

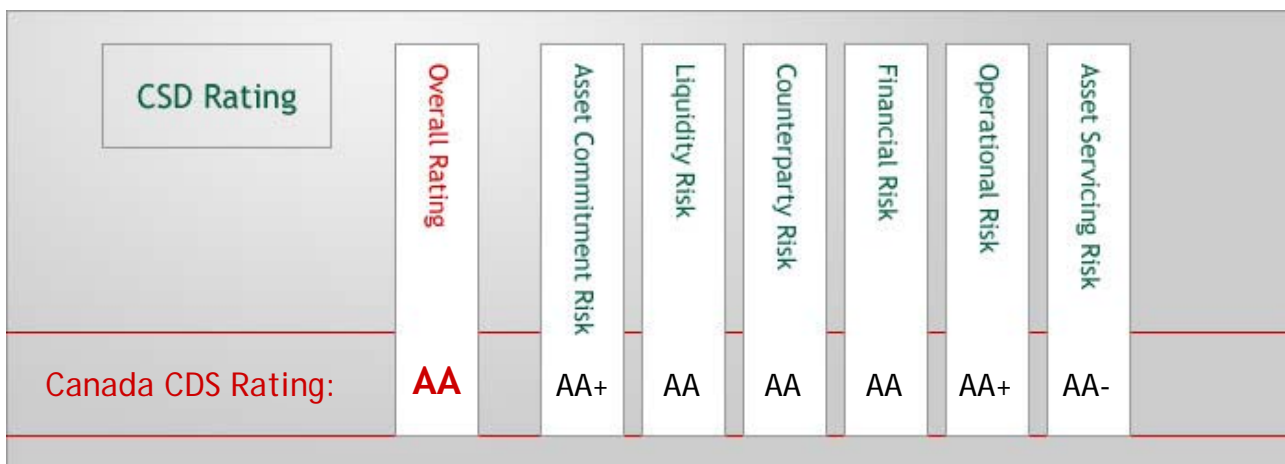


## Public CSD Rating Report

### CDS Clearing and Depository Services Inc

Publication Date: June 2009

Thomas Murray CSD Public Rating for: CDS Clearing and Depository Services Inc is AA



The outlook for the rating is: Stable

#### Overall Risk Summary

Thomas Murray has assigned an overall central securities depository risk rating of AA to CDS Clearing and Depository Services Inc. (CDS), which means very low risk. The rating is a weighted average of six different risk components comprising asset commitment risk, liquidity risk, counterparty risk, financial risk, operational risk and asset servicing risk.

The model results in short asset commitment periods for both buyers and sellers given the simultaneous exchange of securities against credit. Credit can be used immediately to settle another transaction and securities can be used immediately to meet collateral obligations or for settlement of other transactions.

Liquidity Risk is mitigated by the use of netting procedures for CNS settlements, the credit provided by extenders of credit, and an active securities borrowing and lending programme between market participants. Further progress was made in reducing Liquidity Risk as a result of the maximum trade size for debt trades being capped at CAD 50 million and improved electronic trade matching systems that are supported by the CSA's National Instrument 24-101 which sets targets for trade matching times. These two measures contributed to a further reduction in trade fails in 2008.

CDS addresses Counterparty Risk by operating a sophisticated settlement risk model, to protect participants against the risk of default of other participants in clearing, settlement and depository services. The model is based on loss-sharing arrangements designed in a way in which the defaulter's collateral is sufficient to cover its obligations in the vast majority of cases. The risk model proved resilient during the recent global financial instability and asset price volatility. In response, CDS changed the stress testing frequency from a monthly to a weekly basis, and added more scenarios to its comprehensive internal stress testing programme as a means to demonstrate the robustness of the model under more extreme market conditions.

In asset servicing risk, the main weakness continues to be the manual collection of information for some corporate actions, especially for optional events. However, the distribution of entitlement and corporate action information has been enhanced due to the implementation of SWIFT MT564/568 messaging.

In respect of Financial Risk, the main potential call on resources comes from operational claims, but CDS has insurance coverage, arranged credit lines, and reserves to cover for this. CDS has been profitable in the past few years prior to rebates and in the year ending 31 October 2008, it rebated CAD 11 million back to participants. CDS INC. and CDS Innovations are also profitable and contribute to the overall earnings.

2008 was a challenging year for CDS due to the increase in on-exchange trade volumes, particularly in September. Despite the sudden volume increase, CDS standard deliverables were produced and available on time. However, some delays were experienced in the distribution of trade messages on the heaviest days but the IT team implemented several improvements in this area. Other

enhancements made in the operational area include the reduction in the switch time from the main processing site to the back up site from 8 to 2 hours for a number of systems that were not already on the 2-hour schedule. The scope of the internal and external audits was also widened during 2008 and a new in-house training programme was developed in conjunction with the Canadian Securities Institute.

### Outlook Summary

The outlook for CDS is 'Stable'. There are currently no definitive plans that may change the rating over the next 12 months although there are plans to make enhancements to the asset servicing risk area, in which there exist some constraints on market information dissemination related to regulatory specifications. CDS would like to become the central source of market information and is working on a project to develop a Central Information Hub in order to electronically collect information from issuers. CDS is also implementing a number of initiatives to achieve near full dematerialisation by 2014, including a programme to encourage issuers to transfer from cheque to electronic payment for corporate actions. Other initiatives under consideration are the introduction of fines for late delivery of securities and becoming the CCP for CNS trades from the end of T+0.

### Role of the Depository

The CDS Clearing and Depository Services Inc. (CDS), a subsidiary of The Canadian Depository for Securities Limited, is the sole central securities depository in the Canadian market. CDS provides depository, clearing and settlement services for securities in Canada. CDS is a private business organisation incorporated federally in June 1970 under the Canadian Corporations Act and continued under section 181 of the successor Canada Business Corporations Act of 30 July 1980.

Equity and debt securities are immobilised or dematerialised within CDS. The issue of physical shares is still possible though usually limited to satisfy retail market requirements. The majority of outstanding physical certificates are non transferable issues largely issued before 2003. Domestic federal securities are recorded in book-entry form by the Bank of Canada and are cleared and settled by book-entry through CDS. Canadian dollar cash settles on a net basis at the end of the day via the Bank of Canada's LVTS payment system and U.S. dollars via Fedwire through a process called payment exchange.

International clearing and settlement of US transactions through DTC Direct and New York Link support OTC and exchange trades via a link with the National Securities Clearing Corporation (NSCC) for CNS settlements in New York Link and the Depository Trust Company (DTC) for trade-for-trade settlement.

<b>Risk Summary</b>	<b>Risk</b>
<b>Overall Risk</b>	<b>AA</b>
<b>Asset Commitment Risk</b> Asset commitment risk exposure for CDSX settlement processes is negligible as: (i) securities are transferred either through the CNS/BNS batch settlement or in real-time throughout most of the day; and (ii) payment finality is under-pinned by guaranteed LVTS payments and therefore immediate upon batch/real-time settlement. (The major exposure is for payment banks (extenders of credit) who extend lines of credit to receivers intra-day but only receive finality of cash at payment exchange between 4.00pm and 5.00pm.)	<b>AA+</b>
<b>Liquidity Risk</b> Liquidity risk exposure within the various settlement processes is contained by the system design which incorporates, for example, sophisticated netting models for both interbroker settlement and OTC settlement, availability of credit facilities, the LVTS payment system, and the availability of stock lending between participants.	<b>AA</b>
<b>Counterparty Risk</b> Counterparty risk exposure for CDSX eligible transactions is contained by the use of an effective DVP system for equities and debt, application and enforcement of membership criteria based on members' financial soundness, and sophisticated risk containment measures (including net debit limits and collateral). Broker-to-broker transactions settled through CNS and FINet have CDS as the counterparty. This risk exposure is blended with Financial Risk.	<b>AA</b>
<b>Asset Servicing Risk</b> CDS receives corporate action information from various sources: Issuers are legally obliged to provide corporate action information to securities holders, such as the depository as nominee and SEDAR, a publicly accessible issuer information repository that CDS INC. (a subsidiary of The Canadian Depository for Securities Limited) manages for Canadian securities regulators. Other sources include transfer agents, information vendors, the press, stock exchanges, and DTCC. CDS accepts limited responsibility under a claims process and under the terms and conditions of its Rules for losses to the limit of its insurance coverage or recovery from a third party, which arise from late, inaccurate or incomplete information or other errors. A limited number of non-material claims have been made against CDS for such losses over the last few years. CDS provides a passive proxy voting service as participants have to deal directly with the issuer/transfer agent once the information is received.	<b>AA-</b>

<p><b>Financial Risk</b></p> <p>CDS provides a central counterparty service for all transactions eligible for CNS and FINet processing. CDS's resources are not exposed for its role as central counterparty due to the loss sharing arrangements in place in the market. However, CDS operates risk management processes, liens on participants' assets in their General and restricted Collateral Accounts, and guarantee funds to protect participants against a default. CDS's funds are exposed to claims for operational errors. Financial resources are available in the form of paid-in capital and reserves, earnings, explicit (contractual) or implicit support from shareholders or members, insurance coverage, reducing participant rebates and access to credit.</p>	<p><b>AA</b></p>
<p><b>Operational Risk</b></p> <p>Operational risk exposures are well-identified and contained by CDS. The depository employs full operational risk controls on clearing, settlement and depository procedures and is subject to external audit of these operational controls by KPMG in the form of a 5970 review. High standards are maintained on IT system development and preparation for DRP and BCP through planning and testing.</p>	<p><b>AA+</b></p>
<p><b>CSD on CSD Credit Risk</b></p> <p>International links exist with NSCC and DTC in the US and other overseas CSDs. As a participant of NSCC and DTCC, CDS has an obligation to meet any participant failure to perform that can not be immediately met by other participants. The Financial Risk assessment of each of these entities should be read in conjunction with this report (where available).</p>	<p><b>Links Exist</b></p>

# Asset Commitment Risk

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## Summary

Low asset commitment risk exposure exists within the CDSX settlement process. Transactions processed through CDSX have different processing cycles with transfer of securities against a credit facility with cash immediately available to participants. Final cash settlement between participants' payment banks occurs through the Large Value Transfer System (LVTS) with finality in Central Bank money between 4.00 pm and 5.00 pm on settlement date [SD]. However, participants' cash balances are reflected in ledger accounts within CDSX. Eligible participants can transfer positive funds to their LVTS account with the Bank of Canada against their CDSX cash balances at any time during the day. Hence, for direct participants in CDSX there is negligible asset commitment risk, with the sole exposure being for payment banks (extenders of credit) who extend lines of credit to receivers intraday but only receive finality of cash at payment exchange.

