Nasdaq Canada*

On 26 April 2000, Nasdaq Stock Market Inc (Nasdaq) and the Government of Quebec announced that they had reached an agreement to establish a new exchange: Nasdaq Canada. Nasdaq US is a dealership, quote-driven equity marketplace which has specialised in the securities of small to mid-sized and new technology firms.

In November 2000, Nasdaq terminals were installed in the offices of those Quebec dealers who are members of the US National Association of Securities Dealers (NASD), allowing them direct access to the US Nasdaq market. Regulation is being carried out by NASD Regulation. Clearing and settlement of securities are handled through an existing bilateral agreement between the US Depository Trust & Clearing Corporation (DTCC) and the Canadian Depository for Securities.<sup>46</sup> As of autumn 2002, further plans to establish a new exchange have been put on hold.

#### *Alternative Trading Systems (ATSs)*

An Alternative Trading System (ATS) is an automated trading system which is introduced in competition with established marketplaces. Following a previous unsuccessful attempt to do so in 1988, Instinet established the first institutional ATS in Canada, installing terminals in Canada in 1995 (and listing only foreign companies). A second company, VERSUS Technologies (acquired by E\*TRADE Canada in August 2000), also implemented an institutional ATS that year. Still, ATSs in Canada have not captured significant market share.

In July 1999, the Canadian Securities Administrators (CSA) presented a proposal to accommodate more widespread operation of ATSs in Canada, mandating market linkages, consistent trading rules

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<sup>44</sup> At the end of 2000, 128 small-sized Quebec companies were still listed on the exchange. In the autumn of 2000, the Bourse and the TSX Venture Exchange (then known as the CDNX) reached an agreement for the transfer of these companies, which was completed in October 2001.

<sup>45</sup> Commission des valeurs mobilières du Québec (CVMQ).

<sup>46</sup> Note that all Nasdaq-listed securities are traded in US dollars.

across markets, and consolidated market information requirements. The proposal was revised in 2000 and the final version, called Rule ATS, was adopted in Quebec on 28 August 2001 and was approved by the Ontario Minister of Finance on 17 October 2001 (with a concurrent execution date of 1 December 2001). Approval has since been obtained in all the major provincial jurisdictions.

#### **4.1.3 Fixed income markets**

Decentralised and largely institutional in nature, Canadian debt markets are primarily regulated through member regulation of the IDA. In particular, IDA Policy No 5 describes the required standard in terms of market conduct for securities dealers. Rule ATS mandates the creation of a market regulator for debt markets, although such a regulator has not yet been formally identified. Fixed income trading settles through CDS's Debt Clearing Service, over which the Bank of Canada has oversight responsibilities. In recent years, Canadian fixed income securities (including provincial and corporate securities) have moved from registered and bearer certificate to a book-based system.

##### *Wholesale customer market*

Trading between dealers and their institutional clients traditionally takes place in the quote-driven, bilateral, telephone-based market. Attempts to introduce electronic trading in the wholesale customer market are in the preliminary stages. Some single-dealer proprietary trading platforms have been introduced. There are currently three multilateral trading systems in the wholesale customer fixed income market. CanDeal, an institutional multiple-dealer-to-client trading system, announced that it had been granted regulatory approval by the OSC and the IDA on 5 July 2002, and commenced operation on 10 September 2002. CBID Markets, which was granted regulatory approval in March 2002, and became active in July 2002, operates a multi-participant, anonymous, order-driven market for dealers and customers. Bloomberg Bondtrader (operated by Bloomberg Tradebook Canada) is an electronic bulletin board system on which securities dealers display quotations in government fixed income securities; the system is included as part of the basic Bloomberg subscription and was granted regulatory approval in September 2002.

##### *Inter-dealer market*

The inter-dealer fixed income market in Canada is currently dominated by four screen-based brokers or inter-dealer brokers (IDBs).<sup>47</sup> Freedom International Brokerage (recently acquired by Cantor Fitzgerald) and Shorcan specialise in bond trading, while Prebon and Tullett & Tokyo facilitate trading in money market instruments.

