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August 2025

TECHNICAL NOTE ON SYSTEMIC LIQUIDITY ASSESSMENT

This Technical Note on Systemic Liquidity Assessment was prepared by a staff team of the International Monetary Fund. It is based on the information available at the time it was completed on July 22, 2025.

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TECHNICAL NOTE

SYSTEMIC LIQUIDITY ASSESSMENT

Prepared By
Monetary and Capital Markets Department

This Technical Note was prepared by IMF staff in the context of the 2025 Financial Sector Assessment Program in Canada. It contains technical analysis and detailed information underpinning the FSAP's findings and recommendations. Further information on the FSAP can be found at http://www.imf.org/external/np/fsap/fssa.aspx.

CONTENTS

TABLE

APPENDICES

Glossary

ABCP	Asset-Backed Commercial Paper
ABS	Asset-Backed Securities
AMF	Autorité des marchés financiers
BA	Bankers' Acceptance
BATVN	Bankers' Acceptance Transition Virtual Network
BIS	Bank for International Settlements
BCFSA	British Columbia Financial Services Authority
BDN	Bearer Deposit Notes
BOC	Bank of Canada
CAD	Canadian Dollar
CARR	Canadian Alternative Reference Rate Working Group
CBPP	Corporate Bond Purchase Program
CCMS	Canadian Collateral Management Service
CD	Certificates of Deposit
CDIC	Canada Deposit Insurance Corporation
CDOR	Canadian Dollar Offered Rate
CFIF	Canadian Fixed Income Forum
CIMPA	Collateral Infrastructure and Market Practices Advisory Group
CIRO	Canadian Investment Regulatory Organization
CORRA	Canadian Overnight Repo Rate Average
CP	Commercial Paper
CSA	Canadian Securities Administrators
CTAs	Commodity Trading Advisors
CTRF	Contingent Term Repo Facility
D-SIBs	Domestic Systemically Important Banks
DTIs	Deposit Taking Institutions
ELA	Emergency Lending Assistance
ETRF	Extended Term Repo Facility
FISC	Financial Institutions Supervisory Committee
FSRA	Financial Services Regulatory Authority of Ontario
FSAP	Financial Sector Assessment Program
FX	Foreign Exchange
GBPP	Government of Canada Bond Purchase Program
GDP	Gross Domestic Product
GoC	Government of Canada
HoA	Heads of Regulatory Agencies
HQLA	High-Quality Liquid Assets
LAM	Liquidity Activity Monitor
LAR	Liquidity Adequacy Requirements
LCR	Liquidity Coverage Ratio
LOLR	Lender of Last Resort

MMF	Money Market Fund
MTRS	Market Trade Reporting System
NBFI	Nonbank Financial Institutions
NCCF	Net Cumulative Cash Flow
NSFR	Net Stable Funding Ratio
OCFS	Operating Cash Flow Statement
OIS	Overnight Index Swap
OSC	Ontario Securities Commission
OSFI	Office of the Superintendent of Financial Institutions
HFTs	High Frequency Traders
QE	Quantitative Easing
QT	Quantitative Tightening
RV	Relative Value
SGC	Secured General Collateral
SLF	Standing Liquidity Facility
SMSB	Small and Medium-Sized Deposit-Taking Institutions
STLF	Standing Term Liquidity Facility
U.S.	United States

EXECUTIVE SUMMARY

Confidence in the resilience of the Canadian financial system is strong but liquidity risks warrant attention. The financial system is strong thanks to the well-capitalized banking sector and the well-regulated financial system. It has also demonstrated resilience during past episodes of turmoil. However, liquidity risks are present, as key domestic short-term funding markets remain operationally complicated and highly concentrated on relatively few domestic liquidity providers, while the short-term funding needs of the system are growing fast.

Canadian institutions rely strongly on foreign funding sources, which makes it important for authorities to monitor related risks and assess global risk management practices. Canadian institutions increasingly rely on foreign funding, especially from the United States (U.S.) markets to meet their large-scale funding needs and support their international operations. This reliance has led to a notable increase in turnover in the foreign exchange market, particularly driven by foreign exchange (FX) swaps associated with heightened hedging activity. The recent increase in trading related uncertainty globally has arguably increased risks to foreign funding, but so far cross-border market functioning appears smooth. However, these dynamics highlight the need for authorities to continuously monitor foreign funding risks and assess the vulnerabilities that may arise from fluctuations in global markets and interest rates. In particular, authorities should scrutinize the system for potential U.S. dollar liquidity shortfalls and assess hedging practices, even if the financial system appears to have weathered recent volatility well. Ongoing diversification in funding strategies is important to ensure stable sources of funding while maintaining a balance between domestic and international funding.

The authorities should maintain efforts to enhance efficiency and liquidity in the domestic secured funding market. Albeit a fraction of foreign secured funding, secured funding via repo markets in Canada is key for Canadian Dollar (CAD) liquidity by major Canadian investors. While the market benefits from high-quality collateral, inherent risks persist due to the short-term nature of transactions, the concentration of collateral types, and the dominance of a few market participants. Strengthening the repo market through the timely delivery and broad adoption of the Canadian Collateral Management Service (CCMS) can improve efficiency and risk management. The BOC's announced participation in the platform could optimize collateral management, while the service could encourage greater participation from a diverse range of institutions, including international liquidity providers, to bolster market liquidity. Moreover, the authorities should explore the benefits and practical challenges of expanding central clearing in repo trades, which could enhance the intermediation capacity of dealers.

They should also monitor closely the ongoing structural shifts in the unsecured Canadian funding market and assess the merits of bolstering this market. Unlike the growing secured market, Canadian's unsecured segment is shrinking with the end of Bankers' Acceptances (BAs), a key funding instrument. Although the transition has been well communicated and smoothly implemented, the adjustment is ongoing, while alternatives to BAs have not accumulated sufficient volumes to offset the decline. The authorities should continue monitoring transition progress, take

steps to bolster alternatives to BAs in a timely fashion, and consider strengthening domestic unsecured funding markets to enhance funding flexibility and diversification.

The increasing participation of foreign hedge funds in Canadian funding markets raises both opportunities and risks. While their activities can enhance liquidity and market efficiency, their growing role in Government of Canada (GoC) markets (cash, futures and repo) increases financial system vulnerabilities. Such risks could materialize in case of sudden deleveraging, growing constraints in dealer balance sheets with potential crowding out of participants in repo trades with GoC collateral, and ongoing pressure on benchmark short-term funding rates. While these trends can stem from different sources, hedge funds have been a significant contributor. The authorities must closely monitor hedge fund engagement, leverage levels and their trading strategies. Additionally, tracking developments in futures markets, including the role of High Frequency Traders (HFTs) and Commodity Trading Advisors (CTAs) remains crucial.

The authorities should consider measures aiming to support the resilience of GoC markets. These measures include fostering a diverse range of liquidity providers, enhancing transparency around dealer positions, and encouraging central clearing of repo trades with government collateral. To mitigate potential impacts on short-term funding rates, the authorities should improve the transparency of the benchmark rate while continuing to monitor its dynamics in light of ongoing balance sheet normalization and providing liquidity interventions as necessary.

Addressing data gaps and enhancing data-sharing and transparency of domestic funding markets are priorities. Despite progress in trade-level data for the repo market, a comprehensive market view is still missing. Regular collection and publication of aggregate outstanding and trading volumes for core funding markets—for example, repo, securities lending, Commercial Paper (CP), and Asset-Backed Commercial Paper (ABCP)—by market segment, maturity, currency and holders is essential for understanding systemic risks. Authorities, in consultation with the BOC, should expand data collection and fill data gaps in critical market segments such as securities lending. Additionally, refining bank reporting to provide detailed insights into dealer activities and holdings is necessary to understand intermediation practices of dealers, and allocation of their balance sheet in Canadian and global operations. Moreover, enhancing the understanding of risk profiles and leverage sources for leveraged investors is critical, as this area remains a significant data blind spot. Finally, enhancing data sharing in the derivatives market, notably the non-listed segment, could improve the overview of FX and interest rate swap related risks.

The BOC's liquidity management framework comprises a comprehensive set of facilities. These facilities—which were further strengthened after the COVID-19 pandemic—are categorized into 3 main types: (i) active liquidity operations to support monetary policy execution; (ii) standard liquidity operations accessible to financial institutions for short-term funding needs; and (iii) emergency liquidity facilities for financial distress. Regarding the latter, the CTRF, activated for the first time during the pandemic but currently suspended, addresses systemic liquidity shocks, whereas Emergency Lending Assistance (ELA) is aimed at mitigating idiosyncratic liquidity strains. Although seldom or never utilized in Canada in practice, these mechanisms strengthen confidence in financial markets and serve as a backstop for potential liquidity stresses.

In response to severe systemwide liquidity shortages, the BOC can adjust existing operations or activate facilities such as the CTRF. In extreme cases, the CTRF can be activated to provide liquidity to financial market participants that can demonstrate significant activity in the CAD money markets and/or fixed income markets, including nonbank financial institutions (NBFIs). The BOC is undertaking efforts[1] to automate and streamline the processes for eventual liquidity provision operations through CTRF and other facilities if necessary. These preparedness efforts will improve efficiency, reduce operational risk, and enhance response times during market stress. Currently, a large part of its execution remains highly manual, requiring coordination across multiple departments. Given the complexity of system-wide liquidity operations and the unpredictability of liquidity needs, automation will strengthen the facility's scalability and reliability.

The BOC should consider granting systemic and regulated nonbanks access to bilateral standing support. The Canadian financial system is highly interconnected, with banks, households, NBFIs, and the external sector all potentially contributing to systemic risk. Central bank liquidity may be needed when stress in a large, interconnected NBFI poses contagion risks or disrupts financial intermediation, with attendant risks to financial stability. Identifying such systemic institutions and considering bilateral liquidity support for severe idiosyncratic shocks and under strict conditionalities is essential to safeguard financial stability. The CTRF, while valuable, is intended for system-wide stress and broad eligibility. Activating it too early could fuel market speculation and escalate risk. Instead, bilateral support should be reserved for severe pressures involving systemically important and regulated NBFIs. Establishing ex ante clear eligibility and readiness for bilateral support in response to serious disruptions—stemming from, for example, cyberattacks or system failures—would promote market efficiency and stability. Access should be limited to well-regulated, domestically systemic NBFIs, with appropriate safeguards in place, tailored for the nature of each institution.

The BOC should clarify the eligibility of the bilateral standing facilities and its ELA policy, explicitly confirming that liquidity support is not restricted to recovery and resolution cases. Currently, references on the BOC's website, and the Rules Governing Advances to Financial Institutions define eligibility for the Standing Liquidity Facility (SLF) and Standing Term Liquidity Facility (STLF) as applicable to "financial institutions," without explicitly specifying deposit-taking financial institutions. Furthermore, the ambiguity between the BOC's 2015 guidelines and 2020 rules creates uncertainty regarding whether liquidity support under ELA can be extended beyond institutions in formal recovery or resolution, which, in practice, is currently permitted. Establishing clearer distinctions would improve transparency and ensure alignment with regulatory definitions. Finally, the BOC should clarify that, while a credible recovery and resolution framework has replaced the formal solvency requirement for ELA, the viability of the financial institution remains a key factor in decisions to grant ELA outside resolution.

The BOC should adjust ELA pricing to better reflect its higher risk exposure and broader collateral and counterparty scope. While the BOC can charge a higher rate, the minimum price that

[1] The planned changes to the CTRF are disclosed in the following link: https://www.bankofcanada.ca/2025/03/bank-canada-announces-planned-changes-contingent-term-repo-facility/

can be charged for ELA is the same as for SLF operations. The minimum interest rate for ELA does not incorporate the tiered pricing structure applied to other facilities that reflects risk exposure. Unlike SLF, which is primarily intended to address settlement imbalances, ELA accepts fewer liquid assets, thereby increasing the BOC's credit and liquidity risk, while haircuts remain unchanged for the same pool of assets. While requesting ELA carries a stigma, mispricing could distort incentives and may discourage institutions from using STLF, which is intended for proactive management of less severe liquidity needs. A risk-sensitive pricing structure that signals that ELA remains an extraordinary and non-subsidized tool and is sufficient to discourage ELA's use, but not so high as to accentuate the strains that it seeks to alleviate, would better align ELA's function as a last-resort backstop. At the same time, it would maintain consistency across the liquidity framework and better protect BOC's balance sheet.

To enhance responsiveness to evolving market risks, the BOC should increase the frequency of its collateral haircut calibration and its operational tests. Doing so would help ensure that its framework remains effective and adaptive. The current five-year review cycle for haircut calibration should be shortened to two to three years, balancing stability with the need to reflect evolving market conditions. Similarly, standing liquidity facilities should be tested more often incorporating realistic liquidity needs. Expanding testing to a broader range of institutions would improve stress scenario assessments and strengthen the BOC's crisis response capabilities. Given the transition to a new operational system, more frequent reviews and testing would help identify challenges, refine protocols, and reinforce market confidence in the financial system.

Table 1. Canada: Recommendations on Systemic Liquidity Management			
	Recommendations	**Responsible Authorities**	**Timing[1]**
1.	Continue to monitor risks related to foreign funding and to assess hedging practices, also with a view to maintain a balance between domestic and international funding.	All relevant authorities	I
2.	Support the broad adoption and timely delivery of the CCMS.	BOC CIMPA	I
3.	Explore benefits and practical challenges of expanding Central Clearing in repo trading.	BOC CSA CIRO	MT
4.	Continue to monitor short-term funding post—Bankers' Acceptance (BA) cessation, support timely adoption of alternatives, and assess ways to strengthen domestic unsecured markets.	CSA BOC CIMPA	I
5.	Initiate regular data collection in securities lending markets.	OSFI, CSA	MT
6.	Improve data collection to address gaps on dealer activity, foreign hedge fund leverage, CTA and HFT trading, and repo transactions—especially those with foreign dealers and non-CAD collateral.	OSFI CSA	ST
7.	Enhance data sharing practices within the foreign exchange and other derivatives markets, notably the non-listed segment.	AMF, OSC, BOC	ST
8.	Enhance transparency in funding markets by collecting and publishing aggregate data on outstanding amounts and trading volumes for key money market instruments (e.g., repo, CP, ABCP, Certificates of Deposits (CDs), also by instrument type, maturity, and currency. Also, publish holdings by major investor types. Consider the benefits of releasing aggregate repo rates by market and maturity segments (e.g., bilateral, centrally cleared, overnight, term).	OSFI CSA BOC and provincial authorities	ST
9.	Enhance collaboration and promote standardized reporting by provincial authorities on key indicators (e.g., size, capital, liquidity, depositors) of supervised Deposit Taking Institutions (DTIs) to enhance transparency and cross-jurisdiction comparability.	All relevant provincial authorities	ST
10.	Identify systemically important and regulated NBFIs and consider granting well-regulated and supervised NBFIs access to bilateral liquidity support to address severe idiosyncratic shocks, while enforcing strict conditions to mitigate moral hazard.	Relevant authorities and BOC	ST
11.	Clarify in official communications that liquidity provision tools such as STLF are only available for deposit-taking financial institutions.	BOC	I
12.	Clarify BOC's ELA policy that liquidity support is not restricted to institutions that are in recovery or resolution.	BOC	I

Table 1. Canada: Recommendations on Systemic Liquidity Management (Concluded)			
13.	Strengthen communication to clearly state that solvency remains a critical criterion in decisions to grant or deny ELA outside of resolution.	BOC, OSFI	ST
14.	Recalibrate the minimum ELA pricing to reflect its role as a last-resort liquidity instrument.	BOC	ST
15.	Continue advancing automation in the operationalization processes of liquidity provision.	BOC	ST
16.	Recalibrate haircuts on a more regular (e.g. 2–3 years) basis to enhance responsiveness to changing market conditions while avoiding procyclicality.	BOC	MT
17.	Increase the frequency of tests for BOC's standing facilities, broadening the scope to all types of eligible institutions.	BOC	ST

[1] I —Immediate (within 1 year), ST—Short term (within 1–2 years), MT—Medium term (within 3–5 years).

INTRODUCTION[2]

A. Background

1. This note presents a comprehensive systemic liquidity assessment for Canada, providing detailed recommendations which are supported by an in-depth analysis. It summarizes the Financial Sector Assessment Program (FSAP) findings, drawing insights from the mission conducted in February 2025, during which meetings were held with officials and senior staff from the Bank of Canada (BOC), the Office of the Superintendent of Financial Institutions (OSFI), the Canadian Investment Regulatory Organization (CIRO), the Autorité des Marchés Financiers (AMF), and the Financial Services Regulatory Authority of Ontario (FSRA). The mission also engaged with private-sector stakeholders, including banks, pension funds, and other financial institutions. This note assesses developments since the 2019 FSAP, considering the current regulatory framework and supervisory practices as of February 2025.

2. The assessment evaluates the structural dynamics of funding markets and the authorities' capacity to respond to both systemic and idiosyncratic liquidity shocks. In line with their financial stability mandate, central banks have an inherently unlimited capacity to absorb local currency liquidity risk, thanks to their exclusive authority to issue local legal tender. This capability establishes them as the ultimate liquidity backstop, allowing them to substitute for traditional liquidity market participants during times of stress.[3] However, unlike fiscal agencies, central banks do not possess special resources to absorb credit risk from the market. On the contrary, they are obliged to safeguard the taxpayer funds entrusted to them and to minimize losses. Operationally, central banks fulfill this responsibility by extending credit only to financially regulated institutions, subject to strict conditionality and robust risk mitigation measures.

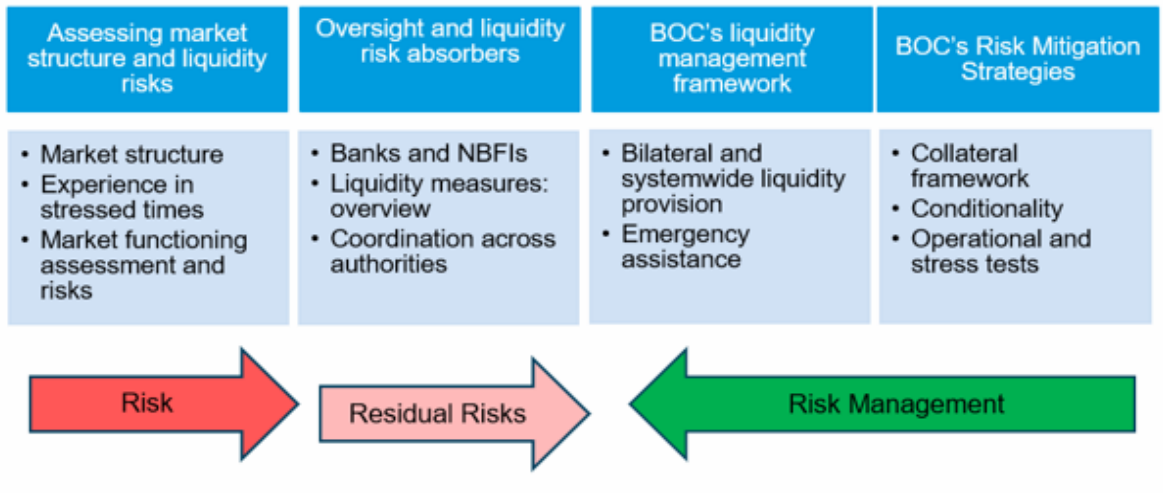
3. The assessment follows the framework established by the Fund. The assessment is divided in four parts, and each has a devoted session in this technical note (see Figure 1 below). The first part examines Canada's reliance on foreign funding as well as the dynamics and liquidity conditions of secured and unsecured funding markets. Additionally, it provides an assessment of potential risks ahead. The second part provides an overview of the oversight framework for both banks and NBFIs. Importantly, other workstreams of this FSAP provide a more detailed sector-specific assessment, ensuring a comprehensive and complementary analysis of the broader financial system, taking into account their respective findings. In the third part, the note provides a review of the effectiveness of the BOC's liquidity backstops, detailing the instruments available to address systemic liquidity risks and the mechanisms for managing idiosyncratic liquidity risks

[2] This technical note was prepared by Cecilia Melo Fernandes and Kleopatra Nikolaou, both senior financial sector experts at the Monetary and Capital Markets Department of the IMF.

[3] In the context of monetary policy implementation, central bank possesses liquidity tools that are used for monetary policy purposes. The use of these standard liquidity tools should ensure the achievement of monetary policy objectives.

through ELA. Finally, the fourth part outlines the BOC's strategies to mitigate the risks it assumes both in the context of its standing facility operations and as a Lender of Last Resort (LOLR).

Figure 1. Canada: Systemic Liquidity Assessment Framework



Source: IMF Staff

ASSESSING MARKET STRUCTURE AND LIQUIDITY RISKS

4. Short-term funding plays a crucial role in the financial system. It provides the necessary liquidity for financial institutions to manage their day-to-day operations and meet immediate obligations. This type of funding, which includes instruments like commercial paper, repurchase agreements (repos), and short-term government paper, ensures that financial institutions and corporations can maintain smooth cash flow and operational efficiency. By facilitating quick access to capital, short-term funding helps institutions manage risks, respond to market opportunities, and maintain confidence among investors and stakeholders. Smooth liquidity provision is vital for preventing disruptions in the financial system and ensuring economic stability.

5. Even in strong financial systems such as in Canada, systemic liquidity risk warrants attention. According to the BOC's May 2024 Financial System Survey, respondents ranked liquidity risk as the third major risk to their organizations, following cyber and geopolitical risks (BOC(b), 2024). Challenges in market and funding liquidity during a crisis were noted concerns, bringing forward the crucial role of short-term funding and money market functioning.

A. Reliance on Foreign Funding

6. Short-term funding sources of key Canadian institutions are global, reflecting their need for large scale funding and their global operations and investment strategies.
Foreign funding has grown faster than domestic funding in key funding markets. With the banking

sector and key institutional investors multiple times the size of the country's Gross Domestic Product (GDP), funding needs stretch beyond the potential of the domestic market (Friedrich et al., 2025; Figure 2.a). Foreign funding provides access to a larger pool of capital essential for funding large-scale, local operations outside Canada. Moreover, banks and institutional investors use foreign liabilities to diversify their funding sources, reducing reliance on the domestic market and lowering systemic risk. Finally, the choice of funding location largely relies on global cost efficiencies. For example, interest rate differentials with the U.S. and strong market liquidity have often made it relatively cheaper to fund in USD and swap back to CAD dollars. To achieve globally diversified sources of funding, Canadian institutions have enhanced foreign market presence, deployed an efficient operational infrastructure and developed strong lender relationships to ensure liquidity, even during economic stress.

7. A large and growing share of wholesale funding from Canada's largest banks is sourced in foreign markets. Canada's Domestic Systemically Important Banks (D-SIBs) use a wide range of financial instruments to acquire wholesale funding in capital markets, which funds about 37 percent of their assets (Figure 2.b). These instruments can be categorized into secured and unsecured borrowings across short- to long-term maturities and are issued across many currencies and jurisdictions (i.e., U.S., Europe, Japan, Australia). Roughly 71 percent of wholesale debt securities are denominated in foreign currencies, a number which has increased significantly from 58 percent since 2015. Amongst the foreign currencies, the USD denominated instruments take the lion's share. In the unsecured market, banks typically tap the U.S. markets to issue CP and CDs in the short-term, while senior unsecured debt is issued in the longer term. In secured markets the bulk of foreign issuance is in EUR denominated covered bonds (Figures 2.c and 2.d).

