

Bank of Canada

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**Assessment of CDSX Against the CPSS-IOSCO  
Recommendations for Securities Settlement Systems**

by

**Darcey McVanel**

Ottawa, Ontario, Canada K1A 0G9  
<http://www.bankofcanada.ca>

## 1. Introduction

The Canadian Depository for Securities Limited (CDS) has created an enhanced securities clearing and settlement system (CDSX) that will settle virtually all securities trades in Canada, including exchange-traded equities. This paper assesses the degree to which CDSX meets internationally recognized minimum standards. The standards, specified in *Recommendations for Securities Settlement Systems* (BIS 2001) were developed by the Committee on Payment and Settlement Systems (CPSS) and the Technical Committee of the International Organization of Securities Commissions (IOSCO). The 19 recommendations for securities settlement comprise international standards that should be met by securities settlement systems and the markets in which they operate. Because the recommendations involve areas that are out of the control of system owners and operators, the assessment is not strictly limited to CDSX itself. The recommendations address three areas: (i) risk mitigation, (ii) efficiency, and (iii) governance and oversight.

The CPSS-IOSCO document, *Assessment Methodology for “Recommendations for Securities Settlement Systems,”* (BIS 2002) outlines how the standards should be applied and identifies the key requirements for meeting the standards. For each recommendation, it suggests the criteria necessary for the observance, broad observance, partial observance, or non-observance of each standard. To the greatest extent possible, the assessment criteria are followed. Generally, if a standard is “observed,” then the system is meeting the minimum standard without deviation. An assessment of “broadly observed” means that the standard is being met, but with a small deviation. An assessment of “partially observed” means that some concerns are associated with the deviation from the standard. “Non-observance” means that there are major deviations from the standard.

This document is organized as follows. Section 2 briefly describes the CDSX system and provides an overview of CDSX compliance with the recommendations. Section 3 describes the recommendations designed to mitigate systemic risk. Section 4 describes the recommendations to mitigate non-systemic risk and/or promote efficiency.

## 2. The CDSX System

This paper assumes that the reader has a good idea of how CDSX operates. For an overview of CDSX, please see “CDSX: Canada’s New Securities Clearing and Settlement System for Securities” (McVanel 2003). For an overview of the CDSX risk controls, please see *CDS*

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*Settlement Services Risk Model* (CDS 2003b). The CDSX rules (CDS 2003c) and procedures (CDS 2004) are also available on the CDS Web site, [www.cds.ca](http://www.cds.ca).

The CDSX system was fully implemented on 6 October 2003. CDS is currently updating its risk model so that the settlement system and its participants remain properly safeguarded against exposure to financial risk. The risk model applied in CDSX incorporates many of the key components of the model used in the former Debt Clearing Service (DCS), including caps, lines of credit, collateral monitors (aggregate collateral value), collateral pools, credit and debit rings, and Large Value Transfer System (LVTS) payments. In addition, CDS is modifying its risk formulas where necessary, to incorporate risk-based coverage where CDS (as the central counterparty) is exposed to market risk in the form of replacement-cost risk. This replaces the traditional participant funds formulas and enhances overall risk-protection mechanisms.

With CDSX fully implemented, CDS launched a one-year transition period to complete enhancements to the system and to the risk model. At the end of the transition period, the system's risk model will be considered to be fully implemented. The descriptions in this document thus reflect the system as of 6 October 2003. After the transition phase, the Bank of Canada intends to amend this document to reflect any changes to the system and its risk model.

## **2.1 An overview of CDSX compliance**

CDSX is in full compliance with all but one of the CPSS/IOSCO standards. The following recommendations are fully observed:

1. Legal framework
3. Settlement cycles
4. Central counterparties (CCPs)
5. Securities lending
6. Central securities depositories (CSDs)
7. Delivery versus payment (DVP)
8. Timing of settlement finality
9. CSD controls to address participants' failures to settle
10. Cash settlement assets

11. Operational reliability
12. Protection of customers' securities
13. Governance
14. Access
15. Efficiency
16. Communication procedures and standards
17. Transparency
18. Regulation and oversight
19. Risks in cross-border links

The only standard for which CDSX receives a non-observed assessment is the second, "Trade confirmation." Trade reporting and confirmation on the trade date is recommended to reduce the number of failed trades. Because direct trades are generally not reported on T+0 in Canada (except for some government debt money market securities), the recommendation is non-observed. This recommendation, however, is concerned with efficiency, and our non-observance does not create systemic risk concerns. The non-observance is the result of market practices and cannot be remedied by CDS, the owner and operator of CDSX.

### **3. Recommendations to Mitigate Systemic Risk**

The following recommendations are designed to mitigate systemic risk, or the risk that, if the system were insufficiently risk-proofed, it could trigger or transmit serious shocks across domestic and international financial systems or markets. The Bank of Canada is responsible for assessing whether all sources of systemic risk are recognized and adequately controlled in systemically important systems such as CDSX. It is thus critical that CDSX meet these recommendations, either fully or with a minor deviation that is not expected to result in systemic risk. CDSX fully complies with all the recommendations intended to control systemic risk.

The wording of each recommendation is taken from the *Recommendations for Securities Settlement Systems* (BIS 2001).

#### **Recommendation 1: Legal framework**

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“Securities settlement systems should have a well founded, clear and transparent legal basis in the relevant jurisdictions.”

The important issues in this recommendation are

- the laws, rules, procedures, and contractual provisions that govern the operations of the securities settlement system are clearly stated, understandable, public, and accessible to system participants;
- the legal framework demonstrates a high degree of legal assurance for each aspect of the settlement process; and
- rules and contracts related to the operation of the system are enforceable in the event of insolvency of a participant.

### Description

All Canadian legislation is accessible to the public. CDS has facilitated public understanding of their processes: all CDS rules and procedures are available on the public part of the CDS Web site.

At the core of this recommendation is the general legal framework within which CDSX operates. The International Monetary Fund (IMF), in its most recent *Report on the Observance of Standards and Codes (ROSC) Canada* (IMF 2000a, b), finds that Canada has a well-developed legal framework. No court has failed to uphold the legal basis of the system settlement rules at any time during CDS’s operation.

