Oversight Activities during 2013 under the Payment Clearing and Settlement Act

Executive Summary

The Bank of Canada (the Bank) is responsible for promoting the safety and efficiency of the Canadian financial system. As part of its role, the Bank is charged with designating and overseeing clearing and settlement systems (also referred to as financial market infrastructures, or FMIs) that could pose systemic risk to the Canadian financial system.[1] Financial transactions are executed through FMIs, which facilitate the exchange, clearing, settlement and recording of these transactions. FMIs allow consumers and businesses to safely and efficiently purchase goods and services, make financial investments, and transfer funds. Given the important role FMIs play in supporting the transactions underlying economic activity and their potential to transmit risks throughout the Canadian economy, FMIs must be reliable, safe and efficient. Through its oversight responsibility, the Bank works to ensure that FMIs achieve these objectives.

At the time of publication of this report, the Governor of the Bank of Canada had designated five FMIs for oversight:[2]

- the Large Value Transfer System (LVTS), a Canadian electronic funds-transfer system that settles large-value and time-critical Canadian-dollar payments;
- CDSX, a Canadian system that consists of a securities settlement system; a central securities depository; and central counterparty services for eligible Canadian exchange-traded and over-the-counter equity, debt and money market transactions;

[1] The Payment Clearing and Settlement Act (PCSA) confers this responsibility on the Bank. Systemic risk, as defined by the PCSA, is the risk that the inability of a participant to meet its obligations as they become due or a disruption to an FMI could, by transmitting financial problems through the FMI, cause: (i) other participants to be unable to meet their obligations as they become due; (ii) financial institutions in other parts of the Canadian financial system to be unable to meet their obligations as they become due; or (iii) the FMI or another FMI in the Canadian financial system to be unable to meet its obligations as they become due.

[2] For the Governor to designate an FMI, the Minister of Finance must also be of the opinion that designation is in the public interest.

- The Canadian Derivatives Clearing Service (CDCS), a Canadian central counterparty that clears transactions in certain fixed-income securities, repurchase agreements (repos), equity derivatives and all derivatives traded on the Montréal Exchange;
- CLS Bank, a global payment system for the settlement of foreign exchange transactions, including those involving the Canadian dollar; and
- SwapClear, a U.K.-based central counterparty that clears interest rate swaps and other OTC interest rate derivatives denominated in multiple currencies, including the Canadian dollar.

The Bank's approach to oversight is described in the "Guideline Related to Bank of Canada Oversight Activities under the Payment Clearing and Settlement Act" (Oversight Guideline). The Bank's main oversight activities relate to monitoring and evaluating risk in designated FMIs. These activities include assessing designated FMIs and reviewing proposed changes to their operations, rules and procedures; periodic audits and inspections; and regular monitoring and engagement with the owners and operators of designated FMIs. For foreign-domiciled FMIs, the Bank conducts its oversight primarily through co-operative oversight arrangements with the foreign regulators of the FMIs.

The Bank's current oversight priorities reflect the domestic environment and changes that are under way in the broader global financial system. In the wake of the global financial crisis, the global financial system, including FMIs, is undergoing a profound transformation—both as a result of the crisis itself and the comprehensive reform agenda designed to address the underlying vulnerabilities. At the same time, advances in technology are facilitating new payment-service providers and innovative payment products.

In this context, the Bank set four main oversight priorities for 2013, which are discussed in this report. While these continue to be priorities for 2014, the Bank is pleased with the progress made toward them in 2013.

Implementation of the CPSS-IOSCO Principles for Financial Market Infrastructures

Following the global financial crisis, CPSS-IOSCO developed new and more rigorous standards for risk management and efficiency ("The Principles for Financial Market Infrastructures," or "the Principles," or "PFMIs").[3] In 2012, the Bank formally adopted the Principles as its risk-management standards. Since the Principles are more stringent than the previous standards, FMIs will require

[3] CPSS-IOSCO: the Committee on Payment and Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO)

time for full implementation. In 2013, the Bank and provincial regulatory authorities worked to provide clear supplementary guidance on areas where the Principles could be open to interpretation. The FMIs, with direction from the regulators, have made substantial progress toward observing the Principles. Implementation of the Principles is a multi-year project and will continue to be a priority in 2014.

