CARR's Review of CDOR: Analysis and Recommendations

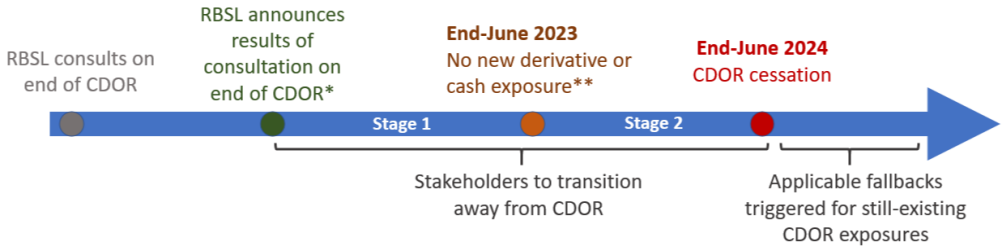
Executive Summary

- The Canadian Alternative Reference Rate working group (CARR) was established in March 2018 to guide benchmark reform efforts in Canada. Its membership includes senior representatives from a variety of stakeholders in the Canadian financial system. In 2020, CARR was tasked with reviewing and analyzing the efficacy of the Canadian Dollar Offered Rate (CDOR) and making recommendations for its future based on that analysis.
- CDOR, originally developed in the 1980s as the basis for pricing Bankers' Acceptance (BA) related credit facilities, is currently the primary interest rate benchmark in Canada. It is referenced in more than $20 trillion of gross notional exposure across the Canadian wholesale financial system, including in derivatives, bonds, and loans. About 97% of this exposure relates to derivatives, while only about 1% relates to loans. CDOR is currently administered and published by Refinitiv Benchmark Services (UK) Limited (RBSL).
- While CDOR has served the Canadian dollar market well for many years, there are certain aspects of CDOR's architecture that pose risks to its future robustness. CARR's objective has been to analyze these issues in the context of the new, higher standards expected of critical interest rate benchmarks to ensure Canada's benchmark regime is robust and resilient in the future.
  - Key global interest-rate benchmarks, including both risk-free and credit sensitive rates, are increasingly being restructured to be primarily based on large volumes of underlying transactions rather than expert judgement. While CDOR is a committed lending rate, the determination of that rate, and therefore CDOR itself, is based predominantly on expert judgement. It cannot be directly tied to observable arms length transactions and is therefore not consistent with evolving global best-practices. All other major credit sensitive rates are defined as a borrowing rate and can therefore be more directly determined by securities transactions.
  - The BA lending model, which supports CDOR, is no longer seen as an effective way for banks to provide credit to their corporate clients. Banks' funding methodology has evolved to better match the term of their funding to the term of their loans, and this practice is now codified in Basel III regulation. Because BA loans are "term" or "committed" facilities, bank treasuries no longer fund them through the issuance of BA securities that are generated through the loan drawdown. It is likely that banks will reduce or cease issuance of BAs. Banks have already started moving in this direction by either holding more BAs on balance sheet instead of selling them into the market and by creating CDOR-based loan products that do not generate a BA. Notwithstanding the absence of a direct linkage, a decrease in BA issuance would increasingly erode the foundation upon which CDOR is built.
  - The International Organization of Securities Commissions (IOSCO) recently called for greater attention, in credit sensitive benchmarks, to (a) the size of the underlying market(s) referencing a benchmark in relation to the volume of trading in the products used to determine the benchmark, also known as "proportionality", and (b) whether there is sufficient underlying data to support the benchmark in both normal times as well as stress periods. Both of these issues are relevant to CDOR and its ongoing robustness.

- Benchmark reform is a global endeavour seeking to establish a sound foundation for financial products in the future. In Canada, this initiative is being supported by the work of CARR and by a new regulatory framework brought in by the Canadian Securities Administrators (CSA) as benchmark regulators. This framework aligns Canada with the heightened standards other jurisdictions began adopting in 2018. Securities authorities in Ontario and Quebec have designated CDOR a "critical" interest rate benchmark, increasing the obligations on both the benchmark's administrator and the benchmark's contributors.
- As was experienced with LIBOR (and other global survey-based benchmarks), contributing member banks may decide they no longer wish to continue submitting rates voluntarily given the increased obligations and costs to do so, as well as potentially from their own concerns about the future of CDOR in light of CARR's analysis of the rate. This is a key fragility given that only six contributing banks remain on the CDOR panel.