A key part of the legal framework that contributes to compliance with this recommendation is the Payment Clearing and Settlement Act (PCSA), enacted in 1996 by the Parliament of Canada. The PCSA reinforces settlement rules by protecting them from certain legal challenges. Specifically, it

- makes the system’s settlement rules valid and binding on participants and their creditors;
- ensures the validity of netting arrangements;
- legally mandates that settlement of payment obligations on the books of the Bank of Canada is final and irrevocable, and prevents settlement from being subject to set-aside provisions; and
- ensures that realization on collateral pledged in the system will not be the subject of stays in the event of the insolvency of the pledgor.

The PCSA thus gives a high degree of legal assurance to the settlement process.

Section 85(1.1) of the Ontario Business Corporations Act also gives CDS, as a clearing agency, “super priority” in collateral pledged to safeguard the system.

The assets of participants are protected in several ways. The system employs delivery-versus-payment, has a comprehensive set of rules that cover the default of a participant, and has provisions for the liquidation of assets that have been pledged as collateral in the event of a

participant default. Assurance that the system will settle in the event of the default of a participant depends in part on the validity and enforceability of security interests granted by the defaulter and by its guarantors. Because the rules of CDSX create valid, first-priority security interests, the claims of CDS and other secured creditors in the system will have priority over the claims of any other creditors of a failed participant.

The validity of book-entry transfers and pledges of securities (including hypothecs in Quebec) is generally governed by provincial legislation. Book-entry transfers of bills of exchange and promissory notes (including bankers' acceptances), however, are subject to the federal Depository Bills and Notes Act. Although the laws of Ontario, Quebec, and British Columbia, as well as the federal laws of Canada, contain explicit recognition of book-entry transfers and pledges of securities, the laws of the other provinces do not. The CDS rules choose the laws of Ontario as the governing law for CDSX participants (because the system is based in Ontario and many of the major participants are headquartered there), but there is a risk that, in some situations, the courts could hold that the laws of a provincial jurisdiction apply even if they do not contain adequate recognition of book-entry transfers and pledges. This could occur, for example, where the securities being pledged are still evidenced by physical certificates held outside Ontario, or if a court were to hold that a security interest in book-entry securities constitutes a non-possessory security interest governed by the law of the pledging participant's principal place of business.

To provide more certainty and to modernize the law governing book-entry holding, transfers, and pledges of securities, the Canadian Securities Administrators have proposed a draft Uniform Securities Transfer Act (USTA), to be adopted by each province in Canada. Modelled on Revised Article 8 of the Uniform Commercial Code (UCC) enacted in all of the United States of America, the USTA replaces outdated concepts of delivery of possession with the UCC idea that the holder of a book-entry position in securities has a bundle of rights known as a "security entitlement." The USTA would also reform the laws that govern security interests in book-entry securities, so that validity and priority are based on the idea of control over security entitlements (through the use of book-entry accounts), rather than outdated concepts of transfer of possession. The USTA would also eliminate the uncertainty as to the laws applicable to security interests, because all book-entry transfers and pledges of securities would be governed by a single, comprehensive statute.

It is important to note that the current law in Canada, even in the absence of the proposed USTA, is very likely to uphold the validity and priority of security interests in CDSX. CDS has obtained legal opinions on the enforceability of security interests in all relevant jurisdictions: British Columbia, Alberta, Ontario, Quebec, and New York. They have all been very favourable, in that they give a high degree of certainty that CDS will have a valid and first-priority security interest

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(or hypothec) under the laws of those jurisdictions. To obtain more certainty that security interests will be upheld, CDS is registering its security interest or hypothec against all participants in Ontario and in the jurisdictions of those participants with executive offices outside Ontario.

#### Assessment

Observed.

#### **Recommendation 4: Central counterparties (CCPs)**

“The benefits and costs of a CCP should be evaluated. Where such a mechanism is introduced, the CCP should rigorously control the risks it assumes.”

There are four important issues in this recommendation:

- The balance of the benefits and costs of a CCP is carefully assessed.
- The legal basis for any netting arrangements is sound and transparent.
- The CCP’s risk controls are sufficient to withstand severe shocks, including defaults by one or more participants.
- The adequacy of resources to absorb financial losses is monitored. Resources are accessible, and rules clearly specify how defaults are handled and how losses are shared.

#### Description

Through the process of novation, CDS becomes the central counterparty for all payment rights and obligations that arise from transactions settled in CDSX. CDS also becomes the central counterparty for specific transactions that involve future-dated Canada bonds and treasury bills (through the DetNet function) and equities (through the continuous net settlement (CNS) function). For the central counterparty functions (DetNet and CNS), once it has novated the trade, CDS must complete the trade with the remaining counterparty if one trading party is unable to do so.<sup>1</sup>

In addition to the collateral requirements for all CDSX transactions, further collateral is required to cover the replacement-cost risk that CDS takes on when becoming the central counterparty by netting and novating transactions at or prior to settlement. Replacement-cost risk occurs because, if one of the parties defaults, CDS must take the counter-position to the surviving party to complete the trade. Because market risk results from a potential discrepancy between the transaction price and the close-out price, CDS requires that each member of the central counterparty service provide collateral to mitigate this risk.

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1. CDS does not immediately complete the trade with the other party if one party fails on a trade. The trade is first allowed to fail, and settlement is attempted on subsequent days.

All trades, once novated in a CCP service, are subject to daily mark-to-market (MTM) at the most recent closing price. At the time of novation, and daily until the trade has settled, the party that has lost relative to the trade price must pay an MTM payment equal to the difference between the trade price and the current market price.<sup>2</sup> This payment will be transferred to the gaining party.

