

Monitoring Shadow Banking in Canada: A Hybrid Approach

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- The shadow banking sector in Canada provides an alternative to banks for intermediating credit to the economy. However, it also has the potential to increase financial sector vulnerabilities, since the sector is not prudentially regulated.
- The Bank of Canada regularly assesses potential vulnerabilities emanating from the shadow banking sector as part of its monitoring of threats to the stability of the Canadian financial system. The Bank's current approach is a hybrid one that examines both markets and entities to ensure broad coverage and capture new parts of the sector as it evolves.
- Based on available information, we judge that the shadow banking sector does not pose large vulnerabilities for the Canadian financial system at this time, mainly because of the limited degree of liquidity and maturity mismatch as well as low leverage in most parts of the sector. The relatively small size of individual subsectors currently also limits the potential for systemic stress.
- However, significant gaps remain in data and knowledge and are likely to persist because of the dynamic nature of the shadow banking sector. The Bank continues to collaborate with domestic and international authorities to fill in these gaps, where possible.

Introduction

Credit intermediation that takes place at least partly outside the traditional banking system is commonly referred to as shadow banking.¹ This sector provides diverse sources of funding to the economy, helps distribute risk among financial sector participants and can also be a source of financial innovation. These elements help to enhance the efficiency and resilience of the financial system.

The experience of the 2007–09 global financial crisis showed, however, that financial stability can be threatened by vulnerabilities originating in the shadow banking sector, especially if they are allowed to grow unchecked.²

¹ Here, the traditional banking system is defined as prudentially regulated deposit-taking institutions. Shadow banking is sometimes described by other terms, such as market-based finance and non-bank credit intermediation. "Shadow" is not intended to be pejorative, and its use is consistent with the terminology employed in Financial Stability Board and G20 communications.

² Vulnerabilities are pre-existing conditions that can amplify or propagate adverse shocks throughout the financial system, leading to a rise in systemic risk.

As in the banking sector, vulnerabilities arising from the maturity and liquidity transformation associated with credit intermediation, often in combination with leverage, raise the risk of runs in the shadow banking sector. However, the shadow banking sector is not prudentially regulated or supervised to the same extent as banks. Moreover, the interdependence of the traditional and shadow banking sectors, while beneficial, can act as a mechanism for propagating adverse shocks across the broader financial system. For these reasons, the Bank of Canada regularly assesses potential vulnerabilities emanating from the shadow banking sector as part of its monitoring of threats to the stability of the Canadian financial system. See Chapman, Lavoie and Schembri (2011) and Gravelle, Grieder and Lavoie (2013) for previous descriptions of the Bank's monitoring of the sector.³

The shadow banking sector is continuously evolving in response to various factors, including changes in the regulatory environment and financial innovation. Tightening bank regulation, for example, can lead to migration of activity from the traditional banking sector to the shadow banking sector. Conversely, as the scope of regulation increases, elements of the financial sector that were previously considered shadow banking may now fall under regulatory purview. Financial innovation, such as a new product or technology, can change incumbent business models, increase competition and improve the ways in which financial services are provided. The Bank of Canada's monitoring efforts must keep pace with evolving business models and the behaviour of financial sector participants.

Monitoring shadow banking includes both estimating the size of the sector and assessing its potential vulnerabilities and risks. Measuring the size allows us to understand the relative importance of shadow banking and its evolution over time. We estimate that the shadow banking sector is roughly half the size of the banking sector in Canada. But aggregate size alone does not provide a complete picture, since the shadow banking subsectors have different characteristics. Accordingly, we also assess the potential vulnerabilities posed by individual subsectors. However, there are currently many gaps in the data, including a lack of information about the connections between shadow banking and other parts of the financial system. Based on available information, we judge that the shadow banking sector in Canada does not exhibit large vulnerabilities at this time: the individual subsectors do not display a high degree of liquidity and maturity mismatch or elevated leverage, and most are small in size relative to the Canadian financial system.

In this report, we describe the Bank of Canada's current approach to defining and measuring the shadow banking sector and include brief assessments of the current state of vulnerabilities in various subsectors.

Shadow Banking in Canada

Refining the definition

The scope of the shadow banking sector changes over time, reflecting the dynamism of the financial sector. To determine which parts of the financial sector are considered shadow banking, a definition is needed that is both comprehensive and adaptable. The definition allows us to identify bank-like intermediation that is not subject to the rigorous and comprehensive prudential regulation and supervision typically applied to banks.

³ The Bank's previous definition of shadow banking focused on bank-like intermediation activities conducted primarily through markets.

Box 1

The Regulatory Perimeter

Identifying and monitoring shadow banking involves careful examination of the extent, purpose and strength of regulation across the financial system. Entities that are subject to comprehensive, risk-based prudential regulation—such as minimum capital and liquidity requirements that aim to protect their safety and soundness—are not included in the shadow banking sector. Transactions involving only prudentially regulated entities are also excluded. For domestic monitoring, any entity regulated by the Office of the Superintendent of Financial Institutions (OSFI) or by a provincial prudential regulator is considered to be prudentially regulated.

Entities that are not prudentially regulated may still be subject to strong and effective regulation. In addition, many markets have rules and restrictions governing conduct and investor protection that can help reduce vulnerabilities in the financial system. For example, in Canada, regulation of investment funds by securities regulators in certain cases includes rules on liquidity and leverage that reduce the risk of runs. The Bank of Canada still considers some of these funds to be shadow banking, but our assessment of vulnerabilities takes into account the risk mitigation from strong regulation. Similarly, all investment dealers are regulated by the Investment Industry Regulatory Organization of Canada

(IIROC) and are subject to liquidity and capital rules.¹ In addition, OSFI assesses the activities of bank-owned investment dealers as part of its prudential supervision of banks, which is done on a consolidated basis. Given that IIROC's supervisory methods and objectives differ in important ways from those of OSFI, bank-owned investment dealers are excluded from the shadow banking sector, but non-bank investment dealers are counted as shadow banking entities.² The mitigation of vulnerabilities as a result of IIROC's regulation is reflected in the vulnerability assessment of non-bank dealers.³

Monitoring of shadow banking also involves tracking activity into and out of the regulatory perimeter. Ongoing regulatory changes and financial innovation necessitate a continuous reassessment—and, when required, adjustment—of the perimeter to ensure comprehensive monitoring.