8. Most of the foreign issuance of major Canadian banks is funding their foreign operations. It should be noted that other than wholesale funding, Canadian banks have a retail presence outside Canada, which provides a stable, local funding base for the local operations and a natural hedge against foreign exchange risk. Beyond deposits, foreign wholesale issuance is typically used to fund foreign assets (such as the large portfolio of foreign government bonds) and complement local operations' funding needs, limiting currency related risks. The BOC estimates around 8–10 percent of foreign wholesale funding is used for northbound funding.[4] According to discussions during the FSAP mission, however, the share of northbound funding, can be much larger for shorter term maturities, and notably maturities up to 18 months, which is the typical realm of short-term funding markets. Northbound funding is typically used to fund global operations, with a lot of the funding swapped into CAD and, to a lesser extent, other currencies. For banks, typically northbound funding is achieved in various ways. In the U.S., branches of Canadian banks may raise short-term U.S. dollar funding in wholesale funding markets by issuing CP and Medium-Term Notes (MTNs) and transfer or lend the proceeds to the parent Canadian bank. Both the U.S. Federal Reserve and OSFI regulate and monitor cross-border liquidity flows between the U.S. and Canada. Canadian

[4] Northbound funding refers to funds flowing from countries outside Canada into Canada (e.g., USD funding collected in the U.S. by branches or subsidiaries of Canadian banks and transferred to their parent entities in Canada).

banks may also raise foreign funding directly, by issuing liabilities in foreign currency (such as CP in the U.S. or covered bonds in Europe), or by using FX swaps.

9. Canadian institutions use the liquidity from the US repo market in different ways. U.S. repo funding can finance banks' portfolios of USD assets, but the dealer arm of banks is active in the U.S. repo market as part of their fixed income dealing activities, that is, they intermediate between cash providers (such as money market funds (MMFs) in the U.S. repo market) and collateral providers. Typical collateral providers are hedge funds, but large Canadian pension funds also use U.S. repo funding. Canadian pension funds build relationships with multiple dealers in the U.S. repo market, including Canadian ones, to ensure they can fund their large U.S. Treasuries portfolios.

10. Canadian pension funds also rely heavily on foreign funding, although lately there is a shift towards domestic debt issuance. Pension funds are global, diversified investors with an average of 70 percent of their assets invested in foreign markets, a share that has grown since 2018. The bulk of the bond issuance is in USD. However, domestic debt programs have been growing since the last FSAP as a share of the funds' total outstanding debt. Repo funding and CP issuance are important short-term funding instruments for pension funds, which are also active in the US repo and CP markets. According to discussions with pension funds during the FSAP mission, US repo funding is used typically to finance their foreign portfolios, whereas US CP funding can be used to finance global operations.

11. Given the significant levels of foreign investments and funding, foreign exchange spot and derivatives markets are a key component of funding. All large domestic financial institutions and corporations with foreign currency liabilities, foreign institutions with Canadian-dollar liabilities, market makers and even corporations with global funding needs rely on those markets to support their foreign funding strategies. The monthly turnover in October 2024 of traditional foreign exchange products totaled about US$4.5 trillion, almost double from US$2.3 trillion in April 2019 (CFEC, 2024). On an average daily basis, total turnover stood at a record high of US$ 204.6 billion in October 2024. According to the latest Bank for International Settlements (BIS) triennial FX survey, Canada's share of global turnover increased to 2.3 percent in 2022 from 1.3 percent in 2019 (BOC, 2022a).

12. The increase in FX turnover is driven primarily by FX swaps, reflecting increased hedging practices. FX swaps help investors manage funds in different currencies without foreign exchange risk and assess the risk/cost attractiveness of funding instruments. Their volume has risen significantly, especially compared to other FX tools, which saw modest growth (Figure 2.e). This growth reflects increased hedging activity by Canadian investors as more assets are invested internationally. Currency forwards are less used for hedging foreign investments but are the second-largest class of derivatives for some investors, like life insurers, after FX swaps.

13. FX derivatives concentrate on the U.S. dollar and have relatively short maturities, with banks playing a key role in trading. Most derivatives volumes are concentrated in USD/CAD and CAD/USD trades, highlighting the key role of U.S. markets in Canadian funding. Nearly 70 percent of FX swaps have a maturity of less than seven days, exposing participants to currency and roll-over

risk. Maturities for forwards and other derivatives are also heavily geared towards short-term, but to a lesser extent. Counterparts in bank foreign currency trading are other domestic and international banks, with pension funds and foreign investors playing a lesser role. Banks are also the largest counterparts in spot foreign exchange trading, which can be used for liquidity management or as part of a broader hedging strategy.

14. Foreign repos and FX swaps are functionally equivalent for hedging exchange rate risk and their interactions should be closely monitored in the Canadian system where both are prevalent. A Canadian bond investor, for example, a pension fund, can either swap CAD for USD in the FX swap market or finance USD securities through USD repo markets; both methods hedge against currency risk. However, FX swaps require initial domestic currency deposits, while repos require collateral, leading to differences in how balance sheets can be levered and the nature of risks borne. Moreover, liquidity issues in one market can spill over to the other, as participants compare returns and manage collateral. Therefore, repo and FX swap rates tend to align outside of market stress, but during stress, liquidity concerns dominate, leading to potential divergence in the two markets.

15. Beyond hedging, limiting currency mismatch between asset and liabilities is an important component of D-SIBs' funding strategies to manage FX risk. D-SIBs implement a centralized funding and liquidity-management structure where funding decisions are closely controlled by the central treasury rather than by individual business units. Centralized funding management is considered by the D-SIBs to be a more efficient way to create optimal funding mixes that satisfy regulatory requirements while minimizing the costs, diversifying funding sources and appropriately transferring funding and associated regulatory costs to the appropriate individual business lines. Given the relatively limited currency mismatch on D-SIBs' balance sheet, FX fluctuations do not result in hedging cost volatility that can materially impact financial performance of D-SIBs.

16. Geopolitical tensions can increase risks from foreign funding exposures. Heightened geopolitical tensions can create a more unpredictable and costly environment for accessing foreign funding sources and managing currency exposures. In the past months, trade-related tensions led to increased volatility in the foreign exchange market, which can raise funding costs as well as hedging costs for investors seeking to protect themselves against adverse currency movements. For example, while hedging is a key tool employed to manage foreign exchange risk, pension funds noted in discussions during the FSAP mission that USD exposures can act as a natural hedge on certain assets, such as equities, which historically tend to have negative correlation. However, such correlations appeared to have broken down in April 2025, with both the USD and U.S. equities losing ground. In view of the ongoing uncertainty, authorities should scrutinize and assess how funding and hedging practices may need to adjust on the way forward.

17. Risks from geopolitical tensions appear, so far, manageable. While volatility in FX funding markets increased, discussions with Canadian institutions during the FSAP missions deemed the increase in costs relatively small and well manageable. Cross currency funding stress vis-a-vis the USD has been limited, also suggesting smooth funding conditions. The cross-currency basis is the

difference between the interest rate for borrowing in one currency using an FX swap and the cost of directly borrowing in that currency in the money markets. In the past couple of years, the cross-currency basis between the Canadian and the U.S. dollar has been relatively stable at negative levels, reflecting the strong demand for USD and smooth USD funding conditions. More recent data (as of the date of completing this report in May 2025) do not suggest an increase in funding stress. (Figure 2.f). Nevertheless, funding dynamics should be monitored closely given ongoing uncertainty.

18. Data sharing can improve blind spots in FX derivatives market for the BOC. The FX derivatives transactions in Canada are reported to the securities commissions (including Ontario Securities Commission (OSC) and AMF) following Canada's commitments to the G20 in 2009 to promote greater transparency and regulation of the derivatives market. The securities commissions are responsible for compliance and oversight of derivatives markets in the corresponding provinces (as well as OSFI for the derivatives activities of Canadian Federally Regulated Financial Institutions). While the BOC does not have access to the trade repository data in FX derivatives currently, the BOC is working closely with securities commissions on data sharing agreements to gain access to the data in the future.

19. Authorities should continue monitoring foreign funding risks and assess global risk management practices. Short-term funding sources of key Canadian institutions are global, reflecting their need for large scale funding and their global operations and investment strategies. The U.S. funding markets remain particularly vital, given their global depth and liquidity. Ongoing diversification in funding strategies is important, while maintaining a balance between domestic and international funding.

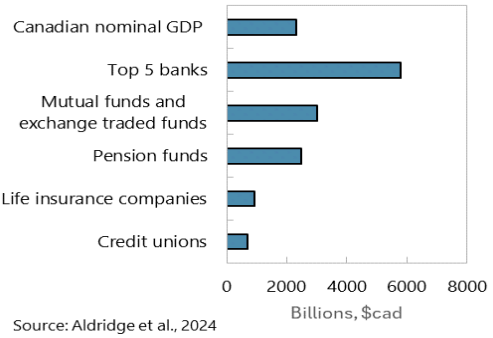
- The authorities should closely monitor the reliance of Canadian financial institutions on global funding sources and hedging practices to ensure that institutions maintain stable sources of funding and are managing their currency risks effectively without exposing themselves to excessive funding or rollover risk. Additionally, the authorities should assess evolving vulnerabilities resulting from recent fluctuations in global markets, interest rates, and hedging costs, as well as their impact on the availability and cost of funding.

- In addition, regularly reviewing regulatory frameworks governing foreign funding, including reporting requirements, is important to ensure that institutions are not overly exposed to foreign funding risks.

- The authorities should also ensure effective coordination and data sharing among various regulatory agencies to help identify vulnerabilities and allow timely interventions to mitigate risks from the interconnectedness of global funding markets and domestic stability.

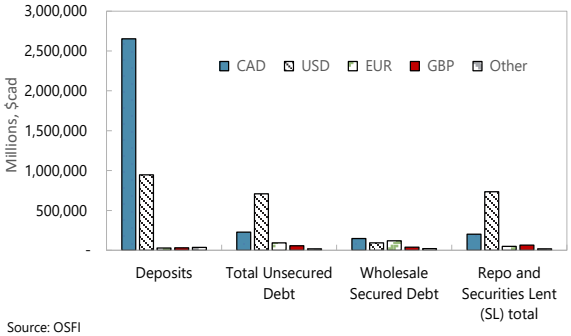
Figure 2. Canada: Reliance on Foreign Funding

a. Assets of Major Canadian Institutions and Canadian Gross Domestic Product



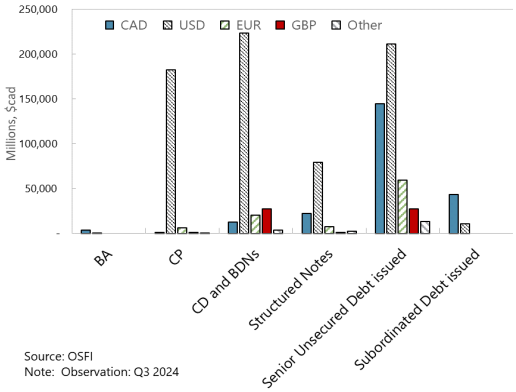
Source: Aldridge et al., 2024

b. Funding Sources of Canadian Banks



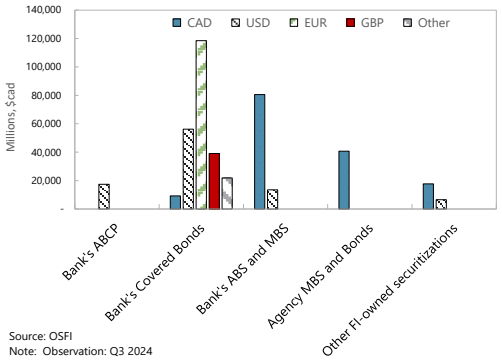
Source: OSFI
Note: Observation: Q3 2024

c. Wholesale Unsecured Debt Issuance of Canadian Banks



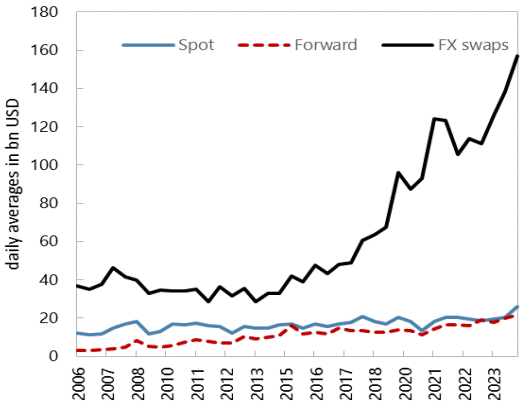
Source: OSFI
Note: Observation: Q3 2024

d. Wholesale Secured Debt Issuance of Canadian Banks



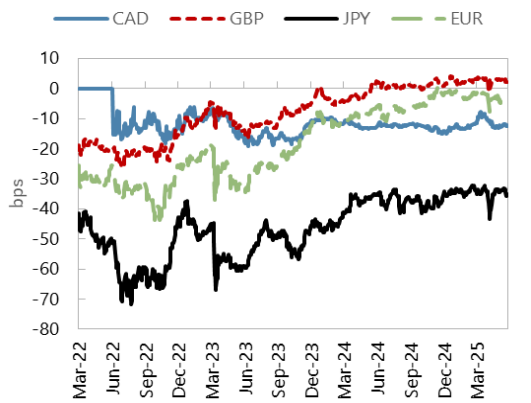
Source: OSFI
Note: Observation: Q3 2024

e. Foreign Exchange Turnover Volume



Source: Canadian Foreign Exchange Committee

f. Cross-Currency Basis Swap Spreads (by Country Against the USD)



Source: Bloomberg

B. Canadian Secured Funding Markets

20. The repo market lies at the heart of the financial system in many countries. Repo is a financial transaction where a counterparty sells a security with the agreement to repurchase the same security at a predetermined price on a future date. It is sometimes referred to as "securities out." The same trade is a reverse repo for the counter party or otherwise noted as "securities in" as the counterparty receives the securities. The same institutions can be involved simultaneously in both repos and reverse repos, depending on their role and funding needs. Repo transactions are economically equivalent to collateralized cash loans, and as such can facilitate short-term, safe and cheap borrowing of money.

21. The Canadian repo market, while a fraction of the size of the U.S. repo markets, plays a vital role in providing liquidity in Canadian dollar fixed-income markets. This market is primarily intermediated by dealers affiliated with large Canadian banks, which also facilitate repo transactions in the U.S., as nearly all D-SIBs operate U.S. subsidiaries or branches that serve as primary dealers. Although the intermediation volumes in the Canadian repo market are significantly smaller than those in the U.S., the domestic repo market remains a crucial component of Canada's financial system and a key point of interconnectedness (Figure 3.a). In addition to banks, notable NBFIs such as pension funds, hedge funds, and, to a lesser extent, insurance companies actively participate in this market. These entities engage in repo transactions mainly to manage liquidity needs and optimize their investment strategies (Garriot and Kyle, 2016; BOC (c), (d), 2024).

22. Pension funds are major clients in the Canadian repo market. Repo funding represents more than 50 percent of the wholesale funding for pension funds, the largest share amongst other major Canadian institutions (Figure 3.b). Pension funds often have large portfolios of high-quality collateral, such as GoC and provincial securities, which they finance via repo. They typically finance provincial government bonds using longer term repo, while engaging actively on both sides of the repo market with GoC collateral in shorter-term maturities.

23. Hedge funds have become key participants in the Canadian repo market. Most of these funds are foreign funds. They utilize the Canadian repo market to finance their GoC portfolios, primarily as part of their relative value (RV) strategies. Changes in these strategies can lead to significant shifts in their repo positions. Consequently, hedge funds have alternated between being net cash providers and net collateral providers in the Canadian repo market. Due to their size, their positions can notably influence market dynamics and occasionally impact repo rates (see Section E for a discussion on the growing role of hedge funds in Canada).

24. Canadian dealer-banks typically serve as net cash providers in this market. The dealer-banks in Canada play a crucial role in the repo market by providing both liquidity and collateral, primarily acting as net cash providers for counterparts such as pension funds and hedge funds. With a limited number of domestic banks at the center of the repo market, their capacity to supply cash is vital for its smooth operation, ensuring that participants can effectively meet their short-term funding requirements.

25. The high concentration of market participants can be a vulnerability. A handful of domestic institutions (banks and pension funds), alongside international hedge funds, make the bulk of trading in the repo market. The high concentration means that any significant changes in the behavior or financial health of these key players could have outsized effects on the market. For instance, if a large Canadian bank were to reverse their cash provision to the repo market, the effect could ripple across the system. The high concentration underscores the importance of ensuring robust risk management practices and assessing ways of making the market attractive to international liquidity providers and dealers.

26. The Canadian repo market is heavily dependent on high-quality, liquid collateral, which is a significant strength during stable conditions. This market is primarily collateralized by state-issued or state-guaranteed securities. Dealers indicate that nearly 70 percent of repo trades and about 80 percent of reverse repo transactions are secured by GoC bonds (Figure 3.d). When including provincial and federal crown corporation bonds, such as those issued by the Canada Mortgage and Housing Corporation, only 10 percent of dealer trades utilize other types of collateral, typically securities issued by Canadian corporations. The reliance on high-quality collateral enhances the robustness and resilience of the repo market; however, this heavy dependence on government collateral could pose a vulnerability during periods of market stress, as evidenced during the Covid crisis (Fontaine et al., 2021).

27. Haircuts in the Canadian repo market are typically low.[5] Although information on haircuts is typically not disclosed, transaction level data for repo trading with government collateral reveal that it is standard market practice to impose zero haircut on these transactions, while negative haircuts have also been recorded (Figure 3.c). In addition, repo transactions involving Canadian Government or Provincial bond collateral, or those with eligible core market participants, may also qualify for a zero supervisory haircut, while haircut practices differ between cleared and non-cleared transactions, with non-cleared transactions typically commanding lower haircuts.[6]

28. Low haircuts can be an area of vulnerability for the market. Zero or negative haircuts may be rationalized in individual trades, because typically dealers will assess the counterparty risk across a broader spectrum of trade relationships they have with each counterparty. Negative haircuts

[5] The haircut is the difference between the market value of the securities pledged in a repo transaction and the initial purchase price, functioning similarly to a margin. Haircuts serve as a crucial risk management measure protecting the repo seller against potential losses due to changes in the market value of the collateral or counterparty default and effectively putting a cap on leverage.

[6] Haircuts in the bilateral market are part of the bilateral trade agreements and typically not disclosed. OSFI specifies supervisory haircuts for regulated financial institutions in Canada must apply supervisory haircuts on eligible securities used as collateral in repo and securities lending transactions for capital calculation purposes, irrespective of the contractual haircuts. Additionally, self-regulatory organizations and clearing agencies, such as the CIRO and the Canadian Derivatives Clearing Corporation (CDCC), provide haircut guidance and set collateral haircut requirements for clearing members.

For centrally cleared repo transactions, the CDCC, as the domestic clearing agency, subjects its clearing members to margin deposits that must be satisfied using eligible collateral, including cash, debt securities, and valued securities. Cash collateral is not subject to any haircuts, but securities collateral is subject to haircuts based on market value and applicable haircut rates. Information on haircuts is published periodically.

could also be rationalized in collateral-driven repos[7]. Albeit potentially efficient, this technique is opaque and reduces protection against decline of collateral value that can typically occur in times of stress. Moreover, haircuts can be an effective cap on repo leverage, by requiring traders to keep more cash with their dealer for every collateral exposure. Zero haircuts on government security repos could bolster the proliferation of leveraged strategies by NBFIs, notably hedge funds. These factors highlight the need for continuous monitoring and rigorous assessment of haircut practices to ensure the stability and resilience of the Canadian repo market.

29. Another area of potential vulnerabilities in the Canadian repo market is the concentrated maturity structure of repo transactions on very short-term maturities. Dealers in the Canadian market maintain large gross positions with a tenor of fewer than seven days, which introduces significant rollover risk (Figure 3.e). This short-term nature of repos means that dealers frequently need to renew or roll over their positions, creating potential liquidity pressures if market conditions become unfavorable. The reliance on short-term funding can lead to maturity mismatches and ultimately instability, particularly during periods of market stress when rolling over positions may become challenging.

30. Despite considerable progress on repo market data availability, data gaps remain and should be addressed. The use of transaction level data has been a significant breakthrough in the analysis of bond markets in Canada, including repo.[8] These data have been rigorously analyzed by the BOC to understand better the functioning of the market; however, some blind spots remain and should be addressed. Data on repo transactions beyond CAD collateral need further processing. The current transactions dataset does not include all trades by Canadian entities in repo markets outside Canada. Such data would fall outside the current scope of CIRO reporting requirements, but could be, at least partially, collected by foreign data sources for analytical purposes, to better understand foreign repo funding dynamics of Canadian dealers and their clients. Crucially, top-down data on outstanding repo volumes by market segment and potentially counterparty are not publicly available on a regular basis. Additionally, regular publication of repo rates by market segment and maturity could further improve transparency in repo market dynamics.

31. Beyond repo, the securities lending is recognized as a core funding market, but the market structure and dynamics remain largely opaque. This market is an important complement to the repo market, notably for supporting upgrades of equity collateral (Johal et al., 2019). The share of securities exchanged for cash is low in the Canadian securities lending market, but the market is a key source of funding with respect to sourcing or upgrading collateral to obtain liquidity, notably

[7] Collateral-driven repos are typically reverse repos initiated by a collateral buyer (e.g. a hedge fund) to lend cash and borrow securities from a dealer. They aim to obtain specific securities, for example, to cover a short position. The hedge fund pays more cash than the collateral's worth, therefore provides a negative haircut, if the collateral is in high demand. This extra cash is additional protection for the provider of collateral (for example the dealer).

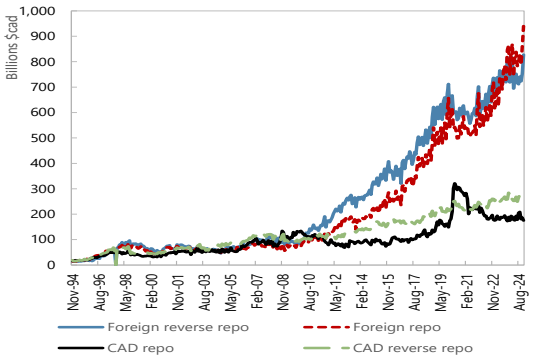
[8] The MTRS provides comprehensive data on CAD repos transacted by Canadian repo dealers and Government Securities Distributors. The CIRO, previously known as the Investment Industry Regulatory Organization of Canada (IIROC), oversees the collection and management of this data. Regulatory authorities, including the BOC and the OSFI, use this data to monitor market activity, ensure compliance with regulatory standards, and produce reports to provide insights into the market.

equities. An important segment of the securities lending market is in equities, thus introducing equity as an indirect source of liquidity, unlike in the Canadian repo market which is largely backed by fixed-income instruments. Canadian banks' collateral swaps feature equity as a major collateral type, at almost 50 percent of total collateral asset types. However, granular data on securities lending markets (both domestic and foreign) are generally lacking, which limits understanding of the market dynamics and risks. Authorities should work to deepen the understanding of the securities lending market as well as its structure and dynamics, including by collecting granular data on securities lending transactions to identify risks and opportunities to enhance market efficiency.