- CARR examined the feasibility of reforming or enhancing CDOR, as was done with the Canadian Overnight Repo Rate Average (CORRA), Canada's overnight risk-free rate, and other global credit sensitive benchmarks. This was not seen as a tenable option due to CDOR's definition and the inherent inability to tie it directly into arm's-length securities transactions. Changing either would almost certainly result in a benchmark that was both legally and economically different from what CDOR is today.
- **CARR recommends that RBSL should cease the calculation and publication of CDOR after June 30, 2024. CARR proposes a two-staged approach to the transition from CDOR (see Figure 0). The first stage would run until June 30, 2023, and the second and final stage would end on June 30, 2024. By the end of stage one we would expect all new derivative contracts and securities to have transitioned to using CORRA, with no new CDOR exposure after that date except with limited exceptions. Those exceptions include derivatives that hedge or reduce CDOR exposures of derivatives or securities transacted before June 30, 2023 or in loan agreements transacted before June 30, 2024.**
- The second stage to June 30, 2024 would provide firms with additional time to transition their loan agreements and deal with potential issues related to the redocumentation of "legacy" securities. The longer time window would also allow for more existing CDOR-based securities exposures to mature. Approximately $95 billion in floating rate notes and securitized products referencing CDOR would remain outstanding after the end-date of June 30, 2024.
- These recommendations for the future of CDOR have been unanimously endorsed by CARR and Canadian Fixed Income Forum (CFIF) members.
- **The decision to ultimately cease CDOR lies solely with RBSL and CARR's recommendation does not constitute a public statement or publication of information that CDOR has ceased or will cease permanently or indefinitely. As outlined in Section 12.2, for RBSL to cease publication of CDOR, it will first need to determine that it is necessary to cease the provision of the benchmark, including whether cessation is the appropriate course of corrective action. RBSL is required to consult on any proposed end-date and later publish a notice of an end-date ahead of any actual cessation date. It is this notice that would trigger the credit spread adjustment calculation under ISDA's derivative CDOR fallbacks, as well as CARR's recommended CDOR floating rate note fallbacks. The actual fallbacks would only apply once CDOR is no longer published. CARR expects Refinitiv to provide more clarity as to their actions in the near future.**

Figure 0 – CDOR transition conditional on RBSL's decision to cease CDOR



* A notice from RBSL announcing the cessation of CDOR would trigger the calculation of the ISDA credit spread adjustment as well as the credit spread adjustment in CARR's recommended fallback language for FRNs.

** Except where derivatives hedge or reduce CDOR exposures in derivatives or securities transacted before June 30, 2023 or in loan agreements transacted before June 30, 2024.

- The recommended timeline would provide time for stakeholders to transition CDOR exposures to other alternative benchmarks. In the case of Canadian dollar derivatives and securities, CARR expects these products will transition to CORRA (calculated in-arrears) and can do so within the shorter timeframe, given the experience and lessons learned from the LIBOR transition. Loan products may also transition to CORRA in-arrears, but CARR will consider the various options for loan products and will consult by the end of Q1-2022 on the potential need for any additional new benchmarks for loan products, including a forward-looking term CORRA.[1] Any new Canadian benchmarks would be expected to be IOSCO compliant and meet new global standards for robustness.
- Should RBSL agree with CARR's analysis and recommendations and announce that they will discontinue the publication of CDOR following their public consultation, the transition from CDOR to CORRA will benefit from the resources dedicated to the ongoing LIBOR transition. It will also benefit from work already done by the International Swaps and Derivatives Association (ISDA) to facilitate the move to overnight risk-free rates. CDOR was included, along with other major global credit sensitive benchmarks, in ISDA's recently completed work to develop and incorporate more robust fallbacks to derivatives transacted under ISDA agreements.
- CARR has already laid some of the groundwork required to support a successful transition having completed its work on enhancing CORRA, provided recommended robust CDOR fallbacks and CORRA conventions for those products currently referencing CDOR. However, CARR recognizes that there is much work yet to be done should RBSL discontinue CDOR, including infrastructure changes, potential changes to governing laws or regulations, and the potential development of new benchmarks. All of these factors have been considered in the development of the two-staged recommended transition plan.
- CARR will continue to work with CDOR's stakeholders, including Canadian authorities, to develop the tools and milestones necessary to enable a smooth transition away from CDOR. To this end, and to reduce the risks to Canadian financial markets posed by an abrupt transition, CARR expects that the six CDOR contributing banks will continue to remain on the CDOR panel and will support BA issuance, to the extent possible, until CDOR's recommended cessation date of June 30, 2024.
- While CARR's recommendation is only with respect to CDOR, the end of CDOR may have implications for the issuance of BAs, with banks potentially moving away from issuing short-dated BAs in favour of other forms of funding. CFIF will work with industry to assess the potential impact of reduced BA issuance and determine what additional work, if any, is needed to support the investment community in adapting to any resulting changes.