1 The term “investment dealer” is mainly used in Canada. Internationally, “broker-dealer” is used to describe the same type of entity.

2 This distinction between bank-owned and other dealers is also a feature of the Financial Stability Board's monitoring of global shadow banking.

3 Foreign bank broker-dealers are excluded from shadow banking as long as they are prudentially regulated under the jurisdiction of the parent bank. However, because of data limitations, they are included in the size estimate for non-bank investment dealers.

The Bank of Canada defines the shadow banking sector as consisting of **entities and markets** that

- conduct or facilitate a **chain of credit intermediation**,
- involve a material degree of **maturity or liquidity transformation**, and
- are at least partly **outside the perimeter of prudential regulation**.

A chain of credit intermediation refers to the provision of credit with at least two links between the issuer and the end-holder of a security or loan. Maturity transformation is the financing of long-term assets with short-term funding. Liquidity transformation refers to financing illiquid assets using liquid instruments. Note also that although some degree of balance-sheet leverage is a possible characteristic of shadow banking, it is not necessary to include it in our definition of shadow banking.⁴ Box 1 provides a discussion of the perimeter of prudential regulation.

The Bank's current approach is to examine both the entities that engage in shadow banking activities and the markets in which shadow banking activities take place. This hybrid method eases measurement challenges and facilitates effective risk assessment. It is important to monitor entities, since engaging in shadow banking activities leads to maturity and liquidity transformation and leverage on their balance sheets, and this information is useful for detecting vulnerabilities in the sector. In addition, the markets in which some entities participate can be opaque, making it difficult to monitor

4 While money market mutual funds engage in shadow banking, they do not have balance-sheet leverage.

their activities from a market perspective. Some shadow banking activities, however, are conducted off-balance-sheet or through entities for which detailed balance-sheet information is not available. In these cases, looking at the market rather than the entity has advantages. Monitoring markets not only overcomes a measurement issue but, more importantly, it also provides information on the interconnections between prudentially regulated entities and the less-regulated sector that can lead to systemic stress.

With the hybrid approach, some double counting may occur when activities are captured in both a market and an entity. To a certain extent, this is an advantage because it minimizes the possibility of overlooking some shadow banking components of the financial system. This methodology is also closely aligned with the definition used by the Financial Stability Board (FSB) to monitor shadow banking globally.⁵

For measurement purposes, the liabilities of entities that are primarily engaged in shadow banking are typically included, although in some cases the assets may be counted instead. For markets, outstanding amounts of securities from transactions that involve at least one entity not subject to prudential regulation are counted. However, when there are gaps in the data, the size of the entire market may be used as a proxy.

Coverage and size of the shadow banking sector

The shadow banking sector can be divided into five major subsectors:

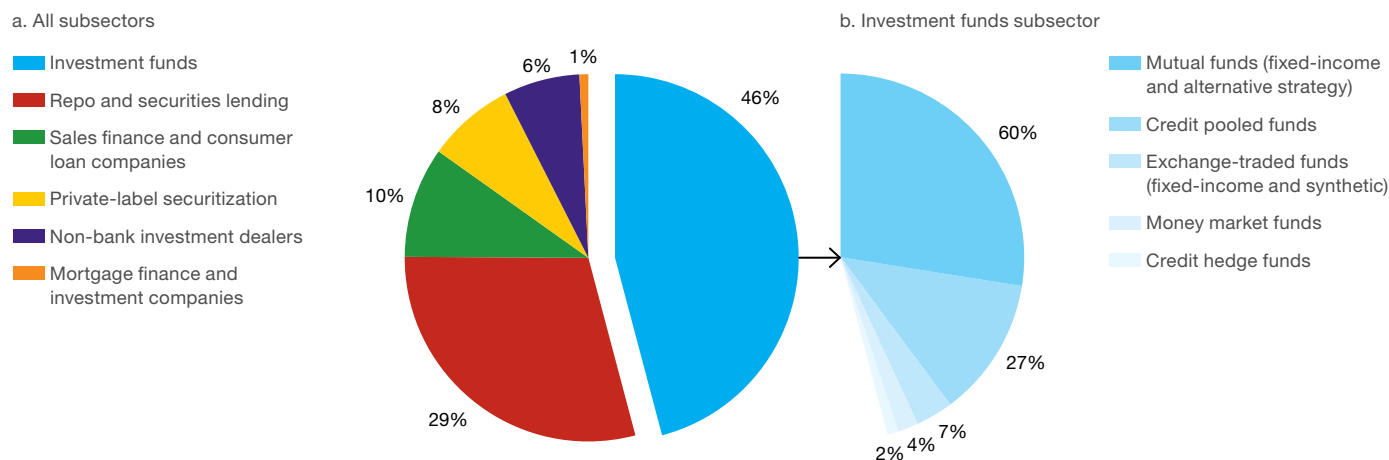
1. Investment funds, consisting of
 - a. money market mutual funds (MMFs)
 - b. other mutual funds and exchange-traded funds (ETFs)⁶
 - fixed-income and alternative strategy mutual funds
 - fixed-income and synthetic ETFs
 - c. prospectus-exempt funds
 - credit hedge funds
 - credit pooled funds⁷
2. Repurchase agreements (repos) and securities lending transactions that involve at least one entity that is not subject to prudential regulation
3. Lenders that are not prudentially regulated, such as mortgage finance companies (MFCs), auto lenders, leasing companies, finance companies and mortgage investment corporations (MICs)
4. Private-label securitization, including asset-backed securities (ABS), asset-backed commercial paper (ABCP) and commercial mortgage-backed securities
5. Investment dealers that are not owned by prudentially regulated banks

⁵ The FSB's policy framework is available at www.fsb.org/2013/08/r_130829c. In 2016, the FSB published a peer review of country implementation of the framework, available at www.fsb.org/wp-content/uploads/Shadow-banking-peer-review.pdf.