32. Authorities should consider the vulnerabilities of the Canadian repo market and take timely actions to enhance its infrastructure. While the Canadian repo market benefits from utilizing high-quality collateral, it also faces inherent risks. The short-term nature of repo transactions, the concentration of collateral types with typically zero haircuts, and the dominance of a few key market participants contribute to potential vulnerabilities that require further assessment and careful management to maintain market stability. Authorities should enhance the infrastructure of the Canadian repo market to improve efficiency, strengthen risk management (particularly regarding haircuts), and enhance liquidity. A recent paper by BOC highlights the benefits of the CCMS for the financial system (Muller and Padalko, 2025), noting the advantages of a broad adoption of the CCMS and of BOC's participation in the service. The BOC has announced its participation in February 2025. Yet, the service remains in a testing phase, despite being launched since 2023. The BOC should work alongside the Collateral Infrastructure and Market Practices Advisory Group (CIMPA) to prioritize a timely adoption, also because it could help promote greater participation from international liquidity providers and support a much-needed diversity of counterparts in the Canadian repo market (Appendix I.A).

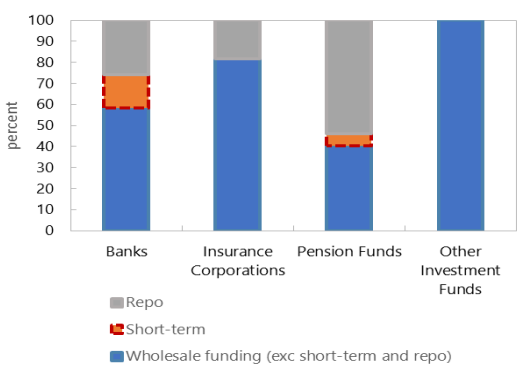
Figure 3. Canada: Canadian Secured Funding Markets

a. Canadian and Foreign Repo Volumes



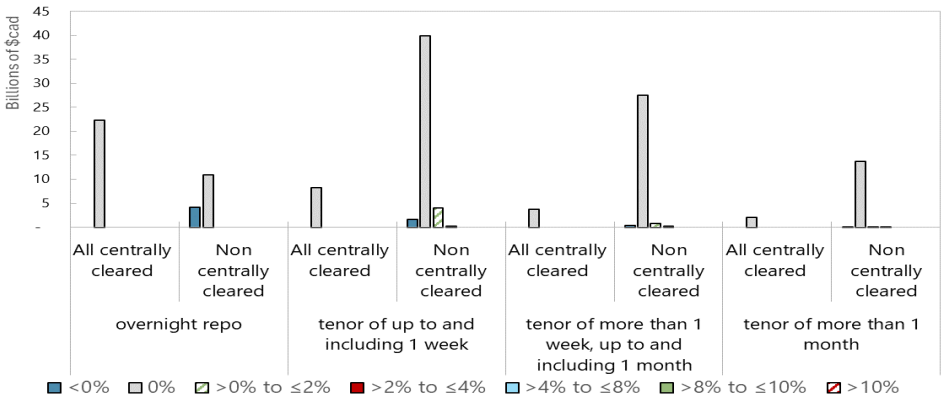
Source: OSFI
Notes: Repo volumes intermediated by dealers

b. Wholesale Funding of Major Institutions



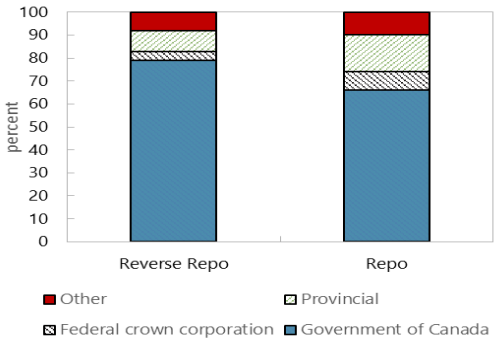
Source: BIS
Note: Data from Dec 2023

c. Repo Haircuts for Government of Canada Collateral



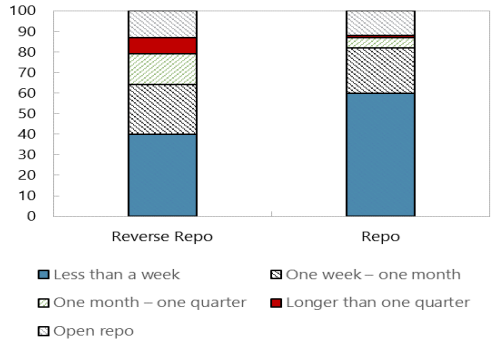
Source: MTRS
Note: Observation: monthly averages (outstanding) over 2023/05–2024/05, excluding open-term repos

d. Client Collateral Types
(Percent of Canadian Repo Volumes)



Source: MTRS
Reference Date: Average May 1, 2023 to May 1, 2024

e. Remaining Outstanding Maturities for Dealers
(Percent of Canadian Repo Volumes)



Source: MTRS
Reference Date: Average May 1, 2023 to May 1, 2024

C. Canadian Unsecured Private Funding Markets

33. Unsecured private funding markets underwent a significant transformation with the wind-down of Bankers Acceptances (BAs). BAs, a previously designated core funding market, have been integral to Canada's financial markets since the mid-1960s, providing small and medium-sized corporations a means to borrow without direct access to the primary markets. Corporations utilized pre-arranged facilities to borrow from banks, and banks sold these loans in the secondary market to raise funding. BAs thus offered a way to match investors with corporate borrowers. The BA interest rate was linked to the Canadian Dollar Offered Rate (CDOR), the previous benchmark rate in Canadian short-term funding markets. Following the shift to the new, secured benchmark rate, the Canadian Overnight Repo Rate Average (CORRA), by June 2024, the issuance of BAs by Canadian banks also ceased. This discontinuation marks the end of a lending model that has been in place for decades, as BAs represented about 20 percent of the notional outstanding securities in the money market (McRae and Auger, 2018; CARR, 2021).

34. The discontinuation of BAs came following growing concerns over the suitability of BAs as an underlying instrument underpinning the key lending benchmark. BA volumes were falling in the past years following the costly treatment of the product under Basel III liquidity standards.[9] Moreover, most of the BA volume was at very short maturities—more than 90 percent was on the one-month tenor. BAs at the three-month tenor—underpinning three-month CDOR, which most derivatives activity is linked to—represented only around 8 percent of BA volume (as of BOC data in November 2020).

35. The transition away from BAs has been very well communicated and smoothly implemented. The Canadian Fixed Income Forum's (CFIF) Bankers' Acceptance Transition Virtual Network (BATVN) developed the approach for winding down the BA market, with the Canadian Alternative Reference Rate Working Group (CARR) publishing a monthly transition monitor to track progress. According to the final monitor in August 2024, the wind down proceeded in line with BATVN's approach. CFIF also published a white paper on the challenges and alternatives to BAs. The official sector supported the transition through secretarial support, outreach, and the issuance of one-month Treasury-bills by the GoC to facilitate the transition. The private sector also participated actively in CFIF and cooperated well during the implementation. Overall, the transition away from BAs has been well communicated, monitored, and implemented.

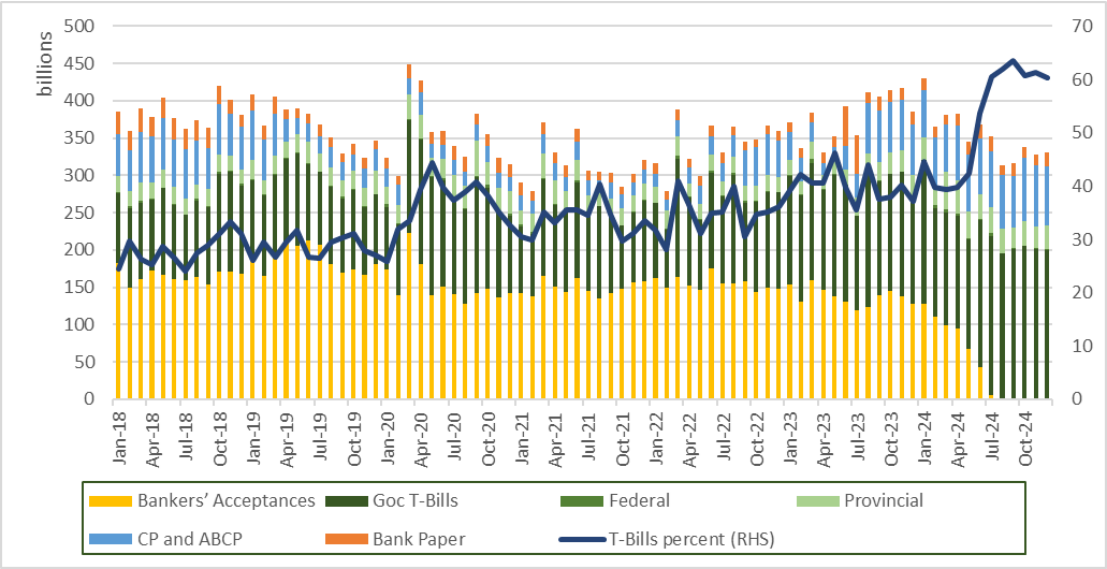
36. With the BA lending model discontinued, a significant gap in funding is left seeking alternatives. Even if outstanding BAs fell to roughly CAD60 billion at the end of February 2024 (down from over CAD 90 billion a year earlier), the gap that they left in the market is substantial. BAs are being replaced by a mix of existing financial products, however, none of the currently existing money market instruments is seen as a direct alternative, lacking either in maturity (too long) or yield (too low). New instruments have also been launched, such as the Secured General Collateral (SGC)

[9] BAs do not count as HQLA under the liquidity coverage ratio.

Notes and reverse repo under the CCMS. While these instruments are expected to gain share, they are still being tested.

37. As a result of the BA cessation, the Canadian unsecured funding market undergoes a transition period, which, so far, has seen overall volumes shrinking. So far, the private unsecured funding market has shrunk significantly since the cessation of BAs (Figure 4). While CP issuance in Canada increased somewhat, other domestic private instruments remained broadly stable. The largest part of the gap has been filled by Canadian Government short term T-Bills, notably one-month Bills, raising the percent of T-Bills to almost 60 percent. The issuance volumes have not been such that the gap is fully covered, allowing space for private initiatives to step up their volumes. With more instruments potentially taking a share, the transition is ongoing and should be monitored closely.

Figure 4. Canada: Evolution of Key Canadian Unsecured Short-Term Funding Instruments



Source: CIRO and IMF staff calculations. Note: The chart covers trading volumes in the secondary market.

38. In view of the ongoing shift, authorities should monitor market dynamics in the unsecured market segment. The implications for the Canadian unsecured market segment following the cessation of BAs are still developing and should be carefully assessed and monitored. In addition to domestic trends in the unsecured market, authorities should analyze shifts in funding patterns of corporates in the absence of BAs, and shifts in investment patterns (e.g., from domestic to foreign investments) of previous holders of BAs. Market feedback suggests that previous BA holders, such as large pension funds, have adjusted well to the transition, likely shifting to repo and foreign CP investments. The impact on MMFs, which invested almost 20 percent of their assets in

BAs, should be examined thoroughly by the authorities, despite the relatively small size of the sector.[10]

39. Authorities should also support the effective replacement for BAs and assess whether a shrinking domestic unsecured market is a desired outcome. Authorities should take steps to promote alternatives to BAs by supporting the adoption of new instruments that have been launched but remain not operational, such as SGC and repo investments via the CCMS. As the shrinkage of the unsecured market continues, authorities should consider the merits of boosting domestic unsecured funding markets, including encouraging a vibrant domestic CP market, as they offer a simpler, faster, and more flexible form of funding, further diversifying funding sources.

40. Finally, significant data gaps in the sector should be addressed. While Market Trade Reporting System (MTRS) reporting can provide a view on the daily trading volumes of key unsecured money market instruments, information on outstanding amounts by market instrument, even on a monthly basis, is not readily available. Further disaggregating outstanding volume data by instrument, maturity, and currency categories would be helpful. Additionally, publishing volumes of holdings by major holders of these instruments would enhance the understanding of vulnerabilities and interconnectedness in the system.

D. Government of Canada Securities and Provincial Securities

41. The GoC securities market provides a key safe asset that underpins funding transactions in Canada. GoC bonds are of key importance for the Canadian financial system, given their use as a benchmark to price most fixed income securities in Canada and as means to finance the federal government. In funding markets, T-Bills are key money market instruments, while GoC bonds are used as collateral to facilitate the main bulk of secured funding. Therefore, the GoC market is a core funding market (Berger-Soucy et al., 2018).

42. More recently, new securities were introduced in the cash and futures segments. The government traditionally has been issuing nominal bonds with six different terms to maturity: two- year, three-year, five-year, 10-year, 30-year, and 50-year as well as two categories of T-Bills.[11] As discussed above, the GoC introduced, in May 2024, a one-month treasury bill as a temporary new tenor to support the Canadian money market's transition from the BAs. In addition, there has been a launch of the new two-year GoC bond futures in late 2020 and a re-introduction of the 30-year GoC bond futures in late 2022, on top of the pre-existing futures in the five-year, 10-year, and 30-year sectors. By increasing the number of liquid points on the Canadian listed yield curve, these newly

[10] Granular data on the evolution of short-term funding holdings of Canadian MMFs face significant limitations. The available data do not capture the entire MMF sector and are reliable at low frequencies with a material lag.

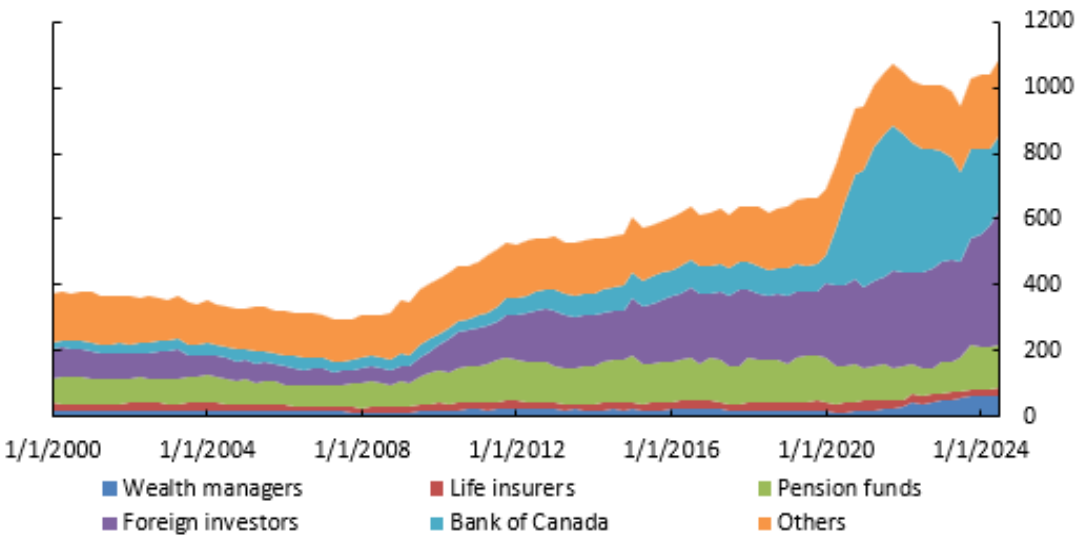
[11] The government issues regular T-bills with three different terms to maturity: 3-month, 6-month, and 1-year. It also issues cash management bills, which are securities with terms to maturity of between one day and three months. The government cancelled the issuance of 50-year bonds in 2022 and ceased issuance of the 3-year bond in the second quarter of fiscal year 2023–24.

added products facilitated trades for various purposes and strategies, improving the liquidity of the GoC curve in the front and long ends.

43. The GoC bond market has grown, attracting foreign investors. Since the last FSAP, government debt levels have grown, albeit still modest compared to other countries and well within a sustainable trajectory. The growth has attracted foreign investors, in line with demand from foreign hedge funds, which buy GoC bonds as part of their RV strategies. While foreign investors now hold the largest share of bonds (around 35 percent), traditional, major domestic holders include pension funds, the largest holders of Canadian bonds, and banks, the largest holder of T-bills. Since COVID-19, the BOC became a major holder of bonds, although its share has declined substantially with subsequent quantitative tightening (QT) (Figure 5.a).

44. The GoC bond market is liquid. Increased net issuance since 2020 has boosted outstanding volumes and market depth, while measures of the market's resilience point to a very liquid market, also in comparison to other major countries. Since 2020, liquidity appears to have deteriorated somewhat according to these measures, compared to pre-COVID-19 period, but part of this dynamic can be explained by the increase in the market's volatility following the sharp rise in interest rates post-COVID-19 (Figures 5.b.i and 5.b.ii).

Figure 5a. Canada: Government of Canada Bonds Outstanding by Investor Type (Quarterly Total Assets, Canadian Dollars in billions)



Note: Last observation in September 2024. "Others" category includes households, non-financial corporations, total chartered banks and quasi banks, property and casualty, other financial intermediaries, financial auxiliaries, captive financial institutions and money lenders, financial government business enterprises, and general governments.

Source: Statistics Canada.

45. Nevertheless, there are some signs of growing vulnerabilities in the GoC bond market related to dealer balance sheet capacity constraints. Despite an uptick since 2020, the amount of government bonds outstanding has plateaued in the past few years, while trading volumes rose a lot faster (Figure 5.b.iii). Increased trading activity typically suggests a high demand for GoC bonds, but

the disparity can signal the increased presence of leveraged investors like hedge funds who fund their GoC bond positions via the repo market. With trades in the dealer-client repo market largely uncleared, the increased demand for repo may not be fully netted, adding to demand for dealer balance sheet space (Figure 5.b.iv). As a reflection of growing demand, negative GoC swap spreads suggest that holding large inventories of bonds, sometimes necessary in the process of intermediation, has become costlier for dealers.

46. The authorities should enhance their understanding of dealer intermediation practices and potential constraints. As mentioned, rising government debt levels have attracted foreign investors, including hedge funds. This, in turn, increased trading volumes in cash markets and the repo market with GoC collateral. With dealer balance sheets ultimately constrained by regulations and internal risk management practices, intermediation may become challenged especially in times of stress when demand for dealer balance sheet space typically increases. It is therefore important to collect and publish (in some aggregation) data on dealer balance sheets. Dealer holdings along the lines reported by primary dealers in the Fed for domestic and foreign holdings, including dealer total assets could enhance understanding of dealer intermediation practices and balance sheet size.

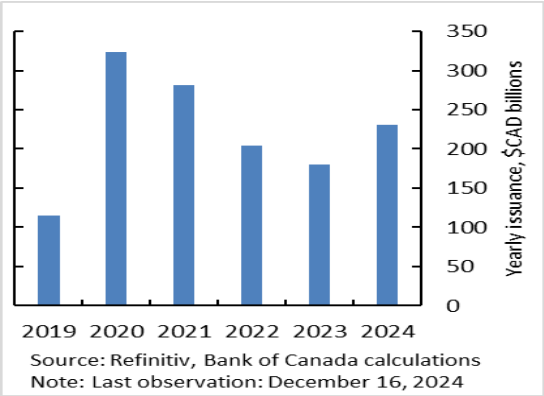
47. Given potential intermediation constraints, the authorities should also take steps to safeguard the stability of the GoC market. Relaxing the residence requirements for government securities distributors (GSDs) could expand and internationally diversify the current pool of primarily domestic dealers, thereby increasing intermediation capacity. The March 2025 adjustments to Canada's debt distribution include this relaxation and provide further adjustments, geared to enhance market functioning and transparency (BOC, 2025). In addition to increasing the number of dealers, the authorities (the BOC and the Canadian Securities Administrators (CSA), in consultation with CIRO) should assess the benefits of expanded central clearing for GoC bond cash and repo trades. Towards this direction, some BOC research has shown that more central clearing could help free up space on dealer balance sheets by providing additional netting of exposures across clients (see Chen et al., 2022). The expansion of central clearing for certain cash and repo transactions is currently underway in the U.S. and discussions regarding a similar approach have begun in other major jurisdictions. However, experience from the U.S. thus far has shown that establishing central clearing can be technically challenging, not least because of the need to onboard non-central counterparty (CCP) members into clearing practices. In this respect, discussions with Canadian banks that have a substantial dealer presence in the U.S. revealed that these banks are developing sponsored access for their U.S. clients to central clearing in the U.S. repo market. Therefore, extensions to the Canadian repo market could also be explored by both the private sector and the authorities.

48. Provincial government bonds complement the spectrum of public sector bonds in Canada. These bonds are considered high-quality investments, offering slightly higher yields compared to federal government bonds, reflecting differences in credit ratings and notably in liquidity, which can differ substantively across provinces. Outstanding amounts of provincial government debt continue to increase with the total size comparable to the GoC market size. They attract similar groups of holders, notably domestic Mutual funds and foreign investors, to a lesser

extent compared with GoC bonds (Figure 5.c). It is therefore important for authorities to monitor developments in both GoC and provincial governments and assess the impact of potential dealer balance sheet constraints also on provincial bond dynamics.

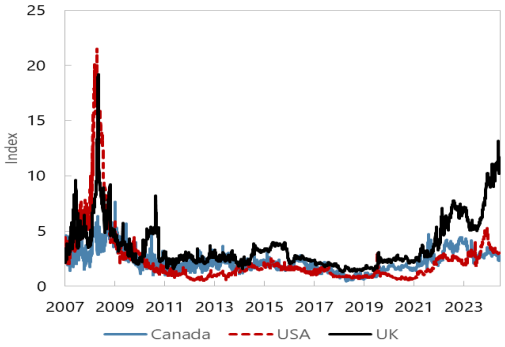
Figure 5b. Canada: Government of Canada Securities - Market Metrics

i. GoC Bond Issuance



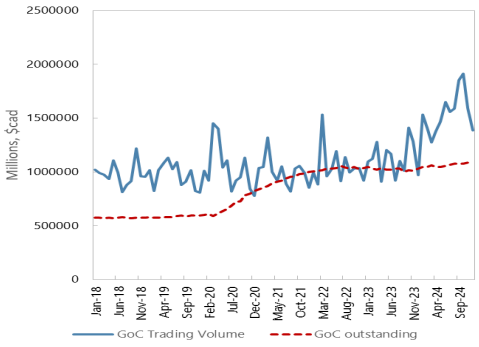
Source: Refinitiv, Bank of Canada calculations
Note: Last observation: December 16, 2024

ii. Government Bond Market Liquidity Indices



Source: Bloomberg

iii. GoC Bonds Outstanding and Trading Volumes

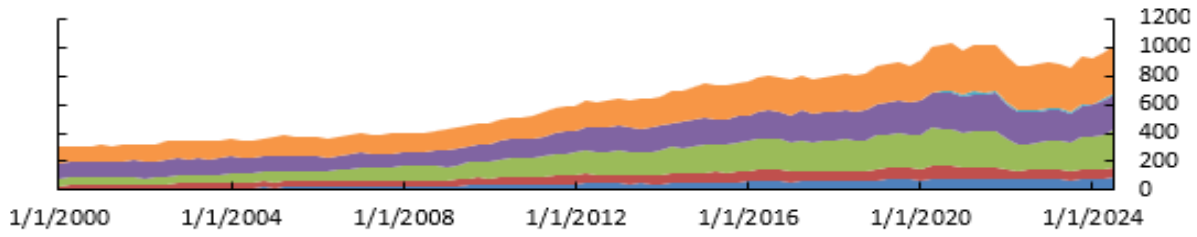


Source: Statistics Canada, CIRO and IMF Staff calculations

iv. Central and Bilateral Clearing Repo Volumes

Source: MTRS
Reference Date: Average May 1, 2023 to May 1, 2024

Figure 5c. Canada: Provincial Bonds Outstanding by Investor Type



Source: Statistics Canada.