Prior to the introduction of the first IDB to Canada's fixed income market (Shorcan in 1978), securities dealers traded amongst themselves in a bilateral, telephone-based market. This practice has become less and less common in recent years, but full electronic trading in the inter-dealer market has yet to take hold. A system designed to provide transparency in the inter-dealer fixed income market, CanPX, was introduced in the autumn of 2001. This system displays aggregated quotes and post-trade information from the various IDBs.

The IDA influences the inter-dealer broker market through regulation of participants: IDA members are restricted from trading on an IDB that does not meet the requirements put forth in IDA Regulation 2100.

##### *Retail customer market*

Distribution to the retail market has traditionally been over the phone, or in person at the branch of a financial institution that deals in these securities. However, e-banking has begun to take hold. Bond Centre is a retail multiple dealer trading environment offered through E\*TRADE Canada. Its BondMatch system (developed by CollectiveBid) features access to live dealer quotes.

In February 2002, Toronto-Dominion Bank and BondDesk (USA) announced the formation of BondDesk Canada, an ATS which will also provide real-time quotes and trading to retail investors. Its prospective launch date has not yet been announced.

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<sup>47</sup> Screen-based brokers post bids and offers on a computerised network. Dealers who wish to trade must call the broker.

#### **4.1.4 Foreign exchange markets**

The vast majority of trades between dealers and customers take place in a quote-driven, telephone-based market. Multiple-dealer electronic trading platforms such as FXall and FXConnect are a small but growing presence in the Canadian market.

Roughly 80-85% of the activity in the Canadian inter-dealer foreign exchange market takes place on Reuters Dealing (D2000-2 and D3000), a system which allows participating dealers to post quotes and trade anonymously. The remainder of inter-dealer activity takes place through voice brokers (Freedom, Prebon and Tullett & Tokyo) or by direct, telephone-based, dealer-to-dealer trading, although these methods have become much less common over time.

In the past, foreign exchange settlement was a decentralised arrangement with obligations typically cleared and settled through nostro bank arrangements. A new arrangement, CLS Bank, to settle foreign exchange transactions began commercial operations on 9 September 2002. With the support of the world's largest foreign exchange dealing institutions, CLS Bank has the potential to become a central feature of foreign exchange settlement.<sup>48</sup>

## **4.2 Clearing and settlement**

There are two main systems for clearing and settling debt and equity securities, both owned by the Canadian Depository for Securities: the Debt Clearing Service (DCS) and the Securities Settlement Service (SSS). The DCS is the largest by value, facilitates the clearing and settlement of all Canadian dollar-denominated debt securities, and is designated for oversight by the Bank of Canada. The SSS facilitates the clearing and settlement of equity and US dollar-denominated debt securities and, compared to the DCS, is a high-volume low-value system. It is expected this system will be phased out in 2003 with all securities then being settled through an enhanced DCS.

The Canadian Derivatives Clearing Corporation (CDCC) is the issuer, clearing house and guarantor of exchange-traded interest rate and equity derivatives contracts in Canada.

### **4.2.1 The Debt Clearing Service (DCS)**

#### *Institutional aspects*

The DCS is owned and operated by the Canadian Depository for Securities and is designated for Bank of Canada oversight under the Payment Clearing and Settlement Act.<sup>49</sup> It is an online real-time system that was first implemented in 1994 to clear and settle Government of Canada Bonds. Following enhancements to its risk containment arrangements in 1995, Government of Canada Treasury Bills were added to the system. In 1998, the remaining money market instruments followed. In 2001, CDS migrated longer-term provincial and private sector debt securities from the SSS into the DCS. Future-dated transactions involving Government of Canada Bonds or Treasury Bills are handled within the DCS using a process called DetNet. The remaining securities held in the SSS, equity securities and foreign debt, are planned for migration to an enhanced DCS in 2003. The enhanced system will be called CDSX.