Contributing to a robust regulatory framework

In the context of enhanced international standards and technological developments in FMIs, the Bank is reviewing its oversight framework to ensure that it remains efficient and effective and to identify areas for improvement. Projects in 2013 included participating in a review of the governance and oversight of retail payments; formalizing co-operative oversight arrangements with provincial regulators, with which the Bank shares oversight responsibility; and initiating a strategic review of how the Bank carries out its oversight responsibilities.

Strengthening the resilience of critical markets

The Bank undertakes several activities related to strengthening the resilience of critical markets. Specifically, in April 2013, the Bank designated SwapClear, which is the dominant central counterparty (CCP) serving the interest rate swap market, for Bank oversight. The Bank also continues to work with the industry to broaden participation in the Canadian Derivatives Clearing Corporation (CDCC) to make the repo market more resilient.

Developing effective recovery and resolution regimes

The Bank is working with the domestic and international community to put effective recovery and resolution regimes in place for systemically important financial institutions, as well as for systemically important FMIs.

1. The Bank of Canada’s 2013 Oversight Priorities

1.1 Implementation of the Principles for Financial Market Infrastructures

The Principles are the minimum international standards for risk management, efficiency and transparency for payment clearing and settlement systems. To ensure that a sufficient level of risk control is achieved in Canada, the Bank adopted the Principles as its risk-management standards in December 2012. As such, the Bank requires that all FMIs designated for oversight observe the Principles. The Bank is working with other Canadian regulators of systemically important domestic FMIs to apply the Principles in a consistent manner.

In July 2012, the Bank, together with l’Autorité des marchés financiers (AMF), the British Columbia Securities Commission (BCSC) and the Ontario Securities Commission (OSC) formed a coordination group to jointly implement the Principles in relation to CDCS and CDSX. In 2013, these authorities then developed a co-operative oversight agreement to formalize their framework for information sharing and coordination with respect to their oversight of CDSX and CDCS for finalization in early 2014.[4] The Bank also works with the Department of Finance regarding the observance of the Principles by the Large Value Transfer System (LVTS). Canadian regulators are committed to providing clear guidance to Canadian FMIs with respect to their expectations as to how, and when, Canadian FMIs are required to observe the Principles.

With respect to the foreign-domiciled systems it oversees, the Bank participates in co-operative oversight arrangements that allow it to monitor these systems and provide its views on their observance of the Principles.

1.1.1 Self-assessments by Canadian FMIs and their work to address gaps

The Principles are more stringent than previous standards for FMIs and incorporate new benchmarks for risk management. FMIs around the world are required to make improvements to their risk-management practices and operations to observe the Principles. For example, some Canadian FMIs will have to enhance their mechanisms for managing credit and liquidity risks, and for some, changes to governance arrangements may also be required.

In 2013, designated Canadian FMIs conducted detailed self-assessments against the Principles and identified gaps in their ability to observe them. Over the course of 2013, they developed work plans detailing the steps required to address their major gaps, and efforts to implement these plans are under way. In 2014, FMIs are expected to make significant progress in implementing their plans.

[4] The co-operative oversight agreement is a joint memorandum of understanding (MOU) and is further explained in Section 1.2.2 of this report.

FMIs will require time to close every gap and fully observe the Principles. The Bank will work with other Canadian regulators to closely monitor the implementation of the FMIs' plans to ensure that they are executed in a timely manner and that systemically important Canadian FMIs observe the Principles. Implementation of the Principles in Canada will also be regularly monitored and evaluated by CPSS-IOSCO on behalf of the Financial Stability Board (FSB) as part of its work related to financial sector reform.

The following section provides a summary of some of the major projects Canadian FMIs have under way in order to observe the Principles.

