

***The Regulation of Central Securities Depositories
and the Linkages between CSDs and
Large-Value Payment Systems***

by Charles Freedman

Bank of Canada



Banque du Canada

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Large-Value Payment Systems****

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ABSTRACT

This paper first describes the Bank of Canada's approach to the design of large-value clearing and settlement systems. It then examines the way the Bank has operated under the Payment Clearing and Settlement Act, passed by Parliament in July 1996. Through this act, the Bank was assigned responsibility for the regulatory oversight of clearing and settlement systems that have the potential to cause systemic risk. The main section of the paper looks at how considerations of safety and costs have been balanced in the development of the Debt Clearing Services (DCS) of the Canadian Depository for Securities (CDS). The final section explores the various linkages between the DCS and the Large Value Transfer System (LVTS).

JEL classification: G20

Bank classification: Payments, clearing and settlements system

RÉSUMÉ

L'étude décrit l'approche suivie par la Banque du Canada en matière de conception des systèmes de compensation et de règlement des gros paiements. Elle examine aussi le rôle de la Banque depuis l'adoption de la *Loi sur la compensation et le règlement des paiements* en juillet 1996. En vertu de cette loi, la Banque est chargée de surveiller les systèmes de compensation et de règlement susceptibles de poser un risque systémique. Dans le chapitre le plus substantiel de l'étude, l'auteur analyse la manière dont les facteurs de sécurité et de coût ont été mis en balance dans la mise sur pied du Service de compensation des titres d'emprunt (SECTEM) de La Caisse canadienne de dépôt de valeurs (CDS). L'étude se termine par un examen des divers liens qui existent entre le SECTEM et le système de transfert des paiements de grande valeur (STPGV).

Classification JEL : G20

Classification de la Banque : Système de paiement, de compensation et de règlement

1. INTRODUCTION

The Bank of Canada has been working for almost 15 years with the designers of Canadian large-value clearing and settlement systems for securities, payments, and foreign exchange. For the past three years, the Bank has been responsible for regulating the key systems. From this perspective, two main topics are discussed in this paper—the approach of a regulator to the design and regulation of central securities depositories (CSDs), and the linkages between CSDs and large-value payment systems. The topic is approached from a Canadian viewpoint, but the discussion will probably be similar, although not identical, to what any of the countries participating in the Committee on Payment and Settlement Systems (CPSS) at the Bank for International Settlements (BIS) would have to say on the subject.

2. THE BANK OF CANADA’S APPROACH TO THE DESIGN OF LARGE-VALUE CLEARING AND SETTLEMENT SYSTEMS

This section looks at the Bank of Canada’s approach to the design of large-value clearing and settlement systems. It focuses in particular on the Debt Clearing Service (DCS) operated by the Canadian Depository for Securities (CDS), Canada’s central securities depository.

In Canada, unlike in most other countries, the central bank is neither the owner nor operator of any of the large-value clearing and settlement systems. The CDS is owned and operated by the financial community; the Large Value Transfer System (LVTS), an electronic large-value payment system, was built by the Canadian Payments Association (CPA); and the Continuous Linked Settlement Bank (CLSB) is an initiative of the commercial banks for clearing and settling foreign exchange transactions (as were Multinet and Echo). Nonetheless, the Bank of Canada did play a major role in ensuring that the design of the LVTS, DCS, and Multinet satisfactorily addressed concerns regarding systemic risk.

Why is the Bank of Canada concerned about large-value clearing and settlement systems? After all, these systems speed up the settlement of financial transactions and often reduce their costs—and that is all to the good. However, the concentration of the

settlement of most or all transactions in specially constructed clearing and settlement systems raises the issue of the risks inherent in such systems. There are various risks that have to be assessed—legal, operational, credit, liquidity, and systemic.¹ For the Bank of Canada and other central banks, the principal concern with such systems is systemic risk. Essentially, systemic risk refers to the domino or spillover effects, whereby the inability of one financial institution to fulfill its payment obligations in a timely fashion results in the inability of other financial institutions to fulfill their obligations in that clearing and settlement system or in other systems, or in the failure of that clearing house or other clearing houses. Systemic risk can arise through either liquidity or credit risk, i.e., liquidity problems at one institution or the failure of one institution can lead to liquidity problems for other institutions or clearing houses, or to the failure of other institutions or clearing houses.