⁶ The securities issued by these funds must be qualified by a prospectus, a detailed legal document that provides investors with information about the fund. An investment fund can be exempt from filing a prospectus if it meets the requirements set by the Canadian Securities Administrators in National Instrument 45-106 *Prospectus Exemptions*.

⁷ In this report, "pooled funds" refers to prospectus-exempt funds that employ strategies similar to mutual funds but are sold to institutions and high-net-worth individuals rather than to retail investors. Credit funds are funds that have gross exposures of more than 50 per cent in credit instruments (e.g., bonds, loans, structured/securitized fixed-income securities).

Chart 1: Composition of the shadow banking sector in Canada



Sources: Annual reports of pension funds, DBRS, Markit, Morningstar, Ontario Securities Commission, regulatory filings of Canadian banks, Statistics Canada and Bank of Canada calculations

Last observation: 2016Q2

A major difference in coverage resulting from refining the Bank’s definition is the exclusion of *National Housing Act* Mortgage-Backed Securities (NHA MBS) and Canada Mortgage Bonds as shadow banking markets. Although these instruments are part of a credit intermediation chain, they have the explicit backing of the Government of Canada, which mitigates credit risk. Another change has been the treatment of the markets for commercial paper and bankers’ acceptances. Instead of including these markets within shadow banking, the investors that perform liquidity and maturity transformation by holding these instruments—such as MMFs—are considered shadow banking entities, which also helps reduce double counting.

A notable addition to the shadow banking sector is investment funds beyond MMFs. These funds engage in liquidity and maturity transformation, since they purchase less-liquid assets with longer maturities but offer investors the ability to redeem their shares at short notice. Including investment funds aligns with the global shadow banking monitoring exercise conducted by the FSB. Other entities now included in shadow banking are MFCs, sales finance and consumer loan companies, and non-bank investment dealers.

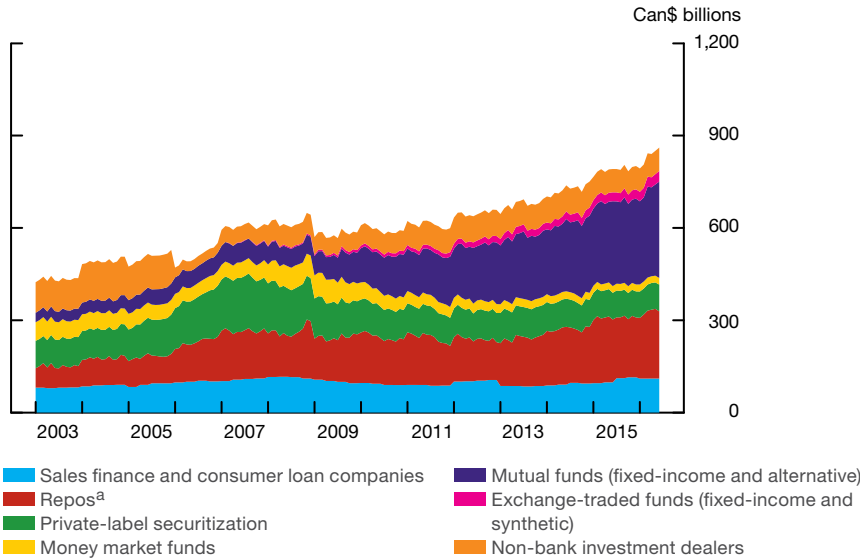
The overall size of the shadow banking sector in Canada is estimated to be \$1.1 trillion, roughly half of the \$2.1 trillion of traditional bank liabilities.⁸ Chart 1a shows the relative size of the shadow banking subsectors in Canada. The sector’s largest components are investment funds (46 per cent), followed by repo and securities lending transactions (29 per cent).⁹ Within the investment funds subsector, fixed-income and alternative strategy mutual funds are the largest components, accounting for 60 per cent of the subsector (Chart 1b) and 27 per cent of the shadow banking sector overall. The measurement of the overall size of the shadow banking sector is imperfect, owing to double counting and limitations that arise due to current data gaps. It provides a rough gauge, however, for understanding how the shadow banking sector is evolving and how it compares with other parts of the financial system.

⁸ Traditional bank liabilities comprise gross deposits (including longer-term Canadian-dollar unsecured debt), subordinated debt and the foreign currency deposits of Canadian residents.

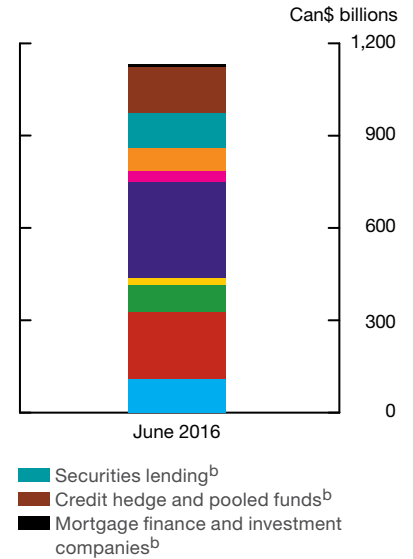
⁹ The size of repo activities is calculated as the sum of the repo liabilities of the Big Six banks and the eight largest pension funds in Canada. Lack of granular data prevents us from extracting interbank repo liabilities, which should be excluded from the coverage of shadow banking. Hence, the extent of shadow banking through repos is likely overestimated.