CDCS

- **Risk management**—In 2013, the Canadian Derivatives Clearing Corporation (CDCC), owner and operator of CDCS, worked to enhance its risk-management practices to observe the Principles. This work culminated in the development of a proposed Enterprise Risk Management Framework that will serve as an effective foundation for comprehensive risk management. This framework is to be implemented in 2014 and will be integrated with the TMX Enterprise Risk Management Framework.[5]

- **Credit risk and liquidity risk**—In 2013, CDCC examined its stress-testing and backtesting frameworks for credit- and liquidity-risk management to identify any gaps in its observance of the Principles. The CDCC is developing plans to implement a new system to improve the flexibility of its risk models and to address identified gaps. This new system is a major initiative that will require changes to CDCC's technological systems and risk-management processes. In addition, CDCC will apply a number of interim measures to improve its stress-testing and backtesting processes before the implementation of the new risk system.

[5] The Canadian Derivatives Clearing Corporation is a wholly owned subsidiary of TMX Group Inc.

CDSX

- **Credit risk**—Currently, CDSX's collateral requirements for its securities settlement system cover the credit risk from the largest potential defaulter. To observe the Principles, all securities settlement systems will have to collect sufficient collateral to cover each participant's credit risk fully and simultaneously to at least a 99 per cent confidence level. This means that credit exposures will have to be supported dollar-for-dollar by collateral value. The Canadian Depository for Securities Ltd. (CDS), the owner and operator of CDSX, began consultations with its stakeholders in 2013 and plans to work to meet the 99 per cent confidence level in 2014.
- **Liquidity risk**—The Principles call for FMIs to have sufficient liquid resources to cover various stress scenarios, including the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme, but plausible, market conditions. CDS plans to enhance its stress testing in early 2014 to account for this additional requirement. In addition, CDS will increase its liquidity providers in early 2014.
- **Central counterparties**—The CNS (Continuous Net Settlement) service is CDS's equity CCP. CDS plans to strengthen risk management at CNS by establishing a default fund for it. While CNS's margin requirements currently ensure that there is sufficient collateral to cover losses from a participant default 99 per cent of the time, the default fund is meant to cover exposures beyond 99 per cent, including the exposure from the single largest default under extreme, but plausible, market conditions. CDS will begin work on establishing the default fund in 2014.

LVTS

- **Risk management**—In 2013, the Canadian Payments Association (CPA), the owner and operator of the LVTS, undertook several important enhancements to align its risk-management framework with the Principles. Much of the CPA's efforts in 2013 focused on the groundwork necessary to implement a chief risk officer position (which was filled in December 2013), a Board-level risk committee and an internal audit function. These initiatives draw on existing risk expertise and practices within the CPA, while enhancing its capacity in this area. Enhancing its risk-management function will continue to be a priority for the CPA in 2014.
- **Affiliated participants**—In 2013, the CPA amended its rules to disallow the direct participation of affiliated institutions. This amendment aligns the CPA's risk controls with the Principles, which require that there be sufficient collateral to cover the default of the largest participant and its affiliates.

- **Collateralization**—The Bank accepts collateral from LVTS participants to support their LVTS activities. Higher standards for eligible collateral were introduced in the Principles. In particular, the Principles encourage mitigating wrong-way risk, which is the risk that an exposure to a counterparty is likely to increase as the creditworthiness of that counterparty deteriorates. Wrong-way risk exists in the LVTS because participants can pledge securities issued by other participants as part of a pool of collateral. Following internal analysis, the Bank issued a consultation paper in 2013 that proposed several sectoral limits, including one on the proportion of a participant's total collateral that is issued by other LVTS participants. On 13 March 2014, the Bank announced the implementation of these sectoral limits, with a six-month transition period ending on 30 September 2014.[6]
- **Other priorities in 2014—**The CPA will continue its work on the Principles by: (i) enhancing risk management; (ii) building a reserve fund to address general business risk (which was begun in 2013); (iii) enhancing the tools for intra-day liquidity monitoring; and (iv) augmenting the CPA's monitoring of participant incidents and its ability to enforce compliance with CPA rules.

