Oversight Activities during 2011 under the Payment Clearing and Settlement Act

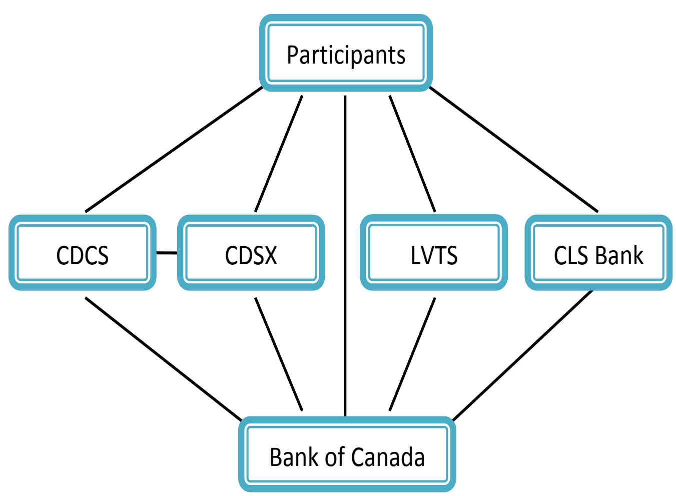
Introduction

This report reviews the Bank of Canada's oversight activities during 2011 pursuant to the Payment Clearing and Settlement Act (PCSA). This annual report is intended to provide transparency and accountability regarding the Bank's activities in this area.

Under the *Payment Clearing and Settlement Act* (PCSA), the Bank of Canada (the Bank) has a formal responsibility for the oversight of systemic risk in designated clearing and settlement systems.[1] In this context, systemic risk is defined as the risk that the default of one participant in a clearing and settlement system, or a serious problem arising within the system itself, could lead, through the activities of the system, to the default of other institutions or systems.

Payment, clearing and settlement systems, also known as financial market infrastructures, bring 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 significant risks and liabilities, depending on the behaviour of other participants and on the design of the system. In addition, there are important operational linkages and inter-dependencies between the designated systems, the participants and the Bank of Canada (see Box 1). As a result, spill-over effects with broader economic consequences could occur if a designated system was not properly designed and operated.

Box 1: Financial market infrastructure operational linkages in Canada



Under the PCSA, the Bank has a mandate to identify systemically important payment, clearing and settlement systems involving Canadian dollars. Provided the Minister of Finance agrees it is

[1] 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.

in the public interest, these systems are designated for oversight by the Bank, and must satisfy the Bank that the appropriate risk controls are in place to deal with systemic risk. [2]

As of 31 December 2011, three systems[3] have been designated by the Bank: the Large Value Transfer System (LVTS), which settles large-value Canadian-dollar payments; CDSX, which clears and settles securities transactions and; CLS Bank, a global system for the settlement of foreign-exchange transactions including the Canadian dollar.

In the following sections, various aspects of the Bank's oversight activities during the past year are discussed. In 2011, the designated systems continued to operate and evolve in a way that supports the stability and efficiency of the financial system.

Overview of Bank of Canada Oversight

Under the PCSA, the Bank has a mandate to identify systemically important payment, clearing and settlement systems involving Canadian dollars. As a framework for these activities, the Bank has established a "Guideline Related to Bank of Canada Oversight Activities under the PCSA".[4] Related activities include periodic environmental scans to identify eligible clearing and settlement systems and determining if an existing or planned system may be operated in such a manner as to pose systemic risk and hence should be designated as subject to the Act. [5]

To ensure designated systems have appropriate risk controls in place, the Bank has also established a general risk-control framework and minimum standards in the Bank's guideline for designated systems. The Bank's minimum standards are based on internationally accepted standards and recommendations, including the 2001 "Core Principles for Systemically Important Payment Systems", developed by the Committee on Payment and Settlement Systems (CPSS), and "Recommendations for Securities Settlement Systems" and "Recommendations for Central Counterparties", developed jointly by the CPSS and International Organization of Securities Commissions (IOSCO).[6] The Bank will incorporate the new CPSS-IOSCO Principles for Financial Market Infrastructures into its minimum standards by the end of 2012. (See Other Oversight-Related Activities) All domestic designated systems will

[2] For a discussion of the Bank's operational roles in, and approach to the oversight of designated systems, see 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.