Chart 2: Evolution of some shadow banking subsectors in Canada

a. Selected subsectors



b. All subsectors



a. Repos include interbank and pension fund repos.

b. Time-series information is not available for these subsectors.

Sources: Annual reports of pension funds, Bank of Canada, DBRS, Markit, Morningstar, Ontario Securities Commission, regulatory filings of Canadian banks and Statistics Canada

Last observation: June 2016

Chart 2a shows the evolution of some of the shadow banking subsectors. Due to data limitations, we cannot continuously track the evolution of all the subsectors, specifically MFCs, MICs, credit hedge funds, credit pooled funds and securities lending transactions. The shadow banking subsectors shown represent roughly 76 per cent of the overall sector in Canada as of June 2016. The estimated size of these subsectors increased rapidly before the global financial crisis, decreased in its aftermath and recently began to increase again. This latest rise can mainly be attributed to the growth of fixed-income mutual funds and, to a lesser extent, to repo and fixed-income ETFs. In contrast, MMFs and private-label securitization remain stagnant. Chart 2b shows all subsectors as of June 2016, including those for which we cannot track the past evolution.

Assessing Vulnerabilities

The shadow banking sector can pose vulnerabilities that may adversely affect the stability of the Canadian financial system. Using the Bank's framework for assessing vulnerabilities, described in Christensen et al. (2015), we regularly evaluate vulnerabilities such as leverage; funding and liquidity (including the degree of liquidity and maturity transformation); pricing of risk; and the degree of opacity in the Canadian financial system, including the shadow banking sector. A variety of inputs, such as quantitative and qualitative indicators, market intelligence, and discussions with other domestic authorities, are used to assess vulnerabilities.

Similar to the traditional banking sector, each of the shadow banking subsectors is susceptible to runs. Although the characteristics and functions of the subsectors vary significantly, they all involve bank-like liquidity and maturity transformation that provide a basis for runs. The impact of runs on the financial system can be magnified by the presence of leverage and

opacity and the interconnectedness of the subsectors with the rest of the financial system. The lower degree of prudential regulation makes regular assessment of vulnerabilities in all shadow banking subsectors especially important.

Overall, based on available information, we judge that the shadow banking sector does not currently pose major vulnerabilities for the Canadian financial system. Structural features in some subsectors make them susceptible to stress, but their relatively small size restricts the potential for systemic stress. However, linkages of the shadow banking sector with the rest of the financial system and the systemic importance of various subsectors are difficult to quantify. In addition, the responses of financial sector participants to regulation and financial innovation may be a source of new vulnerabilities and emerging systemic risks.

Investment funds

A variety of credit-based investment funds that differ by their investor pools and degree of regulation are included in shadow banking. The inherent liquidity and maturity mismatch between the portfolio assets of funds and the potential for on-demand redemptions of the shares in the funds create a risk of runs. While vulnerabilities are currently low for most funds in Canada, certain structural features of funds and the recent growth of fixed-income mutual funds warrant monitoring.

Money market mutual funds

The share of MMFs in the mutual fund industry continues to decline, with MMFs constituting only 2 per cent of the total assets under management, compared with 13 per cent at the time of the financial crisis. The decrease can be attributed to both the smaller size of the assets under management at MMFs (\$22 billion as of June 2016) and growth in the overall size of non-money market mutual funds. The low interest rate environment and increased competition from savings accounts offered by banks have both contributed to the decrease. Although this sector is currently unlikely to be of systemic importance for Canada because of its small size, the prevalence of constant net asset value funds and the general absence of a capital cushion make MMFs more vulnerable to runs (Witmer 2012).

Fixed-income mutual funds and exchange-traded funds

Fixed-income and alternative strategy mutual funds had \$313 billion of assets under management as of June 2016. Canadian fixed-income mutual funds use limited leverage, which is restricted by securities regulation, and hold sufficient cash and equivalents to manage investor redemptions, suggesting that vulnerabilities are currently limited (Ramirez, Sierra Jimenez and Witmer 2015). However, the continued growth of the mutual fund sector—in particular, funds holding less-liquid assets but offering daily redemptions—has attracted the attention of regulators in many jurisdictions. As a result, the FSB has proposed policy recommendations to reduce the potential vulnerabilities arising from liquidity mismatch in these funds.¹⁰

Fixed-income and synthetic ETFs had \$35 billion in assets under management as of June 2016. Fixed-income ETFs are subject to the same securities regulation as other mutual funds and, currently, vulnerabilities in these funds

¹⁰ For more information, see “Proposed Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities,” available at www.fsb.org/wp-content/uploads/FSB-Asset-Management-Consultative-Document.pdf.

are low. They are also less likely than mutual funds to face runs because, unlike mutual funds, investors typically do not redeem ETF units. Instead, liquidity is provided by selling the units to other investors on exchanges. The presence of authorized participants—who create and redeem shares to keep the price of an ETF close to the net asset value—reduces but does not eliminate the likelihood of runs (Foucher and Gray 2014). Synthetic ETFs face more significant liquidity and counterparty risks, but their potential to transmit systemic stress is limited by their small size in Canada.

Credit hedge funds and credit pooled funds

Both hedge funds and pooled funds are prospectus-exempt investment pools that face fewer regulatory restrictions than mutual funds or ETFs.¹¹ Unlike with mutual funds or ETFs, investment in hedge funds and pooled funds is restricted to accredited investors such as institutions and sophisticated or high-net-worth individuals. Hedge funds typically do not offer daily redemptions and often require an initial lock-up period, whereas pooled funds typically offer short-term redemptions on daily or weekly notice. Pooled funds and hedge funds also differ in their strategies; pooled funds employ little leverage and use strategies similar to those of mutual funds, while hedge funds employ alternative strategies, often using leverage.