1.1.2 Additional policy guidance on the Principles

In coordination with the AMF, BCSC and OSC, the Bank is developing supplementary guidance for certain Principles. This guidance will provide designated FMIs with additional context and clarity to assist them in addressing gaps in their observance of the Principles.

Throughout 2013, the authorities conducted policy analysis to support this guidance, and in late 2013, published guidance related to the governance principle for public consultation. It is expected that guidance related to collateral, liquidity risk, business risk and investment risk will be developed throughout 2014. Guidance associated with the recovery and resolution of FMIs, segregation and portability, as well as tiered participation arrangements, is expected to be developed in late 2014 or early 2015.

1.1.3 Integrating the Principles into ongoing oversight

While Canadian regulators have adopted the Principles as their risk-management standards for FMIs, there is still work to be completed in order to integrate the Principles into their ongoing oversight.

One area where additional work is required concerns the expectations of Canadian authorities regarding public disclosures, as outlined in the CPSS-

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[6] The limits are described in "Changes to Conditions for Assets Eligible as Collateral under the Bank of Canada's Standing Liquidity Facility (SLF)."

IOSCO Disclosure Framework. Canadian regulators need to determine the appropriate level and frequency of disclosure for FMIs and for the authorities.

Another important area for further development is the conduct of default simulations. In 2013, each FMI carried out a default simulation as required by the Principles. In 2014, to take into account the integrated nature of FMIs, the Bank will work with them to develop a strategy to carry out more-integrated default simulations.

1.2 Contributing to a robust regulatory oversight regime for FMIs

The Bank has a responsibility to assure itself that systemic risk is being adequately controlled in designated clearing and settlement systems. To do so, it monitors and assesses the risks and risk-control mechanisms in designated systems, both on an individual basis and in conjunction with other overseers and regulators as part of co-operative oversight arrangements. In 2013, the Bank participated in a number of initiatives, including a review of the governance and oversight of retail payments, formalizing co-operative oversight arrangements with provincial regulators and initiating a strategic review of how it conducts oversight.

1.2.1 Contribution to governance review of retail payments systems

Owing to advances in technology, paper-based payment methods such as cash and cheques are increasingly being replaced by a variety of electronic payment methods, including those offered by new payment service providers. While new and innovative payment methods can offer advantages, these systems must also be safe and provide adequate consumer protection.

In the spring of 2012, the Minister of Finance committed to review the governance of the Canadian payments sector to ensure the continued safety and soundness of the payments system, spur innovation and promote the consideration of user interests.[7] The Department of Finance has been working jointly with the Bank and consulting with stakeholders to conduct the governance review. To protect consumers and ensure public confidence in the use of electronic payment methods, a comprehensive risk-based approach to the oversight of the Canadian payments systems is being developed. The federal government intends to consult publicly on the approach in the spring of 2014.

In an effort to ensure that Canada's core national payments infrastructure is operated for the benefit of Canadian consumers and businesses, the Department of Finance proposes to introduce changes to the governance and accountability

[7] See "Minister of Finance Welcomes Findings of the Task Force for the Payments System Review."

structures of the CPA.[8] In addition, the Bank's oversight powers will be expanded and enhanced so that it can better identify and respond to risks in financial market infrastructures in a more proactive and timely manner.

1.2.2 Formalization of co-operative oversight arrangements with provincial regulators

The Bank shares oversight responsibility for designated FMIs with other authorities and therefore co-operates with them in conducting its oversight activities. In 2013, staff at the Bank, the AMF, BCSC and OSC drafted a joint memorandum of understanding (MOU) to formalize their framework for information sharing, consultation and coordination with respect to their oversight of CDSX and CDCS. This MOU promotes co-operation among the parties in order to promote the safety and efficiency of designated FMIs. The MOU was approved and signed by all parties in 2014Q1.