[3] Effective 30 April 2012, the Canadian Derivatives Clearing System (CDCS) was designated by the Bank. For further information, see Other Developments in Financial Market Infrastructure.

[4] The "Guideline Related to Bank of Canada Oversight Activities under the PCSA" is available at http://www.bankofcanada.ca/publications-research/press-releases/guideline-related-oversight-activities/.

[5] To be within the definition, a clearing and settlement system must: have three or more participants, at least one of which is a bank; clear or settle payment obligations that are all or partly in Canadian dollars; and ultimately settle the payment obligations that arise from the clearing within the system through adjustments to the account or accounts of one or more participants at the Bank of Canada.

[6] The core principles and recommendations are available at http://www.bis.org/list/cpss/tid_61/index.htm

complete a gap analysis with respect to the new *Principles* and develop a plan to address gaps in 2012.

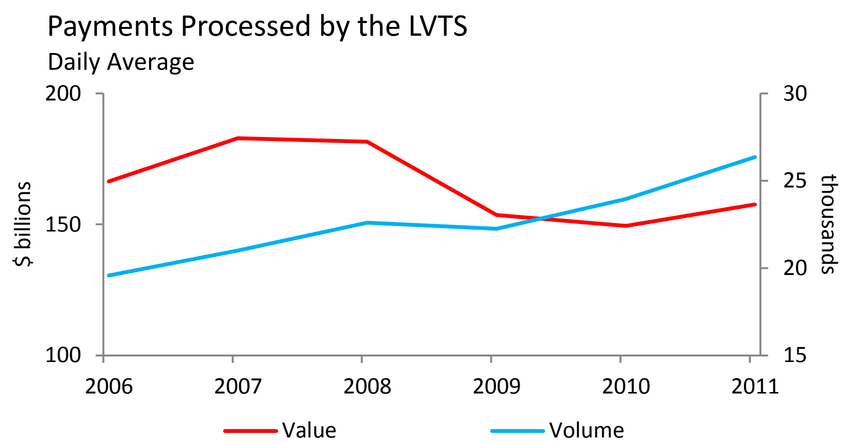
In carrying out its oversight responsibilities, the Bank is engaged in regular meetings and correspondence with system operators. The Bank reviews proposed changes to designated systems' operations, arrangements, rules and procedures to assess their implications for systemic risk. The Bank will also analyze proposed changes and other developments through various research initiatives, which also help to inform policy-related decisions. Review of audits and self-assessments of designated systems against the applicable international standards are conducted annually as well.

The Bank's oversight also involves coordination and regular communication with the Department of Finance Canada, the Quebec Autorité des marchés financiers and the Ontario Securities Commission.

Large Value Transfer System

Owned and operated by the Canadian Payments Association (CPA), the Large Value Transfer System (LVTS) is Canada's principal system for large-value and time-sensitive payments. It is an electronic credit transfer system that provides real-time processing and finality of payment. Its risk controls are designed to ensure that payments are final and irrevocable and that settlement is guaranteed even in the event of a default by one or more participants with the largest net debit positions.

During 2011, the LVTS processed a daily average of 26 thousand transactions worth $158 billion. This represents an annual increase of 10% in volume and 6% in value.



LVTS continued to operate reliably over the year, and was available 99.99 per cent of the time. While overall for the year participants were available 99.9 per cent of the time, one participant experienced various technical difficulties over several days requiring the use of contingency arrangements to complete payments. However, these issues did not result in delays to settlement. The Bank is satisfied with the actions taken to date by the CPA and the participant to address these problems and decrease the likelihood of future occurrences.

In 2011, the Bank reviewed seven LVTS rule changes, most of which were technical in nature. Significant changes included amended LVTS rules to incorporate a new Participant Incident Management Framework, which was developed to improve the categorization and reporting of operational events within the LVTS, and an enhancement to the contingency payment process.

In 2009, the CPA commissioned a review of its payment systems technology, including the LVTS, to ensure the system remains technologically robust and reliable. The review identified technologies that were no longer supported or near end of life. If not addressed, such technologies could potentially pose operational risk. Consequently, the CPA developed a long-term technology strategy to plan the modernization and ongoing renewal of payment systems technology. One major initiative that began in 2011 and will continue into 2013 is the replacement of the workstations and an upgrade of the network used by participants to access the LVTS for administration functions.