Note: Last observation in September 2024. "Others" category includes households, non-financial corporations, total chartered banks and quasi banks, property and casualty, other financial intermediaries, financial auxiliaries, captive financial institutions and money lenders, financial government business enterprises, and general governments.

E. Assessment of Funding Markets' Functioning and Risks Ahead

49. This section examines market functioning in the context of three cases. First, it reviews the literature to assess changes in the market structure and functioning during the pandemic. Second, it discusses developments in the CORRA rate, the key benchmark rate of Canada, to determine market functioning in this core market segment. Third, it explores the growing role of foreign hedge funds in Canadian short-term funding markets and examines the implications for market functioning in those markets.

Case I: Market Structure in Stressed Times: Experience During the COVID-19 Pandemic

50. The COVID-19 pandemic was a full-blown global systemic crisis of unprecedented nature and intensity. The shock has severely disrupted financial markets and economies worldwide, leading to unprecedented volatility and liquidity shortages across various global markets. While some countries experienced more severe economic contractions, others managed to stabilize their financial systems more effectively. Canada, with its robust financial infrastructure and swift policy responses, fared relatively well compared to many other nations. The BOC's interventions played a crucial role in mitigating the impact of the crisis on Canadian financial market (see Section III).

51. Market dynamics change significantly in times of crises. In those times, liquidity typically evaporates rapidly as market participants rush to convert assets into cash. This phenomenon was evident during the COVID-19 pandemic, where uncertainty led to a widespread need for liquidity. To manage liquidity risks, investors typically reduce holdings of liquid assets, leading to selling pressures in the market notably for high quality fixed income assets. They also tap multiple sources to obtain liquidity, often amplifying market stress. While many seek to hold more cash for precautionary reasons, several also face demand for cash due to higher margin requirements (i.e. pension funds, insurance companies or hedge funds) or investor redemptions (e.g., investment funds). The large demand for cash translates into increased demand for dealer balance sheet space, but the surrounding uncertainty and the one-way nature of crisis trades (heavy selling) increase both the inability and the unwillingness of dealers to provide the necessary liquidity. This collective behavior can exacerbate liquidity shortages, leading to significant market disruptions.

52. These dynamics became evident at the onset of the COVID-19 pandemic, when major investors experienced significant liquidity pressures.

- **The Maple Eight pension funds** experienced large liquidity demands in March 2020, mainly from margin calls on their derivatives positions and the inability to roll over U.S. commercial paper, which increased the need for precautionary liquidity. In response, many pension funds ran down their stocks of BAs, while shifting towards longer-term repos, albeit at higher cost. Crucially, they managed liquidity by leveraging their significant asset base, notably using equities as collateral to raise cash (Bédard-Pagé et al, 2021).

- **Banks** faced significant challenges during the COVID-19 pandemic. Banks experienced significant funding pressures as businesses sought access to credit lines, while investors withdrew support

of their unsecured funding, notably BAs and foreign CP/CDs. Despite these pressures, Canadian banks entered the pandemic with strong capital and liquidity positions, which helped them manage the initial shock (Fontaine et al., 2021).

- **Life insurers** faced relatively limited liquidity pressures during the COVID-19 crisis (see Aldridge et al., 2024). Some pressures arose from margin requirements on FX derivatives, but these were offset by margin gains on interest rate derivatives. As liquidity risks did not peak, insurers continued buying long-term corporate and provincial bonds by rebalancing their portfolios from short- and medium-term GoC bonds and using cash inflows from premiums. While their activity provided much-needed cash to bond sellers and issuers, it added to GoC bond selling during the crisis.

- **Hedge funds** had a mixed impact on the Canadian funding markets during the COVID-19 crisis (Sandhu and Vala, 2023). While hedge funds can provide liquidity by purchasing assets outside the peak period of market turmoil, supporting market liquidity, they contributed to market stress during the peak period by selling off GoC positions, possibly in the process of unwinding their basis trade strategies. This dual role highlights the complex nature of hedge funds' involvement in financial markets, where they can both stabilize and destabilize liquidity conditions.

- **Mutual funds**, particularly bond funds, experienced net outflows during the COVID-19 crisis, totaling about 4.5 percent of their assets under management. Investors' rush to redeem shares forced mutual funds to use their cash buffers and in some cases also sell liquid assets. Most redemptions occurred before the authorities announced support measures, which along with actions by fund managers, have helped prevent further asset sales, limiting the impact on market liquidity (see Ouellet Leblanc and Shotlander, 2020). While the depletion of cash buffers had left mutual funds vulnerable to consequent large liquidity shocks in the aftermath of the crisis, liquidity risks have receded since (see CSA, 2024).

53. Short-term funding markets showed signs of elevated stress. Signs of strain became evident in the yields of GoC money market instruments (Fontaine et al., 2021). After the initial flight to quality pushed yields at low levels, the subsequent dash for cash pushed them to the opposite direction as selling pressures accumulated. The BA market came under pressure and the yield on BAs increased, putting pressures on CDOR. Dealers faced constraints in purchasing own-name BAs, while in bond markets, volatility made intermediation riskier and bid-ask spreads increased substantially. In provincial and corporate bonds, dealers shifted toward trading on agency rather than a principal basis. Dealer banks significantly increased their recourse to the BOC's Extended Term Repo Facility (ETRF) and equivalent Fed facilities, amid signs of declining funding volumes from the U.S. repo market (Figure in Appendix I.B).

54. The pandemic highlighted the importance of continuing work to improve the resilience of core funding markets. This unprecedented global systemic crisis featured acute levels of stress and one-sided trading in some markets, which merited a strong response from the BOC. The central bank's role as a liquidity backstop during such deteriorating conditions was crucial; however, it is essential that ongoing efforts to enhance market resilience remain a key focus. The experience

underscored how swiftly liquidity can evaporate during periods of stress, leading to significant challenges for major investors in Canada, including pension funds, banks, and mutual funds. While Canada's robust financial infrastructure and timely interventions helped mitigate some adverse impacts, it is imperative for the authorities and market participants to collaboratively strengthen the mechanisms that underpin core funding markets. The recommendations provided in this technical note aim for this outcome.

Case II: Evolution of Benchmark Rate in Canadian Funding Markets

55. The transmission of the key policy rates has been progressing relatively smoothly albeit with some volatility for the benchmark rate. Money market rates have been reacting timely and proportionately to changes in the BOC target rate (Figure 6.a). However, CORRA, a measure of Overnight Repo rates collateralized with GoC securities, experienced some volatility. CORRA has been consistently below the Overnight target rate in the period following Covid before hovering closely around the target rate in 2022 and moving consistently higher than the target since March 2023. It has averaged about four basis points higher than the BOC's target in 2024, something rather unusual in its history. CORRA is the benchmark funding rate in Canada after the cessation of CDOR, and as such can influence other interest rates throughout the economy. Given its importance, this section discusses the drivers of CORRA's moves.

56. A possible pressure point for CORRA could be the large shifts in reserve balances as QT succeeded quantitative easing (QE). The BOC launched QE in March 2020 to stabilize financial markets and lower borrowing costs during the COVID-19 pandemic, leading to a significant increase in government bond purchases and reserves, with the latter reaching approximately $395 billion by 2021. As the economy recovered, the BOC tapered its asset purchases and ended QE in October 2021. The BOC initiated QT in April 2022, allowing bonds to mature without replacement, reducing the BOC's balance sheet and reserves. Market participants noted increased sensitivity of money market rates to changes in bank reserves since QT started, with upward pressure on CORRA observed by late 2023 (Figure 6.b). Despite this, reserve balances remained above the estimated steady state. The BOC plans to end QT in March 2025 (see Appendix I.C).

57. According to the BOC, a key factor influencing CORRA dynamics is the increasing involvement of hedge funds in the repo market. The BOC highlighted that shifts in market positioning of GoC securities are a primary driver of these changes (Plong and Maru (a) and (b), 2024). As expectations for global monetary policy easing emerged at the end of 2023, investment strategies—particularly among foreign hedge funds, and to a lesser extent among pension funds and dealers—transitioned from net short to net long positions in GoC securities, including outright long positions and curve steepeners. The long positions include the GoC cash-futures basis trades, a popular relative value strategy employed by hedge funds. Since these positions are typically financed through repos, the resultant trades have exerted pressure on CORRA (Figure 6.c).

58. Furthermore, the transition to T+1 settlement in May 2024 added to the pressures on CORRA. The shorter settlement period (in 1 day from prior 2 days) has led to a surge in trading volumes at the overnight maturity, particularly as hedge funds shifted their trades into that segment

of the market, which includes trades eligible for CORRA.[12] CORRA volumes more than doubled from the previous average of CAD 21.6 billion (US$15.4 billion) per day in the first half of the year (Figure 6.d). The combination of heightened trading activity due to shifts in market positioning and the T+1 transmission further exacerbated pressure on the CORRA. The BOC estimated the T+1 switch has added 3 basis points, on average, to the rate.

59. Looking beyond the pressure on the rate, the involvement of hedge funds in CORRA can have positive aspects. According to discussions with the authorities and market participants during the mission, maintaining hedge fund volumes in the CORRA market can be important, because these funds are significant market participants that contribute to overall market liquidity and efficiency. Their active involvement helps to ensure that pricing reflects a wider range of market information and sentiment. Moreover, the additional volumes provided diminish the risk of too few trades in the overnight segment, which would undermine CORRA as a benchmark rate, ultimately affecting its stability and functionality.

60. Nevertheless, the pressure on CORRA rates creates important challenges. First, the influence of hedge funds (notably foreign ones) on CORRA can raise concerns about market transparency and fairness. If a small number of large players can significantly impact the rate, it may not accurately reflect the broader market conditions. Second, changes in the CORRA rate can affect the cost of borrowing for financial institutions and, by extension, for businesses and consumers. If the rate is driven up by hedge fund activity, it could lead to higher borrowing costs. Third, if hedge fund activity drives the CORRA above the BOC's target, it can complicate the BOC efforts to control short-term interest rates and maintain economic stability. Fourth, hedge funds strategies, which rely on leverage, can introduce volatility into the overnight funding market in case positions are unwound or reversed. This can lead to fluctuations in the CORRA rate, making it less predictable.

61. To address such challenges, the BOC has implemented measures to counter the upward pressures on the CORRA in a timely and appropriate fashion. The BOC has engaged in targeted liquidity operations to provide additional funding to the overnight market and maintain the spread between the CORRA and the target rates at low levels. The operations succeeded at bringing the allocation rate of the auctions closer to the target. In January 2025, the BOC adjusted the deposit rate downwards, which can prompt banks to re-allocate to the market additional liquidity deposited with the central bank, thereby smoothing upward pressures for the rate. Since then, Overnight Repo operations have been used only occasionally. More recently, in March 2025, the BOC published additional CORRA metrics (weighted average mean and mode of the CORRA distribution in addition to the median) to offer additional insights into overnight trading and enhance CORRA transparency. Additionally, the BOC has closely monitored market developments and communicated timely on the reasons underlying pressures on the CORRA. By promoting transparency and communication on market functioning, the BOC can bolster confidence among market participants and mitigate

[12] Previously, hedge funds funded their long cash bond positions in the tomorrow/next market, where the closing leg settles at T+2 and were excluded from the CORRA calculation.

potential disruptions in the CORRA benchmark, ultimately supporting a more stable and efficient funding environment.

62. Those measures have largely appeased pressure on CORRA and market concerns. Discussions with market participants noted that so far, and considering the central bank actions taken, the impact on funding costs is very small and there is confidence that the central bank is acting in a timely fashion to protect the integrity of the CORRA. Enhancing CORRA transparency can improve the market's understanding of the CORRA dynamics and direction of trade. Moreover, the publication of the mean and mode metrics with an increased precision up to four decimal digits could potentially stimulate futures market activity.

63. Looking forward, the authorities should continue closely monitoring and communicating CORRA dynamics. The BOC should further monitor and deepen its understanding of the factors driving hedge fund strategies and their influence on market dynamics (see Section E, Case III).

64. Finally, the BOC should maintain flexibility in its approach to liquidity management. As the BOC continues to normalize its balance sheet it should remain vigilant and prepared for potential changes in settlement balances that could further impact liquidity conditions and, subsequently, CORRA. It remains crucial to have liquidity facilities in place that can entice market participation in a timely manner to maintain the appropriate level of reserves in the system. The exit plan from the QE represents a clear and thoughtful way forward in this respect.

Case III: Growing Role of Foreign Hedge Funds in Canadian Funding Markets

65. Foreign hedge funds (HFs) have significantly increased their presence in the short-term funding markets in Canada over the past five years. Their core activities include RV trades, notably of a specific type, the so-called cash-futures basis trade (Uthemann and Vala, 2024). This trading strategy exploits profit opportunities arising from discrepancies in the prices of GoC bonds and their corresponding futures contracts. Basis trades grew alongside increased trading volumes in the GoC bond cash and futures market (Figure 6.e). At the same time, these trades are funded in the repo market, typically at very short-term tenors, driving participation by HF in this market also higher. Hedge funds account for the largest share of client-to-dealer repo transaction volume where GoC bonds are collateral (Sandhu and Vala, 2023). As explained in Sections B and E, their positioning in the repo market has changed significantly over time, with implications on repo rates (Figures 6.c and 6.f). In contrast, Canadian hedge funds have relatively little involvement.

66. Despite the growing role of foreign hedge funds, the underlying drivers of the opportunities they exploit is not well understood. RV strategies capitalize on market misalignments and the trading dynamics that create such misalignment should be the subject of further research by the authorities. Market contacts pointed to the rising activity of CTAs, whose momentum strategies can create mispricing in the futures markets, and real money investors whose strong demand for government securities, notably at longer maturities can create misalignments in the cash segment.

67. The participation of foreign hedge funds in the Canadian funding markets can be beneficial. Hedge funds use arbitrage to exploit market price misalignments, which can reduce mispricing and improve the overall efficiency and information content of the bond and futures markets. For example, Sandhu and Vala (2023) find that hedge funds often transact in the opposite direction of other clients to capitalize on imbalances in the GoC bond market, supporting a two-sided market. By doing so, they provide liquidity to the GoC market and can also increase the volume and depth of the repo market.

68. Nevertheless, the growing participation of foreign hedge funds also introduces financial vulnerabilities. As price misalignments are typically small, hedge funds leverage their positions highly (around 20 times based on market contacts) to make the trade profitable and economically viable. Leverage can amplify market stress in case hedge funds need to exit positions quickly, causing significant selling pressures in the underlying GoC market. Given the core role of the GoC market, and the links between hedge funds and dealers, increased interconnectedness can amplify the shock across markets. Experience from the U.S. and during Covid has shown that such deleveraging can come from sudden increases in repo borrowing costs or margin calls during a stress event.

69. In Canada, the high concentration of HFTs in futures trades poses an additional vulnerability for the basis trade. According to market intelligence, four major U.S. based HFTs are responsible for almost 40 percent of the trade in GoC futures. HFTs are not directly involved with the basis trades but are important in providing liquidity to the GoC futures market, through high-frequency trading that can improve efficiency in trades. Nevertheless, HFTs, which, at least in the U.S., take the form of Principal Trading Firms, tend to be more loosely regulated compared to dealers, do not hold positions overnight that can facilitate intermediation, and tend to withdraw their liquidity in times of stress based on the U.S. experience during Covid. Given the high concentration of HFTs in the GoC markets, such a withdrawal could lead to a deterioration of liquidity in the futures market segment, affecting the cost of futures trading and consequently the cost of basis trades, potentially prompting a deleveraging of these trades, with significant consequences on financial stability.

70. Furthermore, there are growing concerns about crowding out of traditional repo clients in view of the growing demand for dealer balance sheet space by hedge funds. Some market participants explained that the significant increase in demand for repo financing by hedge funds has led to a more direct competition for dealer balance sheet space with the more traditional repo participants, such as pension funds. Crowding out concerns emerge stronger as Canada's repo market is dominated by few domestic dealers, with relatively limited ability to net client positions.

71. In addition, the increased activity of foreign hedge funds in the overnight repo market has also put upward pressure on the CORRA (See analysis in Section E, Case II).

72. Canadian authorities should continue to monitor and analyze closely the engagement of foreign hedge funds in the Canadian markets, including by enhancing relevant data collection.

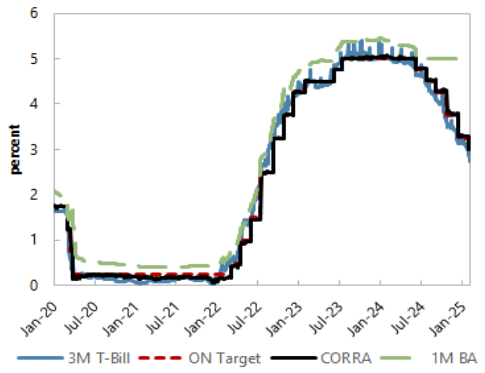
- Authorities should further analyze motivations and strategies of foreign hedge funds operating in the Canadian funding markets. To do so, regulators should collect data to closely monitor the leverage levels employed by hedge funds in their trading strategies.

- Given the concentration of HFTs in GoC futures trades and the prominent role of CTAs, authorities should closely monitor their action and be on the lookout for the need to enhance data transparency around their activity.

- To understand better the intermediation role of dealers and alleviate crowding out concerns for traditional repo clients, authorities should increase transparency on dealer holdings of government and provincial bond positions, as well as dealer financing volumes, promote a diverse range of liquidity providers and foster the ability to net dealer trades with clients through central clearing (see Section D).

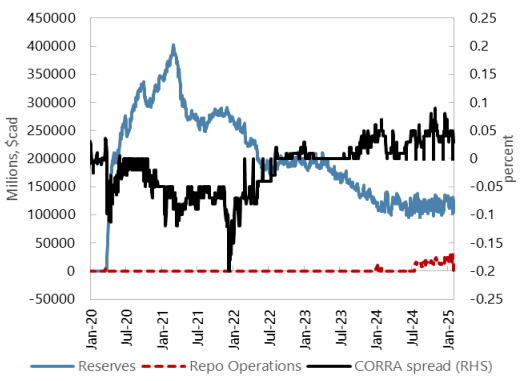
Figure 6. Canada: Assessment of Funding Markets' Functioning and Risks Ahead

a. Monetary Policy and Money Market Rates



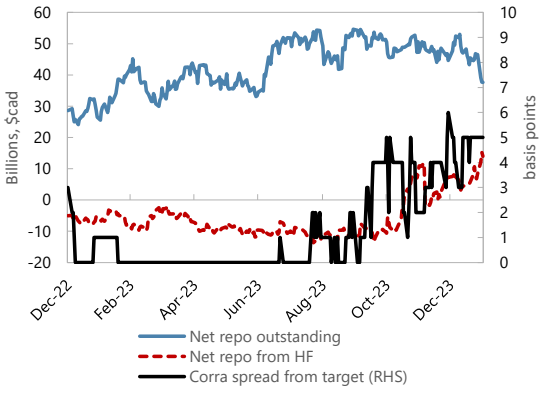
Source: Bloomberg

b. Evolution of CORRA, Reserves, and BOC Operations



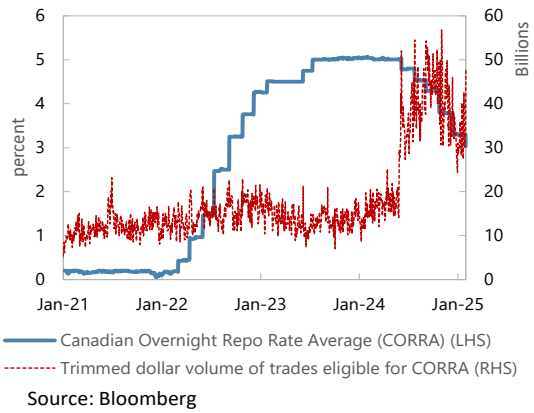
Source: Bloomberg

c. Hedge Fund Repo Volumes and CORRA Spread



Source: MTRS, Bloomberg and Bank of Canada calculations

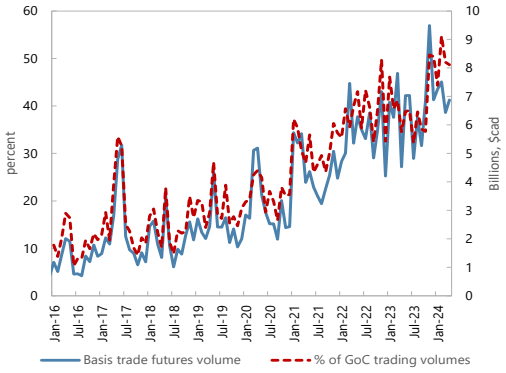
d. CORRA Rate and Volume



Source: Bloomberg

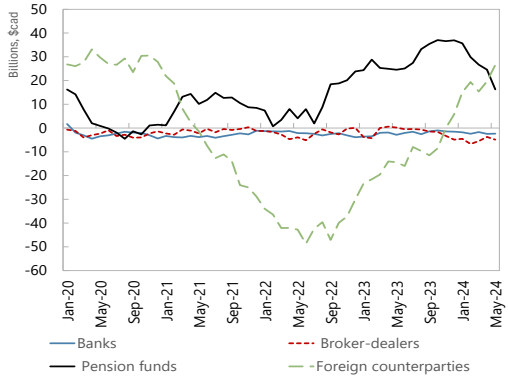
Figure 6. Canada: Assessment of Funding Markets' Functioning and Risks Ahead (Concluded)

e. Basis Trade Futures Volumes



Source: Montréal Exchange (TSX), Bank of Canada calculations

f. Net Repo Positions by Major Counterparties



Source: MTRS and IMF Staff Calculations

OVERSIGHT AND LIQUIDITY RISK ABSORBERS[13]

A. Overview of Regulatory Practices

73. In Canada, financial supervision is divided among several entities, each responsible for different aspects of the financial system. OSFI oversees federally regulated financial institutions, including banks, federally incorporated insurance companies, and federally incorporated credit unions as well as federally regulated private pension plans. Provincial and territorial regulators oversee securities markets and provincially regulated financial institutions such as credit unions, caisses populaires and insurers. The Canada Deposit Insurance Corporation (CDIC) protects eligible deposits at member institutions at the federal level while for provincial financial institutions, there are separate safety net arrangements. The BOC plays a critical role in financial stability by overseeing systemically important payment systems. Additionally, the CSA coordinate securities regulation across provinces and territories. While this section focuses on deposit-taking institutions, Box 1 provides an overview of the oversight framework for NBFIs.

74. OSFI's regulatory framework ensures that both domestically headquartered and foreign-operated institutions in Canada adhere to prudential standards, mitigating risks to the financial system. OSFI supervises and regulates all banks operating in Canada, federally regulated trust and loan companies, including both Canadian-headquartered institutions and foreign banks operating in Canada. Additionally, there are three federal credit unions (FCUs), regulated and supervised by OSFI. These entities are collectively referred to as DTIs. If concerns arise regarding the

[13] This section focuses primarily on federally regulated deposit-taking institutions, providing an overview of key liquidity metrics and a high-level assessment of NBFIs. For a more detailed analysis, please refer to the corresponding Technical Notes highlighted when appropriate in the references.

financial condition or operations of a DTI, OSFI may assign it a stage rating, ranging from Stage 1 (Early Warning) to Stage 4 (Non-Viability/Insolvency Imminent). In total, OSFI provides oversight for more than 400 financial institutions across Canada, which includes insurance companies, and more than 1,200 private pension plans serving employees in federally regulated industries.