#### *Clearing and settlement*

The DCS is a model 2 delivery versus payment mechanism: transactions are settled with securities ownership moving on a gross real-time basis while the net funds positions are calculated and settled at the end of the day.<sup>50</sup>

Trade transactions are entered by one party and confirmed by the other party. These transactions can be entered into the DCS either via file transmission or by direct access. DCS netted payment

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<sup>48</sup> See the chapter "International payment arrangements" for more on the CLS Bank initiative.

<sup>49</sup> See Section 1.1.1.

<sup>50</sup> Securities may also be cleared via a daily batch settlement which occurs during the early hours. Although described as a batch process, it is legally a gross mechanism.

obligations are settled at the end of the day via designated bankers, with payments made through the Large Value Transfer System (LVTS) to CDS's settlement account held at the Bank of Canada. Special procedures have been developed to allow securities that are held in the DCS to secure the DCS intraday payment obligations to be used as collateral to make the LVTS payments. CDS retains a prior claim on these securities until the LVTS payment is made. LVTS payments are final and irrevocable, allowing final settlement of CDS to occur once all the payment obligations have been received. After settlement, securities that were held in accounts with restricted access become available for use without restriction.

In January 2002, CDS introduced a new functionality within the DCS called DetNet. For users of this function, confirmed future-dated trade transactions involving Government of Canada Bonds or Treasury Bills are netted by security and settlement date, with CDS becoming the counterparty to the netted transactions. Settlement of these netted transactions is completed through the usual DCS settlement arrangement.

The opening hours for the DCS are designed to support the operations of CLS Bank. The DCS is open from 12.30 am-8 pm. Online activities become available at 12.30 am, settlement of payments begins at 4 pm and ends at 5 pm. After settlement, the DCS remains open until 8 pm for movement of securities only.

### *Risk management*

The risk containment model developed in the DCS, which is based on survivors pay, runs in real time and is designed to protect CDS from the intraday failure of the participant with the single largest net obligation to CDS. Moreover, the Bank of Canada acts as CDS's settlement agent so that CDS is protected from "banker risk".<sup>51</sup>

There are fundamentally two types of participants in the DCS - receivers of credit and extenders of credit. The receivers of credit are the majority of institutions participating in the system and they receive lines of credit from extenders that enable them to purchase securities. At the end of the day, the extenders of credit are required to make payments to the clearing house to cover securities bought on their own behalf and on behalf of their customers, as well as to cover securities bought by receivers of credit. Receivers of credit grant the extenders a security interest in the securities delivered to the receivers on that day. If an extender is required to make payment for a receiver that is unable to fulfil its end-of-day payment obligation, the extender is entitled to take possession of those securities (the so-called delivered or "unpaid-for" securities). The amount that each extender can owe the system (either on behalf of those to which it has extended credit or on its own behalf) is capped.

The system also has a loss-allocation procedure in the event that an extender of credit is unable to meet its end-of-day payment obligation, either for its own net purchases during the day or on behalf of those receivers of credit that are unable to fulfil their payment obligations at the end of the day. Under the loss-allocation procedure, the remaining extenders are required to fulfil the obligation to the system of the failed extender. This loss-allocation procedure is backed up by a security interest held by CDS and surviving extenders in the securities of the failed extender and of any failed receivers for which it is supposed to make payment, as well as a pool of collateral that all extenders of credit maintain in accordance with the requirements set out in the DCS Rules. The sum of these two types of collateral is sufficient to cover the failure of the extender with the single largest possible net debit to the system. Thus, in the case of the failure of a single extender, the DCS would be able to settle without unwinding any settled transactions and without causing undue liquidity strains for participating financial institutions.

Within this framework, the Debt Clearing Service incorporates a variety of risk control mechanisms in its design and operations.