The designers of any large-value clearing and settlement systems should be asked the following questions: What happens on the day the largest participant in the system fails? How can one be sure that the system will settle, in spite of the failure, if the system has a large exposure to the defaulting institution? And how can one be sure that the failure will not lead to the failure of the system or of other institutions through exposure to the failing institution in the system? An underlying principle for designers of such systems should be that reversals or unwinds of previously processed transactions in large-value clearing and settlement systems are not acceptable; settlement must be ensured in all circumstances.

Of course, it is not just the Bank of Canada that is concerned about such matters. The G-10 central banks, through the BIS, have developed minimum standards for the design and operation of cross-border and multi-currency netting and settlement schemes (the so-called Lamfalussy standards) that have gained widespread acceptance internationally for large-value clearing and settlement systems more generally. The key risk-containment standard is that a system must be able to settle in the face of the failure of the participant with the single largest net debit to the system.

1. See C. Freedman and C. Goodlet, "Large-Value Clearing and Settlement Systems and Systemic Risk," *North American Journal of Economics and Finance* (1996): 153–62; and C. Freedman and C. Goodlet, "The Canadian Payments System: Recent Developments in Structure and Regulation," in *Payments Systems in the Global Economy: Risks and Opportunities* (Chicago: Federal Reserve Bank of Chicago, 1998, 48–62) for more detail.

While the Bank has worked with the designers of such systems and their participants to ensure appropriately risk-proofed systems, it also recognizes that risk-proofing can be expensive. And, as an astute foreign observer of these matters once remarked, a perfectly risk-proofed system may become so expensive that it is not used by the financial community. This was no less an issue in Canada, where the concern was whether the risk-proofing required by the authorities would be so expensive that the financial community would forego the advantages of real-time information and certainty of settlement that such systems provide and would not build or use the system.

3. THE PAYMENT CLEARING AND SETTLEMENT ACT AND THE ROLE OF THE BANK OF CANADA

Why has the Bank of Canada felt the need to take the lead in working with the private sector to develop appropriate risk-containment mechanisms in the major clearing and settlement systems in Canada? The Bank's involvement reflects a number of factors:

- Final settlement of payment obligations among the participants in these systems takes place through the transfer of funds in accounts at the Bank of Canada.
- The Bank has strong links to the Canadian Payments Association, which operates the payments system and built the LVTS.
- The Bank is the ultimate source of liquid funds to the financial system and is naturally concerned about the safety and soundness of these systems. Poorly designed systems could generate significant liquidity risks for participants and the Bank would likely be involved in helping to resolve any disruptions.
- The Bank implements monetary policy, and poorly designed clearing and settlement systems could impair its ability to carry out this responsibility effectively.
- The Bank participates in international groups, particularly of the G-10 countries, which have attempted to identify the types of risks in clearing and settlement systems and to establish minimum standards (or best practices) for the management and control of these risks.

Until July 1996, the Bank of Canada's involvement in the oversight of these systems was informal, arising from the factors mentioned above. With the passage of the Payment Clearing and Settlement Act (PCSA) in July 1996, Parliament gave the Bank formal

regulatory responsibility for the oversight of clearing and settlement systems in Canada for the purpose of controlling systemic risk. With this legislation, the federal government recognized the essential role of the major clearing and settlement systems in the Canadian economy and the requirement for regulatory oversight of these systems. Because the central bank is naturally concerned about systemic risks in clearing and settlement systems, it was the obvious choice to carry out this oversight responsibility. In essence, the act requires those systems that have the potential to be operated in such a manner as to pose systemic risk to satisfy the Bank that appropriate arrangements are in place to manage and control such risk. In addition, the act provides greater legal certainty to the enforceability of netting, and to the enforceability of the settlement rules of certain systems. It also provides new powers to the Bank that it can exercise in its dealings with clearing and settlement systems.

Under the PCSA, the Bank reviews all eligible clearing and settlement systems for their potential to pose systemic risk, designates those systems with the potential to create systemic risk as being subject to the act, and regulates designated systems on a continuing basis for the appropriate control of systemic risk.

