

Bank of Canada Oversight Activities during 2009 under the Payment Clearing and Settlement Act

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This report reviews the Bank of Canada's oversight activities during 2009 pursuant to the Payment Clearing and Settlement Act (PCSA). This is the fifth in a series of annual reports that provide transparency and accountability regarding the Bank's activities in this area.¹

The Bank of Canada (the Bank) has had formal responsibility for the oversight of clearing and settlement systems in Canada since 1996.² The PCSA gives the Bank this responsibility for the purpose of controlling systemic risk. In this context, systemic risk is defined as the risk that the default of one participant in a clearing and settlement system could lead, through the activities of the system, to the default of other institutions or systems.

A clearing and settlement system brings together various financial system participants in a common arrangement, such as a clearing house, where the participants are explicitly interlinked so that the behaviour of one participant can have implications for others. In such an arrangement, each participant could face potentially significant risks and liabilities, depending on the behaviour of other participants and on the design of the system. As a result, spill-over or domino effects with broader economic consequences can occur if the system is not properly designed and operated.

Under the PCSA, the Bank has a mandate to identify clearing and settlement systems in Canada that could be operated in a manner that could pose systemic risk. Provided the Minister of Finance agrees that it is in the public interest to do so, these systems are designated for oversight by the Bank, and must satisfy the Bank that they have appropriate risk controls in place to deal with concerns related to systemic risk.³

Three systems have been designated by the Bank: the Large Value Transfer System (LVTS), which deals with large-value Canadian-dollar payments; CDSX, which clears and settles securities transactions; and CLS Bank, a global system for the settlement of foreign-currency transactions.

In the following sections, various aspects of the Bank's oversight activities during the past year are discussed. In 2009, the major payment, clearing, and settlement systems continued to evolve in a way that supports the stability and efficiency of the financial system.

The Large Value Transfer System

Owned and operated by the Canadian Payments Association (CPA), the Large Value Transfer System (LVTS) began operation in February 1999. During 2009, it processed, on average, 22,250 transactions per day worth approximately \$153 billion. In its eleven years of operation, the LVTS has been a relatively stable system; that is, there have been few significant changes to its design and risk controls. In 2009, the Bank reviewed eight rule changes concerning the LVTS, most of which were largely technical in nature. Significant changes included the implementation of automatic monitoring of the critical LVTS risk controls and the implementation of a new message type. Automated monitoring of the critical LVTS risk controls is intended to provide additional assurance that the critical risk controls are functioning correctly and will automatically provide an alert to the CPA should a potential problem be detected.⁴ As part of global efforts to combat money laundering and terrorist funding, the CPA implemented changes to incorporate a new message type to be used when making “Cover” payments.⁵ The new message type allows for the inclusion of information on all the parties involved in the transaction and facilitates screening in accordance with applicable anti-money laundering regulations.

The LVTS continued to operate reliably, and was available 99.98 per cent of the time. While overall for the year participants were available 99.93 per cent of the time, one participant experienced various technical difficulties over several weeks resulting in some delays to settlement. The Bank is satisfied with the actions taken by the CPA and the participant to address these problems and mitigate the likelihood of future occurrences.

During 2009, the CPA continued to develop a strategy to evolve its systems and rule framework over the long term. Approved in February 2010, the five ‘pillar’ “Vision 2020” includes a strategy to enhance the robustness and resiliency of CPA technology, networks and applications for clearing and settlement. To inform the strategy and to ensure that its systems, including the LVTS, continue to perform reliably and cost-effectively, the CPA also initiated a Payment Systems Health check. Further information about Vision 2020 and the Payment System Health check is available from the CPA.⁶

Integral to the Bank's oversight process is the use of Memoranda of Understanding with operators of designated systems. The Memorandum of Understanding (MOU) between the Bank and the CPA sets out the roles and responsibilities of both parties under the PCSA and how they intend to work together to meet these responsibilities. Pursuant to the MOU, the CPA conducts an annual self-assessment of the LVTS against the *Core Principles for Systemically Important Payment Systems*.⁷

Another important element of the Bank's oversight of the LVTS is the audit report on controls related to the operations of the system. The audit, completed according to Section 5970 of the Canadian Institute of Chartered Accountants Handbook, assesses whether the LVTS operates as designed. In consultation with the Bank and the CPA's auditor, several controls were added or modified for the 2009 audit review, including explicit tests related to the functioning of the key risk controls. The audit results for the period 1 April 2009 to 30 September 2009 were positive and unqualified, with the auditor concluding that the tested controls were operating with sufficient effectiveness to provide reasonable assurance that the control objectives were achieved during the audit period.