In addition to daily MTM payments, CCP participants pledge participant fund collateral to CDS. Participant fund collateral, which consists of two parts, provides collateral to mitigate the risks that CDS faces as central counterparty. These risks are the potential for a defaulting participant to fail to pay an MTM payment owed to CDS on default and the replacement-cost risk on the outstanding positions in the CCP service. The MTM component of the participant fund (which is required in addition to the daily MTM payments) is the absolute value of the largest MTM payment paid to or received from CDS in the last 50 business days. The outstanding positions component of the fund is meant to cover any loss that CDS may face when it closes out a defaulting party's outstanding positions. This component is determined based on the riskiness of the securities in which each participant has outstanding positions. CDS uses value at risk to assess the riskiness of the outstanding positions and requires collateral sufficient to cover potential losses at a 99 per cent confidence level over a three-day holding period.

At the end of the transition period, a system-wide cap will be imposed on the amount of exposure that a participant can create through their central counterparty transactions.<sup>3</sup> A participant who exceeds this cap will immediately be made ineligible for the service in which they have the highest exposure.

#### Assessment

Observed.

#### **Recommendation 7: Delivery versus payment (DVP)**

“Central securities depositories (CSDs) should eliminate principal risk by linking securities transfers to funds transfers in a way that achieves delivery versus payment.”

There are two important issues in this recommendation:

- The technical, legal, and contractual framework ensures DVP.
- The great majority of securities transactions between direct participants of the CSD by value are settled on a DVP basis.

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2. If the current market price (MP) is less than the trade price (TP), the buyer will pay a mark of TP-MP. If the opposite is true, the seller will pay a mark of MP-TP.
  3. Requirements by the Investment Dealers of Canada currently act as a cap on the value of outstanding trades that investment brokers and dealers can have outstanding.



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## Description

The importance of DVP settlement is that it eliminates principal risk, the risk that securities could be delivered but payment not received, or vice versa.<sup>4</sup> All securities transactions in CDSX use DVP model 2, where there is a real-time transaction-by-transaction transfer of securities and a net end-of-day funds transfer (see BIS 1992, 22). It is important to note that, although there is a final net end-of-day funds transfer through LVTS payments outside of CDSX, funds obligations are debited and credited within the CDSX ledgers irrevocably by book entry upon settlement of each transaction in real time.

The settlement rules of CDSX require that all transactions settle using DVP. Furthermore, the PCSA supports the legal framework of DVP: it makes the systems' settlement rules binding by removing potential legal challenges to the rules. Both securities deliveries and funds payments are final and irrevocable. The systems are set up so that securities and funds transfers in the accounts of participants are final once settlement has been completed. Furthermore, end-of-day payments are made through the LVTS, a system that provides unconditional and irrevocable funds on an intraday basis.

## Assessment

Observed.

### **Recommendation 8: Timing of settlement finality**

“Final settlement should occur no later than the end of the settlement day. Intraday or real-time finality should be provided where necessary to reduce risks.”

There are three important issues in this recommendation:

- Timing of settlement finality should be defined clearly, and settlement should occur no later than the end of the day.
- Intraday or real-time finality should be provided where necessary to reduce risks.
- The unilateral revocation of unsettled transfer instructions late in the settlement day should be prohibited.

## Description

The timing of settlement finality is clearly stated in the CDSX rules and procedures and occurs no later than the end of the day. For all settlement functions, securities deliveries and funds payments are final and irrevocable. This means that, on a trade-by-trade basis, settlement finality occurs when each transaction is processed. Depending on the settlement function, securities transfer

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4. Bank for International Settlements definition.

occurs either intraday for the current-dated CCP function (CNS, which applies to equities only), or in real time for non-CCP functions (TFT) and the future-dated CCP function (DetNet).

The settlement of a trade results in a final and irrevocable delivery of securities and funds on the books of the two trading parties. Although the net final funds positions that arise from these transfers are not settled between CDS and its members on the books of the Bank of Canada until the end of the day, participants have intraday access to the securities and funds that have been credited to them by book entry once settlement has been completed. They can then use and trade securities and funds that have been transferred to them intraday or in real time. Intraday or real-time settlement is thus achieved in CDSX.

The settlement process starts after the transaction has been entered into the system and confirmed; it is initiated when the transaction reaches the front of the queue of transactions waiting to be settled. The first step in the settlement process is the risk edit. If it is passed, the transaction will go through settlement. Either party can modify trade details or delete the trade, provided the trade has not entered the settlement stage. Once the trade has begun settlement, neither party can change or delete the trade.

#### Assessment

Observed.

#### **Recommendation 9: Central securities depository risk controls to address participants' failures to settle**

“CSDs that extend intraday credit to participants, including CSDs that operate net settlement systems, should institute risk controls that, at a minimum, ensure timely settlement in the event that the participant with the largest payment obligation is unable to settle. The most reliable set of controls is a combination of collateral requirements and limits.”

There are three important issues in this recommendation:

- A CSD that extends intraday credit to participants, at a minimum, ensures timely settlement in the event that the participant with the largest payment obligation is unable to settle. Risk controls should be imposed to control potential losses and liquidity pressures from the failure of participants to settle.
- Overdrafts or debit balances in securities are not permitted.
- The probability and potential impact of multiple settlement failures is evaluated relative to the costs.

#### Description

CDS, the central securities depository, extends intraday credit to participants by allowing them to have intraday negative funds balances. The associated risk is controlled by

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- implementing limits on the maximum exposures of participants; and
  - requiring that participants collateralize any negative funds balance.

The collateralization occurs when participants grant a security interest to CDS over securities delivered in their securities accounts during the day (defaulter pays) and over a pool of securities that are contributed by members in each participant class and are available to deal with losses within that participant class.<sup>5</sup> Haircuts are applied to the value of those securities that can be used as collateral, so that, in the event of a default by a participant, the realized liquidation value of the securities will be at least as large as the defaulter's negative funds balance to a minimum 99 per cent confidence level.

In the event of the default of a participant, the securities that the defaulter individually pledged to CDS (the securities in their risk account) are seized to cover the portion of the defaulter's negative funds balance that is meant to be covered by these securities. The defaulter may also have a part of its negative funds balance covered by the securities in its collateral pool. The surviving members of the collateral pool are required to cover the defaulting participant's payment obligation that arises from the use of that pool.