- The DCS is a real-time online facility with the position of each participant calculated on a transaction by transaction basis.
- The DCS has been designed to operate on a delivery versus payment (value for value) basis. There is gross, or item by item, settlement for securities transfers throughout the day and, at

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<sup>51</sup> The risk to participants in a clearing and settlement system of the failure of a private sector institution acting as settlement agent for the system.

the same time, there is continuous netting and novation to CDS of corresponding payment obligations.

- Extenders of credit net debit positions vis-à-vis the DCS are subject to “system operating caps”, ie ceilings, with the cap linked to the size of each extender’s regulatory capital.
- A collateral pool is maintained to secure payment items and to provide coverage of intraday risk, until payment exchange is complete. The Aggregate Collateral Value (ACV) edit ensures that any default will be fully collateralised at all times by securities. The system rejects transactions that would cause a participant’s payment obligation to exceed the value of securities pledged as collateral to cover that payment obligation. The ACV tracks the value of a participant’s collateral in real time.
- Any transactions that would put a participant outside the limits imposed by the collateralisation requirement or system operating caps are placed in a “pending” status until a change allows the transaction to settle within these limits.
- All participants in the DCS can calculate exactly their maximum risk exposure at any given time.
- At the end of the day, the net amounts owed and owing between CDS participants (as a result of the novation of obligations to CDS) are settled using the Large Value Transfer System (LVTS).
- The system does not permit the reversal or unwinding of transactions as a means of dealing with participant failure.
- The Bank of Canada acts as settlement agent for CDS in the LVTS, with respect to payment obligations in the DCS. The Bank of Canada, in carrying out this daily function, receives payments from participants that owe money to CDS and makes payments to participants entitled to receive money from CDS. With the Bank acting as settlement agent, so-called “banker risk” is eliminated for the DCS and its participants. Banker risk refers to the possible failure of a private sector institution acting as a settlement agent for a clearing and settlement system. There is no liquidity or credit risk to the Bank of Canada from carrying out this function because the LVTS is used to make end-of-day DCS payments and the Bank will make an LVTS payment on behalf of CDS only if there is a sufficient balance in CDS’s account to cover the amount of the payment.

The DetNet process has a separate risk management structure that requires each DetNet participant to contribute margin collateral that covers the participant’s own risks to CDS for their DetNet activities. If a participant fails to fulfil any of its obligations to CDS within DetNet, CDS may suspend the participant and initiate both the DCS default procedures and the DetNet closeout procedures. The DetNet closeout procedures use a defaulters pay model, and the value of the DetNet collateral that CDS has received from the defaulting participant is expected to be sufficient to cover any DetNet loss generated by the default of that participant.

#### **4.2.2 The Securities Settlement Service (SSS)**

The SSS is owned and operated by CDS. It allows for settlement of equity and foreign pay securities. However, plans are under way to move the settlement of these items to an enhanced (and well risk-proofed) DCS. The enhanced system, to be called CDSX, is expected to be completed during 2003.

##### *Clearing and settlement*

Transactions are completed through a batch net process, which occurs in three cycles during the day, with the latter involving US dollar-denominated securities and funds only. Securities are moved on a gross basis, with funds positions being netted. However, the system does not operate in real time. Securities positions are moved at the end of the cycles and cash payments are netted and completed via designated paying agencies. For Canadian dollar-denominated funds, funds settlement is completed through the issuance and receipt of cheques, which are provisional payments that are cleared and settled through the Canadian Payments Association’s Automated Clearing and Settlement System (ACSS). For US dollar-denominated funds, settlement is completed via designated paying agencies with the funds being sent through Fedwire into CDS’s banker’s account at the Federal Reserve Board.

### *Risk management*

The SSS does not operate in real time and does not have risk containment mechanisms that are as robust as those in the DCS. To secure payment of amounts due, each participant grants CDS a security interest in the following collateral: all cheques and money received by CDS on behalf of the participant upon trade settlement; all payments made to the participant through any service upon trade settlement; all dividends, interest, amounts due from maturity, principal repayments and all other entitlements and proceeds arising with respect to the securities which form the collateral; and all contributions made to a participant fund. The participant fund is made up of contributions from the participants and may include a combination of cash, securities or irrevocable letters of credit in favour of CDS. In some extreme circumstances, unwinds may occur.