75. OSFI supervises DTIs in Canada through a risk-based approach, categorizing them based on their size, systemic importance, and regulatory requirements. The largest and most critical banks are designated as D-SIBs, which are subject to capital buffers: the D-SIB Surcharge of 1 percent and the Domestic Stability Buffer of 3.5 percent. Small and Medium-Sized Deposit-Taking Institutions (SMSBs)—including smaller banks, federally regulated credit unions, trust companies, and loan companies—operate under a proportionate regulatory framework tailored to their risk profile. OSFI also regulates and supervises foreign bank subsidiaries and branches.

76. OSFI segments SMSBs into three categories based on their capital and liquidity requirements. Category I includes SMSBs with more than $10 billion in total assets, while Category II consists of those with less than US$10 billion in assets but meeting at least one risk-based criterion, such as holding over US$100 million in total loans, engaging in derivatives transactions, or having off-balance sheet exposures exceeding 100 percent of total capital. Category III includes SMSBs with less than US$10 billion in assets that do not meet Category II criteria[14]. Additionally, subsidiaries of SMSBs must follow the same capital and liquidity rules as their parent institution, with potential exemptions outlined in OSFI's Liquidity Requirements Guideline. These classifications help OSFI tailor regulatory and supervisory requirements to the size and systemic importance of each institution.

77. The Liquidity Adequacy Requirements (LAR) Guideline established by OSFI sets the regulatory framework for assessing whether banks, bank holding companies, and trust and loan companies maintain adequate and appropriate liquidity. The LAR Guideline[15] serves as the basis for the Superintendent's assessment of liquidity adequacy. The framework is built around two minimum standards: the Liquidity Coverage Ratio (LCR), ensuring short-term resilience, and the Net Stable Funding Ratio (NSFR), addressing long-term funding stability. Additionally, OSFI employs supplementary supervisory liquidity metrics aiming to help the assessment and compliance enforcement; the Net Cumulative Cash Flow (NCCF) and the Operating Cash Flow Statement (OCFS). The NCCF measures an institution's liquidity surplus or deficit over a given period by calculating the difference between eligible cash inflows and prescribed cash outflows. The survival horizon is the last period before the NCCF turns negative, expressed in weeks or months. The NCCF complements the LCR and the NSFR by providing a more dynamic view of liquidity risks and potential mismatches beyond the regulatory minimums. Unlike LCR, which focuses on a 30-day stress period, the NCCF assesses liquidity resilience over multiple time horizons, offering a broader perspective on liquidity management.

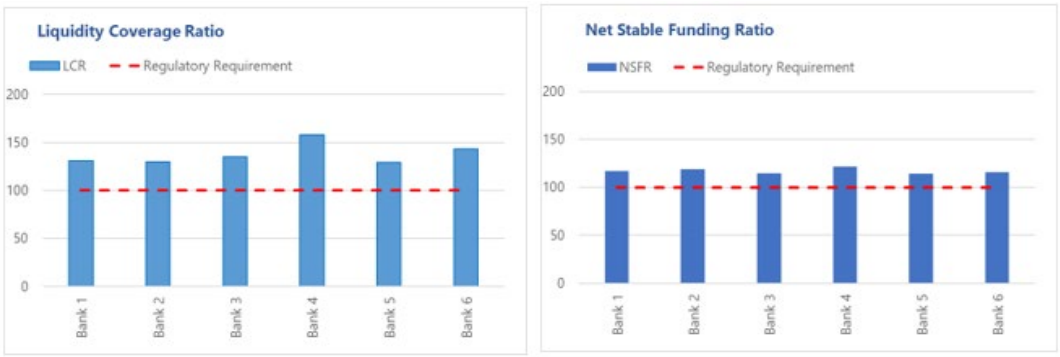
[14] Institutions in Category III may request to be classified under Category II if their activities justify stricter requirements. Subsidiaries of D-SIBs are classified as Category I for capital and liquidity purposes.

[15] The LAR follows the requirements under Sections 485(1) and 949(1) of the Bank Act and Section 473(1) of the Trust and Loan Companies Act.

78. The LAR also includes liquidity monitoring tools, which complement the assessment of an institution's liquidity position with some of them utilizing higher-frequency data. Contractual maturity mismatch assesses the gap between an institution's assets and liabilities based on their maturities, highlighting potential liquidity shortfalls. Concentration of funding monitors reliance on specific funding sources to prevent excessive dependence on a limited number of counterparties. Available unencumbered assets refer to high-quality liquid assets (HQLA) that can be readily used for liquidity needs without restrictions. LCR by significant currency aims at ensuring that liquidity buffers are adequate across different currencies to mitigate currency-specific liquidity risks. Market-related monitoring tools track market indicators such as credit spreads and funding conditions to detect early signs of liquidity stress. The Liquidity Activity Monitor (LAM) provides real-time insights into liquidity flows, helping institutions manage short-term liquidity. Finally, intraday liquidity monitoring tools ensure that banks can meet payment obligations throughout the day, reducing settlement risks and operational disruptions. Table II.A in Appendix II shows an overview of the LAR metrics.

79. On average, banks maintain LCRs and NSFRs well above the 100 percent regulatory requirement, ensuring compliance with Basel III liquidity standards. The LCR ensures that banks hold enough HQLA to cover their total net cash outflows over a 30-day stress period, which aims at helping banks to withstand short-term liquidity shocks. However, the LCR does not fully address long-term funding risks and may lead to unintended shifts in banks' funding structures and is not designed to handle extreme liquidity shocks, lacking early warning capabilities. The assumed run-off rates may not reflect actual deposit behaviors during crises, and banks may hesitate to use liquidity buffers due to market stigma or supervisory uncertainty. To have a more complete overview of the liquidity situation and resilience of the system, LAR other metrics are necessary such as funding concentration and intraday liquidity as well as the implementation of stress tests. The NSFR focuses on long-term stability by requiring banks to maintain a stable funding profile over a one-year period, but while it reduces reliance on short-term borrowing, it also has limitations, similar to those of the LCR. Figure 7 shows both metrics for the six DSIBs, covering 94 percent of the banking sector's assets.

Figure 7. Canada: Liquidity Coverage Ratio and Net Stable Funding Ratio—Big 6 Canadian Banks

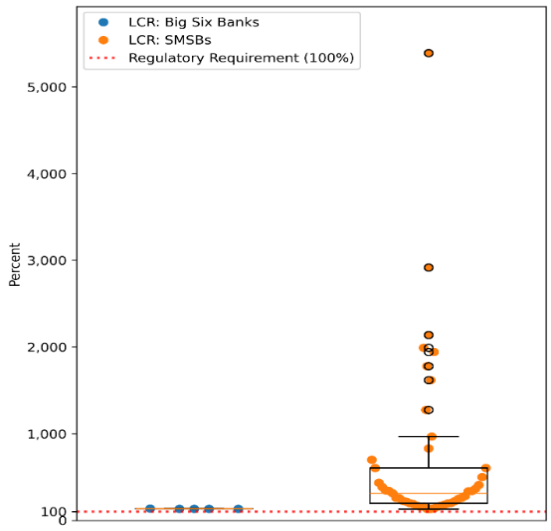


Source: OSFI and IMF calculations.

80. The SMSBs exhibit significantly greater variability and broader values in their LCRs, primarily due to differences in business models. Many SMSBs consist of trust companies or institutions with limited intermediation, resulting in minimal or even negative net outflows (i.e., inflows > outflows). In 2019, OSFI adjusted the LCR calculation by including non-operational demand deposits from indirect clearers (mostly SMSBs) in the numerator instead of the denominator. This change lowered the previously extremely high LCR values, which were difficult to interpret. However, for SMSBs with specialized business models, LCR distortions persisted. In response, OSFI's 2024 proportionality framework shifted most Category III SMSBs away from LCR reporting, instead requiring them to submit the OCFS—a liquidity return aimed at capturing their liquidity profiles. Figure 8 shows the distribution of LCR values for the six DSIBs and SMSB.

81. Each province and territory has its own regulatory authorities, and unlike federally regulated institutions, these financial entities follow provincial regulations, which may vary across Canada. Provincial and territorial regulatory authorities in Canada oversee securities markets, credit unions, caisses populaires, and insurance companies operating within their respective jurisdictions. Each province and territory has its own regulators responsible for enforcing financial laws, ensuring consumer protection, and maintaining financial stability. The largest regulators include the OSC, which oversees Canada's biggest capital market, and AMF in Quebec, which supervises securities, insurance, and financial institutions, including Desjardins. Other regulators include, among others, British Columbia Securities Commission (BCSC), British Columbia Financial Services Authority (BCFSA), FSRA, Alberta Securities Commission (ASC), and Financial and Consumer Services Commission of New Brunswick (FCNB).[16] Figure 9 illustrates the total assets of credit unions and caisses populaires in each province, excluding Desjardins, which holds CAD 465 billion in assets.

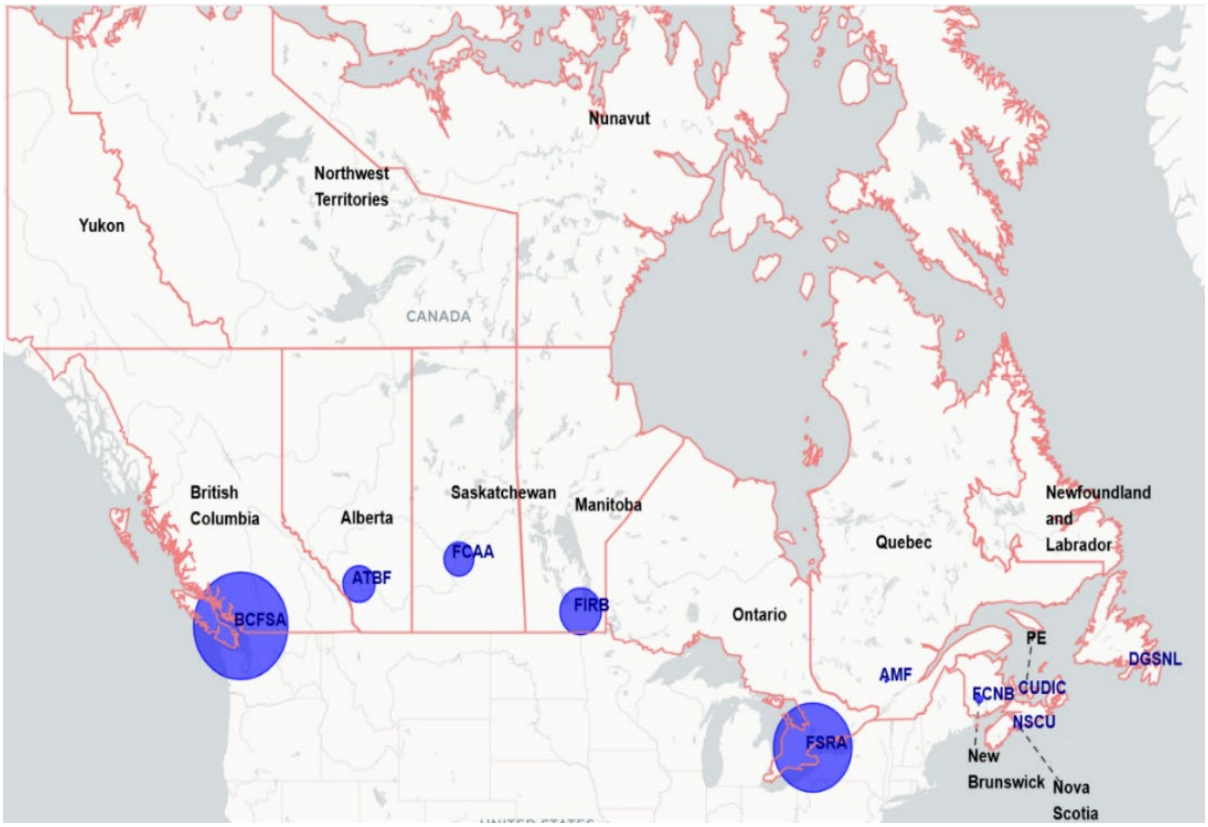
Figure 8. Canada: Liquidity Coverage Ratio



Source: BOC and IMF Staff calculations

[16] Other provincial and territorial regulators include the Manitoba Financial Services Agency (MFSA), Financial and Consumer Affairs Authority of Saskatchewan (FCAA), Nova Scotia Securities Commission (NSSC), Prince Edward Island Office of the Superintendent of Securities and Credit Union Deposit Insurance Corporation, and Newfoundland and Labrador Superintendent of Securities. Additionally, the superintendents of securities in Nunavut, the Northwest Territories, and Yukon oversee financial regulation in their respective jurisdictions.

Figure 9. Canada: Credit Unions and Caisses Populaires (Excluding Desjardins)—Total Assets (Canadian Dollars in billions–2024: Q3**)**



Source: Canadian Credit Union Association and IMF calculations. Code copyrights: Leaflet | © OpenStreetMap contributors © CARTO. Data retrieved from: https://ccua.com/app/uploads/private-files/3Q24SectorResults_27-Jan-25-v3.pdf.

Notes:
(i) The blue bubbles represent the total asset size of credit unions and caisses populaires in each territory, while the acronyms denote their respective regulatory or supervisory authorities.
(ii) Desjardins is not included in the figure and is the main non-bank deposit taking institution group under supervision of AMF in Quebec: it holds CAD 465 billion (more than 4 times of the total assets of CU and CPs in British Columbia, the second largest market).
(iii) B.C., Saskatchewan and New Brunswick results include a federal credit union.

82. Effective liquidity management in Canada relies on collaboration between the BOC and federal and provincial regulators, given the current financial oversight architecture. The Financial Institutions Supervisory Committee (FISC) plays a pivotal role in ensuring liquidity risks are identified and mitigated through information-sharing and joint regulatory actions. Chaired by the Superintendent of Financial institutions, FISC comprises representatives from the BOC, OSFI, CDIC, Department of Finance Canada, and the Financial Consumer Agency of Canada (FCAC). The committee meets regularly to share information, coordinate supervisory activities, and advise on financial system matters. This collaboration is particularly critical in times of market stress when access to liquidity becomes constrained, requiring interventions such as ELA.[17]

83. Provincial authorities supervising DTIs could coordinate their publications of key indicators in a structured and standardized manner, improving transparency and comparability across jurisdictions. Although the Canadian Credit Union Association collects quarterly basic information of each province and publishes it in a dashboard available online to all members, the information provided at the agency level is very limited and not easily accessible, lacking harmonization and making comprehensive analysis challenging. A joint effort by authorities to publish standardized indicators would enhance transparency, support informed decision-making, and strengthen financial stability by allowing for better comparisons and early detection of potential risks across jurisdictions.

Box 1. Canada: Liquidity Oversight for Non-Bank Financial Institutions

In Canada, NBFIs—including investment funds, insurance companies, and pension funds—are overseen by a combination of federal and provincial authorities.

- **Investment Funds:** The CSA is the umbrella organization of Canada's provincial and territorial securities regulators, with key roles played by the OSC and the AMF in Québec. Together, the AMF and OSC oversee Investment Fund Managers (IFMs) that manage 90 percent of total net assets held by investment funds in Canada. They focus on investor protection, liquidity risk management, and systemic risk monitoring.

- **Insurance Companies:** Federally regulated insurers fall under the OSFI, which oversees their solvency, risk management, and governance. Provincially chartered insurers fall under the jurisdiction of provincial regulatory authorities. The framework includes capital requirements (e.g., Life Insurance Capital Adequacy Test - LICAT) and stress testing to ensure the soundness of the insurance sector.

- **Pension Funds:** OSFI supervises federally regulated pension plans under the Pension Benefits Standards Act 1985, ensuring funding adequacy and governance. However, the majority of pension plans are provincially

[17] Other financial system committees consist of: (i) the Heads of Regulatory Agencies (HoA) Committee, chaired by the Governor of the BOC, a federal-provincial forum for financial sector discussions, including representatives from federal agencies and key provincial securities regulators (with the AMF being represented both as a securities and prudential regulator); (ii) Systemic Risk Surveillance Committee (SRSC), created by HoA, which assesses vulnerabilities in the financial system and includes additional agencies such as the CDIC, CMHC, FSRA, and BCFSA, (iii) the Senior Advisory Committee (SAC), chaired by the Deputy Minister of Finance, serving as a platform for policy discussions on financial stability and systemic risks, with the same membership as FISC; and (iv) the FMI Resolution Committee (FMI-RC), chaired by the Governor of the BOC, facilitates federal-level consultation and information sharing on the resolution of FMIs.

Box 1. Canada: Liquidity Oversight for Non-Bank Financial Institutions (concluded)

regulated, with authorities such as FSRA overseeing compliance, funding requirements, and risk management.

The BOC has been closely monitoring how NBFIs manage liquidity risks, particularly after the COVID-19 pandemic, given their growing role in fixed-income markets and systemic stability. The market turmoil in March 2020 exposed vulnerabilities in mutual funds, pension funds, and other asset managers, which faced liquidity mismatches and redemption pressures that contributed to stress in government bond markets.

Since then, the BOC has been monitoring more closely liquidity risk transmission from NBFIs to the broader financial system, assessing their role in amplifying volatility and potential spillover effects. As pointed out in Section III, unlike banks, NBFIs do not have direct access to central bank liquidity facilities (except in extraordinary times) and BOC does not have the mandate to intervene in isolated and idiosyncratic liquidity crises.

Large Insurers and pension funds often manage liquidity by using LCRs, which, though not standardized, generally follows a framework that compares HQLA to potential outflows under stress scenarios. Insurers

and pension funds face liquidity risks driven by market volatility, and derivative exposures. In addition, insurers also face a risk from policyholder behavior. Although life insurance liabilities are generally illiquid, rising unemployment or income loss can trigger sudden liquidity needs, policy lapses and surrenders may surge, creating unexpected cash outflows. Additionally, insurers and pension funds use derivatives for risk management, and sharp fluctuations in interest or exchange rates can lead to unexpected margin calls. Unlike banks, insurers do not follow a standardized LCR, with methodologies varying across firms—some relying on historical stress events, while others consider operational cash flows. To manage liquidity risks, insurers and pension funds maintain buffers of cash and liquid assets, such as government and provincial bonds, and, during financial stress, can generate cash through asset sales, repos, or credit lines.

The OSC Investment Fund Survey (IFS) is the most important data-gathering exercise by the authorities with respect to investment funds in Canada. In Ontario, the IFS data is used to identify high-risk investment funds and outliers for further review. Regulators conduct risk-based compliance reviews of registrants, prioritizing firms with potential compliance issues while also performing routine monitoring. Review cycles vary between OSC and AMF. In recent years, regulatory approaches to stress testing have advanced, encompassing both fund-led assessments and top-down evaluations by authorities. The CSA is working on strengthening liquidity management and stress testing for investment funds.

Data gaps, better cooperation between federal and provincial supervisors as well as improved systemic risk monitoring remain common areas for improvement. Strengthening cooperation between regulators, expanding data collection, and integrating systemic risk considerations more explicitly into supervisory mandates would enhance the oversight of the Canadian NBFI sector.

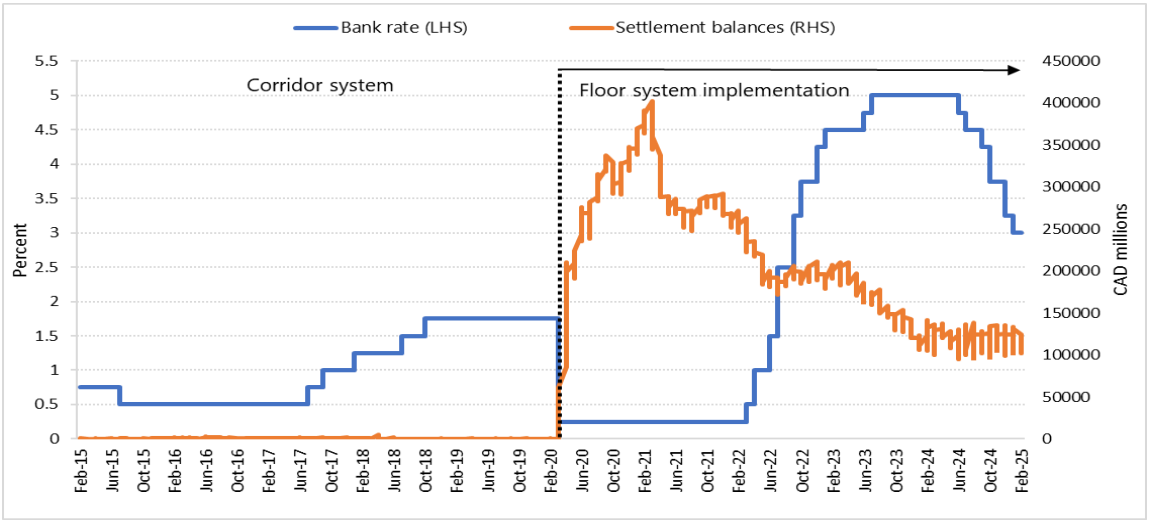
Sources: (i) IMF Staff Analysis; (ii) Aldridge, P., Gignac, S., Vala, R., & Walton, A. (2024). Liquidity risks at Canadian life insurance companies (Staff Analytical Note 2024-7). BOC, retrieved from: https://www.bankofcanada.ca/2024/04/staff-analytical-note-2024-7/.

BANK OF CANADA'S LIQUIDITY MANAGEMENT FRAMEWORK

A. Overview

84. Since March 2020, the BOC has operated under a floor system, as excess liquidity in the financial sector significantly reduced demand for liquidity provisions through standing facilities. Before March 23, 2020, the BOC operated under a corridor system, managing settlement balances near zero. Once the BOC introduced QE during the pandemic, the level of reserves held in the banking system increased substantially. Consequently, the BOC adopted a floor system, ensuring ample balances (ranging from roughly CAD 175 billion to CAD 400 billion—more than 1000 times the average level of settlement balances in the pre-pandemic corridor system)[18] without targeting a specific level (see Figure 10). Under the floor system introduced, the Bank's deposit rate is set equal to the target rate, initially within a 25-basis-point operating band. This allows market participants who are in a long position to lend at or near the Bank's deposit rate to market participants who are in a short position. On January 30, 2025, the deposit rate was set at 5 bps below the Bank's policy rate to improve settlement balance circulation as they stabilize and support short-term funding markets. In addition, the BOC eliminated reserve requirements in 1994.

Figure 10. Canada: Bank of Canada's Transition to Floor System

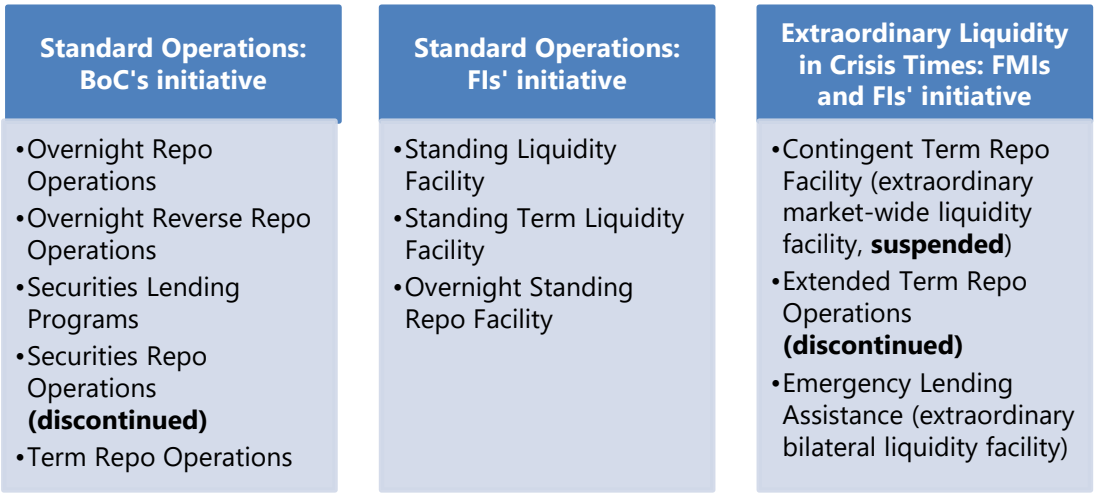


Sources: BOC and IMF calculations.