## Processing Cycles

Most equities are traded on-exchange while bonds are mainly traded OTC. Trade data are sent to CDS by the various exchanges, the Alternative Trading System (ATS) operators, the Virtual Matching Utility (VMU) operators and by the operators of participant back-office systems (OTC trades only). Exchange trades and trades from VMU operators are locked in; other trades are affirmed intraday on a real-time basis via proprietary communication links. Investment Industry Regulatory Organization of Canada (IIROC), formerly the Investment Dealers' Association of Canada, members are required to use CDS's Broker-to-Broker Trade Matching service facility for OTC trades. A rule imposing requirements on institutional trade details for matching has been agreed (National Instrument 24-101). The rule stipulates that 90% of institutional trades must be matched by 12 noon on T+1, although the current actual level is around 85% for the market. CDS maintains a message standard that allows institutional trade matching utilities to send CDSX matched institutional trades. (CDS has an operational link with the Omgeo Central Trade Manager (Omgeo CTM) which allows CDS to receive matched trades in both Canadian domestic and cross-border securities through a single interface. These matching facilities would help market participants comply with National Instrument 24-101 which, when fully implemented, will provide fully automated messaging between the buyer and seller to enable the electronic pass-through of matched trades on trade date.

CDSX has four distinct trade settlement processes: (i) Overnight CNS and Batch Net Settlement (CNS/BNS) (ii) Real Time Trade for Trade Settlement (TFT); (iii) Intraday CNS Settlement and (iv) FINet Intraday Settlement. Trades that are targeted for settlement in CNS are settled in either the overnight CNS/BNS process or the intraday CNS process. Participants can select between the CNS and TFT settlement processes though 99% of OTC trades settle TFT and over 90% of exchange trades settle CNS.

### - Overnight CNS/BNS batch and Intraday CNS Processes

The CNS/BNS process is a batch settlement process that increases settlement efficiency by combining the settlement of trades targeted to settle by CNS or TFT. The goal of the combined process is to allow CNS and TFT activities to net against each other and to reduce participants' requirements for securities positions, funds, cap, credit and collateral. Settlement in the CNS/BNS batch takes place overnight between 4.00am and 5.00am on a multilateral net basis.

A trade is 'available' for settlement if it has reached value date, is in a confirmed status, and both parties "release" the trade for settlement. CNS settlement will be attempted for an 'available' trade for the first time in the CNS/BNS process. A trade will not settle if the buyer has insufficient funds, the seller has insufficient securities, or either party has insufficient Aggregate Collateral Value (ACV - refer to 'Risk Containment Model' under Counterparty Risk).

After CNS/BNS processing is complete, any outstanding CNS positions are available for settlement during the CNS intraday processes. Any new trades targeted to settle CNS will generally only be available for settlement in the next BNS/CNS process. However, the intraday CNS process does have the ability to net in new trades with outstanding CNS positions. This incremental process is not often used.

The intraday CNS settlement process is run at scheduled times during the business day. There are four intra-day CNS batches at 10.00am, 12.00pm, 2.00pm and 3.30pm. Only unsettled CNS transactions, left over from the early morning CNS/BNS process ('CNS Outstandings') and prior CNS intraday processes are generally eligible for settlement by the Intraday CNS Settlement.

### - Trade-for-Trade (TFT) Process

Any trade in any security is eligible for TFT settlement. However, TFT is mainly used for settlement of OTC trades including broker to custodian transactions. Settlement takes place on a real-time basis in two different sessions: from 12.00am to 4.00am (mainly used for pledging of securities) and from 7.00am to 4.00pm, both against a credit limit monitored by CDS through ledger accounts. TFT settlement also occurs in the overnight CNS/BNS cycle. (Between 7.30pm and 12.30am trades are accepted and queued for processing).

Free-of-Payment (FOP) transactions can also be settled between 4.15pm and 7.30pm SD (i.e. after payment exchange system close), but this facility is normally used to settle same-day pending trades that miss the 4.00pm payment exchange cut-off.

## - FINet Settlement Cycle

- The FINet intraday and end-of-day netting processes allow eligible debt securities (Government of Canada bonds and treasury bills and provincial bonds, bills and notes) to be netted against netted trades that have the same security/value date combination as the trade being netted. This netting process pools securities transactions and offsets buys and sells to produce one long or short position in the security/value date combination for each participant.

FINet operates two daily netting cycles as follows:

- Intraday, beginning at approximately 2.00 p.m. This cycle nets eligible trades regardless of their value dates.
- End-of-day, beginning at approximately 5.30 p.m. This cycle nets eligible trades regardless of their value dates. Participants can modify the settlement control indicator, account type and number, tag number and memo text on their netted trades.

In all settlement processes operated by CDS, securities are transferred at the time of settlement across participants' accounts. Cash settlement takes place against a fully collateralised cap and/or a line of credit provided by a participant collateral pool or one of the commercial banks ('extenders of credit') or against a positive funds balance. The actual exchange of funds takes place at the end of the day (between 4.00pm and 5.00pm) when payment exchange takes place (see cash settlement below). Lines of credit can be changed during the course of the business day (usually if an increase is required) by agreement between the participant and their extender of credit.

### Cash

Cash credit balances are usable at any time during the processing day. Intra-day cash transfers are fully supported by collateral with haircuts rates calculated by CDS. CDSX payment risk monitoring ensures that there is sufficient required collateral in a participant's general account to support its funds account debit. Actual net cash movements ('Payment Exchange') between payment banks (LVTS participants) occur via the LVTS through an end-of-day cash transfer batch between 4.00pm - 5.00pm SD.

CDSX calculates the participants' final net cash positions and runs both a US and Canadian dollar payment exchange. For Canadian dollars, payments are made via LVTS; US dollars via Fedwire.

Participants' designated payment banks are required to execute an LVTS payment to the CDS account with the Bank of Canada, the central bank, and CDS executes payments to participants' designated payment banks from the same account. The cash processing cycle (payment exchange) occurs between 4.00pm and 5.00pm.

### Asset Commitment Periods

There is negligible asset commitment risk for the majority of participants, since securities are settled in real-time, and long-cash positions can be used intraday. Payment banks (extenders of credit) who extend lines of credit to receivers intra-day, receive finality of cash at payment exchange.

### Irrevocability

Securities and cash transfers become irrevocable at the point of settlement in the CDSX book-entry system. Netting and novation of FINet transactions are also irrevocable.

CDS becomes central counterparty at the time of novation for CNS trades (in the morning of T+3) and FINet (at midnight on T+0), and guarantees the settlement of securities as well as cash sides of the trade. CDS acts as a counterparty to the cash part of all settled trades in CDSX, not just CNS and FINet settled trades. Once the trade is settled in CDSX, the obligation to make and the right to receive payment on payment exchange is between the participants and CDS. CDS allows participants to operate accounts at NSCC and DTC for the New York Link and DTC Direct services, and is ultimately responsible for settlement of the participants' obligations at NSCC and/or DTC.

### Finality

CDSX participants receive intraday finality on deliveries of securities and payment of funds when CDS makes the debit and credit entries in the CDSX system. Funds transfers between extenders of credit (payment banks) are final after settlement within the LVTS between 4.00pm - 5.00pm SD for CDSX settlement. Settlement in US Dollars through Fedwire is made with same day value.

Asset Commitment Risk - Key Indicators			
<i>Irrevocable commitment to the processing cycle</i>			
	<i>Transaction Type</i>	<i>Start</i>	<i>Finish</i>
<i>Securities</i>	TFT (night)	12.30am SD	4.00am SD
	CNS/BNS Batch	4.00am SD	5.00am SD
	TFT (day)	7.00am SD	4.00pm SD
	CNS Intraday 1	10.00am SD	10.30am SD
	CNS Intraday 2	12.00pm SD	12.30pm SD
	CNS Intraday 3	2.00pm SD	2.30pm SD
	CNS Intraday 4	3.30pm SD	4.00pm SD
<i>Cash</i>	LVTS Payment Exchange	4.00pm SD	5.00pm SD

### **Comments (i.e., on pre-funding and irrevocability)**

Participants who do not belong to the collateralised category credit rings are not provided any system operating cap and are required to either pre-fund their settlement activity or to receive lines of credit from the extenders of credit.

### **Securities processing cycle outlined**

In the real time TFT system, securities are transferred from the selling counterparty to the buyer between 7.00am - 4.00pm and 12:30 am and 4.00am SD. Securities are not blocked for any given period before settlement.

In the intraday CNS system, securities are transferred from the selling counterparty to the buyer at scheduled times during the business day (against net cash transfer). There are four intraday CNS batches at 10:00am, 12:00pm, 2:00pm, and 3:30pm.

### **Cash processing cycle outlined**

Positive Balances in CDSX cash ledger accounts may be withdrawn by participants. End-of-day cash ledger account balances are settled by Extenders (referred to as Designated Bankers). Final funds transfer for CDSX settlement is via batch cycle in the LVTS system.

The Bank of Canada guarantees that settlement of LVTS will occur. Because the LVTS is risk-proofed to cover the default of the single largest net debtor, the guarantee will only be called on in the unlikely event that more than one participant defaults on the same day, and the collateral pledged by participants is insufficient to cover the obligations of the defaulters.

# Liquidity Risk

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## Summary

Liquidity Risk within the settlement systems of CDS is very low due to an active external securities lending market, immediate availability of securities upon settlement, high netting efficiency for cash, and access to credit facilities. Short-term settlement failure is also mitigated by the existence of participant guarantee funds for CNS and FINet services in which CDS acts as a central counterparty.

## Processing Model

### Matching

CDS maintains a Matched Institutional Trade Interface that allows domestic institutional trades to be received in CDSX as matched/confirmed by an external matching utility. There is also a broker-broker trade matching utility within CDSX.

CDS provides an automated real-time trade matching facility for non-exchange trades. The facility supports greater levels of STP increasing efficiency, reducing risks and lowering costs. Trade match reports are available twice daily.

The CSA's National Instrument 24-101 has set targets for trade matching. The targets are being phased in over 3 years. The current target is to match 90% of institutional trades by 12 noon on T+1. Although this target has not been achieved in the market, the improved timing for matched trades has helped reduced the fail rate.

All immobilised or dematerialised stock within CDS is immediately available for onward delivery upon settlement. For CDSX transferred securities this effectively means in real time.

Securities and cash funding for CNS (inter-broker) settlement benefits from (BIS Model 3) multilateral netting which reduces the liquidity requirements for effective settlement. TFT trades settle securities on a gross basis, however payment is settled net via payment exchange with finality of payment as settlement occurs. Although CDSX settlement is gross (BIS Model 1), the real-time nature of the processing allows for securities to be turned around same day.

## Fails Management

CDS facilitates the buy-in process for outstanding CNS positions and FINet trades only. In the event of a lack of securities in CNS, buyers can request an intent to buy-in to CDS from the end of SD, which then forwards the details to the seller(s). The seller then has two days to deliver the securities before the buy-in is executed on the exchange. Actual buy-ins are not common in the market, but when they occur, these are generally issued within five days of the fail. Between March 2008 and February 2009, there were 405,787 notifications of intent but only 371 actual buy-ins.

A fine of CAD 1,000 is charged by CDS for the failure to provide sufficient collateral or funding by the end of the day to support the settlement of a CNS buy trade and for outstanding FINet trades.

Unconfirmed TFT trades remain in the system for 10 days before they are removed. Confirmed unsettled trades, both CNS and TFT, are carried forward to the next settlement date.

Overall, the fail rate is very low - 0.9% for CNS trades to 31 January 2009, and 4.6% for TFT trades in January/February 2009 (rate based on cumulative outstanding fails over 10 days). The introduction, on 10 September 2007, of a limit on the size of debt trades to CAD 50 million (with the exception of Tri-party Repos), appears to have contributed to the lower TFT settlement failure rates.