Part of the oversight arrangement with regard to the LVTS, as set out in the MOU, is regular meetings between the Bank and the CPA in addition to regular communications at the staff level. This allows the Bank and the CPA to discuss general developments in the payments system, as well as potential changes to the LVTS, early in the process of developing those changes. During 2009, the Bank and the CPA held four such meetings. In addition, pursuant to the terms of the MOU, the Bank's Deputy Governor responsible for oversight met with the CPA Board of Directors to discuss issues of mutual interest.

CDSX

Owned and operated by the Clearing and Depository Services Inc. (CDS), CDSX clears and settles securities transactions in Canada. On average in 2009, CDSX processed about 1 million trades daily worth about \$266 billion. CDSX continued to operate reliably, achieving 99.7 per cent operational reliability and on-line network availability of 99.9 per cent.

In terms of changes to CDSX, 2009 was a relatively active year. The Bank approved twenty-seven changes to rules, procedures, and systems. Of significance, in April 2009, CDS implemented FINet, a new central counterparty (CCP) for fixed income transactions, replacing an existing CCP service (DetNet). FINet is more efficient than DetNet and admits a wider range of instruments.

In July 2009, CDS reported that they uncovered a deposit of a money market security that should not have been deposited by the issuer agent into the depository. While the error had the potential to expose CDS and CDSX participants to financial risk, no risks actually materialized in this case. CDS has taken various steps to address this issue, and re-examined the entire framework for the service, with particular emphasis on the processes and procedures used by the money market participants. Several actions were implemented over the remainder of 2009 as a result of the re-examination and a suite of further process, procedure and system changes were implemented in early April 2010. While some action items are still in process, overall the Bank is satisfied that CDS made it a priority to address this issue and is taking appropriate actions to mitigate future problems.

In Q4 2009, in response to changes introduced by the National Securities Clearing Corporation and the Depository Trust Corporation in the United States, CDS implemented changes to the risk-control framework for its cross-border services in the Depository Trust and Clearing Corporation. CDS sponsors its participants in the system and the changes resulted in an increase in the collateral requirements for sponsored participants. CDS also recently recommended that its committed liquidity facility in place to mitigate the risk that it incurs through its sponsorship of participants in the cross-border services be increased from \$90 million Canadian dollars to \$200 million U.S. dollars.

As is the case with the LVTS, an important element of the Bank's oversight of the CDSX is the 5970 audit report on controls related to the operations of the system. The Section 5970 audit covering the year 1 August 2008 to 31 July 2009 concluded that, with one exception related to money market service (described above), CDS's internal controls were described fairly and accurately, the controls were suitably designed to meet CDS's internal control objectives, and the controls had been applied with sufficient effectiveness to meet the control objectives over the audit period.

Under the Bank's Regulatory Oversight Agreement with CDS, semi-annual meetings are held between the Bank and CDS. While there is regular communication on changes and developments at the staff level, these meetings provide the Bank and CDS with a formal opportunity to explore any concerns or questions related to proposed changes and strategic initiatives on a timely and efficient basis. In this way, the Bank is alerted to possible significant changes and can raise any concerns that it may have so they can be dealt with efficiently by CDS in the process of developing system changes. Among the topics discussed in 2009 were the problems with the money market service, changes to the cross border services and related U.S. dollar liquidity arrangements, the review of CDS's risk policy, and its strategic plan. In addition, the Bank's Deputy Governor responsible for oversight met with the CDS Board of Directors in June and September to review matters of mutual interest.

CLS Bank

CLS Bank is overseen collaboratively by the central banks whose currencies are included in the system, with the U.S. Federal Reserve acting as lead overseer. (CLS Bank is incorporated under U.S. laws, and the vast majority of foreign exchange (FX) trades involve the U.S. dollar).

CLS Bank settles payment instructions for FX transactions in seventeen currencies, including the Canadian dollar. All of the six major Canadian banks now use CLS Bank as one means of settling their eligible FX transactions. RBC, CIBC, Scotiabank and BMO all participate directly in CLS, while TD and National participate indirectly and submit their trades through other direct participants in CLS.