In terms of future developments, the CPA plans to adopt global messaging standards (ISO 20022) for the LVTS and is now developing a strategy for its implementation. The adoption of these standards is expected to improve interoperability and straight-through-processing. In 2011, the CPA Board completed a Governance review which was initiated in 2009. As a result, a number of changes have been implemented including: an enhanced Code of Conduct, a new Board committee structure, a revised nomination process for CPA Directors, as well as clearer guidelines on Director Education and Qualifications.[7]

Integral to the Bank's oversight process for LVTS is the Memorandum of Understanding (MOU) between the Bank and the CPA. The MOU 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 CPSS *Core Principles for Systemically Important Payment Systems*, which are the benchmark international standards for payment systems as agreed by the relevant central banks. Similar to previous years, the CPA assessed the LVTS as fully observing all ten core principles.

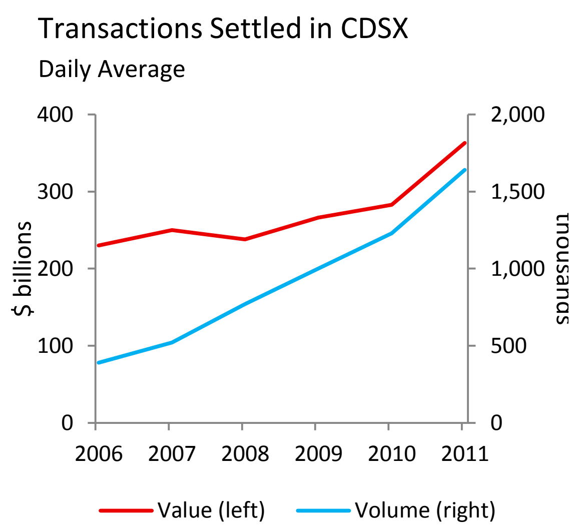
In addition to ongoing staff-level communications, regular meetings between senior Bank and CPA staff are required under the MOU and form a key part of the Bank's oversight. This allows the Bank and CPA to discuss developments and potential changes to the LVTS well before such changes are implemented. During 2011, the Bank and the CPA held four such meetings. Also pursuant to the MOU, the Bank's Deputy Governor responsible for oversight met with the CPA Board of Directors to discuss issues of mutual interest.

[7] For further information about the activities of the CPA in 2011 please see the 2011 Canadian Payments Association Annual Review.
http://www.cdnpay.ca/imis15/eng/Publications/Annual_Review/eng/res/Annual_Review.aspx

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. The audit results for the period 1 April 2011 to 30 September 2011 were unqualified, with only two minor exceptions.[8] The auditor concluded that the tested controls were operating with sufficient effectiveness to provide reasonable assurance that the control objectives were achieved during the audit period. The Bank assessed the exceptions as being minor and adequately addressed by the CPA.

CDSX

Owned and operated by CDS Clearing and Depository Services Inc. (CDS), CDSX clears and settles eligible Canadian exchange-traded and over-the-counter equity, debt and money market transactions. It also provides depository services. During 2011, CDSX processed an average of 1.58 million trades daily worth about $363 billion, an annual increase of 28% and 28%, respectively. A new record volume of 3.1 million trades was successfully processed on 9 August. As of 31 October 2011, the value of securities on deposit was about $3.93 trillion.



CDSX continued to operate reliably over the year, achieving 99.9 per cent operational reliability and on-line network availability of 100 per cent.

Following the discovery of the deficiencies in the money market process in 2009, CDS ordered an independent review of its enterprise risk management (ERM) function.[9] The review provided a generally positive overall assessment of CDS' ERM program. Nonetheless, several areas of improvement were identified, including further clarification of risk management roles and responsibilities, and reinforcement of a stronger risk culture and awareness. In late 2011, the enhanced ERM program was re-assessed. While significant progress has been made, more work is needed to ensure the program is sustainable over the long term.