A system is eligible for review by the Bank if

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

Systems with these characteristics are examined by the Bank to determine whether they have the potential to pose systemic risk. The act provides a definition of systemic risk that is consistent with the definition used in many international reports. If the Governor of the Bank forms the opinion that a system has the potential to pose systemic risk, the system may be designated as being subject to the act, provided that the Minister of Finance is of the opinion that it is in the public interest to do so. Once designated, a system has to satisfy the Bank that the system has risk-control mechanisms in place to control systemic risk. Under the act, the Bank can enter into agreements with the operators of clearing and

settlement systems concerning the control of systemic risk. Also, the Governor may issue directives to the system operators or participants in extreme situations where the Governor judges that systemic risk is being inadequately controlled; and the Bank may conduct audits of any designated clearing and settlement system.

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

While the following not the only factors considered when deciding if a clearing and settlement system should be designated under the PCSA, the Bank pays particular attention to

- the size of individual payment obligations and the size of the aggregate value of payment obligations on any given day;
- the size of payment obligations owed to and by participants in the system relative to each participant's capital; and
- the role played by the system in supporting transactions in the financial markets or in the economy more generally.

The Bank has issued a guideline outlining how it operates under the act, particularly in gathering information to identify eligible systems and in determining whether eligible systems will be designated. The guideline also indicates the minimum standards that the Bank intends to apply to designated systems. While these minimum standards incorporate the standards set out in the Lamfalussy Report, they have been modified slightly so that they can be applied to all designated systems, whether or not these systems use multi-lateral netting.

An important feature of the Bank's regulatory role is that the act directs the Bank to be concerned only with the oversight of systems, not with the regulation of any financial market or the supervision of the affairs of individual financial institutions that may be

members of these systems. Any matter that is not directly related to an institution's participation in a designated clearing and settlement system is not subject to the Bank's oversight under the act. For example, the PCSA specifically precludes the Governor from issuing a directive with respect to a participant's capital adequacy, the management of its investments, or its relations with its own customers.

The PCSA contains provisions that, when combined with protections in federal insolvency legislation for certain financial contracts, recognize the legal enforceability of netting both for transactions handled by clearing and settlement systems and for certain other transactions among financial institutions. The act also contains provisions to ensure that the settlement rules of designated systems (including the rules related to the pledging and possible realization of collateral and the processing of entries to settle payment obligations) are immune to legal stays or other legal challenges, even in cases where a participant in one of these systems has failed. An important objective of the PCSA is to increase the certainty that the legal arrangements governing the operation of a clearing and settlement system will produce the expected outcome in periods of financial stress. Such increased certainty is an important way of dealing with legal risks. When this certainty is combined with appropriate risk-containment mechanisms, the participants and other users of a designated clearing and settlement system can be assured that, once a payment message has been processed and accepted by these systems, the funds received will be unconditional and irrevocable, i.e., final. Although the value of finality is often underestimated in periods of financial calm, it can be extremely important in times of financial stress.

To date, the Bank has identified all the clearing and settlement systems operating in Canada and has reviewed all eligible systems for their potential to cause systemic risk. Thus far, two systems have been designated under the act—the Debt Clearing Service operated by the CDS and the LVTS operated by the Canadian Payments Association.

The PCSA also gives the Bank explicit powers to be a direct participant in a clearing and settlement system (which includes sharing in loss-allocation mechanisms), to act as custodian of financial assets for these systems, to act as a central counterparty to the participants in a designated system, and to provide liquidity loans to a clearing house or central counterparty of a designated system.

4. THE DEVELOPMENT OF THE DEBT CLEARING SERVICE: RISK-PROOFING VERSUS OPERATING COSTS

How have the considerations of safety or risk-proofing on the one hand, and those of costs on the other hand, been balanced? The trade-off is discussed in this section in the context of the Debt Clearing Service of the Canadian Depository for Securities.

Clearing and settlement systems for securities are typically designed to take advantage of the fact that the exchange of value between the seller and the buyer may occur completely within the system. That is, the seller of securities transfers possession of a security to the buyer, who then has an obligation to pay within the system. This allows these systems to be mostly self-collateralizing in dealing with liquidity and credit risks. The resulting payment obligations can be most effectively discharged by using a large-value payment system, such as the LVTS in Canada, or a real-time gross settlement (RTGS) system in most other countries, because these systems provide the clearing house with immediate unconditional and irrevocable access to funds received, thereby eliminating settlement risk.