Only credit hedge funds and credit pooled funds are considered shadow banking for domestic monitoring. These funds face risks of runs and fire sales, depending on their redemption structures. In addition, credit hedge funds may be affected by stress in repo and securities lending markets, which they often rely on for funding.

The size of credit hedge funds in Canada is relatively small, with roughly \$9 billion of assets under management as of December 2015.¹² A comparison of the amount of investor funds redeemable in the short term with the estimated liquidation period of investment assets shows a relatively low degree of liquidity mismatch (**Chart 3a**). The reported gross exposure to illiquid securities of credit hedge funds is only 9 per cent of aggregate net asset value. Their median gross leverage of 2.9 is close to the historical average observed for US credit hedge funds between 2005 and 2009 (Ang, Gorovyy and van Inwegen 2011) and is therefore considered to be moderate.¹³

Credit pooled funds had \$142 billion of assets under management as of December 2015. These funds have negligible leverage, and their gross exposure to illiquid securities is only 2 per cent of aggregate net asset value. A comparison of the amount of investor funds redeemable in the short term with the estimated liquidation period of investment assets shows a low degree of liquidity mismatch in these funds (**Chart 3b**).

Both hedge funds and pooled funds tend to be relatively opaque, since a prospectus does not need to be filed. The vulnerabilities of credit hedge funds in aggregate are assessed to be moderate, but there is substantial heterogeneity across funds. Even the largest hedge funds in Canada, however, are relatively small at this time and, on their own, are not likely to lead to systemic stress. Credit pooled funds currently exhibit low vulnerabilities.

¹¹ Hedge funds and pooled funds are exempt from filing a prospectus by satisfying the requirements set by the Canadian Securities Administrators in National Instrument 45-106 *Prospectus Exemptions*.

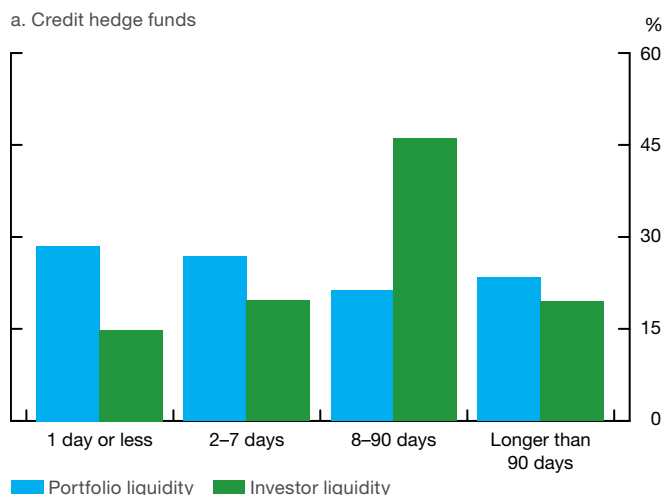
¹² The information in this section is based on aggregated data from a survey of registered investment fund managers undertaken by the Ontario Securities Commission in 2016. The survey is conducted every two years.

¹³ Gross leverage is measured as the sum of long and short exposures divided by net asset value. The median is calculated across funds with more than \$200 million in assets under management.

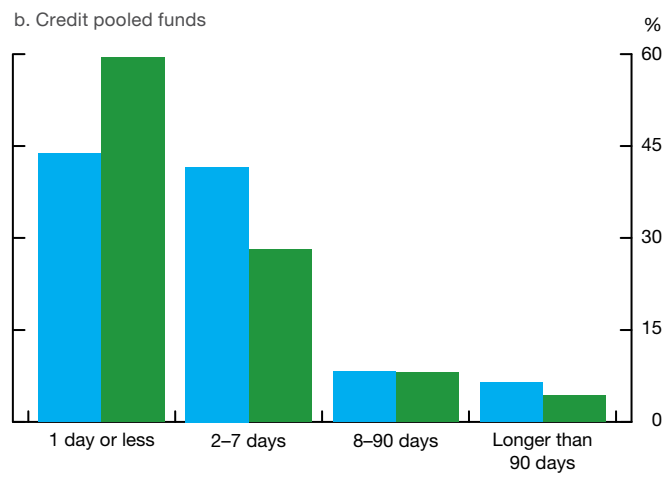
Chart 3: Liquidity profiles of credit hedge funds and credit pooled funds

Share of aggregate net asset value

a. Credit hedge funds



b. Credit pooled funds



Note: Portfolio liquidity is the percentage of a portfolio that can be liquidated within the specified period. Investor liquidity shows the percentage of investor funds that can be withdrawn in the specified period.

Source: Ontario Securities Commission

Last observation: December 2015

Repo and securities lending

A repo is the collateralized borrowing of cash that financial institutions use for short-term funding (Morrow 1995; Garriott and Gray 2016). A securities lending transaction is a collateralized loan of a security in exchange for cash or other securities.¹⁴

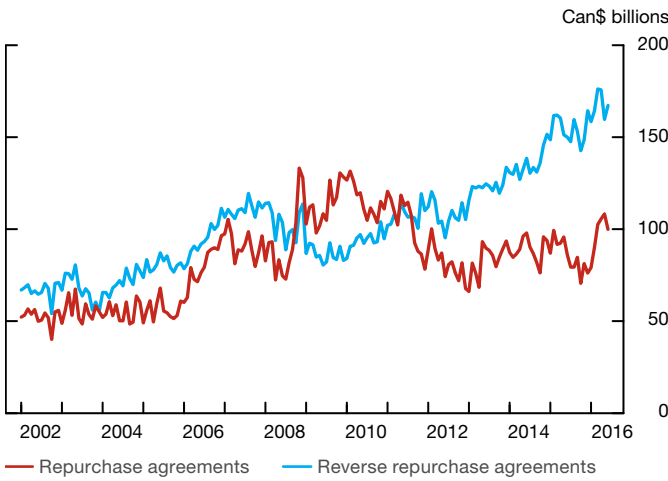
While repo and securities lending play an important role in providing funding liquidity for financial institutions and in support of market-making, using them may lead to a buildup of vulnerabilities (Fontaine, Garriott and Gray 2016; FSB 2013). For example, repo and securities lending transactions are liable to runs when investing borrowed cash or reinvesting cash collateral involves significant maturity or liquidity transformation. These transactions can facilitate a buildup of leverage, which can lead to fire sales of assets funded through the transactions and of assets pledged as collateral in times of stress. Securities lending transactions that do not involve cash can also facilitate leverage. For example, a borrower may exchange a lower-quality security for a higher-quality security (a collateral upgrade), which the borrower can then repo out to obtain cash for a leveraged investment strategy. The chains created by repo and securities lending transactions can act as amplifiers for negative shocks to the financial system.