[18] See Gravelle, T., Morrow, R., & Witmer, J. (2023). *Reviewing Canada's monetary policy implementation system: Does the evolving environment support maintaining a floor system?* BOC Staff Discussion Paper No. 2023-10. Retrieved from https://www.bankofcanada.ca/2023/05/staff-discussion-paper-2023-10/.

85. The Liquidity Management Framework of the BOC provides a comprehensive set of operations and facilities aimed at facilitating the conduct of monetary policy and ensuring the stability of the financial system. These facilities can be broadly categorized into three types based on their accessibility and purpose (see Figure 11). First, the BOC actively conducts liquidity operations to support the effective implementation of its monetary policy framework and maintain adequate liquidity in financial markets. Second, financial institutions have independent access at their own initiative to standard liquidity operations to manage short-term funding requirements. Third, emergency liquidity facilities are available to be deployed during periods of financial distress when market solutions are not available or very scarce. These include measures designed to address systemic shocks that may impact overall financial stability (CTRF, activated during the COVID-19 pandemic and suspended for the moment, as well as Extended Term Repo Operations), and also targeted responses to idiosyncratic shocks, where individual institutions face acute liquidity pressures (ELA). Together, these mechanisms reinforce confidence in the financial system and help maintain stability in funding markets across different economic conditions.

Figure 11. Canada: Bank of Canada's Liquidity Management Framework Overview



Source: BOC and IMF Staff

86. The standard operations at the initiative of the BOC primarily aim to support the effective implementation of monetary policy, ensure the smooth functioning of financial markets and/or manage the BOC's balance sheet. These operations traditionally include OR, which aims at injecting liquidity in the system through a competitive auction, and overnight reverse repo (ORR), which are operations aiming at withdrawing liquidity from the system.[19] The BOC also conducts term repo operations for terms of one and three months. In addition, it provides a temporary source of government nominal bonds and treasury bills to primary dealers to support

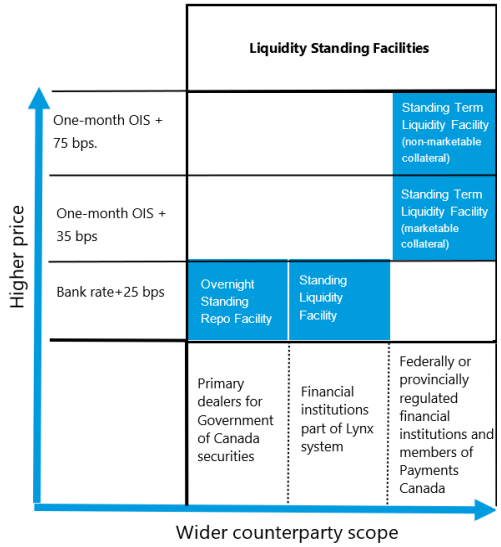
[19] Both operations use directly issued, Canadian-dollar-denominated GoC marketable securities as eligible collateral, subject to limits per eligible counterparty—Canadian Primary Dealers in GoC securities - as well as an aggregate cap per offering. Tenders with the highest bid rates are accepted first, followed by lower bids until the total cash offered by the BOC is allocated. The lowest accepted bid rate becomes the allocation rate, applied to all accepted tenders.

liquidity in the securities financing market through its Securities Lending Program (SLP). The assessment of these standard operations falls outside the scope of this FSAP.

87. The BOC's standing facilities—which are requested at the initiative of its eligible counterparties—provide liquidity at the discretion of the BOC to support market stability, facilitate payments settlement, and ensure the effective transmission of monetary policy. Standing lending facilities provide collateralized, and unlimited short-term funding.[20] The SLF offers secured overnight and intra-day advances to financial institutions that are Lynx participants, to support orderly settlement in the payments system. [21] STLF aims to provide liquidity to eligible financial institutions facing liquidity stress on terms that are known in advance up to 30 days, provided that the BOC has no concerns about the institution's financial soundness. It has a broader scope both for eligible counterparts and collateral and includes certain provincially regulated financial institutions that are not Lynx participants. Finally, the BOC also offers access to its Overnight Standing Repo Facility (OSRF) to primary dealers. The primary purpose of this facility is to help reinforce the upper limit (Bank Rate) of the operating band for overnight interest rate.

88. The BOC's standard liquidity provision tools use a tiered pricing structure to discourage unnecessary use, reduce moral hazard, and promote market-based funding. The cheapest facilities, such as the Overnight Standing Repo Facility and SLF, are priced at Bank Rate +25 bps, providing routine liquidity support to primary dealers and financial institutions that are Lynx participants, respectively. The STLF is available to a broader set of counterparties, as it encompasses federally or provincially regulated deposit-taking institutions that are members of Payments Canada for which the BOC has no concern about their financial soundness. It is priced at one-month Overnight Index Swap (OIS) +35 bps when provided against marketable securities collateral and for one-month OIS +75 bps for non-marketable collateral. The latter is the costliest liquidity tool offered by the BOC, exceeding even the minimum pricing of ELA, as discussed in section C. Importantly, liquidity is provided at the discretion of the BOC. Figure 12 provides an overview of the eligibility and the pricing of the standard liquidity standing facilities available.

Figure 12. Canada: Bank of Canada's Liquidity Standing Facilities



Source: BOC and IMF staff calculations

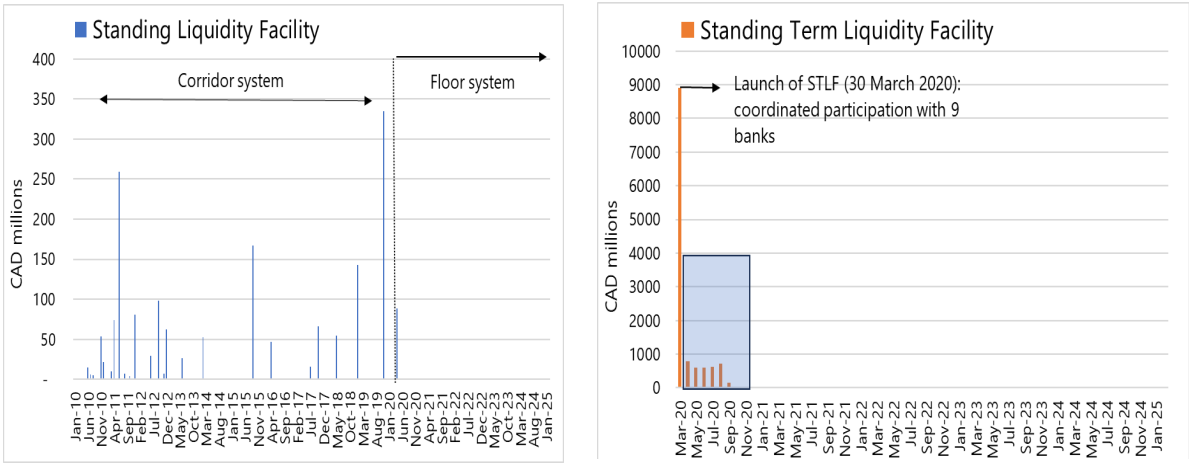
[20] See Adrian, Laxton and Obstfeld (2018) and Maehle (2020).

[21] Lynx is the Canada's high-value payment system, operated by Payments Canada and overseen by the BOC. It facilitates the real-time settlement of large-value and time-sensitive payments between financial institutions using central bank money. Before September 2021, it was named the Large Value Transfer System (LVTS).

89. The BOC should clarify and specify that bilateral liquidity provision instruments such as SLF and STLF are only available for deposit-taking financial institutions in its official communications. Currently, references on the BOC's website, related webpages, and the Rules Governing Advances to Financial Institutions broadly mention "financial institutions"[22] rather than specifically referring to deposit-taking financial institutions. Providing clearer distinctions would enhance transparency and alignment with regulatory definitions.

90. The SLF has seldom been used since the transition to a floor system. The SLF, designed to address temporary liquidity shortages mainly for clearing purposes but not for institutions facing liquidity stress or persistent shortfalls, was used sporadically under the corridor system. Once the system transitioned to the floor system, during the pandemic, the SLF was seldom used. In a floor system, settlement balances are sufficiently high to meet Lynx participants' demand, minimizing the need for overnight advances through the SLF. The BOC has a process in place to investigate if SLF has been provided in an amount that is larger than a certain threshold to analyze other aspects for demand for liquidity. The STLF was launched on March 30, 2020, with the purpose of addressing liquidity stress from various sources. It was used during the pandemic, including in a coordinated draw by a number of large- and medium-sized banks when the facility was first launched (see Figure 13).[23] The OSRF, which was created in 2009, was never utilized. Besides the ample liquidity, these tools remained unused due to the smooth functioning of interbank markets and the BOC's effective alternative liquidity measures during stress periods. However, their presence remains essential as a backstop to safeguard financial stability in case of future disruptions.

Figure 13. Canada: Bank of Canada's Standing Facilities Withdrawals



Sources: BOC and IMF staff calculations.

Note: The data shows SLF advances provided on the last day of the month.

91. Systemic NBFIs should be identified, and based on this assessment, the BC should consider granting them access to bilateral liquidity support. Such access should be limited to

[22] "Financial institution" is defined in Section 149 of the Canada Revenue Agency (CRA)—GST/HST Memorandum 17.6.

[23] See https://www.bankofcanada.ca/2020/03/bank-canada-welcomes-use-new-liquidity-facility-financial-institutions/

severe cases and subject to appropriate conditionalities—to address significant idiosyncratic liquidity strains that may pose threats to financial stability. The Canadian financial system is marked by strong interconnectedness among banks, households, NBFIs, and the external sector—all of which play a significant role in amplifying systemic risk. Central bank liquidity may be necessary if stress in a large, interconnected NBFI poses a contagion risk or if the sector is critical for financial intermediation and credit provision. It is therefore important to identify institutions with significant market exposure and interconnectedness, and to consider enabling bilateral liquidity support—under strict conditionalities—to address potential idiosyncratic risks. The CTRF is a commendable initiative but is aimed to be activated only during systemwide liquidity stress for a broad scope of eligible institutions. Activating it too early when liquidity stress is still very limited to a single entity could exacerbate the problem by generating speculations in the market, increasing the likelihood of a systemic crisis. In this context, bilateral support should be limited for cases where stress in a large, interconnected NBFI poses a contagion risk or implications for financial intermediation and stability. Ensuring proper preparation and eligibility criteria for providing bilateral support in response for idiosyncratic disruptions such as those originated by cyberattacks or system failures would enhance market efficiency and safeguard financial stability. Access should be limited to domestic systemic, well-regulated and supervised NBFIs to ensure responsible use of central bank liquidity under appropriate conditionalities tailored to the nature of each institution. Box 2 examines the factors that can lead to liquidity strains in NBFIs and highlights how an appropriate backstop could help contain these strains, preventing them from escalating into a broader systemic risk.

Box 2. Canada: Non-Banking Financial Institutions and Liquidity Backstops: A General Assessment

This box outlines the main channels through which challenges may arise for NBFIs, as well as the liquidity backstops that could be available to address them.

NBFIs can face significant liquidity challenges due to their structural vulnerabilities, including liquidity mismatches, leverage, and interconnectedness with other financial institutions. NBFIs typically hold relatively illiquid assets. Mutual funds, for example, offer daily redemption to investors, which can lead to liquidity shortages during periods of financial stress. When faced with sudden redemptions or margin calls, NBFIs may be forced into fire sales of assets, exacerbating market volatility and financial instability.[1] Moreover, their reliance on short-term funding mechanisms, such as repurchase agreements and credit lines, can leave them particularly vulnerable when market conditions tighten, as seen during the March 2020 market turmoil and the UK pension fund crisis.[2]

Insurance companies, a key segment within the NBFI sector, also face liquidity risks due to their growing allocation to illiquid assets and structured credit investments. Insurers may rely on non-traditional liabilities, such as funding-agreement-backed securities, to fund their portfolios, creating greater mismatches between assets and liabilities. In times of financial stress, insurers may struggle to liquidate these assets, particularly if they face an increase in policy surrenders or if rising interest rates trigger capital outflows. Additionally, embedded leverage
in structured-credit products, such as collateralized loan obligations (CLOs), can further amplify liquidity pressures, forcing insurers to liquidate investments at distressed prices. These dynamics underscore the importance of robust risk management and regulatory oversight to mitigate liquidity risks within the insurance sector and the broader NBFI ecosystem.

Box 2. Canada: Non-Banking Financial Institutions and Liquidity Backstops: A General Assessment (concluded)

Past crises have shown that even well-capitalized institutions can face sudden liquidity shortages if market conditions tighten. For example, during the March 2020 market turmoil, several systemically important NBFIs struggled to raise liquidity as investors pulled back, forcing central banks to intervene with emergency liquidity measures. Similarly, the UK pension fund crisis highlighted how market-wide shocks can impair NBFIs' ability to access funding, triggering fire sales of assets and amplifying systemic risks.

Given these challenges, relying solely on market access for liquidity provision is not a robust risk management strategy. Instead, stronger regulatory oversight, enhanced liquidity buffers, and access to backstop funding mechanisms—either through central banks or coordinated financial stability measures—are essential to ensure resilience in times of crisis.

In addition, a NBFI can experience liquidity challenges due to idiosyncratic factors rather than generated by broader systemic issues, even if less likely under robust supervision. For example, an individual insurance company or asset manager could experience funding difficulties due to firm-specific factors, such as asset-liability mismatches, reputational concerns or unexpected operational disruptions, such as technological failures or internal fraud. Those factors can impede a NBFI's ability to access or manage its liquidity without necessarily immediately affecting the broader financial system. Nonetheless, such a situation can escalate very fast. Therefore, while idiosyncratic liquidity issues are possible, regulators must remain vigilant to prevent isolated stress from escalating into systemic instability.

Early intervention can play a crucial role in preventing liquidity issues from escalating into a broader crisis. If regulators or central banks act preemptively—for example, by facilitating short-term liquidity support, adjusting collateral requirements, or overseeing risk mitigation measures—they can stabilize the institution before distress spreads. Timely action can prevent fire sales, reassure markets, and limit contagion risks, preserving both the insurer's solvency and broader financial stability. Moreover, addressing idiosyncratic shocks bilaterally through targeted intervention is preferable to announcing a broad systemic backstop, which could inadvertently fuel market overreactions and materialize a systemic crisis that might not have otherwise occurred. As market perception typically plays a crucial role, investors and counterparties may reassess risk across the sector, leading to broader stress as funding conditions tighten for other institutions.

Sources: International Monetary Fund (IMF). 2023. *Global Financial Stability Report, April 2023: Nonbank Financial Intermediaries—Vulnerabilities Amid Tighter Financial Conditions.* Chapter 2. Washington, D.C.

[1] In Canada, publicly offered mutual fund are specifically limited in terms of the amount of illiquid assets they can hold. Under NI 81-102 they can only invest 10 percent of their assets in illiquid securities.

[2] In Canada, publicly offered conventional mutual funds are not allowed to borrow other than on a short-term basis to facilitate redemptions. Alternative funds have greater flexibility in terms of the use of leverage, but this class of mutual funds can only borrow up to 50 percent of net asset value.

92. The BOC has been making commendable progress in improving the operationalization process of liquidity provision for both standing facilities and system-wide support.

The significant investment and coordination across legal, front office, and other key teams demonstrate a strong commitment to enhancing efficiency and resilience. However, given the complexity and manual nature of certain aspects of the current liquidity provision process for banks, as identified in the BOC's tests, advancing automation is essential. Strengthening automation will not only streamline operations but also enhance the Bank's capacity to provide liquidity efficiently and effectively across diverse market conditions.

B. Bank of Canada's Instruments to Address Systemic Liquidity Risk

93. In response to a severe, system-wide liquidity shortage, the BOC can enhance existing operations or introduce new facilities to provide liquidity in extraordinary circumstances. The BOC's response to a systemic liquidity shortage can involve limited and selective intervention, based on guiding principles.[24] To ensure that financial institutions do not become overly reliant on central bank support, the BOC typically applies penalty pricing to these operations. In addition, the BOC also reviews and incorporates lessons from past crises in its evaluations.[25]

94. The BOC can adjust its liquidity operations by modifying their scale, terms, or eligibility criteria as needed to support market functioning. To expand its existing auction-based operations, which are subject to minimum bid rates, the BOC may increase the total liquidity provided, adjust the term or frequency of operations, or raise settlement balances as needed. Enhancements may also include broadening the range of eligible securities or expanding the list of counterparties, subject to criteria set by the BOC. The BOC does not adjust its collateral haircuts during crisis, given its "through the cycle" models, as explained in more detail in section IV.

95. In cases of severe market-wide liquidity stress, the BOC may also activate the CTRF, its standing facility designed to provide liquidity on a bilateral basis. The CTRF, which was activated for the first time during the pandemic, allows the BOC, at its discretion, to extend liquidity beyond primary dealers and their affiliates to maintain financial system stability. To be eligible, counterparties beyond primary dealers and their affiliates must demonstrate, to the satisfaction of the BOC, significant activity in the Canadian-dollar money and/or fixed-income markets, either through the size of their CTRF eligible assets and/or level of repo activity. The scope of BOC's review of eligible counterparties will depend on the extent to which they are subject to federal or provincial financial and/or market regulation. As part of this review, the BOC will conduct a risk assessment whereby unregulated eligible counterparties will be subject to a more comprehensive risk assessment. The CTRF is not intended to address liquidity shocks affecting individual institutions. Its activation and

[24] The principles are: (i) Interventions must be targeted, addressing liquidity distortions of system-wide importance that the central bank is uniquely positioned to correct; (ii) the degree of intervention should be proportional to the severity of the liquidity disruption; (iii) interventions should be well designed, ensuring the use of appropriate tools for specific problems, with market-based transactions, often conducted through auctions, used to alleviate broad market liquidity shortages, while direct loans are reserved for liquidity issues affecting specific institutions; (iv) interventions must also be efficient and non-distortionary, with central bank transactions conducted at market-determined prices to avoid unnecessary disruptions; and (v) interventions should be structured to prevent adverse incentives that could weaken financial discipline over time (mitigation of moral hazard).

[25] There are several papers published reflecting on lessons learned from crisis time in Canada. See for example: (i) *Liquidity Provision and Central Bank Operations: Lessons from Recent Market Stress.* Staff Discussion Paper No. 2023-6. Available at: https://www.bankofcanada.ca/2023/03/staff-discussion-paper-2023-6/; (ii) *The Implementation of Monetary Policy in Canada: Framework, Instruments, and Recent Developments"* Staff Discussion Paper No. 2023-9. Available at: https://www.bankofcanada.ca/2023/04/staff-discussion-paper-2023-9/; and (iii) *Review of the BOC's Exceptional Policy Actions During the Pandemic: Executive Summary.* BOC Report. Available at: https://www.bankofcanada.ca/2025/01/review-of-the-bank-of-canadas-exceptional-policy-actions-during-the-pandemic-executive-summary/.

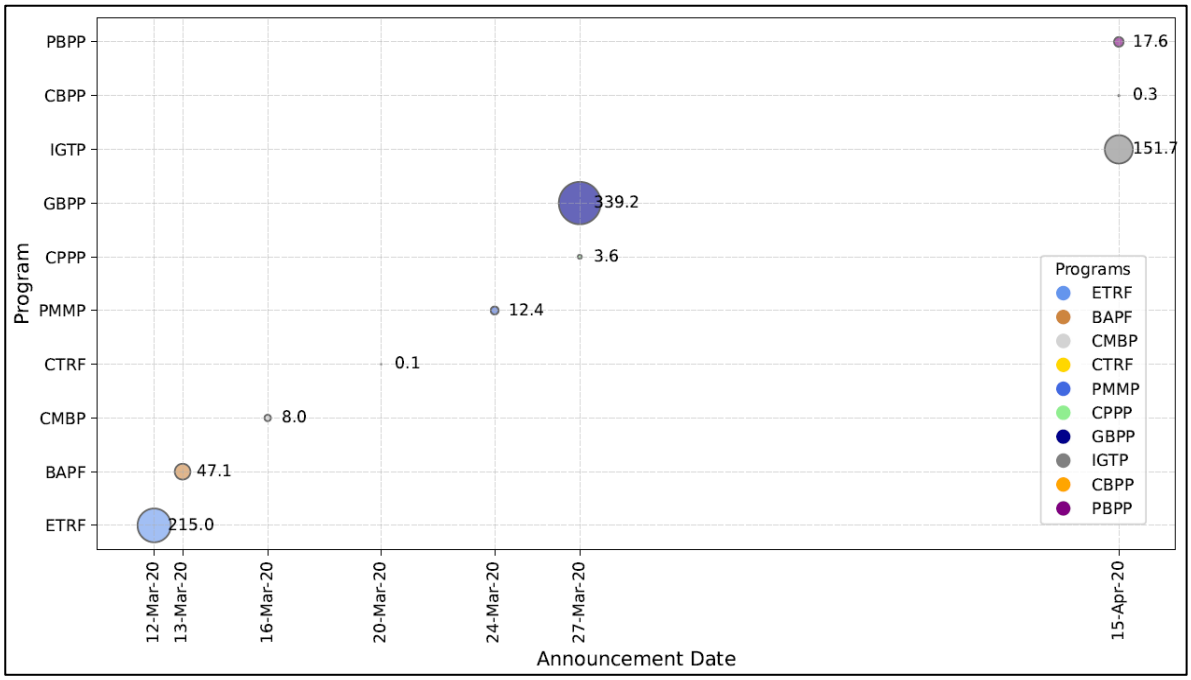
deactivation are at the sole discretion of the BOC, based on prevailing market conditions. Although the CTRF remained active for 12 months since its announcement in March 2020, it was not utilized by any entity other than for operational testing purposes.

96. The BOC determines whether to activate a liquidity facility by assessing a combination of quantitative and qualitative factors, drawing on market intelligence and a range of key financial indicators. These indicators provide insights into market stress and liquidity conditions and include, but are not limited to, repo rates, bid-ask spreads, money market instrument rates and inventories, and trading volumes. By continuously monitoring these metrics, the BOC evaluates the severity of liquidity disruptions and whether intervention is warranted to support market stability. This approach ensures that activation decisions are informed by real-time market dynamics and grounded in both data-driven analysis and qualitative assessments of evolving financial conditions.

97. The BOC's approach to systemwide liquidity provision has evolved significantly, particularly in response to financial crises. In response to the pandemic, the BOC launched 10 extraordinary programs, including term funding facilities, asset purchase programs (which are all discontinued), and emergency liquidity assistance, to ease market-wide liquidity strains and restore confidence. These measures reinforced the importance of targeting systemically important markets, ensuring broad access to liquidity, and designing programs that are flexible enough to scale up or down based on market conditions. Additionally, coordination with other financial authorities proved essential in maximizing the impact of these interventions. Figure 14 shows the total purchased (in CAD billion) during the period which each program was activated and the respective announcement dates.