#### **4.2.3 The Canadian Derivatives Clearing Corporation (CDCC)**

CDCC was established in 1976 as the not-for-profit Trans-Canada Options Corporation. Today it is a for-profit corporation solely owned by the Bourse de Montreal. It is the issuer, clearing house and guarantor of exchange-traded interest rate and equity derivatives contracts in Canada. A variety of instruments are issued and cleared by CDCC. Option contracts include stock, bond and index options. Futures contracts include five- and 10-year Government of Canada Bond futures, three-month Canadian bankers' acceptances, and index futures. Futures options contracts include three-month Canadian bankers' acceptance futures and 10-year Government of Canada Bond futures.<sup>52</sup>

All clearing members of CDCC must be a member of the Bourse de Montreal or be a Schedule I commercial bank as well as meet other specified criteria related to, among other things, the firm's financial condition. Members of CDCC are regulated by one of three organisations: the Bourse de Montreal or the Investment Dealers Association of Canada, both of which are self-regulatory organisations; or OSFI, which oversees federal commercial deposit-taking institutions. CDCC's rules and by-law amendments are reviewed by the Quebec Securities Commission and the Ontario Securities Commission. Also, to support clearing options that are registered for sale to US residents, CDCC files documentation in accordance with Securities and Exchange Commission requirements.

Exchanges send matched trade information to CDCC via dedicated communication lines. The information is checked against CDCC rules. If the trade information conforms to the criteria, it is accepted and the positions of the participants are immediately updated and the exchange is informed of the revised positions. Futures are marked to market, and trades are settled, daily. The system nets out the positions and members make (or receive) a single payment to (from) CDCC before the markets open on the day after trade day (T+1). Payments are settled across accounts CDCC clearing members hold at CDCC's settlement bank. The delivery and settlement of exercised, assigned or tendered contracts is processed through the Canadian Depository for Securities. The corresponding information is sent on a nightly basis.

CDCC has many risk control mechanisms in place. As the guarantor of the system, it ensures settlement will occur even if a participant defaults on a derivatives contract. There are numerous structures in place to deal with default and limit risk including among others membership standards, margin deposits, a securities borrowing facility and a shared default contingency fund.

As at the end of 2001, there were 31 members and 25.5 million contracts (one-sided) were processed.

### **4.3 The use of securities infrastructure by the central bank**

The Bank of Canada is a direct participant in the DCS and completes several business activities through its participation.

#### **4.3.1 Collateral management**

The Bank of Canada uses the DCS to receive securities as collateral. This collateral is used to support the intraday operations of the LVTS; standing loan facilities related to the settlement of both the LVTS

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<sup>52</sup> Information in this section from: Canadian Derivatives Clearing Corporation (2001): *Information statement on market protection mechanisms, financial resources and default procedures* ([www.cdcc.ca](http://www.cdcc.ca)).

and the ACSS; and any advances associated with the withdrawal of currency by participants in the Banknote Distribution System (BNDS).

#### **4.3.2 Monetary policy**

The Bank of Canada, as part of its monetary policy, has a target for the overnight rate and is prepared to enter into open market securities operations with purchases and resales, or sales and repurchases, to support the target rate. These securities transactions are all settled in the DCS.

#### **4.3.3 Government debt administration**

As part of the debt management services the Bank provides to the federal government, the Bank issues through auction and settles through the DCS all new issues of government treasury bills and marketable bond issues. The Bank of Canada acts on behalf of CDS as custodian for Government of Canada securities. Also, all interest and redemption payments on government securities held in the DCS are settled through the DCS by the Bank of Canada acting on behalf of the government.

#### **4.3.4 Client services**

The Bank of Canada offers settlement services on behalf of its correspondent clients, primarily other central banks, for Canadian dollar-denominated securities transactions entered into by these clients. These transactions are settled through the DCS.