1.2.3 Strategic oversight review

The Bank was given responsibility for the oversight of systemically important clearing and settlement systems in 1996. To ensure that these responsibilities are conducted efficiently and effectively, the Bank undertakes periodic reviews of its oversight practices to determine areas of improvement so it can adjust its oversight framework accordingly. Given recent changes in the environment in which FMIs operate, the Bank began such a review in 2013. Work in 2013 focused on reviewing the adequacy of the Bank's oversight powers.

In conducting this review, the Bank placed importance on preserving and strengthening its ability to: apply timely and early intervention to address risk issues before they become significant; apply a graduated escalation approach in proportion to the risks facing an FMI; and enforce its oversight powers under a variety of risk scenarios.

In 2014, the Bank will continue to review its oversight framework and practices. This review will include updating its risk-based oversight approach, incorporating enhanced powers into its oversight practices and expanding its oversight to include any additional responsibilities related to retail payment systems.

1.3 Strengthening the resilience of critical markets

1.3.1 Expanding participation in the repo CCP

The CDCC launched its fixed-income CCP in February 2012 and has seen a steady increase in the average daily value cleared through the system. However,

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[8] The CPA owns and operates the LVTS, as well as the Automated Clearing and Settlement System (ACSS), which facilitates the clearing of the majority of Canada's retail payments.

at present, just 10 to 15 per cent of outstanding repurchase agreement (repos) transactions are cleared through CDCS.

To increase CDCS's share of overall repo activity, CDCC, the Investment Industry Association of Canada and industry stakeholders have been engaging in discussions with "buy-side participants" to explore the feasibility of these entities joining the repo CCP. In 2013, CDCC and the industry worked together to identify the issues and operational challenges that need to be resolved to allow these significant repo market players to join the repo CCP. This resulted in the development of potential participation models to address these challenges.

The Bank is working closely with CDCC and the industry to accommodate buy-side participation and to determine whether any of the changes to CDCS's operations required to accommodate buy-side participation are acceptable from the perspective of systemic risk.

1.3.2 Designation of LCH.Clearnet Ltd.'s SwapClear clearing service for the interest rate swap market

The interest rate swap (IRS) market plays a central role in allowing Canadian banks and firms to manage their interest rate risk. Internationally, SwapClear, operated by LCH.Clearnet Limited (LCH), is the dominant CCP for over-the-counter (OTC) interest rate derivatives, clearing contracts in 17 currencies, including the Canadian dollar, and representing the vast majority of outstanding cleared interest rate derivatives. In 2013, the Bank completed a review of SwapClear's potential to pose systemic risk and, given the important role that the system plays in the Canadian IRS market,[9] concluded that SwapClear is systemically important to the Canadian financial system.

Effective 2 April 2013, the Governor designated SwapClear as subject to ongoing regulatory oversight by the Bank. During 2013, the Bank was actively involved in the oversight of SwapClear through participation in a multilateral arrangement for oversight co-operation led by SwapClear's lead regulator, the Bank of England, and through bilateral interaction with the Bank of England and LCH.[10]

1.4 Developing effective recovery and resolution regimes

Canadian authorities recognize the importance of effective recovery and resolution regimes for systemically important financial institutions, including

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[9] The "Canadian IRS market" refers to the Canadian-dollar IRS market and the portion of foreign currency IRS transacted by Canadian participants.

[10] Oversight responsibility for SwapClear was assumed by the U.K. Financial Services Authority until 1 April 2013, when the responsibility was transferred to the Bank of England.

financial market infrastructures. In 2013, oversight staff worked with other financial sector authorities on important projects to achieve these initiatives.

1.4.1 Understanding and addressing the impact on FMIs of financial institution recovery and resolution

The Key Attributes of Effective Resolution Regimes for Financial Institutions (the Key Attributes), endorsed by the G-20 in November 2011, set out the core elements that the FSB considers necessary for the effective resolution of financial firms. To comply with the Key Attributes, authorities are to develop effective recovery and resolution regimes for systemically important financial institutions.