In Canada, the CDS originally created the mechanisms for clearing and settling trades in securities. Some years ago, it became clear that, for reasons of efficiency, it was essential to move from paper-based transactions in Government of Canada domestic marketable securities to an electronic clearing and settlement system (“immobilization” of securities). For cost as well as other reasons, it was decided to use the facilities of CDS rather than have the Bank of Canada build an entirely new system.

After the decision was taken to use the DCS as the clearing and settlement system for Government of Canada debt, the principal challenge was to risk-proof the DCS to minimize systemic risk. The key mechanism in meeting such an objective in securities clearing and settlement was to design the system on a delivery versus payment (DVP) basis.

There are a number of ways of achieving DVP. The mechanism used in Canada is based on gross, or item-by-item, settlement for securities transfers throughout the day (with no reversal or unwinding possible), and on continuous netting and novation to the CDS of corresponding payment obligations, with end-of-day settlement of the net

amounts owed and owing between the CDS and the participants. (The use of netting significantly reduces the amounts at risk in this system.) To ensure that payment is made to settle the net amounts owed at the end of the day, the system relies upon “assured payment,” in which a small number of the largest financial institutions participating in the system extend credit to the others, provide collateralized guarantees for the end-of-day payments, and make and receive payments to and from the clearing house.

Thus, there were fundamentally two types of participants in the DCS—receivers of credit and extenders of credit. The receivers of credit, the majority of institutions participating in the system, received lines of credit from extenders that enabled them to purchase securities. At the end of the day, the extenders of credit were required to make payments to the clearing house to cover purchases of securities made on their own behalf and on behalf of their customers, as well as to cover purchases of securities made by receivers of credit. Receivers of credit granted the extenders a security interest in the securities delivered to the receivers on that day. If an extender was required to make payment for a receiver that was unable to fulfill its end-of-day payment obligation, the extender was entitled to take possession of those securities (the so-called delivered or “unpaid-for” securities). The amount that each extender could owe the system (either on behalf of those to which it has extended credit or on its own behalf) was capped, with the cap linked to the size of each extender’s regulatory capital.

What would happen if an extender of credit was unable to meet its end-of-day payment obligation either for its own net purchases during the day or on behalf of those receivers of credit that were unable to fulfill their payment obligations at the end of the day? In such a case, the system had a loss-allocation procedure whereby the remaining extenders were required to fulfill the obligation to the system of the failed extender. This loss-allocation procedure was backed up by a security interest in the unpaid-for securities of the failed extender and of any failed receivers for which it was supposed to make payment, as well as a pool of “paid-for” collateral. The sum of these two types of collateral (unpaid-for and paid-for) was expected to be sufficient to cover the failure of the extender with the single largest net debit to the system, that is, to meet the crucial Lamfalussy standard. Thus, in the case of the failure of a single extender, the system would be expected to

be able to settle without unwinding and without causing undue liquidity strains for participating financial institutions.

In addition, as long as end-of-day payments took place through the exchange of cheques (i.e., until the LVTS was operational), an extender was required to pledge further collateral into the pool of paid-for securities as a “top-up” when any cheque that was greater than the size of the pool of paid-for collateral was presented by an extender as payment to the CDS. This ensured that, if an extender failed between the time of completion of payment exchange on the DCS (about 5 p.m.) and the final settlement of cheques on the books of the Bank of Canada at noon the following day, there would be sufficient paid-for collateral to cover the amount of the cheque. The overnight settlement risk that arose from using cheques as the means of payment disappeared when the LVTS became operational in February of this year and became the means through which net payment obligations arising from the DCS are settled.

While these arrangements seemed to provide satisfactory risk-proofing on the surface, after the introduction of Government of Canada bonds in mid-1994 it became apparent that there was one significant problem that raised concerns about systemic risk. At that time, the DCS was an “open” system: it permitted purchases and sales of Government of Canada bonds to be settled on the DCS system in return for payment on the system or for payment outside the system (e.g., payment in a foreign currency or by transfer of a security not on the system). Such so-called “free deliveries” could result in a participant owing large amounts at the end of the day on the DCS, with virtually no backing of unpaid-for securities left in its account to function as collateral if it was unable to make payment. To deal with this problem prior to the introduction of treasury bills into the DCS, the Bank of Canada and the participants in the DCS reached an agreement to make the DCS a much more “closed” system by severely limiting the amount of such free deliveries. This was done by introducing a “pre-edit” procedure for all transactions entering the system. With this procedure, the difference between the value of the security being transferred at the time of settlement and the payment being made on the DCS system was limited to a relatively small amount. It was expected that these differences would not cumulate during the day to more than the amount of the pool of paid-for collateral in the system.