The collateral pools for each group of participants work on the premise that obligations of multiple participants are covered by the same collateral, so the system is guaranteed to survive the default of only the largest net debtor.<sup>6</sup> If two or more participants from the same collateral pool were to fail while in a net intraday debtor position, the remaining (surviving) members of that collateral pool would ultimately be required to cover the portion of the defaulters' obligations that arose from use of the pooled collateral.<sup>7</sup>

The use of pooled collateral greatly reduces the collateral requirements of participants. Because the possibility of two large participants defaulting is very small, the efficiency gains from lowered collateral requirements more than offset the risk of having less than full collateralization for multiple failures.

All participants face a cap on the maximum exposure that they can impose on the system through their transactions; the cap is based on each individual participant's capital base. As described in recommendation 4, participants also face a cap on the amount of exposure they can incur in

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5. Receivers of credit (primarily investment dealers and brokers) typically also have their obligations guaranteed by an extender of credit.
  6. There is a separate collateral pool for each group of participants: the extenders of credit, settlement agents, federated participant, and receivers of credit.
  7. It is very unlikely that more than one participant would fail on the same day. Furthermore, we can reasonably expect that participants who experience financial difficulties (who could later become defaulting participants) would have a positive funds position in the system from selling off securities to generate needed liquidity.

central counterparty transactions, as well as additional collateral requirements to cover CDS's risk as central counterparty.

### Assessment

Observed.

### **Recommendation 10: Cash settlement assets**

“Assets used to settle the ultimate payment obligations arising from securities transactions should carry little or no credit or liquidity risk. If central bank money is not used, steps must be taken to protect CSD members from potential losses and liquidity pressures arising from the failure of the cash settlement agent whose assets are used for that purpose.”

There are four important issues in this recommendation:

- The settlement agent is a central bank. If the settlement agent is a private bank, steps are taken to protect CSD members from potential losses and liquidity pressures that would arise from its failure.
- The operator of the CSD or the regulators or overseers of the CSD monitor the concentration of exposures and evaluate the financial conditions of the settlement bank.
- The proceeds of securities settlements are available for recipients to use, at a minimum on the same day and, ideally, intraday.
- The payments system used for interbank transfers among settlement banks observes the Core Principles for Systemically Important Payment Systems (CPSIPS).

### Description

Throughout the day, funds obligations resulting from securities transactions are netted into an obligation between CDS and each of the participants. The system uses a tiered structure whereby only certain participants can participate in end-of-day payment exchange; qualified participants act as a “designated banker” for participants who cannot participate in the exchange.<sup>8</sup> The obligations of each of those participants are aggregated with those of its designated banker, so CDS receives payments from, and makes payments to, only certain participants.

The central bank acts as the settlement agent in CDSX, and end-of-day cash settlement occurs through a payments system, the LVTS. Participants who act as designated bankers in the system must have LVTS accounts at the Bank of Canada. Participants owing funds to CDS at the end of the day (net debtors) are required to submit an LVTS payment to CDS's account at the Bank of

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8. Extenders of credit and the active federated participant may act as bankers in the system for other participants. Settlement agents may make or receive payments to or from CDS, but they may not act as bankers for other participants. Receivers of credit are not allowed to participate in end-of-day payment exchange, and must have a designated banker.

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Canada to cover their obligation. Once those payments are received, CDS makes an LVTS payment to those participants who are owed funds (the net creditors). These transactions are final and irrevocable, so there is no risk that end-of-day payments will be unwound. Furthermore, LVTS is a well-risk-proofed system and is fully compliant with CPSIPS.

Funds transfers on the accounts of CDSX participants are final and irrevocable. Once a transaction has settled, the buyer can use the purchased securities, and the seller can use the funds on an intraday basis. Securities settlement occurs intraday, and the proceeds of securities settlement are available immediately following settlement.

### Assessment

Observed.

### **Recommendation 11: Operational reliability**

“Sources of operational risk arising in the clearing and settlement process should be identified and minimized through the development of appropriate systems, controls and procedures. Systems should be reliable and secure, and have adequate, scalable capacity. Contingency plans and backup facilities should be established to allow for timely recovery of operations and completion of the settlement process.”

There are four important issues in this recommendation:

- System operators identify sources of operational risk and establish clear policies and procedures to address those risks.
- There are appropriate contingency plans for key systems that are reviewed and tested regularly and after system modifications.
- There are adequate management controls and sufficient personnel to ensure that the procedures are implemented accordingly, and information systems are subject to periodic independent audits.
- All systems are reliable, secure, and able to handle the stress volume.

### Description

CDS has developed an operational risk-control model that employs service-level standards, an internal audit and assessment, and an external audit. The service-level standards are intended to serve as targets for the system and focus not only on reliability but also on customer service and entitlements. The standards, which were developed in September 2000, cover CDS’s depository, clearing, settlement, and ancillary services and are based on input from participants in CDS’s services. CDS reports its compliance with these standards in its quarterly newsletter. In general, these standards are set at a high level and are consistently met, indicating that risks are adequately

controlled. The groups within CDS that oversee the development of appropriate standards are the Risk Committee and Internal Audit. CDS has identified operational risk, and policies and procedures are in place to address that risk.

CDS also uses external auditors to assess their operational risk-control measures. An annual independent audit is performed by KPMG LLP to assess CDS's risk-control procedures. The most recent KPMG audit found that controls were appropriately designed and effective.

CDS uses business-resumption plans (BRPs) for key systems. "The plans, which are updated semi-annually, provide for crisis management, communication and recovery teams, as well as backup sites at shared facilities, other CDS locations or rental locations at the time of the contingency" (CDS 2002e, 36). The BRPs provide for service functionality out of remote locations. To protect against data being lost in a contingency, CDS has backups of all computer files, has secure off-site data storage, and uses data mirroring. CDS monitors system stress in key systems for early warning of potential operational problems that may arise.

#### Assessment

Observed.