In 2009, CLS Bank settled an average daily value of US\$3.4 trillion from an average daily volume of 598,000 instructions. This included Canadian-dollar transactions with an average daily value of Can\$77 billion and average daily volume of 18,500 instructions. Peak volume in 2009 was achieved on 27 November following the U.S. Thanksgiving holiday when CLS settled 1.26 million instructions, the second largest settlement day ever for CLS; the record of 1.55 million instructions was set on 17 September 2008. Peak value in 2009 was achieved on 16 December, when CLS settled US\$6.6 trillion, compared to the record high of US\$10.3 trillion on 19 March 2008. CLS continued to operate reliably, completing settlement 100 per cent of the time.

A major initiative in 2009 was the development of a trade aggregation service. The service aggregates individual small value, high volume trades into a single large trade that is then submitted to the CLS Bank for settlement. The aggregation service is expected to support this growing low-value, high-volume market segment cost-effectively. The service went live in early 2010.

CLS continued to develop a proposal to provide a same-day settlement session with a focus on U.S. dollar/Canadian dollar trades. If implemented, the service could bring a significant reduction in foreign exchange settlement risk associated with this market.

At present, as part of providing the settlement service, CLS holds a majority of the foreign exchange industry's trade data. CLS Bank has indicated it would consider further extending coverage of FX data to promote market transparency and support regulatory efforts, as needed.

Over the second half of 2009, CLS Bank updated the assessment of its system against the CPSS Core Principles for Systemically Important Payment Systems. Their overall conclusion was that the CLS system observes each of the applicable Core Principles.⁸

Financial Crisis

Following an intensification of the global financial crisis in the latter half of 2008 and early 2009, conditions improved over the remainder of 2009 and the Canadian economy returned to positive growth. As was the case in 2008, all Canadian designated systems functioned smoothly in 2009.

Effects on designated systems

LVTS

The economic downturn led to another decline in the daily average value of the payments processed by the LVTS. While volumes remained steady compared to 2008, average daily payment values declined 15 per cent from the previous year.

In November, as part of a series of steps to withdraw its extraordinary liquidity provision, the Bank announced plans to reduce the eligibility of the Canadian-dollar non-mortgage loans to 20 per cent of each participant's total pledged collateral over a three month period beginning in February 2010.⁹ The Bank had begun to accept this form of collateral in October 2008 as a temporary measure to support liquidity in the financial system. Specifically, the Bank began accepting Canadian-dollar non-mortgage loans as collateral for intraday credit in the LVTS and for overnight loans under its Standing Liquidity Facility.¹⁰ The acceptance of Canadian-dollar non-mortgage loans allowed LVTS participants to use more conventional LVTS collateral for other purposes.

CDSX

Higher market volatility continued to result in a marked increase in CDSX trading volumes. Average daily volumes remained at historically high levels of about 1 million trades per day in 2009. This represents year-over-year growth of almost 30 per cent. However, no new volume records were set in 2009. After declining to \$2.9 trillion in February 2009, the value of securities on deposit has since recovered to about \$3.3 trillion.

While no capacity problems were noted during this period, following the peak volumes experienced in late 2008 (1.5 million on 18 September 2008), CDS took proactive steps in 2009 to increase capacity to 3.5 million trades per day to ensure that further volume increases could be easily accommodated.

In early 2009, following the conclusion of industry-wide efforts to restructure frozen Asset Backed Commercial Paper (ABCP), CDS converted \$32 billion ABCP to new restructured notes and paid out a total of over \$1.3 billion in related interest over the course of 2009.

In 2009, CDS continued to respond to the market turmoil in a number of ways, including stress-testing, more frequent adjustments to haircut rates applied to equity securities used as collateral, more stringent validation of prices used for measuring market risk and valuing collateral, and monitoring the adequacy of stand-by liquidity facilities.

CLS Bank

The CLS system settled its record single-day volume during September 2008, at the height of the crisis during the run-up to the Lehman bankruptcy event. Following this event, there was a decline in volumes and values settled in CLS, but growth returned in 2009. Comparing December 2009 with December 2008, average daily volumes and values settled in CLS were up 33 per cent and 25 per cent respectively.

The CLS system operated well through the financial crisis. Nonetheless, CLS Bank has been undertaking hypothetical crisis simulations to test the robustness of its system and its failure management processes, and to inform its participants and overseers. This will help to ensure that CLS Bank and its stakeholders are fully prepared to deal with crisis events or other contingencies that could materialize in the future.

Other developments in financial market infrastructure

The financial crisis underscored the important role that well designed financial market infrastructure can play to keep core markets functioning continuously, including in times of stress, and generally to promote the overall safety and soundness of our financial system.