Recently, as a prerequisite for the introduction of non-federal government securities and to make the risk-proofing arrangements in the DCS even more robust, the system was changed once again. The new Aggregate Collateral Value (ACV) mechanism now tests each and every transaction against appropriately valued and “haircutted” collateral.

Permitting securities in a central securities depository to be treated as collateral as part of a self-collateralizing process can pose three types of risk: market-price risk, paying-agent risk, and issuer-default risk. Government of Canada securities pose only market-price risk since the issuer cannot default and the Bank of Canada is the paying agent. Provincial government securities pose paying-agent risk in addition to market-price risk. Private sector securities pose all three types of risk since the issuer can default.

The introduction of private sector debt into DCS raised the question of the extent to which the system should be permitted to use collateral that was not default-free. The arrangements that were agreed upon are not 100-per-cent risk-free since that would be overly expensive. They require that most of the collateral supporting payment obligations be free of issuer-default risk by imposing explicit limits on the amount of private sector paper that can be used as collateral. And the Bank of Canada monitors the system to ensure there is not too much concentration of collateral in the debt of a single borrower. The only risks remaining are that all of the following would happen on the same day: an extender and two or three major corporations whose obligations were an important part of the collateral on which the risk-proofing of the system was based would fail; the “haircuts” applied to the collateral in total would be insufficient to cover the decline in value of the obligations of the failed corporations; the loss would be greater than the collateral pool; and the cross-guarantee system would not function. Perhaps not 100-per-cent risk-free, but very close.

The introduction of private sector securities in the latter part of 1998 was successful, and virtually the entire money market is now on DCS.

Another risk that has recently been eliminated is “banker risk.” When a private sector financial institution acts as the banker for the CDS, receiving payments from participants that owe money to the clearing house and making payments to participants entitled to receive money from the clearing house, there is risk that the banker could fail between

the time it receives payments from those owing money and the time it is supposed to make payments to those owed money. Now that the LVTS is operational, this risk has been eliminated by the Bank of Canada becoming the settlement agent or banker for the CDS in the DCS. It should be noted that, with the LVTS being used to make end-of-day DCS payments, there is no liquidity or credit risk to the Bank of Canada from carrying out this function.

A new risk consideration concerns the impact of the recent decision of the federal government to permit foreign banks to branch directly into Canada and thus potentially to be direct participants in large-value clearing and settlement systems such as the DCS. The direct entry of foreign bank branches in the DCS raises potential issues concerning the applicable governing law and conflicts of law in the event of the insolvency of the foreign bank. These issues relate to the viability of the netting arrangements for payment obligations in the DCS, the enforceability of the pledge of collateral to support the intraday payment obligations owing to the clearing house, and the viability of the legal protections contained in the PCSA that are designed to ensure that the settlement rules of the DCS will operate as planned, free from legal challenges and stays.

The proposed legislation permitting the entry of foreign branches into Canada amends the PCSA to provide that the Governor of the Bank of Canada may prohibit, or impose conditions on, the participation of a foreign bank in a clearing and settlement system designated by the Governor under the PCSA if the Governor is of the opinion that its participation would pose, or would likely pose, a systemic risk or an unacceptable risk to the Bank of Canada. To enable the Governor to make this assessment, the proposed amendments empower the Governor to require foreign banks to provide certain information about the application of foreign laws to the bank.

The main method for obtaining information about the application of foreign laws to a foreign bank wishing to participate directly in a designated system will be a legal opinion from counsel in the bank's home jurisdiction. The Bank of Canada has developed a draft form of legal opinion and has provided it to foreign banks currently operating in Canada as well as to the CDS and the CPA for comment. The form requires legal counsel in the home jurisdiction to give an opinion on, among other things: which laws would

govern the foreign bank's activities in the designated system; the enforceability of netting in the home jurisdiction; and the validity and enforceability in the home jurisdiction of collateral pledged to support obligations in the designated system. It is intended that the opinion will be provided to both the Bank of Canada and to the designated system in which the foreign bank wishes to participate.