## Credit Facilities

Participants operate against credit limits for settlement within CDSX. Credit facilities are available through commercial banks which can be raised intraday if necessary and/or collateralised credit rings in the form of limit caps.

The caps for the extenders of credit are changed quarterly. These are set at a level that provides sufficient headroom to meet the needs of market participants.

## Securities Lending

Stock lending is permitted within the market but is external to CDS. There is an active stock lending market among brokers, banks and other financial institutions. There are no restrictions on stock lending for non-residents. CDS processes stock loan transactions, but takes no active part in the loan process.

Due to the temporary ban on short selling in some markets, there was a reduction in the volume of stock lending in Canada, although it remains a liquid market.

The amendments to NASD-Rule 3370-Prompt Receipt and Delivery of Securities restricts members or persons associated with a NASD member from executing a short sale on a NASD regulated market unless they are able to assure that they will receive delivery of, or have the ability to borrow, the securities by settlement date.

## Registration Model

For the initial immobilisation of securities, a registrar re-registers the security into the name of the depository central nominee, CDS & Co., so rendering securities eligible for use within the Depository. Legal transfer of title occurs once securities balances are transferred within the books of CDS or on re-registration by the transfer agent.

Where the issuer has no established transfer agent or registration arrangements in place, CDS will directly coordinate security registration with the issuer. Where there is a transfer agent for a security, deposits are confirmed by the transfer agent before the participant is credited with the deposited quantity. Confirmation of a deposit takes place within 48 hours although there are also "rush deposit" facilities available to participants. In rare cases, it is possible for a deposit to be subsequently found by the transfer agent to have been invalid. In such a situation, the deposited quantity is reversed from the depositing participant's ledger position. If this reversal results in a negative (i.e., short) position in the participant's funds account, the participant's cash settlement position is charged with 150% of the market value of the position in question. The short position is marked to market on a regular basis until such time as the participant makes good on the position. When the short position is covered, the cash collateral taken against the short position is credited back to the participant.

## Deposited securities

The majority of publicly traded securities are immobilised or dematerialised at the CDS. In terms of dematerialisation, the option to hold a physical certificate will continue but the use of a nominee-name book-entry central securities depository is the first choice for holding securities for financial intermediaries and their clients.

CDS has a project underway tasked to have nearly all securities dematerialised by 2014. The strategy includes eliminating the physical certificates by converting the existing certificates in the vaults into electronic form and reducing the flow of new physical issues into the depository through the new Book-Entry Only (BEO) securities services agreement. One of the main issues is to eliminate the aged (essentially certificates for defunct companies) Non Transferable Issues (NTIs), which represent 70% of the certificates in the vaults. CDS is working to identify NTIs, which will be destroyed after an electronic image has been made in order to keep a proof of existence. Progress is limited with the absence of federal government legislation that mandates dematerialisation. However, all but three provinces have adopted the Provincial Securities Transfer Act that exempts issuers of uncertified securities from an obligation to provide a certificate at a later date at the request of the investor.

## Deposit and Withdrawal of securities

There is a very limited number of transactions in equities which involve securities held outside the depository.

CDS tracks the values of deposits at the transaction level. In 2008, there were 310,431 deposits and 92,876 withdrawals.

CDS has determined that it will not support the physical withdrawal of securities after 31 October 2011.

### Liquidity Risk - Key Indicators

#### Settlement Models

CDSX - Model 1 - Gross simultaneous settlement of securities and funds (TFT settlements).

CDSX - Model 2 - Gross settlement of securities against net settlement of funds/credit.

CNS and FINet- Model 3 - Net simultaneous transfer of securities and funds (CNS settlements).

#### Processing Periods

##### Overnight (by batch)

Yes

##### End of day

Yes

##### Batch daylight processing

Yes

##### Real-time and on-line

Yes

##### Other

No

#### Comments

There is real-time on-line and batch settlement through CDSX.

The end of day process is available: LVTS cash settlement for extenders of credit through Central Bank.

### *Credit Facilities*

#### **Central bank money used to settle cash elements of trades**

Yes

#### **Credit facilities provided by the CSD**

No

#### **Credit facilities provided by commercial banks**

Yes

#### **Comments**

Intra-day finality of book-entry is established by the Rules of CDS, with Central Bank finality at the end of the day on SD.

### *Stock Lending*

#### **Is stock lending permitted in the market**

Yes

#### **Are stock lending facilities provided by the CSD?**

No

#### **Are stock lending facilities provided by commercial banks/brokers?**

Yes

#### **Comments**

CDS does not act as principal for securities lending, but securities lending is facilitated through CDS.

### *Transfer of Securities*

#### **Are securities deliveries achieved by book-entry?**

Yes

### *Registration of Securities*

#### **Period of time required to register a holding?**

Immediate upon settlement on CDS's books. Re-registration on the transfer agent's shareholders register are handled by the transfer agent.

# Counterparty Risk

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## Summary

Low counterparty risk exposure exists for participants settling transactions through CDS, but it is possible exposure could arise in two areas:

1) For CDSX eligible transactions, participants are exposed to the other members of the credit ring collateral pool. However, the chance of losses arising from credit exposures between participants is reduced because most participants' funds obligations are guaranteed by their extender of credit as well as by the use of an effective securities settlement system which has efficient cash netting with finality guaranteed by collateral. Risk exposure is further mitigated by the application and enforcement of membership criteria based on members' financial soundness. Should a default occur, timely remedy is sought by exercising legal claims on the defaulting member's assets. In addition, all members are subject to credit limits which help to contain any potential loss. Securities settling in CDSX are final upon settlement in real-time during the day, but cash finality between designated payment banks only occurs upon payment exchange at the end of the day. CDS has an intraday lien on securities purchased but not yet paid for by the participant in the General and restricted Collateral Accounts (Although CDS has a lien, securities can be transferred in and out of the general account real time so long as the overall collateral requirement is all met). In other words, non-participant buyers are exposed to their Canadian agent, until the agent settles their daily net obligation with the CDS via the LVTS payment exchange. This exposure is mitigated by ensuring that negative cash balances are fully collateralised at all times. This is achieved through payment risk edits, which are applied to all transactions settling in CDSX. In order for a client to be exposed to any loss of securities, the agent would have had to fail in its obligation to pay and the net obligation exceed the value of their posted collateral. At that stage, the credit rings of the different categories of surviving participants would be used to cover any residual liabilities.

2) For clearing using the CNS and FINet services, credit exposure is on CDS, which assumes the role of a central counterparty. However, for CNS settlements, CDS only becomes the central counterparty in the morning of SD (T+3) leaving the two original counterparty participants exposed to each other during the first two days after trading. An analysis of the risks associated with CDS standing in as the central counterparty is blended under the analysis of financial risk (Refer to Financial Risk).

For unsettled trades in CDS's central counterparty services (CNS and FINet), the replacement cost risk is mitigated by means of a collateral pool of assets that the participant maintains at CDS that is designed to cover potential participants' share losses 99% of the time in CNS and 97% of the time in FINet, which has replaced the previous DetNet service.

## Participant Counterparty Risk

Counterparty risk exposure to another participant of CDS arises from the loss sharing arrangements used by CDS. However, the exposure is limited by the existence of an effective securities settlement system known as CDSX. Within CDSX, securities settle on a real-time trade-for-trade basis from 7.00am to 4.00pm (payment exchange); from 12.30am to 4.00am against payment; and from 4.00pm to 7.30pm securities-only transactions are processed. Trades may be submitted between 7.30pm and 12.30am.

CNS runs four times during the day to try to settle long or short CNS outstanding positions; additional cycles can be run if warranted. CNS/Batch Net Settlement (CNS/BNS) runs the CNS process during overnight processing. At approximately 4.00 am, both CNS and TFT transactions are processed and cash netted to try to maximize settlements. In summary, CDSX is a system for securities and irrevocable credit balances, with actual net cash transfers between designated paying agents, via the Large Value Transfer System, occurring in an end-of-day batch cycle between 4.00pm and 5.00pm SD.

The maximum level at which a member can maintain a negative funds/cash balance is based on the cap amount assigned to a participant according to a formula in the Rules and Procedures and/or the line(s) of credit established by the extenders of credit. Full CDSX participation is limited to the Central Bank, Extenders of Credit, Federated participants, settlement agents and receivers of credit (investment dealers etc). Extenders of credit are restricted by incorporation status, bank license requirements, capitalisation, and relationships with the Canadian Payments Association (CPA).

## Risk Containment Model

The risk model for CDSX settlement was built on the risk controls applied in the former Debt Clearing System (DCS) for government of Canada bonds and money market instruments, which was replaced by CDSX. Enhancements were made to the DCS model to cover the transfer of equity and some debt from the Securities Settlement Service (SSS) to CDSX.

The system includes the following principal features:

**System Operating Caps** - established for each extender and receiver of credit, settlement agent and active federated participant to limit the aggregate value of transactions which may be effected at any one time. Receivers may also be capped by the Receivers-of-Credit Collateral Pool (contribution x leverage = cap).

**Maximum Exposure Point (MEP)** - the sum of the credit extended and funds used by each extender during the business day. CDS uses a defined methodology to regularly calculate each extender's proportionate amount of credit ring collateral pool contribution. Loss allocation is restricted to the members of each credit ring.

Lines of Credit - provided by extenders to receivers of credit to guarantee funds for the settlement of pledges and trades. At present, there are only two extenders of credit providing credit to participants other than to their own wholly owned broker/dealer subsidiaries.

CDSX Collateral - collateral maintained by credit ring collateral pool members to provide coverage of intraday risk until LVTS payment exchange is completed. Only the most liquid types of assets are permitted as collateral in the credit rings and collateral pools.

CDS conducts stress testing on a weekly basis using historical data to affirm the resilience of the risk model (adequacy of the collateral requirements), by calculating potential loss impacts on the collateral rings under a number of different scenarios. Currently 86 scenarios are used.

LVTS - procedures within LVTS guarantee that there will be enough collateral supplied by the LVTS participants (i.e., banks) to generate the necessary liquidity to permit settlement on the books of the Bank of Canada for the payment obligation of any participating financial institution that defaults on its obligations. At the beginning of each day, the LVTS participants pledge to the Bank of Canada appropriate collateral security with a value sufficient to cover the largest single permitted net debit position from a single participant in LVTS, thus providing the Bank of Canada with sufficient collateral to make available the necessary liquidity to settle the system even in the event that one of the LVTS participants defaults. The Bank of Canada also guarantees settlement of the system in the extremely unlikely circumstance that more than one participant fails during the LVTS operating day. The guarantee will only be called on in the event of the unanticipated failure of more than one participant on the same day during LVTS operating hours, with the failing participants in a net owing position vis-à-vis the system, and if the amount owed by the failing participants exceeds the value of collateral that has been pledged to the Bank of Canada. Payments confirmed by LVTS are irrevocable (i.e., it would never be unwound due to settlement problems under the Payment Clearing and Settlement Act). Assurance (by BOC) of LVTS payments provide clients with finality and irrevocability for each payment received intraday.