[8] A control objective may be met despite one or more exceptions as long as the exceptions do not impact the overall control objective. This would be the case, for example, if exceptions were judged to be minor or one-off and/or other mitigating controls are in place.
[9] For more information, please see the 2010 Annual Oversight Report and the 2009 Annual Oversight Report.

In 2011, the Bank provided its non-disapproval for 17 changes to CDS's rules, procedures and systems. The most significant amendments related to the conversion of the equity CCP (Continuous Net Settlement - CNS) batch settlement process to real-time and extending the settlement window by half an hour; the elimination of collateral value generated from maturing securities; changes to align the ex-dividend processes between Canada and the US; and changes to support the settlement of fixed income transactions from CDCS (see Other Developments). CDS also continued to make progress in dematerializing both security issuance and entitlement payments.[10]

Under the Financial Stability Board's (FSB) *Framework for Strengthening Adherence to International Standards*, a peer review of Canada was completed in 2011. The main purpose of the report was to assess Canada's progress in addressing regulatory and supervisory issues raised by the International Monetary Fund (IMF) under the Financial Sector Assessment Program (FSAP) in 2007-08. The report also provides an overview of market and regulatory developments since the FSAP was published.[11] The peer review included an examination of the steps taken by the Canadian authorities to address FSAP recommendations relating to CDSX, and concluded that good progress has been made to address the related FSAP recommendations.

Integral to the Bank's oversight process for CDSX is the Regulatory Oversight Agreement (ROA) with CDS. Under the ROA, executive-level meetings are held semi-annually between the Bank and CDS. While there is regular communication regarding changes and developments at the staff level, these meetings provide the Bank and CDS a more formal opportunity to explore any concerns or questions related to proposed changes and strategic initiatives. Among the topics discussed in 2011 were projects on ERM enhancement, and the new draft CPSS-IOSCO *Principles for Financial Market Infrastructures* (see Other Oversight-Related Activities). In addition, the Bank's Deputy Governor responsible for oversight met with the CDS Board of Directors in July 2011 to review matters of mutual interest.

Similar to the LVTS, an important element of the Bank's oversight of CDSX is the Section 5970 audit report on controls related to the operations of the system. The audit, which covered the period from 1 August 2010 to 31 July 2011, concluded that CDS met all control objectives this year, however three exceptions were observed.[12] The Bank assessed the exceptions as being minor and adequately addressed by CDS.

[10] For more information, please see CDS 2011 annual report at http://www.cds.ca/cdsclearinghome.nsf/Pages/-EN-Publications?Open

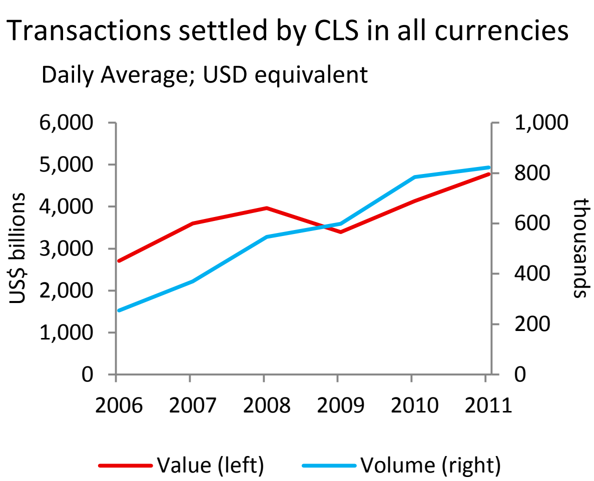
[11] For more information on Canada's peer review, please visit the FSB's website at http://www.financialstabilityboard.org/ .

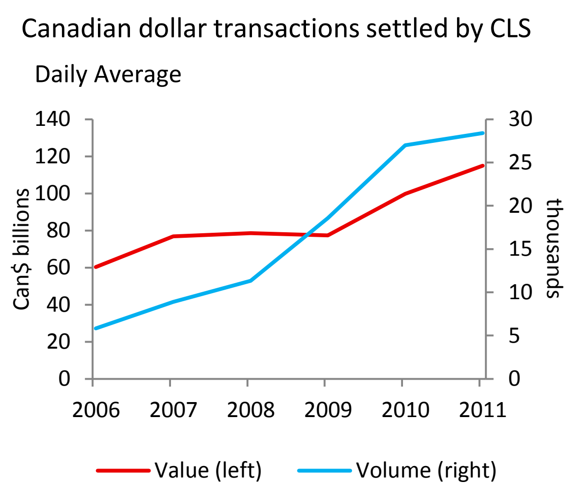
[12] A control objective may be met despite one or more exceptions as long as the exceptions do not impact the overall control objective. This would be the case, for example, if exceptions were judged to be minor or one-off and/or other mitigating controls are in place.