Consistent with the Key Attributes, Canada's federal financial agencies are working with domestic systemically important banks to develop their recovery and resolution plans.[11] This work has included a review of potential issues and challenges related to the participation of financial institutions in FMIs in the context of a recovery or resolution scenario. To this end, the Bank and its federal partners began work in 2013 to create a resolution regime for financial institutions that minimizes the propagation of risk through FMIs.

1.4.2 Developing recovery and resolution regimes for financial market infrastructures

The disorderly failure of an FMI could lead to severe systemic disruptions if it caused the markets it serves to cease to operate effectively. It is therefore essential that FMIs are able to continue to provide critical functions in all circumstances—including when they face a material financial loss.

Recovery involves the set of actions an FMI facing financial difficulties can take to restore or maintain its viability so it can continue to provide critical services without requiring authorities to use their resolution powers. During 2013, Bank staff contributed to the development by CPSS and IOSCO of international guidance for FMIs on how to develop appropriate recovery regimes. Following completion of the final report—expected during the first half of 2014—Canadian FMI regulators and overseers will provide supplementary guidance to Canadian FMIs.

Resolution is the responsibility of the authorities and involves the actions taken following the failure of an FMI. In some circumstances, it may not be possible for FMIs to take actions that allow them to sufficiently replenish their financial resources. In that case, resolution authorities will have to step in to resolve the

[11] See http://www.osfi-bsif.gc.ca/eng/fi-if/rg-ro/gdn-ort/adv-prv/pages/dsib_nr.aspx for more details on Canada's domestic systemically important banks.

FMI in an orderly manner. In 2014, Canadian authorities, including the Bank, will begin work on resolution regimes for systemically important Canadian FMIs.

2. Key Activities Related to Designated FMIs

Each year, the Bank works with designated Canadian FMIs to monitor their activities to ensure that systemic risk continues to be adequately controlled. For foreign-domiciled FMIs, the Bank conducts its oversight primarily through co-operative oversight arrangements with other regulators of FMIs. In 2013, many of the FMIs' key activities were related to meeting those new, more stringent standards. However, FMIs also completed other important activities that were not directly related to meeting the Principles.

2.1 Large Value Transfer System

In response to the relatively high number of participant incidents over the period from September 2011 to February 2013, the CPA conducted a holistic review to examine the root causes and propose recommendations. The analysis revealed that several incidents were related to changes or upgrades made by participants to their internal payment processing. As a result, the CPA will incorporate participant change-management procedures into its rules and review the options available to improve compliance.

In 2013, the CPA also focused on major technological initiatives, including implementing a new system to access the LVTS to perform administrative functions. This was a large and complex undertaking during which the LVTS experienced a number of operational incidents. However, the CPA took appropriate steps to manage the incidents and to identify and address root causes. In addition, a review of the project led to enhancements to change-management processes and system-monitoring tools.

The CPA has also embarked on a multi-year project to adopt ISO 20022 as its new payment-messaging standard. This will allow for greater interoperability, increased remittance information, straight-through processing and potential efficiencies. In 2013, the CPA consulted its members and stakeholders to begin defining the ISO standards and usage guidelines.

2.2 CDSX

CDS, the operator of CDSX, was acquired in August 2012 by a group of major Canadian pension funds and investment dealers, Maple Group Acquisition Corporation (Maple). Maple also acquired TMX Group Inc. and Alpha Trading Systems LP to form TMX Group Ltd.[12] In 2013, CDS took steps to ensure that its

[12] The CDCC, a wholly owned subsidiary of TMX Group Inc., was also affected by the acquisition. While CDCC also needed to undertake work related to integration, the existing relationship with

integration within TMX was accomplished safely. This work included maintaining sufficient resources at all times in the Operations and Risk Management areas and ensuring that any work outsourced to TMX Group was managed effectively and efficiently, in a manner that adequately mitigated risk to CDS and its participants.