Aggregate Collateral Value (ACV) - Securities in a participant's general account are the primary source of collateral, which can be used by its extender to obtain liquidity to make a payment on behalf of the defaulting party. Settlement of transactions that would cause a participant's payment obligations to exceed the collateral value of securities in its general account available to cover these payment obligations are prevented. This applies to all participants.

If the ACV is greater than its payment obligation, a participant may move securities out of its general account into its segregated account intraday. If the ACV is forecast to become less than its payment obligation, the participant may move securities from the segregated account to the general account to increase the amount of available ACV.

Sector limits - CDSX eligible securities used in the calculation of ACV are classified into security "types" (i.e., sectors) with the maximum collateral value within each sector being limited to a percentage of the relevant participant's system operating cap. This limitation of collateral value by sector applies to certain systemically-important participants.

### **Delivery Versus Payment**

For CDSX settlement, while securities move during the day and actual cash transfers occur at day-end on a net basis, credit received intraday is immediately redeemable for good funds. While settlement in central bank funds only occurs at the end of the day during payment exchange, prior transactions cannot be unwound or reversed anytime once the securities have been transferred. CDSX is a true DVP system with irrevocable funds transfer through the LVTS system.

### **Role of Central Counterparty (CCP)**

CDS operates two central counterparty (CCP) clearing services: Continuous Net Settlement (CNS) for the settlement of equity trades executed on a recognized exchange or ATS, and FINet for Canadian federal and provincial government bonds, and treasury bills. CDS becomes the central counterparty for these trades via novation. In the CCP services, novation occurs as soon as the transactions are netted, which can occur prior to SD for FINet trades (normally at the end of TD) and in the morning of SD for CNS trades.

CDS transfers its exposure as a CCP to its participants via the loss sharing arrangements established in the CCP Participant Funds. In the event of default, the defaulter's collateral should be sufficient to cover the resulting losses in 99% of the cases for CNS and 97% of cases in FINet. Any losses in excess of the collateral requirement of the defaulter are borne by the surviving participants in the service.

For the CCP services, CDS manages two participant funds: the CNS Participant Fund and the FINet Participant Fund. Participants are exposed to a potentially unlimited loss as survivors in one of the CCP services resulting from another participant's default where the defaulter's own collateral was insufficient. However, there is a withdrawal option for participants of these funds in order to limit their loss allocation due to the default of one or more members of the fund. Withdrawal is possible by paying an additional 500% or 700% of the participant's collateral requirements in that CCP service if the participant is withdrawing from FINet or CNS, respectively.

All trades and outstanding positions in the CCP services are marked-to-market daily to cover the potential loss between the original trade price and the current price which could result if there were a default by a participant. Participants must contribute to the CCP funds to cover the marked-to-market payment owed by a participant in the event of default.

A cap is applied to the replacement cost risk arising from the outstanding positions that any participant can create in aggregate across all CCP services in which a participant is a member. Once this cap is reached, additional processes are activated within CDS including informing the appropriate regulators of the event and the collection of additional collateral.

Currently, the CNS service is widely used while the FINet service is only utilised by a small number of participants. FINet was introduced on 28 April 2009 and replaced DetNet. The additional functionalities provided by FINet are expected to encourage a larger number of participants to join.

### **Participant Criteria**

Within participant groups and within services, all participants are subjected to the same controls and regulations. Participants are required to sign standard agreements that cover their use of the different services. Specific and well-defined requirements exist for all categories. CDS requires that the participants provide evidence of their financial ability to meet their CDS obligations, the sufficiency of their personnel, the suitability of their computer equipment, and their ability to satisfy other standards which CDS may establish.

Participant eligibility requirements are the same regardless of the market in which the member is trading. Membership criteria are clearly defined in the CDS rules for the seven categories of participant: extenders of credit, settlement agents, receivers of credit, federated participant, transfer agents, ATON (Account Transfer Online Notification service) participants and the Bank of Canada.

Participants must be a regulated financial institution, a government body, a foreign institution, the Bank of Canada, a transfer agent, ACT or an ATON participant. Foreign institutions must have minimum capital of CAD 1 million or be able to provide satisfactory evidence of financial strength to CDS.

Participants are classified into the following groups with these respective minimum capital requirements:

Extenders of Credit - CAD 1 billion

Federated Participant - CAD 1 billion in aggregate of federation and federated members

Settlement Agents - CAD 100 million

Bank of Canada - No minimum capital requirement

Transfer Agents - Perform the 'depository agent' and/or entitlements processor roles as well as a 'validator' role (no minimum capital requirements, but have a maximum of CAD 10 million for the processing of entitlements)

ACT Participant – No minimum capital requirement, this is a limited purpose participant that uses the ACT service for the matching of cross-border trades

ATON Participant – No minimum capital requirement, this is a limited purpose participant that can deliver and receive securities related to the transfer of client accounts

Receiver of credit - any other qualified participant (minimum capital requirement as required by its regulatory authority).

### **Participant Concentration**

All major banks and brokers are direct and active CDS participants, giving the depository the widest possible participant base. However, 60% of domestic transactions in the market flow through the top six most active participant "families", each of which operate through bank, broker and/or custodian subsidiaries. This represents significant transaction flow concentration in the market.

In addition, there are currently six 'extenders of credit' although only two of them are currently active in the market as extenders to other than their own subsidiary companies. There is a potential for cost increases for participants if one of the banks was to withdraw as an extender to third parties. Also, participants would not have an option on their credit providers if this were to happen. However, market forces would come into play and other banks could start extending credit to third parties if returns from being in this business were attractive enough to mitigate the risks.

### **Financial Compliance/Surveillance**

Any applicant meeting the requirements for participation as described in CDS Participant Rules and which meets its primary regulator's or self regulatory organization's (SRO) financial standards is considered to have met the financial requirements for participation. CDS has a policy of requiring its participants to demonstrate on an ongoing basis that they comply with the financial standards established by their primary regulator. This may be accomplished by the establishment of a memorandum of understanding (MOU) between CDS and the primary regulator or the SRO or the provision of appropriate evidence of good standing on a regular basis. CDS's role in ongoing credit risk assessment includes, but is not limited to, regular verification of each participant's compliance with participation standards in the Rules and membership standards for any credit ring of which a participant may be a member. No members have been suspended for failing to meet CDS standards over the last three years.

Under its role as a CCP, CDS executes active surveillance on participants' fail to settle exposures (i.e., the replacement cost risk posed by any participant) resulting from outstanding positions in CNS and FINet. The collateral requirement of each participant's exposure is calculated by the system. CDS staff monitor any shortfall in the collateral posted by participants between 11.00am and 1.00pm daily. This ensures collateral sufficiency throughout the day to cover the obligations of each participant.

### **Guarantee Funds**

CDS operates collateral pools/credit rings for each of the participant categories (except for Bank of Canada). Each collateral pool is kept separate, and generally operates so that on the failure of a participant, the survivors guarantee payment obligations of the

defaulter. This occurs on the same day of default since the defaulting participant's payment obligation must be fulfilled that day. Since participants' payment obligations are collateralised, the survivors in the collateral pools/credit rings have undisputed prior claim to the defaulter's collateral. For any residual losses, the failing institution's contribution to the fund will next be used to cover any deficit in the service. After that, collateral of other participants in the credit ring of the service or category is used.

<b>Counterparty Risk - Key indicators</b>
<b>Capacity of CSD</b> Agent only
<b>Surveillance of participants by CSD</b> Yes
<b>Settlement assurance</b> Yes, for CNS, FINet, NY Link and DTC Direct transactions.
<b>Participation criteria</b> Yes
<b>Minimum Capital (local currency)</b> Extenders of credit - CAD 1bn Federated Participant – CAD 1 billion in aggregate of federation and federated members Settlement agents - CAD 100 million  Canadian regulated financial institutions (including brokers) - in accordance with minimum regulatory requirement Foreign institutions – CAD 1 million or other evidence of financial stability
<b>Size of Guarantee Fund - (Name, local currency, Euro and USD - (millions))</b> Participant Funds (at 31 January 2009)  CNS Participant Fund: CAD 143,290,364 FINet Participant Fund: CAD 38,442,344 NSCC Participant Fund for New York Link: USD 91,385,772 DTC Participant Fund for New York Link: USD 6,898,814 DTC Direct Link Participant Fund: USD 959,056  Collateral Pools (at 31 January 2009)  Extenders of Credit Collateral Pool: CAD 2,271,000,000 Settlement Agents Collateral Pool: CAD 204,200,000 Federated Participant Collateral Pool: CAD 161,136,000 Contributing CAD Receivers of Credit Collateral Pool: CAD 17,712,327 Contributing USD Receivers of Credit Collateral Pool: USD 10,000,000
<b>Does the CSD act as a central counterparty</b> Yes
<b>Comments</b> Participation criteria also depends on a participant's role (e.g., Extender of Credit, Settlement Agents, etc).  CDS acts as central counterparty for exchange trades in CNS, and for Government of Canada bonds, provincially-issued debt instruments and treasury bills in FINet.
<b>Participant Concentration (Local Currency Millions)</b>
<b>Value of transactions in the market by top 10% of participants</b> 60% for top six financial groups through different entities
<b>Volume of transactions by top 10% of participants</b> 60% for top six financial groups through different entities
<b>Volume of largest individual participant</b> N/A

# Asset Servicing Risk

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## Summary

CDS receives corporate action information from various sources: Issuers (who are legally obliged to provide corporate action information to securities holders, such as the depository as nominee, and SEDAR, a publicly accessible issuer information repository that CDS INC. manages for the Canadian securities regulators), Transfer Agents, Information Vendors, Press, Stock Exchanges, and DTCC. CDS accepts limited responsibility under a claims process and under the terms and conditions of its Rules for losses to the limit of its small claims fund or insurance coverage or recovery from a third party, which arise from late, inaccurate or incomplete information or other errors. A limited number of non-material claims have been made against CDS for such losses over the last few years. CDS provides a passive proxy voting service; participants have to deal directly with the issuer/transfer agent once the information is received.

## Information processing

There is no central source of market information and market participants, including CDS, have to actively look for information. CDS electronically captures about 90% of corporate action information regarding Canadian securities from Computershare and TSX, and 100% of corporate action information of DTCC-eligible securities.

Issuers/transfer agents are legally obliged to supply CDS as a registered shareholder with certain corporate action event information, and CDS proactively gathers information from the System for Electronic Document Analysis and Retrieval (SEDAR), the stock exchanges, issuers, registrars and the press. CDS will verify this information with information providers, Newswires, Transfer Agents and other sources, unless the information is received from SEDAR or the Stock Exchange. Source documents are manually input and disseminated within 24 hours (usually within 1 to 2 hours) to CDS participants who are holding securities on behalf of beneficial holders. However, in February 2007, CDS automated its system to facilitate data capture in an electronic form from multiple vendors (e.g., TSX, Computershare and DTCC). CDS applies electronic data integrity checks to this data which, if accepted, can be seamlessly updated in CDS's system.

CDS will notify all participants, regardless of their holdings, about mandatory as well as optional corporate actions. In fiscal year 2008, 100% of notifications were made within 24 hours of receipt of information via web-based bulletins (with prospectuses attached if the event type was filed on SEDAR and the participant elected to use this enhanced service) and broadcast via messages through the depository's proprietary electronic system. In addition, event information can be viewed online on the system or is available to participants via batch feeds.