CLS Bank

CLS Bank settles payment instructions for foreign exchange (FX) transactions in 17 currencies, including the Canadian dollar. All six major Canadian banks use CLS Bank as one method of settling their FX transactions, while National Bank participates indirectly as a "third-party user", submitting its trades through a CLS direct participant. CLS Bank is overseen collaboratively by the central banks whose currencies are included in the system, with the U.S. Federal Reserve accepting primary responsibility for the oversight of CLS under this cooperative oversight framework.[13]

In 2011, CLS Bank settled an average daily value of $4.8 trillion USD equivalent from an average daily volume of 820 thousand instructions. This represents an annual increase of 17% in daily value and 3% in daily volume. Record volume for CLS was achieved on 21 September 2011 when CLS settled 1.96 million instructions totalling almost $9 trillion USD equivalent.
Settlement of foreign exchange trades involving the Canadian dollar also increased over the year, with an average daily value of Can$115 billion and average daily volume of 28 thousand instructions, an annual increase of 16% and 5%, respectively.[14]





CLS continued to operate reliably, completing settlement 100 per cent of the time.

The CLS Aggregation Service has continued to grow since its launch in January 2010. The service aggregates individual small value, high volume trades into a single large trade that is then submitted to the CLS Bank for settlement. Peak volumes for the service were achieved on 31 October, when 444 thousand gross trades were aggregated for settlement in CLS. At present,

[13] CLS Bank is incorporated under U.S. laws, and the vast majority of foreign exchange trades involve the U.S. dollar.
[14] For every foreign exchange trade, CLS receives one instruction from each counterparty.

no Canadian banks participate, although the Canadian dollar is an eligible currency for the service.

In terms of future developments, CLS has continued its efforts to develop a same-day settlement session to further reduce FX settlement risk, with an initial focus on same-day U.S dollar/Canadian dollar trades. Same-day FX trades cannot currently be settled in CLS due to the timing of the existing settlement session. The new service is currently targeted for implementation in the second half of 2013. In addition, CLS has identified a list of prospective currencies to be made eligible for settlement in the main session.

As required by Federal Reserve policy, CLS published a self-assessment against the CPSS *Core Principles for Systemically Important Payment Systems*.[15] According to CLS' assessment, CLS broadly observes the core principle on governance and fully observes all other principles. CLS has taken steps to fully observe the governance principle including a review of its corporate governance framework. The review led to several changes such as the inclusion of independent board directors, the addition of geographic representation in selecting board directors, the establishment of a new Risk Management Committee at the CLS Holding Board, and the creation of a board committee to focus on strategic and regulatory matters.

Other Developments in Financial Infrastructure

Canadian Derivatives Clearing Corporation

Following a request for proposal to develop an effective central counterparty (CCP) framework for repurchase ("repo") fixed income 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 was already operating a CCP system, the Canadian Derivatives Clearing Service (CDCS), for the clearing and settlement of derivatives traded on the Montreal Exchange, and some OTC derivatives. Throughout 2011, CDCC continued to work with stakeholders to enhance the CDCS to clear fixed income transactions. The first phase of this new service, clearing of bilaterally traded, single security repurchase agreements ("repos")[16], successfully began operations on 21 February 2012.

The introduction of an appropriately risk-controlled CCP for the fixed-income market improves this market's resilience by mitigating counterparty risk. This reduces the potential for systemic risk to be transmitted through the financial system, supporting the ability of the market to

[15] See CLS assessment: http://www.cls-group.com/About/Documents/CLS%20Bank%20-%20Core%20Principles%20Assessment.pdf.