98. The limited use of the BOC's facilities can be attributed to several factors. Market conditions improved rapidly after the interventions, reducing the need for extensive usage, while complementary measures by federal and provincial governments, along with regulatory adjustments, further stabilized liquidity. Additionally, actions by other central banks, particularly the U.S. Federal Reserve, had spillover effects that helped restore confidence in Canadian markets. In some cases, merely announcing a program reassured market participants, mitigating liquidity concerns before actual implementation. Many facilities were designed as backstops rather than primary funding sources, leading to lower-than-expected demand. Some programs, such as the Government of Canada Bond Purchase Program (GBPP), transitioned from emergency support to monetary policy stimulus, altering their role—explaining their more extensive and prolonged use compared to other instruments. Meanwhile, others, like the CTRF and Corporate Bond Purchase Program (CBPP), saw limited uptake as financial institutions found alternative funding sources. As conditions normalized, the BOC gradually phased out most programs, further explaining their relatively modest use.

Figure 14. Canada: Programs and Facilities to Address the COVID-19 Crisis: Total Purchased (Canadian Dollars Billion) and Announcement Dates



Sources: BOC and IMF staff calculations.

Note: The bubbles designate the size of the total purchases while the programs were active in CAD billions. The dates in the x-axis designate the dates in which each program was announced. The details of each program can be found in the following link.

Programs and period of activation: (i) Extended Term Repo Facility **(ETRF)** operated from 12 March 2020–21 May 2021; (ii) Bankers' Acceptance Purchase Facility **(BAPF)** from 23 March to 26 October 2020; (iii) Canada Mortgage Bond Purchase Program **(CMBP)** from 17 March to 26 October 2020; (iv) Contingent Term Repo Facility **(CTRF)** from 6 April 2020 to 6 April 2021; (v) Commercial Paper Purchase Program **(CPPP)** from April 2020 to April 2021; (vi) Corporate Bond Purchase Program **(CBPP)** from 26 May 2020 to 25 March 2021; (vii) Government of Canada Bond Purchase Program **(GBPP)** from 27 March 2020 to April 2022; (viii) Provincial Bond Purchase Program **(PBPP)** from 7 May 2020 to 6 May 2021; (ix) Provincial Money Market Purchase Program **(PMMP)** from 24 March to 24 November 2020; and (x) **(IGTP)** Incremental GoC treasury bills purchases from 21 April 2020 to 24 November 2020.

99. While the BOC successfully unwound most of its emergency programs as market conditions normalized, the experience highlighted the challenge of determining the appropriate timing and scale of intervention. Initially, the BOC intended to follow a clear, structured approach to liquidity provision, prioritizing primary dealers and expanding access in a phased manner. However, as the crisis unfolded, it became evident that liquidity stress does not always follow a linear progression, prompting a reassessment of the expansion strategy to ensure timely and effective support where needed. A key lesson from the pandemic is the need for a structured exit strategy to minimize market distortions and to a certain extent, moral hazard. Future liquidity provisions should include clear evaluation metrics, well-communicated objectives and terms, as well as flexible operational adjustments. The BOC is already working on enhancing automation and integration of its operations and it actively incorporates lessons learned in its policy toolkit. Further strengthening these elements will improve the effectiveness of the BOC's liquidity framework in potential future crises.

100. The BOC is working on improving and automating the operationalization of the CTRF and other facilities. The current CTRF operationalization, if activated, would require significant coordination across multiple teams, including legal, front office, risk management, middle office and back office, with some stages still relying on labor intensive processes. Based on the feedback of several tests, the process is now being automated and simplified by the BOC. Given the complexity of execution, in particular for systemwide operations, building automation into the process will enhance efficiency, reduce operational risk, and improve response times during periods of market stress. Ensuring capacity and scalability is critical, particularly as liquidity needs can evolve unpredictably. The BOC should continue prioritizing efforts to enhance the automation and streamlining of the CTRF, ensuring that it remains a reliable and responsive tool for managing liquidity shocks while minimizing operational bottlenecks. The same holds for the other facilities available.

101. The BOC's ability to provide foreign currency funding is contingent upon access to foreign reserves and swap arrangements with other central banks. In cases of idiosyncratic stress, the Canadian government could consider providing foreign currency funds directly to the financial institution. Swap lines are designed to address market-wide stress rather than idiosyncratic issues. Therefore, the response to address foreign currency needs in a market-wide stress is determined by the BOC's access to foreign currency swap lines. During the crisis, the BOC established bilateral, standing currency swap agreements with major central banks, including those of the euro area, Japan, Korea, Switzerland, the United Kingdom, and the United States. In particular, coordinated actions are taken to enhance liquidity provision through the standing U.S. dollar liquidity swap line arrangements when necessary to address liquidity stress. For example, in March 2020 and March 2023, the BOC, Bank of England, Bank of Japan, European Central Bank, Federal Reserve, and Swiss National Bank announced a joint initiative to strengthen liquidity provision via these swap lines. These swap lines have not been utilized by Canada to date.

C. Addressing Idiosyncratic Liquidity Risks Through Emergency Lending Assistance

102. The BOC may act as a LOLR by providing ELA to eligible FIs and FMI facing serious idiosyncratic liquidity problems. ELA is not an entitlement: if banks assume guaranteed access to central bank support, they may take undue risks, leading to moral hazard by relying on the central bank as a backstop against failure. Without ELA as a safeguard, a bank facing severe funding pressures or insufficient securities for regular operations could pose a risk to financial stability.

103. The BOC should clarify its ELA policy to explicitly define that liquidity support is not restricted to recovery and resolution cases, ensuring a consistent and effective crisis response framework. The ambiguity between the BOC's 2015 guidelines and its 2020 rules on ELA creates uncertainty about whether liquidity support is limited to institutions in recovery or resolution or if it can also be provided for other severe liquidity crises, raising important policy implications for crisis

intervention.[26] While the broad ELA criteria, including for FMIs are commendable, the BOC should clarify that access is not limited to institutions in formal recovery or resolution. A strict interpretation of the 2020 rules could deter institutions from requesting ELA prior to recovery and resolution[27]. In Canada, entities in this situation could seek support from STLF, but they may not meet the eligibility criteria for the facility. Additionally, ELA accepts a broader range of collateral, providing greater flexibility in liquidity support. Clarifying this policy is crucial to ensure consistency in crisis response and to determine the extent of ELA's role in stabilizing the financial system.

104. The BOC's eligibility criteria of ELA are relatively broad and comprehensive, contingent to regulatory status, systemic importance, and Payments Canada membership.

Federally regulated FIs, such as banks and FCUs, must be Payments Canada members with a credible recovery and resolution framework. The latter requirement was introduced in December 2015 as part of the revised ELA framework, to ensure that institutions undergoing resolution could still access ELA promptly, thereby facilitating orderly and timely resolution processes. Since ELA is disbursed through Lynx, non-Lynx participants must access funds via a Lynx-clearing member.[28] Provincially regulated DTIs, such as credit unions and caisses populaires, qualify if they have Payments Canada membership, provincial indemnity, and systemic importance.[29,30] Trust companies can also receive ELA only through loans secured by company-owned assets or asset purchases with a repurchase agreement, ensuring client assets remain protected. ATB Financial—which is a unique financial institution in the country as it operates like a bank but is owned and regulated by a provincial government—is also eligible for ELA as long as the BOC's ELA criteria are met. For domestic systemically important FMIs, ELA is available only to those designated under the Payment Clearing and Settlement Act (PCSA) and under BOC oversight. Finally, ELA is not available for non-deposit-taking institutions including insurance companies, pension and mutual funds and investment dealers. Foreign branches are also not eligible for ELA. The BOC Act is provided for a maximum term of six

[26] The BOC's 2015 ELA Policy indicates that ELA can be a temporary source of liquidity for financial institutions (FIs) and FMIs facing serious liquidity issues. More precisely, it states that ELA can play a role as a temporary source of liquidity in supporting the recovery and resolution of eligible FIs. However, the 2020 "BOC Rules Governing Advances to Financial Institutions" defines ELA as "*advances made at the Bank's discretion for the purpose of addressing a serious and persistent withdrawal of liquidity from a financial institution or FMI in the context of the recovery or resolution of the entity.*" While the 2020 rules suggest that ELA is limited to institutions undergoing recovery or resolution, the 2015 guidelines could be interpreted to mean that ELA supports but is not strictly restricted to such cases.

[27] Institutions undergoing a formal recovery process shall apply structural measures such as capital raising, asset sales, cost-cutting, or restructuring.

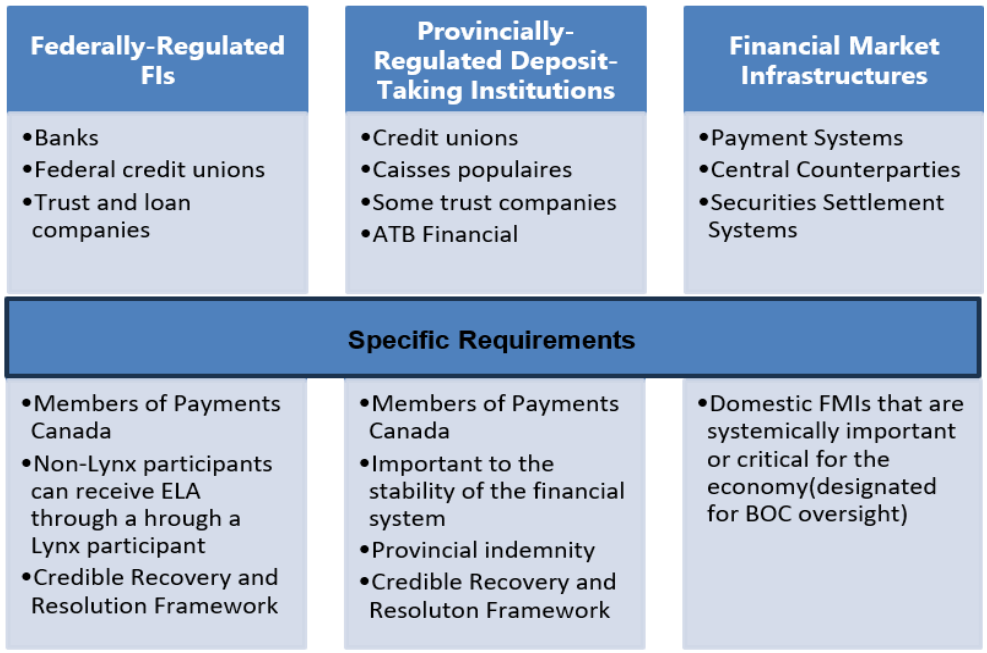
[28] Not all Payments Canada members are necessarily part of Lynx, but all Lynx participants are part of Payments Canada. For example, Automated Clearing Settlement System (ACSS) is another payment system which handles the clearing and settlement of low-value retail payments.

[29] The provincially regulated financial institutions that are already PayCan members are: Central 1, Alberta Central, SaskCentral, Credit Union Central of Manitoba (CUCM), Atlantic Central, Desjardins, ATB Financial, and Caisse populaire Alliance Limitée.

[30] Bill C-59, titled the Fall Economic Statement Implementation Act, 2023, received Royal Assent on June 20, 2024. This legislation amends the Canadian Payments Act to expand membership eligibility for Payments Canada, specifically by including local credit unions in the list of entities that can become members. The amendments are yet to come into force on a date determined by an order of the Governor in Council. More information can be retrieved in the following link : C-59 (44-1) - LEGISinfo - Parliament of Canada.

months, with the possibility of renewal at BOC's discretion. However, in practice, ELA loans are typically structured as one-day loans and rolled over daily. Figure 15 provides an overview of the eligible entities and the respective requirements.

Figure 15. Canada: Emergency Lending Assistance Eligibility and Requirements



Source: BOC and IMF Staff

105. The BOC currently lacks the operational capacity to provide ELA in foreign currency, relying instead on government support, while swap lines address market-wide stress. The BOC has the legal authority but currently does not have the operational capacity to provide ELA in foreign currency and it cannot lend against U.S. dollar loan collateral. The ELA framework also foresees that the BOC could provide foreign-currency ELA to FMIs. The BOC does not hold a significant pool of foreign-currency assets on its own balance sheet. Canada's foreign exchange reserves are owned by the Government of Canada. Currently, the only available source for foreign currency liquidity support to address idiosyncratic stress is through direct support from foreign central banks (see section II). In case of liquidity needs, banks receiving ELA in Canadian dollars may access the private market to purchase foreign currency if required. Work is ongoing between the GoC and BOC to establish a mechanism that could provide foreign currency liquidity from the GoC to the BOC to lend out in the form of foreign currency ELA. Canadian authorities should advance on its operational preparedness for liquidity provision in foreign currency.

106. The activation of ELA involves a dynamic and iterative exchange between the BOC and supervisors and regulators. These authorities provide critical information that informs the BOC's assessment of eligibility for ELA, including on the institution's financial condition, liquidity needs, and recovery and resolution strategies. The BOC assesses the situation based on all the information available and determines if liquidity provision should occur and under what terms and conditions. The process is organic rather than strictly sequential—the BOC engages in ongoing discussions with

regulators, seeking their input on whether ELA is appropriate, considering both financial stability implications and institutional viability. This ensures that liquidity is provided prudently and effectively, aligning with broader recovery or resolution efforts while safeguarding the financial system.

107. The BOC should enhance their public communication to clarify that, while the formal solvency requirement for ELA has been replaced by a credible recovery and resolution framework the FIs' viability remains a key factor in the decision-making process on granting ELA outside resolution. In December 2015, following a BOC consultation with relevant stakeholders, the BOC revised its ELA policy.[31] Under the former policy, only FIs that were judged to be solvent were eligible for an ELA loan. The BOC's updated policy requires since then that FIs have a credible recovery and resolution framework in place. The reason why the solvency requirement for ELA was removed was to ensure that emergency liquidity can be provided promptly during resolution, thereby facilitating orderly and timely resolution processes. Nonetheless, OSFI continues to routinely assess the solvency of the financial institutions, including when considering any potential provision of ELA. Clear communication of this distinction would help reinforce confidence in the framework and mitigate any misperceptions regarding the safeguards in place.

108. While the BOC can charge a higher rate, the minimum price that can be charged for ELA is the same as SLF and OSRF, not reflecting the tiering pricing structure principle applied to the other facilities. As discussed in section IV, while the market recognizes the implications of requesting ELA and the stigma associated with its use, charging the ELA's minimum rate set at the same level as the price for SLF and OSRF, in certain circumstances could fail to account for the increased risk the BOC assumes, even within a strong collateral framework. While the BOC can charge a higher rate, historically, ELA has been provided at the Bank rate.[32] As the lender of last resort, ELA serves as a critical market signal and mispricing it could distort incentives. If STLF is priced significantly higher than ELA, institutions may avoid using STLF depending on the circumstances, even though it is designed for proactive liquidity management in less severe situations. To maintain market discipline and prevent incentives for reliance on ELA in crisis times, in particular in the context of ELA provision outside resolution, the BOC should adopt a more risk-sensitive pricing structure, ensuring that its cost appropriately reflects its function as a final liquidity backstop while remaining consistent with the broader liquidity framework. Importantly, the rate at which ELA is provided should be sufficient to discourage use, but also not so high as to accentuate the strains the ELA is seeking to alleviate. Figure III.A in Appendix III shows a detailed table comparing the prices charged and the counterparty eligibility scope across the BOC's liquidity provision facilities and ELA. The collateral framework is assessed in section IV.

[31] See https://www.bankofcanada.ca/wp-content/uploads/2016/11/boc-review-autumn16-graham.pdf.

[32] ELA has not been provided since 1986.

BANK OF CANADA's RISK MITIGATION STRATEGIES

109. Maintaining a robust and resilient balance sheet is essential for central banks to effectively fulfill their mandates. A strong balance sheet enables central banks to implement monetary policy efficiently, manage liquidity in the financial system, and respond adeptly to financial crises. Conversely, a weakened balance sheet can undermine a central bank's credibility, limit its policy options, and potentially lead to financial instability. Therefore, central banks must diligently manage their assets and liabilities, assess and mitigate risks, and ensure transparency in their financial operations to uphold confidence in the financial system and support sustainable economic development.

110. To protect its balance sheet, the BOC implemented several policies, which are reviewed in this section. These measures include requiring high-quality collateral for liquidity provisions, applying conservative haircuts to mitigate market fluctuations, conducting regular stress testing, and maintaining a diversified asset portfolio. Additionally, limits are imposed on the duration and amount of liquidity assistance to ensure support remains temporary and targeted, reducing long-term exposure.

A. Collateral Framework

111. The collateral policy establishes the conditions under which assets can be pledged, with the SLF having the most restrictive set of eligible securities, serving as the foundation for the other facilities. Canadian dollar-denominated securities are eligible for all asset types, whereas U.S. dollar-denominated securities are restricted to specific government and high-quality public sector securities, including U.S. Treasury bonds. Securities used as collateral must be pledged through the Canadian Depository for Securities Exchange (CDSX) or delivered physically. Concentration limits apply to asset classes, ensuring that no more than 5 percent of the pledged collateral is from a single private sector issuer, with specific limits for covered bonds, corporate and municipal securities. In terms of the bilateral liquidity provision facilities, SLF has the most restrictive collateral pool, serving as the foundation for the STLF, which allows additional loans, while the ELA provides the broadest flexibility in eligible assets. In addition, institutions cannot pledge their own securities or those of related entities, including covered bonds, term Asset-Backed Securities (ABS), ABCP, and SGC Notes. Eligible securities must not mature the next business day, and only the most senior tranches of term ABS and ABCP are accepted.

112. In addition to several requirements to ensure collateral security, a minimum principal amount of CAD 1 million per security is required. Legal documentation is necessary to secure the Bank's interest in pledged assets. ABCP and term ABS programs must meet strict eligibility and transparency criteria, including clear disclosure of sponsors, liquidity providers, and the structure of the underlying assets. Highly structured products, such as Collateralized Debt Obligations (CDOs) and synthetic assets, are prohibited. Continuous disclosure of relevant investment information is required to ensure transparency and risk assessment. Additional requirements ensure collateral security, including ensuring that pledgors are not exposed to excessive leverage, credit derivatives, or

complex financial structures. The BOC reserves the right to monitor, limit, or reject pledges based on risk tolerance and market conditions. Currently, in the SLF collateral policy, Government of Canada, provincial and territorial issuers are exempt from credit rating requirements. While the BOC reserves the right to add additional risk mitigants to provincial and territorial issuers, no additional risk mitigations have been applied to any provincial or territorial issuers.

113. The BOC employs robust risk management practices in its term securities repurchase operations, including daily valuation of securities, margin calls for significant shortfalls, and criteria adjustments as needed to ensure financial stability and adequate protection. As part of its risk management practices, the BOC values securities daily on a counterparty-by-counterparty basis and compares them to the contract valuation to ensure adequate protection. If a shortfall is identified, the BOC initiates a margin call, requesting the counterparty to deliver additional securities to cover the difference. Margin calls are triggered when the shortfall is the lesser of CAD 500,000 or 0.1 percent of the total outstanding transactions with that counterparty. However, for shortfalls covered under the 0.1 percent criterion, a minimum transfer amount of CAD 50,000 applies, and no margin call is issued for shortfalls below this threshold.[33]

114. The BOC's collateral framework expands progressively from the SLF's restricted marketable securities to the ELA's broader eligibility, while margin requirements reflect the riskiness of the asset and remain consistent across facilities for the same type of collateral. However, the BOC reserves the right to apply higher haircuts to any security or asset at any time as its discretion, including on collateral delivered in an outstanding transaction.

- The **SLF** accepts the most restricted range of marketable securities,[34] including those issued by the Government of Canada, provincial governments, and select public and private sector entities, subject to rating requirements. Additionally, no more than 20 percent of pledged collateral can come from the non-mortgage loan portfolio.

- The **CTRF** accepts collateral for securities issued or guaranteed by the GoC and provincial governments, including Canada Mortgage Bonds and NHA mortgage-backed securities (with specific eligibility criteria), as well as stripped coupons and residuals that meet high-quality standards. Additionally, eligibility, concentration limits, and exceptions are at the BOC's discretion.

- The **STLF** expands eligibility to include all SLF-eligible marketable securities, plus Canadian-dollar non-mortgage loans without a concentration limit, insured residential mortgages, and uninsured residential mortgages with a loan-to-value (LTV) ratio of 80 percent or lower.[35] The ELA accepts

[33] The BOC retains the right to modify these criteria under the Master Repurchase Agreement if deemed necessary.

[34] For a detailed description of the collateral framework for the SLF, see: https://www.bankofcanada.ca/2025/01/assets-eligible-collateral-standing-liquidity-facility-310125/.

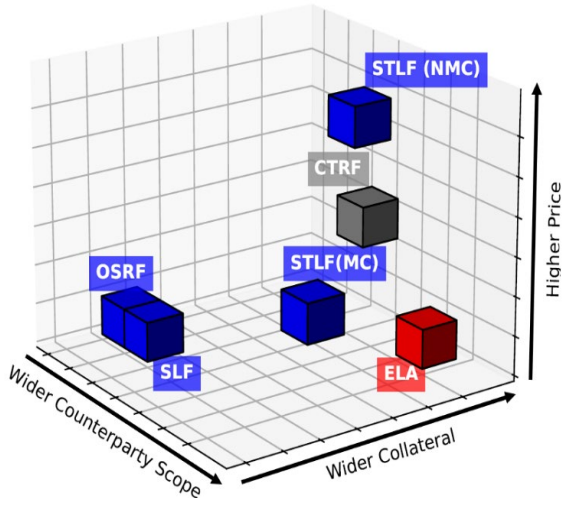
[35] Margin requirements for residential mortgage collateral are determined using a stress scenario. Insured residential mortgages, which carry lower credit risk due to repayment guarantees from mortgage insurers, are subject to a 10 percent margin requirement to account for liquidity risk. Uninsured Canadian-dollar residential mortgage loans

(continued)

the broadest range of collateral, including all SLF and STLF-eligible securities and loans, as well as less liquid securities, collateralized own-name securities, insured and uninsured residential mortgages (without LTV restrictions), and non-residential mortgages. Details of ELA-eligible collateral remain confidential.

115. The minimum ELA pricing should be recalibrated to account for the relatively higher residual risk inherent in the extraordinary circumstances under which ELA is provided. As shown in Figure 16, ELA accepts more entities and a significantly broader range of collateral than all the other facilities, including less liquid assets, uninsured mortgages without LTV restrictions, and non-residential mortgages, exposing the BOC to greater credit risk in some circumstances, despite its solid risk assessment framework. While the BOC can charge a higher rate, the minimum price for ELA remains the same as for the SLF, which is primarily intended to clear settlement imbalances. Additionally, haircuts reflect the riskiness of the asset and by definition are not adjusted for the same set of collaterals accepted under the SLF. As mentioned in section III, ELA serves as the last resort lending option within the hierarchy of available tools, signaling distress to the market. If STLF is priced significantly higher than ELA, institutions may be disincentivized from using STLF under specific circumstances, which is intended for preemptive liquidity management in less severe situations, leading to distorted pricing incentives. This is particularly important in the context of providing ELA outside a resolution process. Furthermore, although provinces must provide indemnities when accessing ELA, no such requirement exists for federal institutions. While the BOC maintains a strong collateral framework, implementing a differentiated pricing structure for ELA would enhance its risk management approach and better reflect its exposure while enhancing the protection of the BOC's balance sheet. Importantly, the ELA pricing should be sufficient to discourage use, but not so high as to accentuate the strains the ELA is seeking to alleviate.