Since the implementation of CDCC's fixed-income CCP in February 2012, transaction volumes in CDS' FINet Service experienced a proportional and steady decline. The CDCC has recently made provincial bonds eligible for their fixed-income netting service, which resulted in an associated reduction in transactions submitted to FINet. In April 2013, the CDS Board of Directors approved rule amendments to proceed with the decommissioning of FINet, and these were subsequently approved by regulators. CDS began the process of shutting down the FINet service in December 2013.

2.3 CLS Bank

CLS Bank launched its new Same-Day Settlement (SDS) service on 23 September 2013. This service allows same-day settlement of foreign exchange transactions involving U.S. and Canadian dollars, and significantly reduces settlement risk on these transactions. There are currently 15 settlement members, five of which are Canadian,[13] participating in the SDS session, and two additional settlement members are expected to join by mid-year.

In the autumn of 2013, CLS successfully raised £160 million (approximately Can$277 million) in additional capital from its members. This additional capital will strengthen CLS's capital structure and allow it to support business initiatives and meet the anticipated requirements of the Principles. The Principles require FMIs to hold sufficient liquid net assets to cover potential general business losses so that an FMI can continue its operations and services as a going concern if those losses were to materialize.

2.4 SwapClear

In 2013, the primary focus of SwapClear's owner and operator, LCH, was on making the required changes to comply with U.S. and European regulatory requirements. This included revising SwapClear's margining process in order to be able to comply with the Commodity Futures Trading Commission's (CFTC's) "real-time trade registration" or "60-second" rule, as well as implementing

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TMX Group Inc. meant that the extent of integration work required was significantly less than that required of CDS.

[13] The remaining participants are both U.S.- and other foreign-based institutions.

changes in the areas of governance, liquidity-risk management, risk modelling, and segregation and portability in order to comply with the European Market Infrastructure Regulation (EMIR).[14]

There were also a number of changes to LCH's corporate structure during 2013, with the London Stock Exchange Group acquiring a majority stake in LCH.Clearnet Group and several changes in LCH's executive senior management team. The Bank participates in the multilateral arrangement for oversight co-operation of Swap Clear, which closely monitored these changes in management.

[14] The CFTC's rule on straight-through processing, also known as the "real-time trade registration" or "60-second" rule, requires CCPs to register (and novate) trades within 60 seconds of submission. EMIR, a European OTC derivatives market reform regulation that builds on the Principles, includes new risk-management standards for CCPs. LCH has applied to the Bank of England for EMIR authorization.

Appendix 1: Background on FMIs Overseen by the Bank of Canada

Financial market infrastructures (FMIs) are systems that facilitate the clearing, settling or recording of payments, securities, derivatives or other financial transactions among participating entities. FMIs allow consumers and firms to safely and efficiently purchase goods and services, make financial investments, and transfer funds. FMIs can therefore play an important role in enhancing financial stability. Some FMIs (referred to as “systemically important FMIs”) have the potential to pose *systemic risk*, in that the inability of one participant to meet its obligations to the FMI could, by transmitting financial problems through the FMI, cause other participants to be unable to meet their obligations. It is therefore essential that these FMIs incorporate appropriate risk-control mechanisms to ensure that systemic risk is adequately managed. Three types of FMIs are eligible for Bank oversight:

- **payment systems (PSs)**—which facilitate the transfer of funds.
- **securities settlement systems (SSSs)**—which facilitate the transfer of securities and other financial assets. SSSs often operate in conjunction with central securities depositories (CSDs), which provide securities accounts, central safekeeping and asset services. SSSs may provide additional securities clearing and settlement services, such as CCP clearing services.
- **central counterparties (CCPs)**—which become the buyer to every seller and the seller to every buyer of a financial contract to ensure that, even if a buyer or a seller fails to meet its obligation to the CCP, obligations will be met on all contracts.