As part of the G20 efforts, the Bank was active in domestic and international fora considering ways to improve the standards and infrastructure supporting the over-the-counter derivatives market and other important financial markets.

The Bank is an active member of the Committee on Payment and Settlement Systems (CPSS) of the Bank for International Settlements. The CPSS is a committee of central bankers that collaboratively sets standards that guide oversight policies around the world.¹¹ In 2009, Bank staff were actively involved in several working groups established by the CPSS. The emphasis of the work was related to reviewing developments in financial market infrastructures and the related standards and recommendations in view of the experience gained over the last several years and in particular during the financial crisis. Of note, the CPSS, together with the International Organization of Securities Commissions (IOSCO), has established a work-plan to formally review the CPSS/IOSCO standards and recommendations pertaining to systemically important payments systems, security settlement systems and central counterparties.¹²

Following a Request for Proposal to develop a more effective central counterparty framework for repo transactions in Canada, the Investment Industry Association of Canada (IIAC) selected the Canadian Derivatives Clearing Corporation (CDCC) as the preferred vendor in December 2009.

CDCC currently operates a central counterparty for the clearing and settlement of derivatives traded on the Montreal Exchange.

Pursuant to the PCSA, the Bank periodically reviews the potential for eligible payment clearing and settlement systems to pose systemic risk. Given this new development, in 2010 the Bank will review the designation status of the system operated by CDCC. If designated, CDCC's system would be subject to oversight by the Bank.

Other Oversight-Related Activities

As part of the regulatory framework governing the Automated Clearing Settlement System (ACSS), the federal Department of Finance regularly consults the Bank with regard to proposed rule changes and other developments affecting the ACSS.¹³ In this regard, the Bank reviewed eighteen ACSS rule changes during the year.

Most significantly, the Bank reviewed the systemic risk implications of a proposal to change the default procedures in ACSS to better align the rules with members' operational and technical capabilities and to provide more legal certainty. Overall, the proposal was viewed as an improvement over the current framework and no systemic risk concerns were identified.

More generally, to facilitate the Bank's interaction with the Department of Finance on payments issues, including broader policy developments affecting payment, clearing, and settlement systems, senior and working-level officials meet on a regular basis to exchange information and analysis.

SWIFT

The Bank continues to participate in the co-operative oversight of the Society for Worldwide Interbank Financial Telecommunication (SWIFT). SWIFT is the principal payment-messaging service provider for financial institutions around the world and for critical systems such as the LVTS and CLS Bank. This co-operative oversight group monitors and assesses the extent to which SWIFT maintains appropriate governance arrangements, operational processes, risk management, and controls to effectively address potential concerns that may arise for financial stability.

The SWIFT Oversight Group met twice in 2009. The restructuring of SWIFT's global operations centres (the so-called "distributed architecture" project) continued to be a key topic of discussion. To be introduced in two phases, distributed architecture will organize SWIFT messaging services into two processing zones, the European zone and the Trans-Atlantic zone, with pairs of operating centres for each zone. Implementation of Phase 1, which includes a new temporary operating centre in Europe and a new command and control centre in the Asia-Pacific area, was completed by the end of 2009. In the second phase, a new state-of-the-art operating centre will replace the temporary operating centre. Current plans are for the second phase to be completed by the end of 2012.

Distributed architecture will improve resilience, add capacity, control the long-term average costs of messaging, and alleviate concerns about data protection raised by subpoenas issued by the U.S. Treasury Department for access to information on global payments using SWIFT messaging services.¹⁴ All SWIFT traffic among Canadian members is now being processed at the European operating site.

Business-continuity planning (BCP)

The Bank works with the operators and participants of systemically important Canadian clearing and settlement systems to enhance arrangements for continuity of operations. These systems are at the centre of Canada's financial system, and serious economy-wide repercussions could arise if their operations were not extremely reliable. The Bank, together with the CPA and CDS, is working to develop a framework for information-sharing regarding key risks and mitigation strategies affecting Canadian clearing and settlement systems. In 2009, the group administered a survey of LVTS and CDSX participants to help assess the current state of business continuity planning, preparedness and standards from a system-wide perspective and aid in the identification of areas where further actions may be required.

The Bank also worked with the Minister of Finance and other federal and provincial authorities to coordinate sector-wide preparations.