CDS uses SWIFT MT564/568 ISO15022 compliant message types to distribute all entitlement event and corporate action information. Provision of these message types is in line with CDS's strategy to create efficiencies for CDS and its participants. The new MT564/568 messaging streamlines the bulletin release process for CDS and for its participants by providing participants with an automated means of processing entitlements on an STP basis.

CDS Rule 4.2 describes the extent of CDS's liability for any type of loss that CDS may cause a participant.

## Instruction processing

Participants send corporate action instructions to CDS via the proprietary electronic system. Validation, as to sufficiency of securities position or funds, for voluntary events is done by the system when an instruction is received. When an instruction has not been received close to the deadline, CDS is not required to advise the participant, although it may provide a courtesy call.

Depository Agents (typically transfer agents) have the capability to take the role of depository agent in CDS's system. Tender instructions and shares will move from the participant's ledger straight into the depository agent's ledger which constitutes a legal tender, supporting extending instruction deadlines up to the legal expiry of the offer during the hours CDS's system is up and running (7.00am – 7.30pm). The previous cut-off of 24 hours will not apply if the depository agent is set up in the system.

CDS has canvassed the market and, in general, participants do not require CDS to contact them where instructions have not been received close to the deadline. The system does not accept instructions submitted after the deadline.

Claims for mandatory distribution events on outstanding trades and positions are automatically generated and settled by the system. CDS has an automated facility for processing withdrawal instructions where withdrawal rights are part of the terms and conditions and where instructions are received prior to the withdrawal right expiry date and time.

CDS accepts limited responsibility, under a claims process and under the terms and conditions of its Rules, for losses to the limit of its insurance coverage or recovery from a third party, which arise from missed corporate action deadlines where instructions have been received within published deadlines.

CDS ensures that the allocation of securities and cash resulting from Corporate Actions are made through their proprietary system upon release of payment by the paying agent. A significant proportion of payments from issuers are received via cheque (around 10% by value, 61% by volume in 2008).

Cash payments are made in same day funds, increasingly via the Large Value Transfer System (LVTS) - for 2008, around 70% by

value was received via LVTS. Once payment is received from the issuer, corporate actions staff will manually match the payment to their records and once this is completed, CDS proceeds to distribute payments to participants via the CDSX payment process. In the majority of cases, distribution of entitlement funds occurs on pay date although if funds matching cannot be completed before the end of PD, payment is executed on PD+1. CDS will pay interest on any money retained overnight only if they are able to obtain interest on this money. In fiscal year 2008, 99.9% of income and 99.9% of corporate action (where predetermined) entitlements were credited on due date.

### Proxy Voting

CDS provides a passive proxy voting service as participants have to deal directly with the issuer/transfer agent once the information is received. CDS sends participants notifications of general meetings but does not accept proxy voting instructions. The depository provides the announcement of all meetings but will not attend meetings on participants' behalf.

Participants' holdings do not need to be re-registered to attain voting eligibility, nor are positions frozen around meeting dates. Issuers are obligated to inform CDS of meeting dates, which CDS then provides each week, as a regulatory requirement, to 2 of the main national newspapers. An electronic data file subscription service is available from CDS.

### Other services

CDS assists Canadian participants investing in US securities by transmitting information on rates to be withheld by the IRS and distributing the net payment to participants. It also withholds tax on behalf of American investors investing in Canadian securities.

CDS introduced a new added value Dividend Eligibility Reporting Service through a centralised repository managed by CDS. This service provides participants with an efficient option to obtain important information on the eligibility of dividend payments (by issuer) for tax credits.

<b>Asset Servicing Risk - Key indicators</b>
<i>Information processing</i>
<b>Securities covered</b> Depository eligible securities
<b>Information sources used</b> SEDAR, Issuers, Transfer Agents, Stock Exchange, Depository, registrars & press
<b>Information provided in English</b> Yes
<i>Number of Events during last full year</i>
<b>Dividends</b> 26,300 (as at 31 October 2008)
<b>Interest &amp; Redemptions</b> 76,300 (as at 31 October 2008)
<b>Corporate actions</b> 19,200 (as at 31 October 2008)
<b>Notification via</b> Proprietary electronic and email
<b>SWIFT message types</b> MT564 and MT568
<b>Notification within</b> 24 hours
<b>Information processing comments</b> Money market maturities totalled 31,192
<i>Instruction processing</i>
<b>Use of depository</b> Market practice and IDA regulation
<b>Settlement on due date</b> Yes

**Optional corporate actions supported**

Yes

**Cash account credited**

Yes

**Central paying agent**

No

**Entitlements based on**

Ledger positions and Outstanding trades

***Proxy voting services*****On-line**

No

**Outsourced**

No

**Announcement of meetings**

Yes

**Elections (Voting)**

No

**Results reporting**

No

# Financial Risk

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## Summary

Financial resources are in the form of paid-in capital and reserves, earnings, explicit (contractual) or implicit support from shareholders or members, insurance coverage and access to credit. In the case of credit losses, supplemental resources can be found in the form of guarantee funds and collateral protection.

CDS acts as the central counterparty (CCP) for on-exchange transactions eligible for CNS processing, and for future-dated trades in federal and provincial Government of Canada bonds and treasury bills in FINet. However, CDS's resources at risk are limited despite its role as CCP given the loss sharing arrangements in place.

Potential calls on CDS's financial resources could arise as result of the following:

- Investment in operational infrastructure,
- Operational losses for which CDS has assumed liability,
- Losses for which a public Court has considered CDS accountable.

The Canadian Central Bank provides no explicit guarantee for CDS. The net amount owing to CDS is settled at the end of day via LVTS payments, which are final and irrevocable. Although CDS does have a liquidity facility in place with the Bank of Canada, the bank will only consider providing liquidity in certain narrow and highly unlikely circumstances where CDS has sufficient collateral pledged by participants to cover its liquidity requirements but the markets have closed (preventing CDS from selling the securities) and its commercial banker is unwilling to provide CDS with immediate funds in exchange for the securities.

## Financial and other Resources

### Capital Structure

CDS's total shareholders equity has remained relatively stable over the past 5 years with some small variations in the level of unappropriated reserves. At 31 October 2008, the shareholders equity was CAD 41.2 million compared to CAD 42.7 million at 31 October 2007 - CAD 41.544 million in 2006 and CAD 44.6 million in 2005. Shareholders' equity and reserves have remained stable around CAD 8.7 million and CAD 10 million, respectively, over the last five years,.

CDS is wholly owned by The Canadian Depository for Securities Limited (CDS Limited), the holding company for the CDS Group. CDS Limited is owned by the major Canadian chartered banks (66.7%), members of the Investment Industry Regulatory Organization of Canada (15.2%) and the Toronto Stock Exchange (18.1%). The CDS does not directly pay dividends but rather returns money in the form of rebates. In order to increase capital, CDS would have to raise it like any other privately-held corporation by issuing additional shares or borrowing. There are no shareholders, bankers or investors who are legally bound to provide capital to CDS. No capital calls have been made in the past 20 years. No government body has an ownership stake and hence direct government support has to be discounted.

Although CDS's capital is not significant relative to assets under custody, its resources are only at risk for claims due to a failure by CDS to follow operational procedures that causes a loss to a participant. CDS takes no liability in its role as central counterparty for CNS and FINet trades since the losses caused by a default of a participant in the system are assumed by the other members of the respective credit ring pools and participants funds.

### Earnings Performance

CDS operates with a priority to provide customer efficiency rather than a return on shareholder equity, and structures its financial strategy to required cash recovery rather than a specific profit. CDS has the flexibility to raise or lower fees as required which it has combined with the granting of rebates to participants over the last 5 years. A rebate of CAD 11 million was accrued as at 31 October 2008 (CAD 8 million in 2007, CAD 19 million in 2006) and was netted against the domestic clearing and settlement, depository, international and courier revenues in the consolidated statement of operations.

As a not for profit entity, CDS's policy is to rebate any excess profits back to participants after provision for any investment has been made. CDS reported a net loss in 2008 after a profit in 2007. In 2008, CDS's net operating revenue was CAD 80.9 million compared to CAD 91.9 million in 2007, CAD 88.3 million in 2006, and CAD 94.1 million in 2005. Overall, CDS reported lower net operating revenues in 2008 compared to 2007 mainly due to a reduction in depository revenue. Expenses also decreased from CAD 94 million in 2007 to CAD 85 million in 2008.

While the losses reported in 2005, 2006 and 2008 do not represent a threat to CDS's financial sustainability; it might restrict its ability to accumulate reserves for systems and other developments.

During the 2008 fiscal year, which ended on 31 October 2008, 35.8% of revenues were obtained from depository services, 22.6% from clearing services, 5.3% from international, 6% from SEDAR, 12% from NRD, 6.2% from SEDI, 3% from courier and 9% from other services.

In order to protect itself against drastic changes in transaction volumes, CDS invoices and collects a transaction volatility premium

(TVP) (currently set at 7%) for use in the event of unexpected declines in transaction volumes. Since the inception of the transaction volatility premium in 1992, and with the exception of using the TVP to fund the development of CDSX in one instance, 100% of the value of premiums collected has been refunded annually to CDS participants.

### **Guarantee Funds (Central Counterparty Funds Only)**

CDS manages two guarantee funds, whose size is detailed in the Counterparty Risk section. These apply to trades for which CDS acts as the CCP:

- FINet for government and provincial debt transactions
- CNS for on-exchange equity transactions

### **Access to Credit**

CDS has committed lines of credit in place with its bankers. These can be used to cover a default in case the collateral posted by the participant is not immediately available to cover the default (e.g. the collateral is with the extender of credit and the extender will pay CDS on behalf of the defaulter). In addition, operating lines of credit for both CDS Clearing and Depository Services Inc. and CDS INC. may be used to cover general cash flow requirements or to cover a liability claim that was not fully covered by the insurance arrangements or to cover insurance deductibles.

The amount available under these facilities is not available as it is confidential to CDS, but it is considered sufficient to cover any liquidity need in CAD that would arise in the normal course of the business.

### **Insurance**

CDS makes full disclosure of its insurance policy to its participants but limits further disclosure to the public. However, CDS does have extensive insurance coverage that includes insurance for the loss of securities including electronic securities, computer fraud, directors' liability, errors and omissions by staff, damage to building and equipment and others. The insurance limits and deductibles vary in size for the different types of cover. The policies are reviewed by the Audit/Risk committee and the Board of Directors on a regular basis to ensure the policies are appropriate for the organisation and to approve any changes to the policies.

### **Potential Claims on Financial Resources**

#### **Credit Loss**

CDS does not provide credit facilities to its participants.

#### **Central Counterparty Exposure**

CDS is not exposed to credit losses as a result of its role as central counterparty for trades involving government fixed income securities and equities since it operates a loss sharing arrangement for market participants. In order to protect participants against a default in the system, CDS maintains an active risk mitigation function. In the event of a payment default CDS has a lien on delivered securities for which it makes payments. Participants pay CDS at end of day or vice versa. Payments to DTC and NSCC are made through same-day fund settlement using US Federal Reserve's FEDWIRE. However, as sponsor of its participants in this link, notwithstanding the collateral and loss sharing arrangements with participants, CDS has a day of default liquidity exposure to cover a participant's position in the event of a default, if other participants are unable to immediately do so.