Based on the legal opinions provided as well as on any other relevant information, the Governor will judge whether direct access to a designated system of banks in a given country (or of a given jurisdiction in a country where relevant) would pose systemic risk or a risk to the Bank of Canada in guaranteeing settlement. Where the judgment is that the foreign bank's participation would pose systemic risk or unacceptable risk to the Bank of Canada, the Governor will have the power to prohibit, or place conditions on, that bank's participation.

While most of the Bank of Canada's work to date has been related to system design issues—especially those related to the containment or elimination of systemic risk—the Bank's attention is now turning to the ongoing oversight of the DCS system. As part of this ongoing oversight, the Bank of Canada may, under the PCSA, carry out audits or examinations of the system. However, the Bank does not have the resources to carry out such audits and it would not be cost effective to develop such resources. Instead, the Bank has chosen to rely on an existing process in which the DCS is examined by an external auditor to determine the effectiveness of internal controls in achieving the operational integrity of the DCS system. In this manner, the Bank can satisfy itself that the risk-containment arrangements spelled out in the DCS rules are in fact operational. The Bank is in the process of working out the details of this arrangement with the CDS and its external auditors. The result will be an effective audit regime on which the Bank can rely. Moreover, this regime will impose very few additional costs on the CDS since, in any event, it would have carried out this process for its participants and other interested parties. The Bank also meets annually (and more frequently if necessary) with the board of the CDS and the board's Audit Committee to discuss issues of common interest.

Finally, the Bank examines all proposed changes to the DCS rules to determine if the changes would raise concerns about systemic risk. The Bank can, and has, requested modifications to proposed rules, although this is an infrequent occurrence.

Another area of ongoing oversight involves the preparations by the CDS for the year 2000. The Bank is confident that, on the basis of information obtained plus the results of testing carried out by the CDS and its DCS participants, the DCS system will function as designed during the calendar date rollover at the end of 1999. Nevertheless, contingency plans are being developed that take account of DCS's central role in the Canadian financial system.

5. LINKAGES BETWEEN THE DCS AND THE LVTS

Over the years, the importance of the various potential interrelationships between the DCS and the LVTS has been noted. Indeed, several years ago, when the Canadian financial institutions were in the early stages of planning the three electronic systems (DCS, LVTS, and Multinet), the usefulness of taking account of these interrelationships during the development process became apparent. It was also apparent that those responsible for the various systems in the large Canadian banks were, by and large, not working together in the most effective manner. Hence, at a meeting initiated by the then-President of the Canadian Bankers Association (CBA) and held under its auspices, the author argued for a much closer relationship among the people who were responsible for the three systems within each major financial institution, but to little avail. A few years later, when the CDS already had its system in operation, and LVTS and Multinet were in the midst of detailed planning, a second attempt was made. A meeting was convened by the Bank of Canada and attended by all the financial institution personnel involved in the development of LVTS, DCS, and Multinet. The goals of the meeting were to focus attention on the interrelationships among the three systems and to ensure that the individual systems would take account of each other's requirements in the course of development. Under the chairmanship of the Bank of Canada, a tripartite committee of those involved with the development of the three systems was set up. Its mandate was to ensure that appropriate attention was paid to the systems' interrelationships. This time, the outcome was much more satisfactory.

What are the interrelationships between the DCS and the LVTS? The most obvious one is that the LVTS is used to make payments to the DCS by those participants with end-of-day obligations and to make payments from the DCS to those participants with end-of-day claims. This means that settlement of the DCS must take place during LVTS operating hours. As noted earlier, the Bank of Canada acts as banker for the CDS, receiving all the DCS in-payments and then (and only then) making DCS out-payments. One of the ongoing problems faced by the CDS is that certain types of payments (interest and maturity entitlements) may still be paid by cheque by non-participants and this both reduces the efficiency and increases the risk to extenders of credit of transactions associated with these payments.

A second key linkage relates to the use of the DCS for pledging much of the collateral needed for the LVTS to function (in particular, Government of Canada treasury bills and bonds). This necessitates coordinating the opening hours for the DCS and the LVTS. And, with the implementation of the Continuous Linked Settlement Bank (CLSB), both the DCS and the LVTS will have to be available by 12:30 a.m. each working day to facilitate the CLSB operations.

These two interrelationships, the use of the LVTS to make DCS payments, and the use of the DCS to pledge collateral for the LVTS, mean that contingency plans and disaster recovery plans for each system must be consistent with the requirements of the other system.