In Canada, the Big Six banks have been net lenders of cash in the repo market since 2011, and their net lending position grew to \$67 billion as of June 2016 (Chart 4a). The repo market is also an important source of liquidity and leverage for some of the big pension funds (Bédard-Pagé et al. 2016). Vulnerabilities in the Canadian repo market are mitigated by the fact that most collateral consists of liquid government-issued securities (Chart 4b): Government of Canada (GoC) debt (74 per cent), debt of Crown corporations (13 per cent) and provincial debt (12 per cent). We therefore

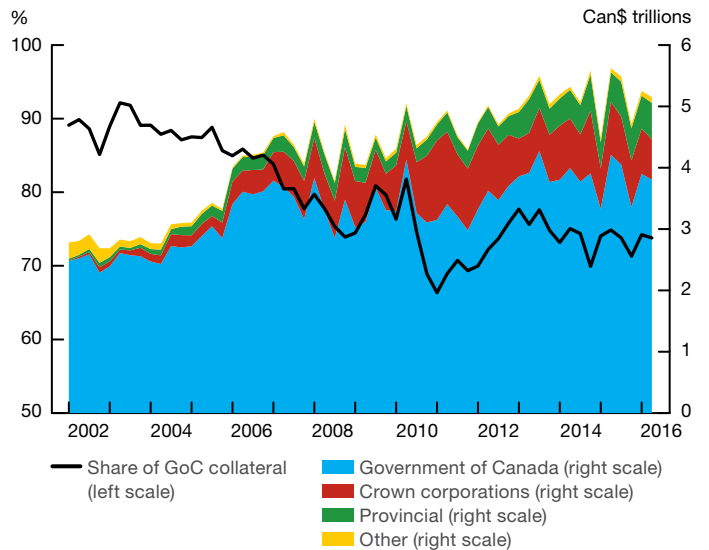
¹⁴ A securities lending agreement involving cash collateral is economically similar to a specific repo. Our discussion with market participants indicates that institutions sometimes classify cash-collateralized securities lending as repos, and vice versa. This practice can result in some double counting in our estimation of the size of repo and securities lending activities.

Chart 4: Repo and reverse repo activities

a. Outstanding amount at domestic banks



b. Transaction volume, by collateral type (debt securities by issuer)

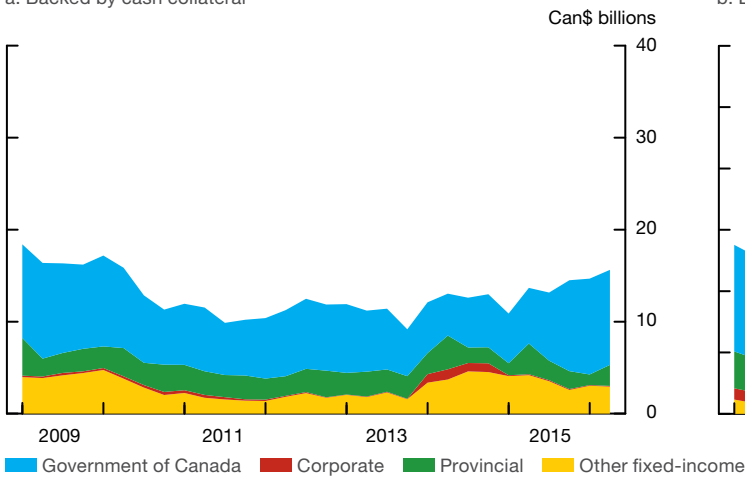


Note: "Other" includes municipal debt, corporate debt and asset-backed securities.
 Sources: Bank of Canada and regulatory filings of Canadian banks