#### **Liability for Operational Losses**

CDS has a limited programme in place to compensate participants against losses due to operational errors by CDS. The board establishes a maximum limit for compensation which is currently set at CAD 120,000 for a six-month period for budget purposes. In 2008, CDS reported 4 claims totaling CAD 13,967. After 31 October 2008, CDS received and rejected a large claim from a participant arising from an entitlement processing event. CDS Rule 4.2 describes the extent of CDS's liability for any type of loss that CDS may cause a participant.

The depository accepts liability for losses caused by CDS to a participant to the extent recoverable under CDS's insurance policies or from third parties.

#### **Investment in Infrastructure**

CDS made a large investment in the conversion process to CDSX. Annually, CDSX maintenance and enhancements take place in four separate implementations in February, May, August and November. CDS also ensured that CDSX was able to handle the unprecedented transaction volumes that they have been experiencing, although this did not require a significant or expensive upgrade.

The main infrastructure project in 2008 was a consolidation of approximately 40 server systems down to two. In early 2009, IT implemented a major upgrade of the disk storage subsystem used for mainframe and open systems.

In 2008 CDS renewed its maintenance contract with Tata Consulting Services for development and support of CDSX for a further 5 years

FINet was introduced on 28 April 2009 to replace DetNet. FINet supports netting in a wider range of security transactions (particularly repo) and was completed marginally over the budget of CAD 1.6 million.

## Financial Risk - Key indicators

### Ownership of the CSD

	Number - Domestic	Number - Foreign	Total Percentage
Central Bank	0	0	0
Stock Exchange	1	0	18.1
Participant banks	6	0	66.7
Broker/dealers	n/a	0	15.2
Mutual funds	0	0	0
Private clients	0	0	0
Others	0	0	0

### Comments

The following participant banks are common shareholders of CDS, holding in aggregate 66.7% of the issued common shares:

- Bank of Montreal
- The Toronto Dominion Bank
- National Bank of Canada
- Canadian Imperial Bank of Commerce
- Royal Bank of Canada
- Bank of Nova Scotia

The remaining (33.3%) is held by the TMX Group (18.1%) and the Investment Industry Regulatory Organisation of Canada (IIROC) on behalf of broker/dealers (15.2%).

### Statistics

	Capital structure Local Currency
Issued capital	8,661,000
Surplus	0
Reserves	10,000,000
Retained earnings	22,536,000
Total	41,196,000

### Comments

Statistics as at 31 October 2008 in CAD.

### Lines of stock

	2004	2005	2006	2007	2008
Lines of stock	74,109	74,100	75,400	77,900	80,511
% Stock Exchange transactions cleared and settled through CSD	100	100	100	100	100
Total value of securities under custody	CAD billion 2,308	CAD billion 2,690	CAD billion 3,093	CAD billion 3,371	CAD billion 2,964

### Comments

figures for year ended 31 October.

### Equities

	2004	2005	2006	2007	2008
Market Value	CAD billion 964.0	CAD billion 1,210.472	CAD billion 1,439	CAD billion 1,596	CAD billion 1,075

% of issued securities in the CSD	97	97	97 (est)	97 (est)	95% (est)
% of market capitalisation in the CSD	97	97	97 (est)	97 (est)	97 (est)

### Comments

figures for year ended 31 October

### Fixed Income

	2004	2005	2006	2007	2008
Market Value	CAD 1,344 billion	CAD 1,479.582 billion	CAD 1,654 billion	CAD 1,779 billion	CAD 1,889 billion
% of issued securities in the CSD	96	99.9	99.9 (est)	>95% (est)	>95% (est)
% of market capitalisation in the CSD	97	99.9	99.9 (est)	99.9 (est)	99.9 (est)

### Comments

Fixed income figures also include values for Money Market instruments.

Figures are for year ended 31 October

### Money Markets

	2004	2005	2006	2007	2008
Market Value	N/A	N/A	N/A	N/A	N/A
% of issued securities in the CSD	N/A	N/A	N/A	N/A	N/A
% of market capitalisation in the CSD	N/A	N/A	N/A	N/A	N/A

### Comments

Figures for Money Market instruments are included in the figures for fixed income.

### Expenses

	2004	2005	2006	2007	2008
Expenses as % total operating revenue	96	99	111	102	99

# Operational Risk

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## Summary

CDS maintains a well-defined and comprehensive system of internal controls and safeguards. Depository, clearing, data processing and business continuity key controls and related procedures, which are consistent with CDS's business, exist and have been satisfactorily tested by internal as well as independent external auditors. Other operational risk controls and systems exist which are all regularly reviewed by the internal risk committee and Internal Audit group within CDS.

Key controls exist within CDS which help to minimise operational risk exposure categorised as:

- Safeguarding assets which are consistent with controls expected to be found in a depository which operates a clearing function.
- Depository controls surrounding CDSX-eligible securities.
- Clearing controls surrounding settlement including payment exchange.
- Data processing controls surrounding computer operations, systems performance, capacity planning, systems development and maintenance and change controls.
- Business continuity controls including programmes necessary to ensure the smooth running of CDS.

Independent reviews of controls are provided by the internal audit department and the annual external audits executed by KPMG LLP in the form of a 5970 report (Canadian equivalent of the SAS 70 report). The latest report covered the period between 1 August 2007 and 31 July 2008.

## Depository controls

### Physical security

Depository controls within CDS are aimed at protecting participants' securities on deposit against loss and inappropriate disposition. All certificates are held in secure vaults at CDS or at approved custodians. Underlying certificates are subject to an annual physical count confirmed by external audit.

There are tight controls around CDS's vaults that employ a variety of security measures.

CDS operates under a logical segregation of duties which restrict people from having access to both certificates and ledgers. Transport of certificates is via armoured courier which provides a high level of security. Security in the premises is enhanced with real-time surveillance using cameras with motion detectors.

Equities and corporate debt - Government of Canada domestic debt issues, provincial treasury bills, provincial bond, municipal bonds, commercial paper and bankers acceptances, mortgage backed securities, equities and corporate debt are CDSX-eligible. Domestic federal securities are recorded in book-entry form by the Bank of Canada and are cleared and settled by book-entry through CDS. Provincial treasury bills, commercial paper, banker acceptances, mortgage backed securities, equities and corporate debt are typically dematerialised.

CDS does not allow participants to withdraw physical certificates of non-transferable/defunct issues (NTIs). The immobilisation of NTIs at the CDS only has a limited effect on the operational risk exposure related to these securities, as these are issues of companies that are no longer traded in the market.

Annual independent audit reports as at June 2008 confirmed that the physical certificates, non-certified inventory positions and packages of securities were matched to book-entry-only positions and participant ledger balance records of securities maintained by CDS.

Access to the building is restricted and is controlled by security guards with continuous monitoring of security cameras (cameras are employed across different branches). Remote monitoring of the regional offices from Toronto has been available since May 2008. Access is controlled with electronic cards and entrance to some areas is only permitted to specific employees. There are also alarms inside the building to warn against unauthorised entrances.

### Reconciliations

At the end of each working day CDS runs an automated process to compare the electronic (NCI) ledger positions and the inventory held by CDS. If a discrepancy exists, an exception report is generated and the problem should be resolved the following working day.

For physical securities held at the subcustodian on behalf of CDS, a monthly report is sent by the relevant custodian and CDS manually reconciles it against CDS's records. If a discrepancy exists, it is input in a discrepancy log and the situation resolved by the relevant CDS staff. If the error came from the custodian, the situation is referred to them for correction.

Automatic daily reconciliations also take place with transfer agents for dematerialised securities. Discrepancies are reported in the transfer agent's Reconciliation Exception Report.

## Risk Management

There is a specific risk management department that is in charge of designing the risk management policies for CDS which are discussed within the risk management committee, chaired by the Chief Risk Officer and attended by the managers of the different departments. Risk management policies are also discussed within the Risk Advisory Committee, attended by participants.

Each division is responsible for assessing the risks involved in its area based on the probability of occurrence and the potential financial impact. Rankings are assigned for each process under a standard procedure to ensure that the risks are consistently assessed across CDS.

## Audits

There is an internal audit division that reports to the President & CEO and to the Board of Directors. The Chief Auditor leads the department that comprises teams covering IT audit and operational audit. The department has 17 staff including 10 IT audit staff.

The mission of the internal audit is to provide an independent, objective assurance as to the quality and effectiveness of CDS's controls, operational and management processes and to provide value-added consulting services designed to improve CDS's operations and functions. The internal audit department also evaluates and improves the effectiveness of risk management, internal control and the governance process.

Internal audit also supports the work of the external auditors by providing their opinions on CDS's controls. In fact, the internal audit plan and the plan presented by the external auditors are coordinated and complementary. The internal audit plan is established every year and covers the main areas to be audited and the schedule. In 2008, CDS widened the scope of their internal audit to include all business risks. Control risks were prioritised under a three-tier programme. The frequency of the audit (annually, two yearly and five yearly), varies according to the tier in which the risk is classified.

The results of the internal audits are provided to the management of CDS as well as to CDS's Board and are discussed during audit committee meetings. The review of CDS's internal controls structure, business continuity programme and other audit issues is executed by the audit committee.

CDS also has appointed an external auditor, KPMG, which complements the work executed by the internal audit division and provides an independent view on the controls undertaken by CDS and CDS INC. KPMG has acted as CDS's external auditors for 30 years and was recently reappointed. It is now CDS's policy to undertake a contestable review of the appointment of its external auditors every five years.

The review on controls is undertaken under a 5970 report (the Canadian equivalent of the SAS-70 report), which in 2008, was extended to cover new activities such as some processes associated with managing CDS's financial risk model.

The external auditors also report to the management of CDS and participate in the audit committee which is a subcommittee of the board of directors. The external auditor could meet separately with a particular participant at the request of the participant to discuss the findings of the report. The reports are also available to the regulators of CDS such as the Autorité des Marchés Financiers (AMF), Ontario Securities Commission (OSC) and Bank of Canada (BoC).

As part of the external audit process, there are visits throughout the year with concentration over July, August and September while the 5970 report is being prepared.

## Staff training

There is a specific budget allocated to staff training of approximately 2% of CDS's revenues (CAD 1.79 million in 2008) which is allocated across the different areas.

In order to apply for a training course, employees have to complete an application form, which is submitted to the managers for approval. The manager must then send the form to the Human Resources department for processing and final approval.

CDS developed a training programme for new employees, which includes two courses (Overview of the Canadian Capital Markets and CDS's Role in the Canadian Capital Markets). These courses were developed together with the Canadian Securities Institute.

## Clearing controls

Instruction Receipt and Processing

Settlement instructions are sent by participants to CDSX in various electronic forms and are classified as on-exchange (exchange) or OTC (non-exchange). Details of on-exchange transactions are received in a batch file from the relevant exchange or ATS in a confirmed status.

Off-exchange transactions are entered, modified and deleted through online screens, real-time messages or batch processing. Transactions can be electronically matched by CDS's Trade Matching service (introduced in 2008), or alternatively manually entered by one party and then confirmed by the counterparty. (All broker participants are required by IIROC Regulation 800.49 to use the matching service.) If there is a discrepancy in the trade details, participants can modify or delete the trade.