#### Comments

An initiative is currently underway to synchronize and strengthen operational contingency plans of critical systems and participants in the Canadian financial system. CDSX and LVTS are critical to the functioning of the Canadian system and must therefore have thorough and up-to-date business continuity plans (BCPs). Part of this initiative involves sharing information on the BCPs. Because CDS is a key player in Canada's financial system, the Bank will continue to monitor its BCPs and its information dissemination with respect to its plans.

## **4. Recommendations to Mitigate Non-Systemic Risk and/or Promote Efficiency**

The following recommendations are designed to mitigate non-systemic risk and/or promote efficiency. It is important to note that these recommendations are critical to a well-functioning securities clearing and settlement system, and that many are designed to mitigate risk while promoting efficiency.

### **Recommendation 2: Trade confirmation**

"Confirmation of trades between direct market participants should occur as soon as possible after trade execution, but no later than trade date (T+0). Where confirmation of trades by indirect

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market participants (such as institutional investors) is required, it should occur as soon as possible after trade execution, preferably on T+0, but no later than T+1.”

There are three important issues in this recommendation:

- Confirmation between direct market participants occurs no later than T+0.
- Settlement instructions are matched prior to settlement.
- Where confirmation is by a third party to indirect participants, it should occur by T+1.

#### Description

In CDSX, third parties do not confirm trades to indirect participants; therefore, observance of this recommendation will be based on the first two key issues. The process for trade confirmation is as follows. If the trade has gone through an exchange, it is entered in a confirmed state and cannot be changed by either party. Non-exchange trades must be submitted by one party and confirmed by the other party to the trade.

Trade matching occurs for the majority of trades, which settle on T+3, as follows: “Proprietary trades are matched the evening of T+0. Transactions are input by the exchange on the evening of trade date (T+0). Clients do not receive the trade confirmation and forward settlement instruction until the next day (T+1). Trade matching therefore cannot be accomplished by T+0” (ISSA 2001a, 3). For trades that settle on T+0 (mainly money market trades), confirmation occurs on that day.

#### Assessment

Non-observed.

#### Comments

CDSX has been built with the functionality to accommodate trade confirmation on T+0. In fact, it can accommodate straight-through processing (STP), which would mean that trades could be reported to the system immediately and in a final and confirmed state. CDS does not meet this recommendation solely because of market convention. Not meeting this recommendation does not create any systemic concerns but leads to lesser efficiency and possibly to higher instances of failed trades.

### **Recommendation 3: Settlement cycles**

“Rolling settlement should be adopted in all securities markets. Final settlement should occur no later than T+3. The benefits and costs of a settlement cycle shorter than T+3 should be evaluated.”

There are four important issues in this recommendation:

- Rolling settlement occurs no later than T+3.

- The frequency and duration of settlement failures is monitored.
- Risk implications of failure rates are analyzed, and actions are taken to reduce or mitigate associated risks.
- Benefits and costs of a settlement cycle shorter than T+3 are evaluated.

#### Description

CDSX uses a rolling settlement cycle.<sup>9</sup> Market convention dictates that most trades by volume settle on T+3, but some trades (Government of Canada debt and money market securities) settle on T+0. If a trade does not settle by T+3, the most common reason is that it has failed to satisfy the required risk edit to be eligible for settlement. The additional risk that arises from CCP transactions is fully covered (see Recommendation 4).

Some work was done to assess the benefits and costs of a settlement cycle shorter than T+3 for Canada. The initiative was to move towards securities settlement on T+1. An interim step that is necessary to achieve T+1 settlement is STP of trade information. Because STP has not been achieved yet, the initiative to move to a settlement cycle shorter than T+3 has been postponed, at least until STP is achieved. Since a number of organizations in Canada are working towards STP, and since CDSX has been designed to facilitate STP, the fourth key issue is essentially satisfied.

#### Assessment

Observed.

### **Recommendation 5: Securities lending**

“Securities lending and borrowing (or repurchase agreements and other economically equivalent transactions) should be encouraged as a method for expediting the settlement of securities transactions. Barriers that inhibit the practice of lending securities for this purpose should be removed.”

There are three important issues in this recommendation:

- Impediments to the development and functioning of securities lending are removed.
- Securities lending and borrowing are encouraged as a method for expediting securities settlement.
- Supervisors and overseers have policies and procedures to ensure that risks that stem from securities-lending activities are appropriately managed by entities subject to their oversight.

#### Description

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9. A rolling settlement cycle is one in which trades are settled a specified number of days after the trade, rather than at the end of an “accounting period.”



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Canada has a well-developed securities-lending market. All securities loans in Canada are governed by the Securities Loan Agreement of the Investment Dealers Association (IDA).<sup>10</sup> This agreement requires the borrower to provide the lender with collateral equal to 100 per cent of the market value of the loaned securities. There are also requirements regarding collateral quality and payment of mark-to-market margins. The agreement provides protection to both the borrower and the lender against the non-delivery of collateral or loaned securities upon termination of the agreement.

CDS has developed a central counterparty function for Government of Canada debt, called DetNet, which helps to facilitate the repurchase market for these securities. Through the DetNet function, CDS nets and novates eligible future-dated Canadian federal government debt trades, significantly reducing collateral requirements.

#### Assessment

Observed.

#### **Recommendation 6: Central securities depositories (CSDs)**

“Securities should be immobilized or dematerialized and transferred by book entry in CSDs to the greatest extent possible.”

There are two important issues in this recommendation:

- Immobilization or dematerialization and transfer by book entry in CSDs should be implemented to the greatest extent possible.
- In jurisdictions that operate a direct holding system, but in which the CSD is not the official registrar of the issuer, a transfer of securities in the CSD should automatically result in the transfer of legal title to the securities in the official register of the issuer.

#### Description

In Canada, the great majority of securities are immobilized. In practice, approximately 95 per cent of government securities, equities, and corporate bonds, 90 per cent of corporate money market instruments, and 100 per cent of asset-backed securities are held in the depository. A security must be immobilized to be traded in CDSX, which is an electronic book-entry system (Association of Global Custodians 2002).