[16] A repo is a sale of a security, with an agreement to repurchase it at a later date for a fixed price. A repo is economically equivalent to a secured loan, and is a key source of funding for financial intermediaries such as investment dealers.

remain continuously open, even in times of stress. A CCP also provides balance-sheet relief to its members through netting efficiencies.[17]

The second phase of the fixed income CCP project will expand the service to cover outright purchases and sales of Government of Canada securities (“cash trades”) and allow cash trades and single-security repos to be submitted by inter-dealer brokers on a “blind” basis. These enhancements are expected to be implemented in late 2012. The third and final phase of the project will involve the implementation of a pooled General Collateral “GC” product, which will allow borrowers of cash to post many securities from a pre-defined basket as collateral, instead of just a single security. Because this type of GC product does not currently exist in the Canadian market, this phase of the project will be more complex. The industry and CDCC are currently considering options for the design and implementation of this product.

MF Global

Following the bankruptcy of the parent company MF Global Holdings Ltd. on 31 October 2011, CDS suspended MF Global Canada (MFGC) on 1 November 2011 and seized its pledged collateral. Neither CDS nor CDSX participants had exposure to MF Global, a relatively small participant within the CDSX. CDS did not encounter any issues during the management of the default.

CDCC (not designated at the time) also declared MFGC to be a non-conforming member on 31 October. MFGC was subsequently suspended by CDCC on 1 November. All MFGC positions at CDCC were in client accounts with most of them being promptly transferred to other clearing members. CDCC closed out all remaining MFGC positions by 21 November with no financial loss.

Other Oversight-Related Activities

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 is used for critical systems such as the LVTS and CLS Bank. This co-operative oversight group monitors and assesses the extent

[17] For further information, please see Chatterjee, Embree, Youngman . 2012. “Reducing System Risk: Canada’s New Central Counterparty for the Fixed-Income Market” Bank of Canada Financial System Review (June) http://www.bankofcanada.ca/wp-content/uploads/2012/06/fsr-0612-chatterjee.pdf

to which SWIFT maintains appropriate governance arrangements, operational processes, risk management and controls to address potential financial stability concerns.

During 2011, the Bank attended two meetings held by the SWIFT Oversight Group and four meetings by the Technical Oversight Group. The distributed architecture project, which organises SWIFT messaging services into two processing zones (the European zone and the Trans-Atlantic zone), continued to be a topic of discussion. More specifically, the second phase of the project, scheduled to be finalized in 2013, relates to the construction of a new state-of-the-art operating centre that will replace the temporary operating centre. The goal of this project is to strengthen the resiliency of global financial messaging while also addressing data protection issues.

Another topic of interest includes the project to renew the core infrastructure supporting SWIFT messaging services. This project entered into its second of five years and is intended to reduce technology risk and costs. SWIFT also made progress on its Enterprise Risk Management framework by identifying risk management principles, which will help guide SWIFT to balance risks and in mitigating actions.

CPSS-IOSCO Principles for Financial Market Infrastructures

The Committee on Payment and Settlement Systems (CPSS), of which the Bank of Canada is a member, is a committee of central bankers that collaboratively sets standards that guide oversight policies for financial market infrastructures (FMIs) around the world.[18] The CPSS, in collaboration with the International Organization of Securities Commissions (IOSCO), worked throughout 2011 to enhance the international standards and recommendations pertaining to systemically important payments systems, security settlement systems and central counterparties.[19] In March 2011, the draft *Principles for Financial Market Infrastructures* was released for public consultation and the final CPSS-IOSCO Principles for Financial Market Infrastructures were published 16 April 2012. The Bank will incorporate the new principles into its oversight guideline for designated systems in Canada this year.

Joint Operational Resiliency Management Committee

The Bank works with the operators and participants of designated payment, clearing and settlement systems to ensure appropriate 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 committee’s focus in 2011 was to develop a work plan for examining operational risk management in financial market infrastructures from a system-wide perspective. Specifically, the committee undertook planning for a Threat and Risk Assessment, which will be performed in 2012. The committee

[18]The CPSS is under the auspices of the Bank for International Settlements. For more on the CPSS, see http://www.bis.org/cpss/index.htm.

[19] For more information on the review of standards, see http://www.bis.org/publ/cpss94.htm.

also focused on expanding participation in the group to facilitate input from financial institutions that participate in the designated systems.