National Instrument 24-101 is a regulatory requirement for market participants to achieve increased rates of matching for institutional trades to improve the timeliness and efficiency of trade settlement processing. There is a timetable for specific targets to be met (currently, 90% of trades should be matched by 12.00 pm on T+1). The new Trade Matching Service has assisted the markets' ability to help achieve this regulatory requirement.

CDSX calculates and submits settlement obligations to participants daily for trades executed on trade date (TD). Trades coming from the exchanges are "locked in" on TD. However, in the rare situation that both parties to a trade agree to amend the trade, participants can, on TD+1, request an amendment to a trade reported to CDS from a domestic exchange or ATS by faxing the relevant forms to CDS from both buyer and seller. Requests are then verified and authorised by a CDS control analyst and once the correction is made, a second analyst verifies the details of the request. Participants can match transactions before processing and can verify through CDS systems access that transactions were executed as per their instructions. In the CDSX system, all collateral requirements must be in place before payment exchange can be concluded on any given day.

SWIFT ISO 15022 messaging standards are applied for its links to Euroclear France, Euroclear UK & Ireland, Japan Securities Depository Center Inc. (JASDEC) and Skandinaviska Enskilda Banken AB. SWIFT ISO 15022 messaging standards are also applied to corporate actions and messaging to/from virtual matching utilities.

#### Collateral management

Collateral pool calculations are manually maintained and monitored using the Collateral Management System (CMS) which is integrated into the CDSX platform.

#### Reporting

Participants are able to check in real-time the status of each trade they have input in the system. Using this system they can track whether a particular trade is pending and the reasons for this status. In addition, participants receive a batch report with detailed information at the end of each batch cycle and at the end of the business day. These reports detail their account movements, the list of settled, failed and partially settled transactions, details of loans, and details of collateral movements.

Intra-day messages or outbound files are generated for participants subscribing to either information service. A settled transaction report is available intra-day on request. Participants are not currently able to customise reports on line, although they can request specific reports from CDS.

### **Data processing controls**

#### Data processing

CDS provides its own data centre operation in a secure space leased from a data centre provider. Control procedures exist to monitor changes to software, disaster prevention mechanisms, data storage and retention of files, program libraries, and systems software.

CDS's data centre runs on a 24/7 basis. Computer operators working on 12-hour shifts monitor data centre activities. Computer operators follow daily checklists of the activities to be executed during each shift.

The tasks executed by the computer operators as well as the timing of job completions are monitored including the submission of the daily shift turnover log to senior IT managers for review. The CDSX daytime and evening time deliverables summary (including target, and actual completion and variances) is produced daily.

#### Security

CDS employs industry standard network security measures including high-level information security policies for firewall remote access, network component configuration management and Internet usage. In 2009, an independent consultant validated the effectiveness of CDS's perimeter security infrastructure. Dedicated test systems exist in segregated environments to allow testing of the various systems without impact on any production environments.

A password (using ISO 17799 standards) is required to log-in to the system. Passwords must be changed every 30 days. There is a decentralised model whereby each participant administers their own access, although it is CDS's policy that each unique password must only be used by the registered person.

Participants' and remote employees' connections are protected by running on private networks, either using dedicated circuits or VPN.

Passwords are also used by CDS employees to access the system. There are restrictions in terms of data access.

CDS regularly uses third parties (ethical hackers) for vulnerability assessments. A network perimeter test was conducted in 2009 - the results stated that there were no critical findings.

#### Data Zaps

A data zap is any change to application or control data that is conducted outside of a production application to add, change or delete data. Intervention is required at times to bypass control or application programming defects, which cause or will cause an interruption to the processing schedule. The defect is identified for correction.

In 2008 CDS executed less than 10 datazaps. For effectiveness management purposes, a threshold level of four data zaps per month has been set and is regularly reviewed by senior management.

#### Disaster Recovery/Business Continuity Procedures

CDS maintains an off-site processing centre and an off-site disaster recovery site. CDS's disaster recovery centre employs synchronous data mirroring to protect against the loss of transactional data. Critical systems are recovered in 2 hours, 4 hours, 8 hours or 24 hours depending on the requirements of the relevant process. The DRP site is under surveillance by the data centre provider.

In the event that CDS's offices become inaccessible, CDS has a range of options that can be used depending on need. CDS has split its core operation into two geographic regions, Toronto and Montreal. There are 60 people located in Montreal who would be able to revise priorities and undertake the processing of all critical activities if the main office in Toronto became unavailable. For corporate divisions, CDS has both permanent and as-required capabilities at a commercial business recovery site. Lastly, CDS is in a position to rely on certain employees working remotely (from home) in order to execute their daily activities. The computer systems can even be brought up and managed remotely. CDS has a practice that key employees work from home regularly to verify that the connection works and all activities can be executed this way. Through these various business contingency options, CDS believes that it would be able to run operations remotely for an extended period of time.

Software changes can be made remotely while hardware changes require the physical presence of IT staff in order to take place.

On 11 November 2008 CDS conducted a corporate wide test of its Business Continuity Plan (BCP) which included participation of 100 staff from its Calgary, Montreal and Toronto offices. All factors such as network connectivity, functionality of the alternative work site and remote computing users operated as specified in CDS's BCP. Each department at CDS also conducts their own independent business continuity arrangement tests.

CDS conducts semi-annual disaster recovery tests, and the last test took place in May 2009. The audited test demonstrated CDS systems (online and business functionality, network failover, file transfer and participant connectivity) were recovered within predetermined recovery time objectives without failure. Regular reviews with IT department are undertaken to help ensure the disaster recovery plan is current. Updates to technology or processes are immediately incorporated into the DRP plan, as are required changes identified as a result of the tests. The back-up data centre is "warm" and has a UPS and a Diesel generator. There are also back ups for digital and analogue lines.

Application and data back ups are shipped to an independent third party for storage. CDS implements retention of back up data, based on approved, application-specific back up policies and procedures which are periodically updated.

In the event of the unavailability of the CDS offices, physical securities held in the vault cannot be withdrawn. In these instances, CDS will work with participants, transfer agents and regulators to ensure that no rights of security ownership are adversely affected.

CDS Contingency Planning Services provides terminal access, office space and general support to participants who are temporarily unable to access CDS systems for whatever reason. CDS has also implemented the Participant Shared (Terminal) Access programme to enable different CDS participants to share CDS terminals in the event of a systems breakdown or disaster affecting their access to CDS. Once the participants have reached an agreement on the conditions of the sharing arrangement, CDS allocates appropriate segregated user Ids to the terminals to allow for multiple user access.

CDS has also arranged additional business continuity office space 40km from Toronto that can accommodate up to 50 employees on a dedicated basis and an additional 50 employees on a shared basis. This site has real-time camera surveillance that is monitored remotely.

#### Depository Liability

CDS is only liable to participants in respect to the operations of services. CDS takes no liability for any third parties (including any client or customer of a participant, any person on whose behalf a participant was acting in any capacity, or any other person

claiming through or against such persons).

#### CDS's liability for participant loss

CDS is only liable to participants with respect to the operation of its services and maintains insurance coverage at a level determined by the board of directors.

The extent of CDS's liability for participant losses and for loss of securities are detailed in Rules 4.2.3 and 4.2.4. CDS accepts liability for losses caused by CDS subject to the limitations in Rule 4.2.5 (Limitation of Participant Recovery) and 4.2.9 (Exclusion of CDS Liability).

Rule 4.2.5 states: The maximum total amount payable by CDS to all Participants for any Participant Loss or Loss of Securities shall be the net amount recovered by CDS from its insurers or any other Person in respect of the Participant Loss or Loss of Securities. In the event of a Participant Loss or Loss of Securities, CDS shall make a claim under any applicable policy of insurance and against any Person responsible for the Participant Loss or Loss of Securities, if CDS considers it commercially reasonable to make such a claim.

Rule 4.2.9 states: The amount payable by CDS for any Participant Loss or Loss of Securities shall be limited to the amount payable pursuant to Rule 4.2.5 and shall not exceed that amount in any circumstances, including a Participant Loss or Loss of Securities arising from or in any way connected with a breach (including a fundamental breach) of the Legal Documents, or a Participant Loss or Loss of Securities arising from or in any way connected with any negligent or reckless act or omission of CDS or any fraudulent, negligent, reckless or willful act or omission of any director, officer, employee, agent or contractor of CDS, whether or not the possibility of such Participant Loss or Loss of Securities was disclosed to or reasonably could have been foreseen by CDS.

For claims against CDS deemed to be valid, CDS first draws upon a pre-approved annual budget of CAD 240,000. Payment of higher amounts are at the discretion of the board and are net of amounts recoverable from its insurers, or any other party in respect of the participant loss. If a loss caused by CDS is uninsured or unrecoverable by CDS, then the board may, at its sole discretion, make good on the loss to the participant from CDS retained earnings or contingency reserves.

#### CDS's liability for loss of securities

Rule 4.2.4 applies only to CDSX and not to cross-border services. CDS shall be liable to its participants for a loss of securities, subject to the limitations set out in Rules 4.2.5 and 4.2.9. A loss of securities means any circumstance in which CDS would be unable to deliver to all participants all securities held by CDS for them, including:

- The theft, destruction or mysterious disappearance of any certificate or other instrument evidencing securities;
- The determination that any security is a defective security;
- The determination that the registration of any security in the name of CDS, a nominee, a custodian or a nominee of a custodian, is invalid, improper, defective, subject to any adverse claim or privilege or cannot be effectively and right-fully transferred.

CDS has set a limitation on the maximum liability amount of CAD 120,000 every six months (CAD 240,000 per annum), which is a board-approved annual budgetary guideline.

However, participants are able to make a claim for a higher amount subject to the net amount recovered by CDS from its insurers or any other person in respect of the participant loss or loss of securities. If a participant suffers a loss caused by CDS, which is uninsured or unrecoverable by CDS, then the board may, in its discretion, make good on the loss to the participant from CDS retained earnings or contingency reserves. In effect, if there were one or more participant losses in excess of CAD 120,000 in a six month period, the board would be called upon to exercise its discretion and would not necessarily be constrained by their previously established budgetary guideline. If the board chose not to increase the loss provision from CAD 120,000 in the six-month period, the loss payments would be pro-rated to ensure the limit was not breached.

CDS does not accept liability for losses triggered by reconciliation errors with registrars or issuers, or from force majeure events.

#### **Systems Performance**

Systems performance within CDS is monitored through a series of procedures, controls and indicators to monitor stress in the system including, for example, pre-established targets and standards, critical early warning indicators including system responses times, cycle processing times, critical job run times, periodic reviews of operational performance statistics and capacity planning.

CDS experienced a sudden spike in on-exchange trades in September 2008, which saw the number of daily trades go from around 1 million to around 1.6 million trades, which was over its tested peak volume. Although most standard deliverables were produced and available on time, there were some delays in the distribution of trade messages on the heaviest days. CDS IT responded promptly and have implemented system operational changes and hardware improvements which have extended CDS's tested capacity to 3.5 million trades a day (more than twice the peak volumes).