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10. There are two standard securities loan agreements: the *Securities Loan Agreement (with set-off)* and the *Securities Loan Agreement (without set-off)* (IDA 1993). The risk-proofing in both agreements is essentially the same. The agreement without set-off allows counterparties such as pensions funds that are not willing or able to enter into the standard agreement to have an applicable alternative agreement.

CDS operates a largely indirect holding system for its central securities depository. An indirect holding system is a market where securities are registered in the name of a broker-dealer or custodian, rather than in the name of the ultimate investor. The recommendation can thus be assessed solely on the basis of the first key issue.

### Assessment

Observed.

### **Recommendation 12: Protection of customers' securities**

“Entities holding securities in custody should employ accounting practices and safekeeping procedures that fully protect customers' securities. It is essential that customers' securities be protected against the claims of a custodian's creditors.”

There are three important issues in this recommendation:

- Entities that hold securities in custody use procedures to ensure customer securities are protected, particularly against the claims of creditors.
- Entities that hold securities in custody regularly reconcile their records to ensure that customer claims can be satisfied and are subject to mandatory audits.
- Entities that hold securities in custody are supervised and regulated.

### Description

CDS protects itself as the custodian by

- having set up separate legal entities for core and non-core services. Its central counterparty, central securities depository, and settlement agent functions, which are essential to market functioning, are provided through CDS Ltd. CDS Ltd. is a separate legal entity from CDS INC., which provides other functions; and
- very thorough risk controls designed to prevent the failure of CDS Ltd.

CDS carries out its securities-information services through CDS INC., and its depository and clearing functions through CDS Ltd. CDS INC. is a subsidiary of, and separate legal entity from, CDS Ltd., so a failure of CDS INC. should not translate into a failure of CDS Ltd.

CDS has appropriate controls in place to manage custody risk, and it further enhances its ability to finance risk in the event of loss through the purchase of specialized insurance.

CDS purchases a financial institution bond with a computer-crime extension to protect against the risk of loss or damage to securities from fraud, theft, destruction, or disappearance. In addition, CDS purchases insurance for loss from errors and omissions, general liability, and direct damage to real property and computer equipment.

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In the event that depository assets are lost or damaged as the result of an insured peril, CDS limits its liability to the net amount recovered from insurers plus any amount agreed to by the Board of Directors, which may be available through the corporation's reserves.

If CDS uses a third-party custodian to hold participants' assets (as for cross-border functions), CDS adequately transfers responsibility for losses to the agent being used and verifies that the CDS Board-approved standards for security and insurance are maintained.

One of the mechanisms that CDS uses to protect assets in the event of a failure by a participant or itself is the segregation of assets. There are separate accounts for securities pledged to CDS and assets that are held by CDS in the depository for participants. This segregation is supported legally, and assets held by CDS for participants will not be subject to a lien by creditors of CDS.

CDS regularly reconciles its records with respect to the depository service so that the rights of participants in the depository securities can be satisfied. As part of this function, CDS provides daily safekeeping reports to participants using its depository service. CDS may also be subject to audits by its regulatory authorities for depository services (the Ontario Securities Commission and the Québec Autorité des marchés financiers), and is subject to independent audits by its external auditor (KPMG LLP).

#### Assessment

Observed.

#### **Recommendation 13: Governance**

“Governance arrangements for CSDs and CCPs should be designed to fulfil public interest requirements and to promote the objectives of owners and users.”

There are four important issues in this recommendation:

- Governance arrangements are clearly specified and transparent.
- Objectives and major decisions are disclosed to owners, users, and public authorities.
- Management has the incentives and skills needed to achieve objectives and is fully accountable for its performance.
- The Board contains suitable expertise and takes account of all relevant interests.

#### Description

CDS's governance arrangements are clear and transparent. A list of the officers and directors and of the Board of Directors is included in CDS's annual report (CDS 2002, 2003a), which is available on CDS's Web site. The list of officers and directors includes names and specific titles at CDS. The information regarding the Board of Directors includes the name of each director's employer and his or her title, as well as the specific CDS Board committee in which he or she

participates and the percentage of meetings attended. The committees are the Executive Committee, the Audit Committee, and the Finance Committee.

CDS's annual reports and other publications give a high-level indication of the company's envisioned future direction. Major decisions are disclosed to owners, users, and public authorities through several channels. High-level decisions (as they affect changes to business operations) are disclosed on the public part of the Web site. Before major changes are made to rules and procedures, they must go through a formal review committee, which includes a notice period for participant comment, and be approved by the Board. Furthermore, the overseeing regulatory authorities will disapprove any major changes that they believe could undermine the security of the system.<sup>11</sup> Since major users, owners, and public authorities are represented in the decision-making process, objectives and major decisions are necessarily disclosed to all major interested parties.

The composition of CDS's Board of Directors reflects the ownership of CDS. Nine seats are divided as follows: three seats for the banks, three seats for the trust companies (as represented by their bank owners), and three seats for the investment dealers (as represented by the Investment Dealers Association, TSX Inc., and an investment dealer not owned by a bank). Also included in the Board of Directors is one CDS executive, one from the TSX Venture Exchange, and four directors not related to either management or the owner groups. Since the Board is made up of owners and the major user groups, shareholder and user interests are represented, and the full set of expertise is accounted for. Furthermore, the fact that the Board of Directors is answerable to the shareholders of CDS means that shareholder interests are well represented.

The soundness of CDS's corporate governance structure is further attested to by an independent assessment prepared in the autumn of 2001 by corporate governance consultant Patrick O'Callaghan. The assessment was generally favourable but produced a few minor recommendations for ways to improve the effectiveness of CDS's corporate governance. These recommendations have been implemented.

#### Assessment

Observed.

#### **Recommendation 14: Access**

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11. The Governor of the Bank of Canada may disapprove any change or new initiative if he or she feels that it has the potential to pose systemic risk. The securities regulators may disapprove a change if it is deemed to be in violation of the relevant securities act and/or other relevant regulations.

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“CSDs and CCPs should have objective and publicly disclosed criteria for participation that permit fair and open access.”