Canadian OTC Derivatives Working Group

In 2011, the Bank continued to contribute to work being done both domestically and internationally on the reform of the over-the-counter (OTC) derivatives market. As chair of the inter-agency Canadian OTC Derivatives Working Group, the Bank continued to work in close collaboration with other domestic authorities and the industry to assess options for central clearing for the Canadian OTC derivatives market. The Bank has also been actively involved in efforts at the international level to identify and promote the achievement of safeguards for safe central clearing of OTC derivatives at global CCPs serving multiple jurisdictions.

Changes to the Payment Clearing Settlement Act (PCSA)

To provide greater certainty as to the application of the PCSA to the central counterparty clearing of derivatives, especially in the international context, a number of technical changes to the Act were recommended.[20]

Recovery and Resolution

The *Key Attributes of Effective Resolution Regimes for Financial Institutions*, endorsed by the G20 in November 2011, set out the core elements that the Financial Stability Board (FSB) considers necessary for the effective resolution of financial firms. Based on these Key Attributes, federal agencies, including the Bank, the Office of the Superintendent of Financial Institutions (OSFI), the Canada Deposit Insurance Corporation (CDIC), the Department of Finance and the Financial Consumer Agency of Canada (FCAC), have been working with financial institutions to develop recovery and resolution plans.[21] Recovery plans outline actions financial institutions could take to restore their own financial strength and viability should they come under severe stress. Resolution plans outline actions a regulator could take to facilitate an orderly resolution of a troubled financial institution without taxpayer exposure to loss, and to ensure critical activities such as those related to payment clearing and settlement systems continue to operate as usual. To this end, the Bank has been working with CDIC and the CPA with respect to the LVTS.

Additionally, the Bank has been engaged on the international level to examine resolution options available to financial market infrastructures and their regulators. Having the appropriate resolution plans in place will help ensure that the critical services provided by a financial market infrastructure are not interrupted by events that challenge the entity's

[20] These changes came into force in May 2012. For further information, see Bill S-5 Amendments to the PCSA at: http://laws.justice.gc.ca/eng/acts/P-4.4/index.html

[21] CDIC, as the resolution authority for federally regulated deposit-taking institutions, has been tasked with developing and maintaining these resolution plans. OSFI is responsible for directing FIs to complete recovery plans.

viability. The Bank has been participating in discussions on how the Key Attributes should be applied to financial market infrastructures.

Task Force for the Payments System Review

In June 2010, the Department of Finance appointed an independent task force to conduct a comprehensive review of the Canadian payments system.[22] The review was intended to identify public policy objectives to be pursued in the operation and regulation of Canadian payments systems, and cover topics such as safety and soundness, governance, competition, and innovation. Following extensive consultation with a broad range of stakeholders through online submissions and working groups, the Task Force released a report in March 2012.

[22] For more information on the task force review, see http://paymentsystemreview.ca/index.php/home and http://www.fin.gc.ca/n12/12-030-eng.asp

Publications in 2011

Allen, J., A. Hortaçsu, and J. Kastl. 2011. "Analyzing Default Risk and Liquidity Demand during a Financial Crisis: The Case of Canada." Bank of Canada Working Paper 2011-17.

Chapman, J., J. Chiu, and M. Molico. 2011. "Liquidity Provision and Collateral Haircuts in Payments Systems." *Bank of Canada Review* (Autumn).

Chapman, J. L. Embree, T. Roberts, and N. Zhang. 2011. "Payment Networks: A Review of Recent Research". *Bank of Canada Review* (Winter 2010-2011).

Lavoie, S., A. Sebastien, and V. Traclet. 2011. "Lessons from the Use of Extraordinary Central Bank Liquidity Facilities." *Bank of Canada Review* (Spring).

Lazarow, A. 2011. "Lessons from International Central Counterparties: Benchmarking and Analysis." Bank of Canada Discussion Paper 2011-4.

Roberts, T. 2011. "The Impact of Operational Events on the Network Structure of the LVTS." Bank of Canada Discussion Paper 2011-7.

Zorn, L., and A. García. 2011. "Central Bank Collateral Policy: Insights from Recent Experience." *Bank of Canada Review* (Spring).