System uptime of 99.96% was achieved in 2008 compared with system availability of 99.92% in 2007 (100% in 2005 and 2006). There were no whole days where the system was disrupted.

*Operational Risk - Key indicators*

**Control objectives identified by the CSD match standard objectives**

Yes

**Key controls and procedures are identified by the CSD**

Yes

**Independent evidence exists that key controls and procedures have operated effectively through the last year**

Yes

**Material errors have been identified**

No

## CSD on CSD (Credit) Risk

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### Summary

CSD on CSD (credit) risk exposure to DTC must be assessed by reading the Financial Risk assessment of that entity contained in its respective Thomas Murray Depository Report. CDS sponsors participants into the New York Link and DTC Direct services, and is responsible for the settlement of their obligations through these links.

CDS's major cross-border depository link is with the US depository, Depository Trust Co. and its sister company, the National Securities Clearing Corporation. In 1998, the CDS link to the DTC was enhanced with DTC becoming a CDS participant for USD trades and in 2006 for CAD transactions. Transfers are executed as regular movements at the CDS terminals.

### CSD - CSD Links

CDS has full settlement and custody links with the NSCC and DTC, custody-only links with Euroclear France, SEB and JASDEC and a sponsored settlement and custody link with Euroclear UK & Ireland.

All CDS participants became eligible to use any of the Canada-US cross-border channels for against payment transactions in October 2001. CDS offers its participants 2 different Canada-US cross-border links: the New York Link and DTC Direct.

In the New York Link service, CDS sponsors participants for direct membership in NSCC and DTC. In DTC Direct, CDS sponsors participants into DTC only. For both links, CDS is responsible for settlement of participants' obligations at NSCC and DTC respectively. Participants indemnify CDS for its obligations to NSCC or DTC associated with their activities in New York Link and DTC Direct through a settlement bank credit ring and collateralisation of a participant fund based on risk-based margining (RBM). CDS also has cross-border move functionality with DTC, which is on an FOP basis only.

CDS has a one-way free of payment link with CAVALI, the Peruvian CSD (i.e. CAVALI is a participant in CDS).

### Processing Cycles

DTC and NSCC operate within the same time zone as CDS and operate a similar daytime multi-batch system (CNS) to that used for equities by CDS.

Certain messages between CDS and the Depository Trust Company (DTC) are processed on a real-time basis. In order to support the messaging facility, all Northbound cross-border movements submitted through DTC must reference the receiving CDS Participant's CUID as the third party.

### *CSD on CSD (Credit Risk) - Key indicators*

#### **International Links: List of international links established and/or planned by the CSD**

USA: DTC and NSCC - settlement and custody

France: Euroclear France - custody only

Japan: JASDEC - custody only

UK and Ireland: Euroclear UK & Ireland - settlement and custody

Peru: CAVALI

# Governance and Regulation

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## Management and governance of the depository

CDS is a private business incorporated federally on 9 June 1970 under the Canadian Corporations Act and continued under section 181 of the successor Canada Business Corporations Act. Although CDS is a privately held company, not bound by stringent company disclosure regulations, the policy of CDS is to observe the highest standards and best practices of corporate governance and disclosures established by the securities regulators in Canada. These are clearly articulated in CDS's Corporate Governance Manual, and assist CDS in operating effectively in the best interests of the Canadian capital markets.

The CDS board of directors consists of 15 directors, 9 from shareholders, 1 from CDS management, and 5 independent directors. There are 3 committees that directors have membership on; the Governance/Human Resources Committee, the Audit/Risk Committee and the Finance Committee.

The Governance/Human Resources Committee is responsible for the supervision of human resources and compensation issues.

The Audit/Risk Committee reviews the quality, integrity and timeliness of financial reporting as well as CDS's risk management and insurance programmes. It is also in charge of reviewing CDS's internal controls, business continuity programme and audit issues. It also reviews and reports to the board, management's recommendation for the appointment of the external auditor, the terms of engagement and the appropriateness and reasonableness of the proposed audit fee.

The Finance committee monitors the financial performance of CDS and provides financial management and direction of the business and affairs of CDS.

In addition to the board and its three committees, CDS has internal and external committees as follows:

External Committees:

- Strategic Development Review Committee, which includes four separate subcommittees for issues relating to debt, equity, entitlements and tax.
- Risk Advisory Committee, which reviews and recommends enhancements to the CDS Financial Risk Model.

Internal Committees:

- Strategy group
- Executive steering committees (2)
- Risk management committee
- Operations committee
- Project review group.

## Regulatory and independent examination of the depository

CDS is regulated by the Ontario Securities Commission and is a recognised clearing agency under section 21.2 of the Ontario Securities Act and in the province of Quebec, under section 169 and 170 of the Quebec Securities Act, regulated by the AMF de Quebec. Recognition as a clearing agency is essential to conducting securities and depository activities and to effecting securities transfers and pledges by book-entry in the records of CDS. Under federal Protection of Securities Regulations, CDS is specifically authorised to act as a prescribed custodian of securities for federally incorporated financial institutions such as banks, trust and loan companies, insurance companies and pension funds. CDSX was designated as a clearing and settlement system subject to the provisions of Part 1 of the Payment Clearing and Settlement Act 1996 which provides for the formal oversight of CDS by the Bank of Canada.

The Depository Bills and Notes Act, 1998, section 85 of the provincial Securities Transfer Act, section 10.2 of the Quebec Securities Act and other provincial legislation govern the immobilisation and book-entry deliveries of corporate money market paper, government debt and corporate securities.

Under the Canadian Securities Administrators' National Instrument 81-102, CDS is an approved securities depository and clearing agency in Canada, with which a Canadian custodian of mutual funds may deposit securities.

Based on the CDS Report on Internal Controls and Safeguards 2005, management state that: "CDS co-operates with federal and provincial Superintendents of Financial Institutions, which regulate banks and trust companies (...) CDS abides by the terms of a Regulatory Oversight Agreement entered into with Canada's central bank, the Bank of Canada."

Under the rules of the stock exchanges in Canada and the Investment Industry Regulatory Organization of Canada (IIROC), CDS is defined as the clearing corporation for each exchange; trades in listed securities are to be settled through CDS; and delivery of securities to settlement agents on behalf of clients is to be made through securities depositories (effectively, therefore, CDS).



**Domestic eligible participants**

98 (Banks 11, Brokers 58, Central Bank 1, and others 28).

**Foreign eligible participants**

4 (Brokers - 1, Others - 3 Cavali, JASDEC and DTC)

**Ownership**

CDS Limited (holding company) which is owned by the major Canadian chartered banks (66.7%), TMX (18.1%), and IIROC (15.2%).

## Internal Safety Measures

## Services Provided

### *Participant Eligibility Criteria*

**Minimum Capital Standards**

Yes

### *Financial Aspects*

**Ability to raise capital/borrow**

Yes

**Committed lines of credit in place**

Yes

**Publish audit financials**

Yes

**Take lien on stock held**

Yes

**Central Bank Guarantee**

No

**Other third party guarantee**

No

**Third party insurance**

Yes

### *Safeguard Facilities*

**Offsite Backup**

Yes

### *Disaster Recovery*

**Disaster Recovery Plan**

Yes

**Back-up power generator**

Yes

**UPS (Uninterruptible power supply)**

Yes

### *Matching*

**Pre-matching services**

No

**Matching services**

Yes

### *Clearing*

**Clearing services**

Yes

### *Securities Settlement*

**Book-entry settlement**

Yes

**Fails management**

Yes

### *Cash Settlement*

**Internal cash settlement**

No

### *Stock Lending*

**Securities lending for fails coverage**

No

**Comments**

Settled through CDS but CDS does not act as principal

### *Asset Servicing*

**Notifications**

Yes

**Securities processing**

Yes

**Paying agent**

No

**Central registrar**

No

**Proxy voting services**

No

**Comments**

CDS is central registrar for some Book-Entry Only (BEO) issues

***Communications*****Electronic communications**

Yes

***Reporting Services*****Electronic reporting**

Yes

**Reporting of every movement**

Yes

**Regular statement of securities deposited**

Yes

## Publication Date

The publication date represented here is July 2008. This is the date that the assessment report has been reviewed by third parties including the CSD. The report is updated on an on-going basis throughout the year as new information is received and should be read in conjunction with the relevant newsflashes issued since the publication date.

## RISK EXPOSURE DEFINITIONS

**Asset Commitment Risk - The period of time from when control of securities or cash is given up until receipt of countervalue.** This risk concerns the time period during which a participant's assets, either cash or stock, are frozen within the CSD and payment system pending final settlement of the underlying transaction(s). Following settlement, the risk period is extended until the transfer of funds and stock becomes irrevocable. It excludes any periods when assets, cash or stock, are committed to a market participant including brokers, banks and custodians, not caused by CSD processing.

**Liquidity Risk - The risk that insufficient securities and or funds are available to meet commitments; the obligation will be covered some time later.** This is where for certain technical reasons (e.g., stock out on loan, stock in course of registration, turn round of recently deposited stock is not possible) one or both parties to the trade has a shortfall in the amount of funds (credit line) or unencumbered stock available to meet settlement obligations when due. These shortfalls may lead to settlement 'fails' but do not normally lead to a default.

**Counterparty Risk - The risk that a counterparty (i.e., a participant) will not settle its obligations for full value at any time.** This is simply the total default of a direct participant of the CSD. This is the event when a participant is unable to meet its financial liability to other participants. This risk only goes as far as direct participants of the CSD and excludes clients of direct participants that default on liabilities to such participants, even if such a default should systemically cause the direct participant to subsequently default.

**Asset Servicing Risk - The risk that a participant may incur a loss arising from missed or inaccurate information provided by the depository, or from incorrectly executed instructions, in respect of corporate actions and proxy voting.** This risk arises when a participant places reliance on the information a depository provides or when the participant instructs the depository to carry out an economic transaction on its behalf. If the depository fails either to provide the information or to carry out the instruction correctly then the participant may suffer a loss for which the depository may not accept liability. The depository may provide these services on a commercial basis, without statutory immunity, or it may provide the service as part of its statutory role, possibly with some level of protection from liability. This risk is likely to become much higher when international securities are included in the service.

**Financial Risk - The ability of the CSD to operate as a financially viable company.** This risk concerns the financial strength of the depository and if its financial resources are sufficient to meet the on-going operation of the organisation. This risk also includes where the CSD may act as central counterparty, or otherwise acts in a Principal capacity.

**Operational Risk - The risk that deficiencies in information systems or internal controls, human errors or management failures will result in losses.** The risk of loss due to breakdowns or weaknesses in internal controls and procedures. Internal factors to be considered in the assessment include ensuring the CSD has formalised procedures established for its main services. The CSD should have identified control objectives and related key controls to ensure operation and proper control of established procedures. Systems and procedures should be tested periodically. There should be external audit processes in place to provide third-party audit evidence of the adequacy of the controls.

## RATING SCALE

AAA	Extremely low risk
AA+	Very low risk
AA	
AA-	
A+	Low risk
A	
A-	
BBB	Acceptable risk
BB	Less than acceptable risk
B	Quite high risk
CCC	High risk
N/R	No rating has been given due to insufficient information

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Names of analysts available on request.

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**Report Date**

**Canada**

5 June 2009