There are three important issues in this recommendation:

- Criteria are objective, clearly stated, and publicly disclosed.
- Criteria that limit access on grounds other than risks to the CSD and CCP are avoided.
- Procedures that facilitate the orderly exit of participants who no longer meet membership standards are clearly stated and publicly disclosed.

### Description

The criteria for participation in all services of CDS are clearly stated and available in the rules. This information is available to the general public on CDS’s Web site. It is clearly stated and publicly disclosed. To become a participant, a party must meet the participation requirements and receive the approval of the Board of Directors.

The Payment Clearing and Settlement Act (PCSA) (Canada: Department of Justice 2001) also gives the Governor of the Bank of Canada the ability to prohibit a foreign institution from participating in the system or to place conditions upon its participation if he or she feels that the institution or its actions could pose systemic risk or a risk to the Bank of Canada.

There are standards for all participants regarding their ability to meet financial obligations and physical infrastructure, as well as a requirement for them to carry sufficient insurance. Each participant is categorized by its type of institution, capital adequacy, and whether it is an LVTS participant. The participant categories are extender of credit, federated participant, settlement agent, and receiver of credit; functionality within the system is based on participant category.<sup>12</sup> The Bank of Canada is also a participant in its own category.

Procedures for the exit of participants, whether initiated by the participant or by CDS, are clearly stated in the participant rules. If a participant voluntarily decides to exit CDSX, they are first required to complete all outstanding transactions.

As stated in the rules, CDS may suspend a participant, or the Board of Directors may terminate a participant if adequate cause exists. A temporary suspension or restriction of access may be issued for less serious matters, such as a loss of system functionality caused by operational or technical problems. Termination results only from serious breaches, including

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12. The participant class affects mainly a participant’s collateralization requirements; i.e., whether they are allowed to extend credit to other participants and whether they may participate directly in end-of-day payment exchange.

- the failure to make payment when due;
- being in infringement of legal rules or regulations;
- failure to satisfy participation requirements; or
- if CDS believes that the participant may jeopardize the system or other participants.

Termination orders must be issued by the Board of Directors; the participant is allowed to appeal the decision.

#### Assessment

Observed.

#### **Recommendation 15: Efficiency**

“While maintaining safe and secure operations, securities settlement systems should be cost-effective in meeting the requirements of users.”

There are two important issues in this recommendation:

- The system operator or other relevant party has in place mechanisms to regularly review the costs and pricing of the securities settlement system.
- The system operator or other relevant party has in place the mechanisms to regularly review the service levels and operational reliability of the securities settlement system.

#### Description

CDS is a private, not-for-profit corporation that is owned by its major participants. It bases fees on the projected cost of providing service and service levels agreed to by participants. Specifically, CDS sets fees so that they consistently cover costs.

A review of operational reliability is conducted internally and by CDS’s external auditor.<sup>13</sup> CDS regards the reliability of the system as the most important factor, but also strives for a high level of efficiency. In some cases, CDS has been able to increase both reliability and efficiency. The amalgamation of the Debt Clearing Service (DCS) and the Securities Settlement Service (SSS) into CDSX, and the high level of immobilization of securities in the depository, are examples. To align service levels with customer needs, CDS conducts participant surveys and bases changes to services, in part, on the results of these surveys.

#### Assessment

Observed.

#### **Recommendation 16: Communication procedures and standards**

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13. For a description of CDS’s operational reliability, see the discussion of Recommendation 11.

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“Securities settlement systems should use or accommodate the relevant international communication procedures and standards in order to facilitate efficient settlement of cross-border transactions.”

The important issue in this recommendation is that

- international communication procedures and standards relating to securities messages, securities-identification processes, and counterparty identification should be applied for cross-border transactions.

#### Description

CDS has established cross-border linkages with the Depository Trust and Clearing Corporation (DTCC, United States), the Japan Securities Settlement & Custody Inc. (JSSC), and Euroclear France. In fact, CDS states that its linkage with DTCC is “the world’s most active and sophisticated inter-depository linkage in the world” (CDS 2001a, 2).

CDS uses internationally recognized standards for cross-border transactions. Securities messages use ISO Standard 15022, SWIFT’s new messaging formats that contain reusable blocks of information and minimize rekeying of information. The international securities identification numbering process (ISIN) ISO 6166 is also used. The communication procedures and standards facilitate efficient settlement of cross-border transactions.

#### Assessment

Observed.

#### **Recommendation 17: Transparency**

“CSDs and CCPs should provide market participants with sufficient information for them to identify and evaluate accurately the risks and costs associated with using the CSD or CCP services.”

There are four important issues in this recommendation:

- Market participants have the information necessary to evaluate the risks and costs of participating in the system.
- The CPSS/IOSCO Disclosure Framework or the answers to the key questions are completed and disclosed.
- Information is accessible and available in a language commonly used in financial markets, as well as in the domestic language.
- The accuracy and completeness of disclosures is reviewed periodically by the CSD and the CCP.

### Description

Through the participant rules and the risk model, the potential risks and possible magnitudes are well described and accessible to participants. Overall, CDS takes steps to minimize risks and, for risks that remain, describes them thoroughly in both English and French. All participants should be able to accurately judge their risks from using all CSD and CCP functions through the rules and the risk model.

CDS has completed and disclosed its responses to the CPSS-IOSCO Disclosure Framework (CPSS-IOSCO 1997). The responses are posted on the Web site of the CPSS. CDS has also published on its Web site two other documents that explain risks and risk controls in the system: the *2001 ISSA Handbook Update* (ISSA 2001a) serves as a self-assessment, and the Thomas Murray/Standard & Poor's *Depository Review and Evaluation Service* (Thomas Murray 2001) explains the assessment of these outside auditors.

### Assessment

Observed.

### **Recommendation 18: Regulation and oversight**

“Securities settlement systems should be subject to transparent and effective regulation and oversight. Central banks and securities regulators should cooperate with each other and with other relevant authorities.”

There are four important issues in this recommendation:

- The system is subject to effective regulation and oversight.
- The responsibilities, as well as the roles and major policies, of the securities regulator and the central bank are clearly defined and publicly disclosed.
- The securities regulator and the central bank have the ability and the resources to carry out regulation and oversight policies effectively.
- Securities regulators and central banks co-operate with each other and with other relevant authorities both within and outside the country.