Figure 16. Canada: Liquidity Standing Facilities: Key Features



Sources: BOC and IMF staff calculations.

116. The BOC follows a "through-the-cycle" approach to set haircuts, ensuring consistent collateral valuation by not adjusting haircuts during financial stress, while prioritizing flexibility in other aspects of its collateral framework. As part of its haircut review process, at least one crisis period must be included in the quantitative analysis to capture the full spectrum of

have margin requirements ranging from 10 percent to 67 percent, based on the BOC's estimate of the current loan-to-value (cLTV) ratio and the geographic location of the properties. The cLTV is calculated by comparing the outstanding loan balance to the updated property appraisal value, which is then stressed under a worst-case scenario for Canadian housing prices, factoring in foreclosure costs.

risk. However, while haircuts remain stable, the BOC actively manages liquidity risks through other tools, such as adjusting its concentration policies on certain securities. During the COVID-19 crisis, the BOC temporarily increased the allowable proportion of non-mortgage loan portfolios (NMLP) from 20 percent to 40 percent and later to 100 percent to ease liquidity pressures. These concentration limits were later scaled back to pre-crisis levels as market conditions normalized. Additionally, the BOC expanded its eligibility criteria, such as introducing ABS issued by private placements.

117. The BOC should increase the frequency of its haircut calibration for a shorter period than the current five-year formal review cycle to enhance its responsiveness to evolving market conditions. While the through-the-cycle approach is welcome to ensure that haircuts are set based on long-term risk assessments rather than reacting to temporary volatility or crises, more frequent adjustments are necessary to strike a balance between avoiding procyclicality and ensuring that haircuts accurately reflect changing market risks. A shorter review cycle, for example between two and three years, would allow the BOC to better assess market dynamics, respond to fluctuations in asset valuations, and mitigate emerging risks, ultimately strengthening the effectiveness and resilience of its collateral framework.

118. The BOC does not require prepositioning for individual facilities; instead, institutions preposition their entire non-mortgage loan collateral portfolio, ensuring flexibility in liquidity access. A significant portion of the pledged assets consists of consumer loans (secured and unsecured) and business loans (excluding mortgages). Currently, after applying haircuts, the total value of prepositioned collateral exceeds CAD 300 billion. Given the additional complexities of accepting non-residential mortgages, the BOC encourages financial institutions to prioritize pledging securities, residential mortgages, and non-mortgage loans first as collateral. If financial institutions seek to increase their borrowing capacity beyond post-haircut limits, the BOC may accept alternative forms of collateral and seek to increase the concentration limit.

B. Operational and Stress Tests

119. The BOC conducts various testing exercises to ensure the effectiveness of its liquidity provision frameworks. While tests for ELA and the other bilateral facilities are operationally very similar, the BOC distinguishes between them. STLF designated tests have been more frequent and upon request. Since the STLF's launch in 2020, the BOC has conducted 55 tests across large, medium, and small federally regulated institutions, as well as a range of provincially regulated institutions. Typically, one ELA test is conducted annually for FMIs and occasionally for other institutions. Additionally, the BOC conducts annual internal stress test scenarios to assess its ability to handle an unlikely financial institution default on an ELA loan. Separately, the BOC also tests its central bank currency swap lines on a two-year cycle, though this schedule is not currently based on a risk-based approach.

120. The BOC should increase the frequency of tests for its standing facilities, ensuring that all eligible institutions are tested with values that reflect potential real liquidity needs. Progress has been made since the 2019 FSAP, demonstrating the BOC's commitment to strengthening its liquidity frameworks. However, increasing the frequency of tests for all facilities would enhance efficiency, preparedness, and consistency while ensuring that resources are not overstretched. Expanding the scope to include a broader range of eligible institutions would ensure that all potential borrowers are adequately assessed under plausible stress scenarios, strengthening the BOC's ability to respond effectively to liquidity crises. This is particularly important given the current transition to a new operational system, as more frequent and standardized testing would help identify potential implementation challenges, refine response protocols, and reinforce market confidence in the resilience of the financial system.

121. The BOC also conducts annual stress tests to assess the resilience of its own balance sheet. In 2024, the BOC balance sheet stress test evaluated the resilience of BOC's financial position under four independent stress scenarios, each reflecting potential risks to its balance sheet. The Asset Purchase for Market Functioning scenario assessed the impact of large-scale asset purchases aimed at stabilizing market conditions. The BIS Share Revaluation scenario examined potential fluctuations in the valuation of BOC's holdings in the BIS. The ELA scenario tested the BOC's ability to provide liquidity support to distressed institutions while managing associated risks. Lastly, the Financial Market Infrastructure (FMI) Resolution scenario evaluated the BOC's role in supporting critical financial market infrastructure in times of severe stress.

Appendix I. Insights on Market Structure

A. The Tri-Party Repo Market in Canada and the U.S.

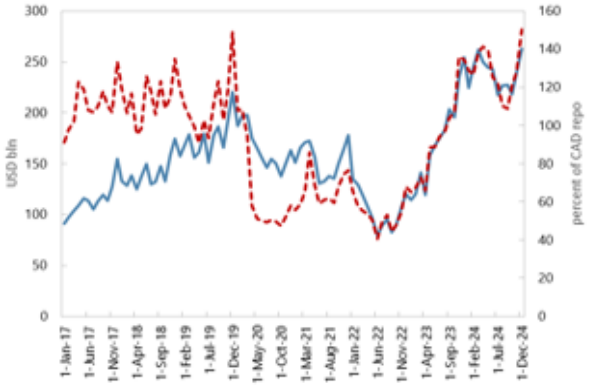
1. The repo market in Canada is divided into two main segments. The interdealer market, where dealers and banks source liquidity and collateral amongst themselves, and the dealer-to-client market, where dealers and banks transact with clients such as pension funds and asset managers. The two segments are roughly similar sizes, with substantial activity.

2. Recently a new, tri-party repo market segment has emerged. The CCMS, launched in 2023, as an attempt towards a tri-party repo service in Canada. Tri-party repos remain in essence bilateral transactions, but involve a third-party agent to manage collateral, provide efficiency in settlements, and reduce operational risk. Importantly, the process allows trading baskets of general collateral. That is, investors are willing to accept any security within a broad class instead of agreeing on specific collateral. In the U.S., where it has been successfully used for years, the service provides significant liquidity to the repo market by allowing large volumes of securities to be financed in a cost-efficient manner.

3. The introduction of the CCMS can provide significant benefits for the Canadian repo market. It can modernize and automate the collateral management system in Canadian fixed income markets, which currently relies on rather manual and time-consuming processes, adding to operational risks. This modernization is expected to ease operations, improve collateral mobility and availability, thereby supporting liquidity in funding markets (Muller and Padalko, 2025). It can also provide a secure and efficient mechanism for short-term borrowing and lending, which can be an alternative to BAs, albeit lower yielding.

4. Canadian dealer banks are significantly utilizing the U.S. tri-party repo market for their funding needs. Analyzing the repo volumes of Canadian dealers with U.S. MMFs in the tri-party market (TPR) shows that these funds are providing substantial liquidity to Canadian dealers. On average, the liquidity received from these U.S. funds is comparable to the amounts these dealers raise in the Canadian market, although there was a decline in the U.S. TPR repo volumes following the COVID-19 crisis (Figure I.1). The broad adoption of CCMS could potentially attract foreign liquidity providers, such as U.S. MMFs, which are currently major liquidity providers in the U.S. repo market. Such a development would help reduce the heavy reliance of the Canadian repo market on a very concentrated set of liquidity providers.

Figure I.1 Repo Volumes for Canadian Dealers in the US TPR Market



Source: OSFI, Crane data and IMF Staff calculations

B. A View on Alternatives to Bankers' Acceptances

5. A host of existing and new financial products present alternatives to BA, albeit not direct ones:

- **Bearer Deposit Notes (BDNs) are issued by banks for general funding purposes.** While they are the closest substitute to BAs in terms of yield, BDNs typically have longer maturities (range from three months to one year) and have a longer investor base. Banks have little incentive to issue shorter maturities for reasons similar to those leading to the demise of BAs. A new product, floating rate BDNs with shorter duration than equivalent maturity BDNs, could appeal to investors with low-interest rate risk appetite. Major Canadian banks already issue these in the U.S. and are willing to issue them in Canada to replace BA funding, subject to investor demand. However, the industry still needs to address operational issues to enable large-scale issuance.

- **CP** is another money market instrument issued by banks. However, CP issuance in Canada typically does not have the frequency and consistency of BA issuance, and most of CP is being issued in the foreign markets, notably the U.S.

- A more direct replacement would be floating rate **notes linked to a term version of CORRA**. However, the CARR, clarified that term CORRA is not a type of tradeable security. The current permitted use cases by the BOC for term CORRA do not permit an FRN to be written on the index. Moreover, term CORRA would rely on ample futures liquidity, which has yet to develop in one-month contracts.

- **The CCMS Repo service** aspires to be a viable alternative to BAs. The service, launched in May 2023, aims to enhance repo's appeal as an investment product, by improving settlement practices and collateral management, and facilitating scaling up of repo trades for general collateral (see previous text). Nevertheless, repo by nature of being a secured asset, would offer lower yields.

- A higher-yielding repo product in the form of **SGC notes** is expected to emerge and would be a closer alternative. This is a novel form of securitized financing that could help lenders unlock value from balance sheet assets and borrowers reach higher yields.[1] The instrument was launched in June 2024, but such notes have not yet been issued.[2]

- **A key BA replacement instrument comes from the Canadian government.** The GoC has issued a one-month Treasury bill as a temporary measure to support the BA transition. The T-bill was introduced in May 2024 to mitigate the impact of the cessation of BAs. The decision on

[1] SGC Notes are short-term discounted money market instruments. They are linked to the same Canadian bank credit exposure as BAs (Level 2 HQLAs) but are secured with a basket of general collateral debt securities (SGC Securities). These securities could include government and provincial bonds, corporate credit debt and select mortgage-backed securities and would be backed by the credit of the banks issuing them.

[2] See https://www.tmx.com/en/newsroom/press-releases?id=1210.

whether the Government will continue the issuance of the newly introduced one-month treasury bill sector will depend on factors such as market need and efficiency. These T-bills would still offer lower yields compared to BAs.

C. The Exit from Quantitative Tightening

6. Canada is the first major central bank to announce an end to its QT program. Back in 2022, as monetary policy turned contractionary against a backdrop of higher inflation, central banks in several AEs (including those in the U.S., EA, U.K., Canada, Australia, New Zealand and Sweden) have been shrinking their balance sheets. Following a first stage when net asset purchases ceased, the BOC adopted a natural run-off of maturing securities, as its approach to balance sheet reduction, whereby any maturing securities are not re-invested. Some central banks, such as the CBNZ, the BoE and the Riksbank followed active sales of securities in addition to the natural run-off of maturing assets, thereby accelerating the pace of asset reductions. Conversely, the U.S. Fed and the European Central Bank, opted for a more gradual reduction of their holdings compared to a natural run-off by limiting (capping) the reinvestments of maturing assets at specified amounts per month. The natural run-off worked well for the case of Canada, given that, compared to other major countries, the BOC had not done QE before the pandemic so its balance sheet to GDP is relatively small; the BOC ended QE before its peers and a shorter maturity profile allowed for a relatively fast runoff.

7. The QT reduction plan is the clearest plan the bank has yet outlined for how it expects to finish normalizing and then maintaining its balance sheet. In February 2025, the BOC announced that QT would end in the first half of 2025. When the program ends, the bank will start replacing assets via term repo operations, before starting Treasury bill purchases in the fourth quarter of this year. In the steady-state, the BOC aims to match floating-rate liabilities (deposits) with short-term assets (mostly T-bills and term repo). Beginning in late 2026 (at the earliest), the central bank will purchase GoC bonds in the secondary market and announce these operations well in advance. This deviates from the BOC's pre-pandemic practice of buying bonds in the primary market. In the long run, the central bank plans to roughly match currency in circulation with GoC bond holdings. The BOC may not reach its steady state composition until 2030.

8. On the way forward, it remains of key importance to ensure the appropriate level of reserves (settlement balances) in the economy. The BOC's understanding of the optimal reserve level has evolved over time. According to its latest announcement, the BOC foresees a higher steady state of reserve balances than earlier, between CAD 50 billion and CAD 70 billion from the earlier CAD20 billion to CAD 60 billion range. However, the BOC acknowledges that only CAD 20–30 billion is needed to support the payments system and the rest is due to precautionary demand, a buffer for unexpected liquidity shocks. Because liquidity management practices and regulatory requirements have changed over time, estimating precautionary demand and pinning down the levels at which reserves become scarce is challenging in practice, potentially creating uncertainty over the stability of funding rates. It is therefore crucial to have liquidity providing facilities in place, which can be drawn in a timely and appropriate fashion to balance reserve demand and supply in the economy. As explained in Section III, the BOC has a very robust liquidity framework and capacity to do so.

Appendix II. Liquidity Adequacy Requirements

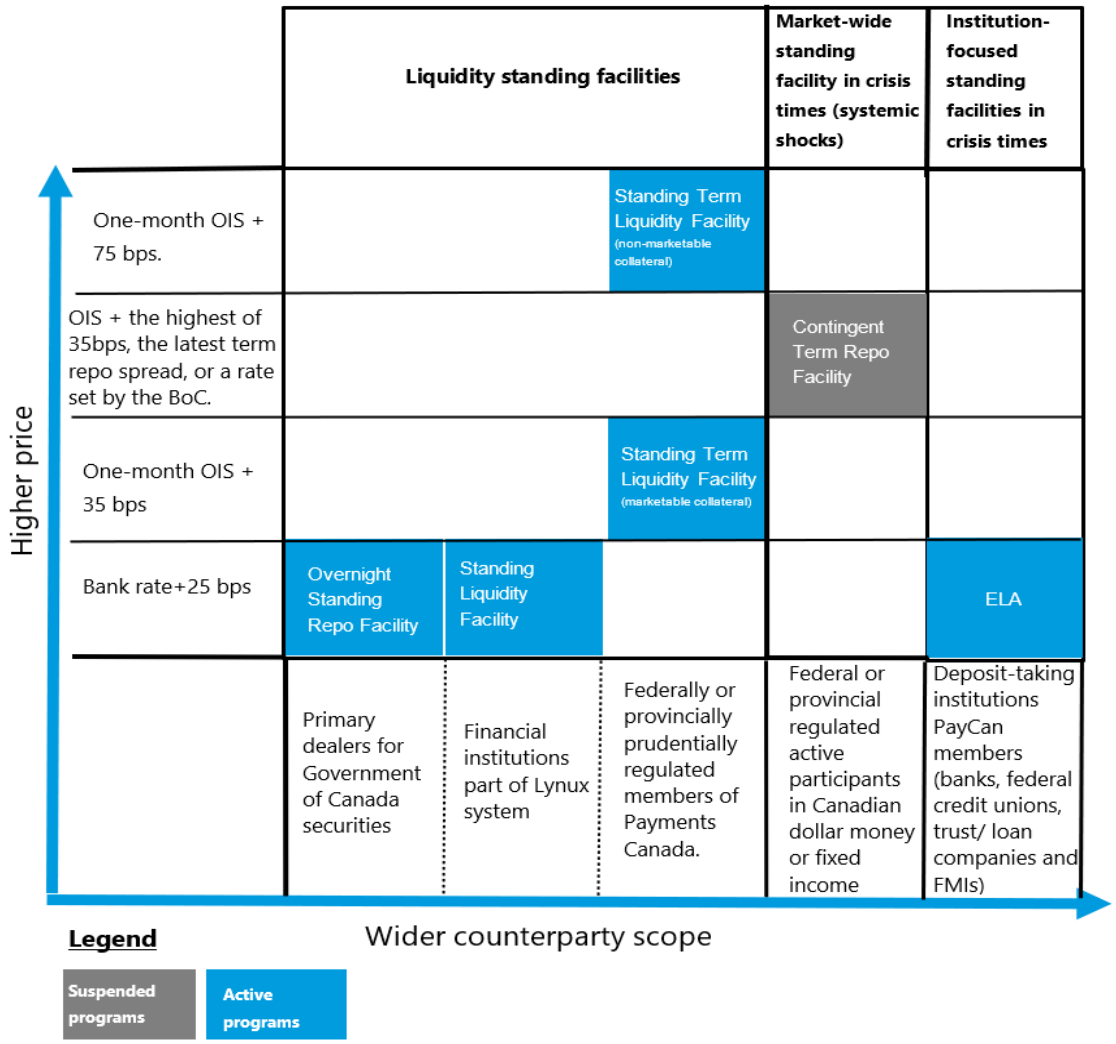
Table II.1. Canada: Liquidity Adequacy Requirements

Tool Type	Liquidity Measure	Public Reporting	Category Type Applicability	Assessment Horizon
Standard	Liquidity Coverage Ratio (LCR)	Yes	DSIBs, Categories I and II	Short term (30 days)
	Net Stable Funding Ratio (NSFR)	Yes	DSIBs and Category I institutions with significant reliance on wholesale funding	Medium to long term (1 year)
Supervisory	Net Cumulative Cash Flow (NCCF)	No	DSIBs and Category (Comprehensive NCCF); Category II (Streamlined NCCF)	Short to medium term (up to 1 year)
	Operational Contingency Funding Plan (OCFP)	No	Category II	Contingent/ variable
Monitoring	Contractual Maturity Mismatch	No	DSIBs, Category I, II and Category III	Short to medium term
	Concentration of Funding	No	DSIBs, Categories I and II	Short to medium term
	Available Unencumbered Assets	No	DSIBs, Categories I and II	Short to medium term
	LCR by Significant Currency	No	DSIBs, Categories I and II	Short term (30 days, currency-specific)
	Market-Related Monitoring Tools	No	DSIBs, Categories I and II	Variable (market conditions dependent)
	Liquidity Activity Monitor (LAM)	No	Only selected institutions are required to provide this metric	Intraday
	Intraday Liquidity Monitoring Tools	No	All DTIs–different categories of requirements	Intraday

Source: OSFI

Appendix III. Bank of Canada's Liquidity Backstop Facilities

Figure III.1. Bank of Canada's Liquidity Backstop Facilities: Price, Collateral and Counterparty Scope



Source: BOC and IMF Staff calculations

References

Aldridge, Patrick, Stephane Gignac, Rishi Vala, and Adrian Walton. 2024. "Liquidity Risks at Canadian Life Insurance Companies." Bank of Canada, April 2024.

Bank of Canada (BOC)a. 2022. "Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity in Canada during April 2022." October 2022.

Bank of Canada (BOC)b. 2024. "Financial System Survey Highlights—2024." May 9, 2024.

Bank of Canada (BOC)c. 2024. "Overview of the Canadian Repo Market." October 2024.

Bank of Canada (BOC)d. 2024. "Canadian Repo Market Fact Sheet." October 2024.

Bank of Canada (BOC). 2025. " Changes to Canada's Debt Distribution Framework." March 2025.Bédard-Pagé, Guillaume, Daniel Bolduc-Zuluaga, Annick Demers, Jean-Philippe Dion, Manu Pandey, Léanne Berger-Soucy, and Adrian Walton. 2021. "COVID-19 Crisis: Liquidity Management at Canada's Largest Public Pension Funds." Bank of Canada, May 2021.

Berger-Soucy, Léanne, Corey Garriott, and André Usche. 2018. "Government of Canada Fixed-Income Market Ecology." Bank of Canada, September 2018.

Brooks, Skylar. 2024. "Central Bank Liquidity Policy in Modern Times." Staff Discussion Paper No. 2024-6, Bank of Canada, June 21, 2024.

Canadian Alternative Reference Rate Working Group (CARR). 2021. "CARR's Review of CDOR: Analysis and Recommendations." Bank of Canada, December 2021

Canadian Foreign Exchange Committee (CFEC). 2024. " Results of April 2024 Foreign Exchange Volume Survey." Bank of Canada, July 2024.

Chen, Jessie Ziqing, Johannes Chen, Shamarthi Ghosh, Manu Pandey, and Adrian Walton. 2022. "Potential Netting Benefits from Expanded Central Clearing in Canada's Fixed-Income Market." Bank of Canada, June 2022.

CSA. 2024. "2024 Annual Report on Capital Markets." https://www.securities-administrators.ca/csa-activities/csa-systemic-risk-committee/2024-annual-report-on-capital-markets/

Fernandes, Joshua, and Michael Mueller. 2023. "A Review of the Bank of Canada's Support of Key Financial Markets During the COVID-19 Crisis." Staff Discussion Paper No. 2023-9, Bank of Canada, April 27, 2023.

Fontaine, Jean-Sébastien, Corey Garriott, Jesse Johal, Jessica Lee, and Andreas Uthemann. 2021. "COVID-19 Crisis: Lessons Learned for Future Policy Research." Bank of Canada, February 2021.

Friedrich, Christian, Hanno Friedrich, Nick Lawrence, Javier Cortes Orihuela, and Phoebe Tian. "The International Exposure of the Canadian Banking System." Bank of Canada, January 2025.

Garriott, Corey, and Kyle Gray. 2016. "Canadian Repo Market Ecology." Bank of Canada, March 2016.

Gravelle, Toni. 2023. "Lessons from Our Support of Financial Markets in Tough Times." Bank of Canada, March 29, 2023.

Gravelle, Toni. 2023. "The Bank of Canada's Market Liquidity Programs: Lessons from a Pandemic." Bank of Canada.

Johal, Jesse, Joanna Roberts, and John Sim. 2019. "Canadian Securities Lending Market Ecology." Bank of Canada, July 2019.

Johnson, Grahame. 2023. "A Review of the Bank of Canada's Market Operations Related to COVID-19." Bank of Canada, March 2023.

McRae, Kaetlynd, and Danny Auger. 2018. "A Primer on the Canadian Bankers' Acceptance Market." Bank of Canada, June 2018.

Muller, Philippe, and Maksym Padalko. 2025. "The New Repo Tri-Party Canadian Collateral Management Service: Benefits to the Financial System and to the Bank of Canada." Bank of Canada, February 2025.

Ouellet Leblanc, Guillaume, and Rohan Arora. 2018. "How Do Canadian Corporate Bond Mutual Funds Meet Investor Redemptions?" Bank of Canada, May 2018.

Ouellet Leblanc, Guillaume, and Ryan Shotlander. 2020. "What COVID-19 Revealed About the Resilience of Bond Funds." Bank of Canada, August 2020.

Moretti, M., Dobler, M. C., & Piris Chavarri, A. 2020. "Managing Systemic Banking Crises: New Lessons and Lessons Relearned." International Monetary Fund.

Plong, Boran, and Neil Maru (a). 2024. "What Has Been Putting Upward Pressure on CORRA?" Bank of Canada, March 2024.

Plong, Boran, and Neil Maru (b). 2024. "CORRA: Explaining the Rise in Volumes and Resulting Upward Pressure." Bank of Canada, August 2024.

Sandhu, Jabir, and Rishi Vala. 2023. "Do Hedge Funds Support Liquidity in the Government of Canada Bond Market?" Bank of Canada, August 2023.