In response to the H1N1 influenza pandemic, the Bank, CDS and the CPA worked together to ensure the continuous operation of infrastructure critical to the functioning of the financial system should several of the key individuals supporting these functions be absent from work concurrently. These efforts included tests to ensure that operations could be conducted effectively from alternative locations and developing and sharing lists of contact information for key personnel. Actions also included the implementation of enhanced cleaning routines and educating employees on precautions to limit contact and on vaccination programs.

In order to improve the resiliency of the services provided by the Bank to critical clearing and settlement systems, preparations were made to permanently split its payment and settlement operations between the head office and the business recovery site in the Ottawa region. These new arrangements were successfully implemented in April 2010.

Publications in 2009

During 2009, the Bank published the following staff work related to clearing and settlement systems:

- Engert, W. C. Wilkins and L. Zorn. 2009. "[Bank of Canada Liquidity Actions in Response to the Financial Market Turmoil.](#)" *Bank of Canada Review* (Autumn).
- Embree L. And T. Roberts. 2009. "[Network Analysis and Canada's Large Value Transfer System.](#)" Bank of Canada Discussion Paper No. 2009-13.
- D'Souza C. 2009. "[Collateral Management in the LVTS by Canadian Financial Institutions.](#)" *Bank of Canada Review* (Summer).

References

Arjani, N. and D. McVanel. 2006. "A Primer on Canada's Large Value Transfer System." (Available at <http://www.bankofcanada.ca/en/financial/lvts_neville.pdf>.)

Engert, W. and A.Lai. 2009. "[Bank of Canada Oversight Activities during 2008 under the Payment Clearing and Settlement Act.](#)" Bank of Canada (June): 2.

Engert, W, T. Gravelle, and D. Howard. 2008. "The Implementation of Monetary Policy in Canada." Bank of Canada Discussion Paper No. 2008-9.

Engert, W. and D. Maclean. 2008. "Bank of Canada Oversight Activities during 2007 under the Payment Clearing and Settlement Act." Bank of Canada *Financial System Review* (June): 43-49.

Engert, W. and D. Maclean. 2006. "The Bank of Canada's Role in the Oversight of Clearing and Settlement Systems." Bank of Canada *Financial System Review* (June): 57-64.

Goodlet, C. 2007. "Bank of Canada Oversight Activities during 2006 under the Payment Clearing and Settlement Act." Bank of Canada *Financial System Review* (June): 33-37.

---. 2006. "Bank of Canada Oversight Activities during 2005 under the Payment Clearing and Settlement Act." Bank of Canada *Financial System Review* (June): 31-34.

1. The first three such reports were published in the Bank of Canada's *Financial System Review* (June 2006, 2007, 2008). Prior to this practice, an account of the Bank's oversight activities was included in the Bank's *Annual Report*.
2. A clearing and settlement system is the set of instruments, procedures, rules, and technical infrastructure for the transfer of funds or other assets among system participants.
3. For a discussion of the Bank's approach to the oversight of designated systems, see Engert and Maclean (2006).
4. This enhancement was a follow-up to the discovery and correction in 2007 of certain coding errors. See Engert and Maclean (2008), and Engert and Lai (2009).
5. Cover payments are used internationally in correspondent banking to process wire payments in cases when the financial institutions of the originator and the beneficiary customer do not have a direct account relationship.
6. For more information see http://www.cdnpay.ca/imis15/eng/Publications/Annual_Review/eng/res/Annual_Review.aspx?hkey=bdcccdf9-b9b2-4297-a723-9dc02fc0ab92.
7. These core principles are available at <http://www.bis.org/publ/cpss43.pdf?noframes=1>.
8. The assessment against the Core Principles for Systemically Important Payment Systems is available at <http://www.cls-group.com/About/Documents/CLS%20Bank%20-%20Core%20Principles%20Assessment.pdf>.
9. For more information see http://www.bankofcanada.ca/en/notices_fmd/2009/notice051109_slf.html.
10. For a more detailed explanation of these aspects, see Engert, Gravelle, and Howard (2008); for details on the design and operation of the LVTS, see Arjani and McVanel (2006).
11. For more on the CPSS, see <http://www.bis.org/cpss/index.htm>.
12. For more information see <https://www.bis.org/press/p100202.htm>.
13. The ACSS, which is owned and operated by the CPA, is used for payments not handled by the LVTS; generally, small-value items, such as paper cheques, automated bill payments, and debit card transactions. The ACSS is subject to oversight by the federal Department of Finance. In 2009, the ACSS handled an average of 23.1 million payment items per day, with an average total value of \$19.5 billion.
14. See Goodlet (2007).