The Governor of the Bank of Canada has designated five FMIs for oversight:

- The **Large Value Transfer System (LVTS),** a Canadian electronic funds-transfer system that settles large-value and time-critical Canadian-dollar payments.
- **CDSX**, a Canadian system that consists of a securities settlement system, a central securities depository, and central counterparty services for eligible Canadian exchange-traded and over-the-counter (OTC) equity, debt and money market transactions. The Bank oversees all of these elements of the system.
- The **Canadian Derivatives Clearing Service (CDCS)**, a Canadian central counterparty that clears transactions in certain fixed-income securities, repurchase agreements (repos), OTC equity derivatives and all derivatives traded on the Montréal Exchange.

- **CLS Bank**, a global payment system for the settlement of foreign exchange transactions, including those involving the Canadian dollar.
- **SwapClear**, a U.K.-based central counterparty that clears interest rate swaps and other OTC interest rate derivatives denominated in multiple currencies, including the Canadian dollar.

See **Table 1** for a summary of these FMIs and the functions they perform in the Canadian financial system.

FMIs are interdependent, relying on the services provided by one another. These relationships increase the potential for risk to be transmitted from one FMI to another and thus underscore the importance of robust risk management by FMIs.

The Bank's main oversight activities relate to monitoring and evaluating risk in designated FMIs. The Bank does this by assessing designated FMIs against internationally accepted risk-management standards and reviewing proposed changes to their operations, rules and procedures. The Bank asks for regular audits of the operations of designated FMIs and can also ask for special audits or inspections. Further, the Bank frequently engages with the owners and operators of designated FMIs at various levels (e.g., regular meetings with staff and an annual address to the Board). For foreign-domiciled FMIs, the Bank conducts its oversight primarily through co-operative oversight arrangements with the other FMI regulators.

Table 1: Summary of the activities of designated FMIs in 2013

		Volume[1] 2013	Volume[1] 2012	Value[1] 2013	Value[1] 2012
Large Value Transfer System (LVTS)					
PS	Daily average				
- Designated in 1999	transactions settled:	30 K	28 K	$150 B	$151 B
- Large-value funds transfer					
- Payment exchange for other FMIs					
CDSX					
SSS, CSD and CCP	Daily average				
- Designated in 2003	transactions settled:	1,372 K	1,480 K	$452 B	$352 B
- Equity and fixed-income securities	Securities at CSD:			$4.3 Tr	$4.1 Tr
- Securities clearing and settlement and safekeeping of assets					
Canadian Derivatives Clearing Service (CDCS)					
CCP					
- Designated in 2012	Daily average				
- OTC repos	value cleared:			$19.7 B	$8.5 B[2]
- Exchange-traded financial derivatives	Notional traded:			$101 B	$91.8 B
- OTC-traded financial derivatives	Notional traded:			$15.1 M	$8 M
Continuous Linked Settlement Bank (CLS Bank)					
PS	Daily average transactions settled				
- Designated in 2002	Total (in US$):	819 K	705 K	$4,987 B	$4,687 B
- Foreign exchange settlement	Can$:	30K	27 K	$126 B	$117 B
SwapClear					
CCP	Total notional outstanding				
- Designated in 2013	Total (in US$):			$436 Tr	$340 Tr[3]
- OTC interest rate swaps	Can$:			$7.7 Tr	$4.5 Tr

[1] The volume and value of transactions are expressed in thousands (K), millions (M), billions (B) or trillions (Tr) of dollars.

[2] The CDCS fixed-income service was launched in phases during 2012. Owing to the incremental activity in the service during these phases, the amount provided represents the average value of repo trades cleared in December 2012 rather than for the entire year.

[3] 2012 statistics for SwapClear are end of year.

Appendix 2: Relevant Research and Publications Issued by the Bank of Canada in 2013

Anderson, S., J.P. Dion and H. Pérez Saiz. 2013. "To Link or Not To Link? Netting and Exposures Between Central Counterparties." *The Journal of Financial Market Infrastructures* 1, 4: 3−29. Also published as Bank of Canada Working Paper No. 2013-6.