The Bank of Canada has introduced a number of innovative procedures designed to reduce collateral costs in the LVTS. Two of these involved the DCS and required significant changes to the DCS rules.

The first of the innovations facilitated by the Bank concerns the transfer of funds between the LVTS and DCS systems. Transfers of surplus balances can go both ways, but consider the case where an LVTS participant has sold securities in the DCS system, resulting in a positive-funds position in that system, and it wishes to use these funds to make a time-sensitive payment in the LVTS. Given that the DCS system does not settle participant payment obligations until late in the afternoon, this institution could be faced with having to use collateralized intraday credit to make the LVTS payment, even though it has surplus

balances in the DCS system that could be used to fund that payment. To deal with this type of situation, the Bank agreed to provide a mechanism whereby the financial institution's excess funds in the DCS could be transferred to the Bank's DCS funds account. The Bank would then make an LVTS payment in that amount to the financial institution. The advantage for the financial institution is that it can make an LVTS payment without having to resort to the use of intraday credit (thereby saving collateral costs).

For the Bank to agree to engage in these transactions, it had to be satisfied that it was not exposed to any credit risk associated with the DCS funds-receivable position, since it provides LVTS funds in return for that position. Since the Bank was closely involved in the risk-proofing of the DCS system, it was able to work with the DCS participants to establish risk-containment arrangements that would make this type of transaction risk-free.

The second initiative was aimed at reducing the cost of the collateral required to make end-of-day LVTS payments to settle amounts owing in the DCS. As just discussed, certain participants in the DCS make final and irrevocable payment to the CDS via the LVTS to discharge payment obligations that have arisen from their purchases of securities (either for themselves or their clients) or those of other DCS participants. The risk-containment arrangements in the DCS require DCS participants that have to make payments to the CDS to fully collateralize their payment obligations to the CDS during the day, until their payment obligations have been discharged. These DCS participants were concerned that there would be some "doubling up" of collateral requirements when payment was being made to the CDS since the Government of Canada securities purchased on their own behalf and used to collateralize part of their payment obligation to CDS during the day could not also be used in the LVTS to support payment to CDS.

The Bank of Canada, along with LVTS and DCS participants, worked out arrangements whereby such Government of Canada securities held in participants' accounts in the DCS can be earmarked in the LVTS to support an LVTS payment to the CDS. The legal arrangements permit those securities (used as collateral in the DCS) to be pledged to the Bank of Canada in anticipation of an LVTS payment to the CDS. The securities, however, remain subject to the priority security interest of the CDS and the DCS participants. If the

LVTS payment made by a participant to discharge its obligation to CDS requires the use of intraday credit, the securities pledged to the Bank can be used to support that payment, and the CDS and the other DCS participants surrender all claims to the collateral. If the DCS participant fails to make the LVTS payment to the CDS, the securities are returned by the Bank to the CDS for use in support of its risk-containment mechanisms (i.e., to generate liquidity to allow the DCS system to settle), and the Bank of Canada surrenders all claims to the collateral.

The legal arrangements are carefully crafted to ensure that the collateral in question is supporting only one payment obligation at any point in time and to ensure, in the case of a participant failure, that the appropriate parties are entitled to use the collateral to generate the needed liquidity to settle the relevant system. The payment obligations of individual participants in the DCS can amount to several billion dollars on a given day. This arrangement, by reducing potential collateral requirements in the LVTS, can result in a significant reduction in costs. It also helps to reduce concerns that time-critical payments to the CDS might be held up in the LVTS. Considerable use is being made of these special arrangements, suggesting that they are a valuable enhancement to the system.

6. CONCLUDING REMARKS

It is worth noting the value for both parties—the central securities depositories and the regulator—of maintaining a close relationship. If the regulator understands the concerns of the system’s operator and its participants and if they understand the regulator’s concerns, it is more likely that arrangements satisfactory to both sides can be developed. This does not mean that the two sides will always agree on everything. After all, the private sector and the public sector have a somewhat different focus in approaching the various issues that arise in the design, development, and operation of CSDs. And, as discussed earlier, there will frequently be a trade-off between risk-proofing and costs of operation. Nonetheless, in Canada, outcomes have been achieved that provide a high level of safety at reasonable cost.

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