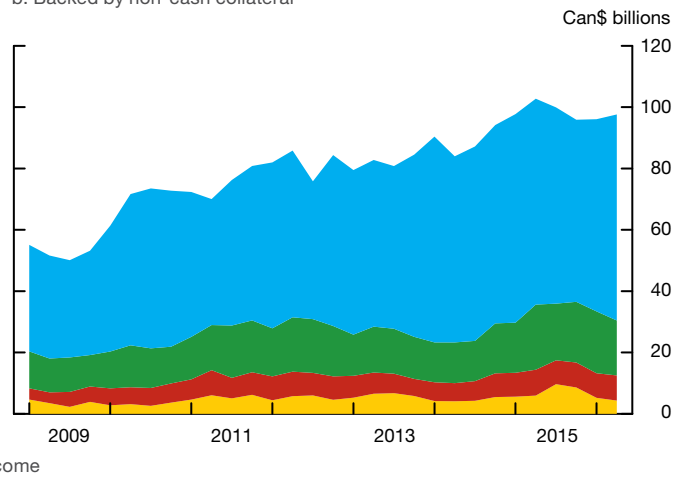
Last observation: 2016Q2

Chart 5: Outstanding amount of fixed-income securities lending

a. Backed by cash collateral



b. Backed by non-cash collateral



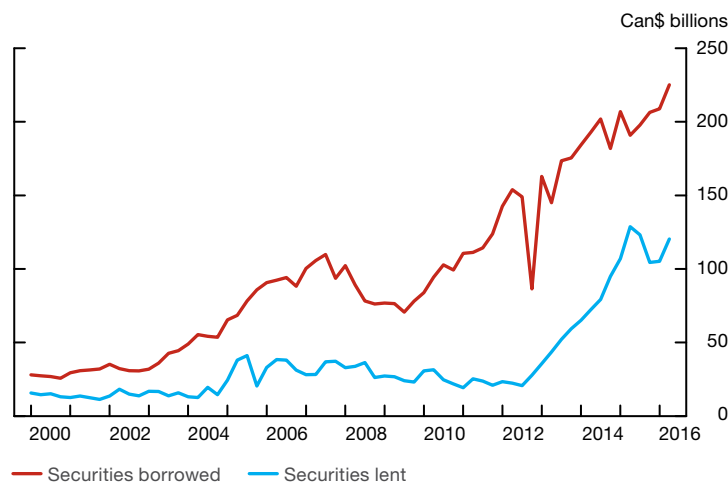
Note: "Other fixed-income" includes commercial paper, asset-backed securities, securities issued by the Canada Mortgage and Housing Corporation and other asset types.
 Sources: Markit and Bank of Canada calculations

Last observation: 2016Q2

assess that the vulnerabilities arising from the Canadian repo market are currently low. But the proportion of repos collateralized with GoC debt has been declining steadily. A wider range of less-liquid securities is being used in repo transactions, which increases the degree of liquidity transformation.

The Canadian fixed-income securities lending market is considered shadow banking, and the outstanding amount of securities on loan was estimated to be \$113 billion as of June 2016. A majority of the securities loaned consist of GoC bonds (Chart 5a and Chart 5b). A small number (roughly 14 per cent) of transactions are collateralized by cash in Canada (Chart 5a).¹⁵ The cash collateral is typically reinvested in low-risk, liquid products, such as money

¹⁵ In contrast, 75 per cent of securities lending transactions are collateralized by cash in the United States (Dreff 2010).

Chart 6: Securities borrowing and lending activity of the Big Six banks

Source: Regulatory filings of Canadian banks

Last observation: 2016Q2

market funds, reverse repos against government collateral or deposits, but it can also be invested in products with greater liquidity risk. For public investment funds such as mutual funds and ETFs, regulation limits the reinvestment of cash collateral in securities with a remaining term to maturity no longer than 90 days. Owing to the low share of cash-collateralized transactions and conservative cash reinvestment practices, the degree of liquidity and maturity transformation due to cash-collateralized securities lending is considered to be limited. For transactions that are backed by non-cash collateral (**Chart 5b**), anecdotal evidence suggests that the main reason for the upward trend in the lending of GoC bonds is collateral upgrades, where relatively illiquid assets, such as provincial bonds and NHA MBS securities, are used to obtain GoC bonds.

The Big Six banks have been net borrowers of securities, and they have recently increased their activity significantly (**Chart 6**). Note that **Chart 6** represents a broader set of securities than **Chart 5a** and **Chart 5b** and includes equities, ETF shares and foreign securities. Market participants have indicated that increased use of arbitrage strategies in the US and European equity markets explains much of the growth shown in **Chart 6**.¹⁶ Unlike collateral upgrades, these arbitrage strategies typically do not lead to a buildup of leverage and therefore pose limited potential for systemic risk. Overall, more-granular data on the type of collateral and cash-reinvestment practices are needed to make a full assessment of vulnerabilities in this sector.

Lenders not subject to prudential regulation

This subsector is composed of lenders that are neither banks nor credit unions and includes finance companies, MFCs and MICs.¹⁷ These entities lie outside the prudentially regulated sector, engage in shadow banking by lending, obtain funding through securitization and other short-term financial

¹⁶ Various arbitrage strategies involving ETFs require short-selling of equities or ETF shares. Other arbitrage strategies requiring securities lending include dividend reinvestment trades and cross-border dividend tax arbitrage.

¹⁷ Pension funds are also involved in lending outside the banking sector. However, we do not consider this activity to be shadow banking because there is little maturity or liquidity transformation in defined-benefit pension funds (Bédard-Pagé et al. 2016).

instruments, or take on varying degrees of leverage. Together, they account for \$125 billion of our shadow banking estimate. We assess current vulnerabilities to be generally low for this subsector.

Finance companies consist of sales finance and consumer loan companies. Sales finance companies finance the purchase of goods and services at the industrial, wholesale or retail levels, often providing term loans to companies and financing leased capital. Consumer loan companies specialize in direct lending to individuals, normally secured by promissory notes. In the second quarter of 2016, the combined total financial assets of finance companies reached \$110 billion. Limitations on available data—for example, on individual enterprises—preclude a full assessment of the vulnerabilities of these entities. But, in aggregate, finance companies have relatively low balance-sheet leverage (assets are less than four times equity) and low maturity transformation.

MFCs are mortgage lenders that, as a group, underwrite and service about \$165 billion, or 12 per cent, of outstanding residential mortgage credit (as of December 2015). MFCs source their mortgages from brokers and either sell the mortgages to a third party, such as a bank, or fund them with government-backed securitizations. The credit exposure of most of the mortgages they originate is therefore passed on to the government or to the regulated sector and not counted in the shadow banking measurement. Only those mortgages that are being warehoused prior to sale or securitization using either ABCP conduits (about \$6 billion) or MFCs' internal resources (about \$4 billion) are included in our estimate of shadow banking. Vulnerabilities associated with MFCs primarily relate to their relatively low levels of capital and liquidity and their reliance on funding sources that are potentially unstable during periods of housing market stress (i.e., third-party purchases). The potential vulnerabilities of MFCs are explored in more detail in Coletti, Gosselin and MacDonald (2016).