### Description

The Bank of Canada has the regulatory and oversight responsibilities for CDSX at the federal level and, at the provincial level, these responsibilities lie with the Ontario Securities Commission and the Québec Autorité des marchés financiers. CDS also reports to the Canadian Securities Administrators, the umbrella organization of securities regulators for the provinces and territories. The overseeing agencies co-operate in their respective roles.



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The Bank of Canada derives its oversight role from the Payment Clearing and Settlement Act (PSCA) of 1996. The Bank may designate as subject to the Act any clearing and settlement system that the Governor deems could be operated in a manner that would pose systemic risk, provided the Minister of Finance is of the opinion that this action is in the best interest of the public. Once a system is designated, it must satisfy the Bank that it has mechanisms in place to appropriately control systemic risk. The Act stipulates that

- the operators of a designated system must provide the Bank with documentation upon request;
- the Bank may enter into an agreement with the operators of the designated system;<sup>14</sup>
- the Governor of the Bank may issue directives to control systemic risk; and
- the Bank has the power to disapprove any new initiative or change that it believes may introduce systemic risk into the system.

The Act also permits the Governor to deny or place conditions on the participation of foreign institutions in a designated system where the Governor judges that such participation might cause systemic risk or a risk to the Bank of Canada. The Bank entered into a regulatory oversight agreement with CDS in 1994 and is negotiating an updated regulatory agreement under the Act.

The oversight powers of the Ontario Securities Commission and the Québec Autorité des marchés financiers stem from a section in each of their securities acts that stipulates that they must recognize CDS as a clearing agency in order for it to be able to conduct securities clearing and settlement activities. The focus of the security commissions is mainly on investor protection and market operations. Rule and procedure changes are given to the two provincial commissions for their comment and disapproval or approval.

#### Assessment

Observed.

#### **Recommendation 19: Risks in cross-border links**

“CSDs that establish links to settle cross-border trades should design and operate such links to reduce effectively the risks associated with cross-border settlements.”

There are three important issues in this recommendation:

- CDS designs links to minimize or constrain settlement risks. The CSD evaluates the financial integrity and operational reliability of any other CSD with which it intends to establish a link.

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14. This agreement may cover netting arrangements, certainty of settlement and finality of payment, financial aspects of participants and the clearing house, scope for audits, and other matters that pertain to systemic risk.

- DVP is achieved and provisional transfers across the link are prohibited, or, at a minimum, their transfer is prohibited until the first transfer is final.
- Any credit extensions between CSDs are fully secured and subject to limits.

### Description

CDS is involved in cross-border trades with the National Securities Clearing Corporation (NSCC) and the Depository Trust Corporation (DTC) in the United States. The financial integrity and operational reliability of these entities is extremely good, so there is no concern that problems in these systems could cause contagion in CDS systems.

U.S. securities trades settled in CDSX and through cross-border services are generally held for CDS by DTC in New York. Provided that these securities are otherwise eligible as collateral security, CDSX participants may also pledge them to CDS as collateral. CDS's legal analysis of the cross-border use of such securities as collateral (with which the Bank of Canada concurs) concludes that, although it is not free from doubt, it is likely that CDS's security interest in securities held in DTC is governed by the laws of Ontario, under which CDS has a valid, first-priority security interest in these securities. Even if a court were to hold that CDS's security interest is subject to the laws of New York (i.e., UCC Article 8), CDS would have a valid and perfected security interest under those laws.

CDS offers participants three channels, or links, to effect Canada-U.S. cross-border transactions: ACCESS®, New York Link, and DTC Direct Link.

In ACCESS® (American and Canadian Connection for Efficient Securities Settlement), participants can manage all domestic and Canada-U.S. cross-border activity involving equities using their own CDS account for settlement and custody. CDS manages Canada-U.S. cross-border settlement through an omnibus account and handles the relationship with NSCC and DTC on behalf of ACCESS® participants. In the New York Link, CDS sponsors participants for direct membership in NSCC and DTC. Custodial, institutional clearing, and settlement services are offered. Participants can settle transactions on a continuous net settlement (CNS) and trade-for-trade basis. In the DTC Direct Link, CDS sponsors participants for direct membership in DTC. Participants have complete control over U.S. settlement activities and can settle transactions on a trade-for-trade basis.

Both CDS and NSCC provide CNS systems that process trading activity. Trades conducted by ACCESS® participants are entered into CDS's CNS system; trades entered into by New York Link customers are processed within NSCC's CNS system. The clearing organizations then assume the contra sides of each CNS transaction and guarantee their settlement.

Payment exchange for the three links to the U.S. marketplace is centralized through CDS. Participants who owe funds pay CDS, and those who are in a credit position receive funds from CDS, through designated payment agencies. As with designated bankers for CDSX payment exchange, designated payment agencies are large financial institutions that settle on behalf of a number of New York Link participants. For ACCESS® participants, payment exchange and settlement is centralized (in U.S. dollars) through CDSX.

Payments to, and receipt of funds from, NSCC and DTC are made using Fedwire.

The risks translated into CDSX depend on the specific cross-border settlement system. ACCESS® operates just like the CNS function. CDS imposes the same collateral and participant fund requirements and faces risks identical to those in CNS. Because the risk-mitigation techniques mirror those in CNS, and the CNS risk controls are adequate, the risks stemming from ACCESS® can be said to be sufficiently controlled. In the New York Link function, some trades go through the CNS functionality, so CDS faces counterparty risk. CDS thus requires a participant fund contribution for CCP transactions, and for all New York Link transactions, full collateralization of negative funds balances. DTC Direct Link transactions are trade-for-trade transactions; therefore, CDS requires full collateralization of any negative funds balance, but it does not require a participant fund contribution. CDS conducts the payment exchange with DTC or NSCC in the three cross-border functions using one of two private U.S. settlement banks. There is therefore some banker risk, because it is possible that the U.S. settlement bank could fail.

#### Assessment

Observed.

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