MICs are Canadian corporations with 20 or more shareholders where each corporation's only undertaking is investing its funds. MICs must always have more than 50 per cent of their assets invested in Canadian residential mortgages or cash deposits. The mortgages are often originated by the MIC or by a closely affiliated lending institution. Assets of publicly listed MICs were just under \$5 billion in June 2016. While the lending done by MICs is not subject to prudential regulation, their small size and limited use of leverage suggest that they pose limited risk to the financial system.

Private-label securitization

The outstanding amount of private-label securitization in Canada stood at \$87 billion in June 2016, down from a peak of \$178 billion in August 2007. Credit cards dominate the assets backing these securities, followed by auto-related transactions and residential mortgages.

Changes in regulation, substitution with covered bonds, competition from public securitization (e.g., NHA MBS) and the retrenchment of the non-bank ABCP market (Kamhi and Tuer 2007) have contributed to the significant decrease in private-label securitization in Canada.¹⁸ Moreover, the complexity of the market has declined and asset quality has improved in the post-crisis period. However, this has increased costs for banks and reduced the relative attractiveness of ABS and ABCP as funding sources, especially for financial entities that have access to a variety of other financing

¹⁸ Covered bonds are excluded from shadow banking because they can be issued only by prudentially regulated entities and their assets stay on the consolidated balance sheet of the issuer.

instruments. The restriction on the use of insured mortgages for ABCP, which came into effect on 1 July 2016, with a transition period until 2021, could lead to a more active private market through the replacement of insured mortgages by other assets. The restriction could also reduce the size of the overall ABCP market, a potential development that needs to be monitored.

Given the small size of the Canadian private-label securitization market and the quality of the underlying assets, we currently consider that vulnerabilities in this sector are not elevated.

Non-bank investment dealers

The contribution of non-bank investment dealers to shadow banking in Canada is relatively small. At the end of 2015, their financial assets amounted to \$76 billion. The size of the sector has been declining because of reduced activity in the commodity sector—where non-bank investment dealers have an important footprint—and lower profitability due to technological changes and regulation.

Typically, investment dealers have a relatively high leverage ratio (financial-assets-to-equity ratio). The average leverage ratio for all investment dealers increased from 8 in 2008 to 11 at the end of 2015, but it is still below its level of 14 to 15 before the global financial crisis. The growth in leverage for all investment dealers can be attributed to an increase in their repo activities. The leverage ratio for non-bank investment dealers is currently lower, at 8. At the end of 2015, liquid assets accounted for 96 per cent of total assets for all investment dealers and exceeded current liabilities. The amount of liquid assets held is subject to the capital formula used by the Investment Industry Regulatory Organization of Canada, which is designed to ensure that dealers have sufficient liquid assets to meet their obligations. We therefore assess that non-bank investment dealers currently have low vulnerabilities.

Monitoring Challenges

Monitoring of shadow banking entities and markets is challenging, since they are diverse, evolve quickly and are less regulated, all of which restrict the amount of information available and constrain assessments of their size, vulnerabilities and interconnectedness with the rest of the financial system. These issues are particularly acute where data must be aggregated from many different sources to build a national picture. For example, sharing data among many different provincial and federal regulators requires extensive coordination. The Bank continues to work to improve data collection and the availability of relevant data sources. But important data gaps remain and will persist.¹⁹

For example, the Bank has access only to repo transactions that involve a registered government securities dealer. Transaction-level data that identify counterparties and the types of non-cash collateral are not available for securities lending transactions. Nor are data available on the rehypothecation of collateral for either repo or securities lending transactions. Information on the composition and quality of underlying pools of assets would be helpful to assess vulnerabilities in the private-label securitization subsector. The Bank has access to some data on lenders such as mortgage

¹⁹ The FSB's 2016 peer review of shadow banking found that, across jurisdictions, data may not be adequate or granular enough to assess the shadow banking risks of both regulated and unregulated entities. Accordingly, two of the four recommendations to jurisdictions concern the need to address data gaps and to enhance public disclosures, as required, to better understand the risks posed by shadow banking.

finance companies. However, timely information is sparse for auto finance companies; equipment and leasing companies; and prospectus-exempt funds such as hedge funds, pooled funds and MICs.

To address these gaps, the Bank is working with various Canadian agencies to improve access to existing data or to develop new data sources. In addition, market intelligence gathered through regular discussions with industry participants helps us understand important developments and informs our assessment of vulnerabilities in the shadow banking sector.

Another challenge in monitoring the shadow banking sector is rapid innovation in financial system products and practices, which can be driven by regulatory developments or technological advances. An example is the development of peer-to-peer (P2P) lending—the practice of institutional and high-net-worth individuals lending money to other individuals through online lending platforms.²⁰ P2P platforms tend to be relatively unregulated and may facilitate liquidity and maturity transformations. Although P2P lending remains a small share of financing in Canada and does not currently pose significant risk to the financial system, the Bank continues to monitor activity in this area.

Conclusion

Over the past 20 to 30 years, shadow banking has been an important and growing source of innovation and competition. However, the financial crisis revealed that this sector can also be a source of vulnerabilities that can propagate shocks throughout the financial system. The Bank of Canada has adopted a dynamic monitoring approach that examines both markets and entities to ensure broad coverage and to capture new parts of the sector as it evolves. Based on currently available information, we judge that the shadow banking sector does not pose large vulnerabilities for the Canadian financial system because of the low degree of liquidity and maturity mismatch and the low leverage in most parts of the sector. The relatively small size of most subsectors currently also limits the potential for systemic stress. While stresses in shadow banking markets and entities could lead to losses for some investors, the potential for a system-wide impact is judged to be small at this time. Nevertheless, gaps in the data—particularly on the interconnectedness of the shadow and traditional banking sectors—prevent a complete assessment. The Bank will continue to monitor this evolving sector and work with both domestic and international authorities to share information and learn from their experiences.

²⁰ See “Selected Financial System Developments,” in the Bank of Canada *Financial System Review*, December 2015.

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