[1] Similar to term SOFR's initial licensing, term CORRA's use could potentially be restricted to loans and hedging of loans.

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1. Introduction

CARR was established by the Canadian Fixed-Income Forum (CFIF)[2] in March 2018 to help guide benchmark reform efforts in Canada. In October 2020, CARR was asked by CFIF, in consultation with the six CDOR contributing banks, to analyze the effectiveness of CDOR as a benchmark in Canada and to make recommendations on the future of CDOR to ensure Canada continues to have a robust benchmark regime. While CDOR has been the subject of several reforms in recent years, there had yet to be a holistic review of the efficacy of the benchmark, especially in light of changes to bank and benchmark regulation. With the global landscape for financial interest rate benchmarks rapidly changing, and with many global financial products transitioning to overnight risk-free rates with the end-of LIBOR, Canada's public and private sectors agreed that it was time to review CDOR in its entirety.

To accomplish this work, CARR was restructured to include a broader representation of stakeholders across the Canadian financial system and the seniority of its members was raised. It established a new subgroup, the credit sensitive subgroup, with the mandate to complete the CDOR review. This new subgroup established three workstreams, with broad representation across different types of stakeholders from both CARR and non-CARR firms, to focus on 1) the size and scope of CDOR and BAs, 2) the CDOR submission process and associated controls, including a comparison of CDOR with other global credit sensitive benchmarks, and 3) the efficacy of BAs as a funding, lending and investment product. These workstreams launched a number of surveys and held virtual meetings or workshops, with (a) domestic and global regulators, (b) the administrators of LIBOR, Euribor, BBSW and CDOR, (c) bank treasuries, (d) lenders and borrowers, and (e) money market traders and investors, to gain better insights into the issues. In short, CARR sought the data, thoughts, insights, and experiences from all constituencies with a stake in CDOR and BAs or with experience in benchmark reform. CARR and its members wish to express their gratitude to everyone who has contributed to this review. Your thoughts and opinions were carefully considered by CARR and proved influential to our recommendation.

This white paper summarizes CARR's findings. Section 2 provides an overview of CARR, while Section 3 describes Canada's interest rate benchmark regime. Sections 4 and 5 provide an overview of CDOR and the BA market respectively. Section 6 details the recent changes that have taken place in other global credit sensitive benchmarks. Section 7 describes the global and domestic benchmark regulatory environment. Section 8 highlights the key issues that CARR found with CDOR's architecture, while Section 9 covers the potential option to reform CDOR. Section 10 provides CARR's recommendation for the future of CDOR. Section 11 deals with Canada's preparedness to transition from CDOR and Section 12 outlines the next steps. Three annexes are attached. The first annex details CARR's membership. The second annex provides recent recommendations and tools developed by CARR. The final annex provides the quantitative results from CARR's survey on the size and scope of CDOR and BAs.

[2] CFIF is a senior level industry committee established by the Bank of Canada to discuss developments in fixed-income market structure and functioning, market practices and related policy issues.

2. Overview of CARR

Global context

The wholesale reformation of interest rate benchmarks began after the Global Financial Crisis led to concerns about LIBOR's susceptibility to manipulation. To coordinate this global work, the Financial Stability Board (FSB) established the Official Sector Steering Group (OSSG) in 2013 to advise the FSB on recommendations to strengthen existing interbank offered rate benchmarks,[3] as well as to promote the development of alternative risk-free or nearly risk-free reference rates that could be used for some types of transactions, especially derivatives. Both existing and new benchmarks would need to adhere to international regulatory standards, including the IOSCO Principles for Financial Benchmarks published in 2013.[4] To coordinate this large body of work, all LIBOR jurisdictions, and many non-LIBOR jurisdictions, formed national working groups composed of both private and public sector participants.

CARR

As Canada's national working group, CARR's original mandate was to review and, if necessary, reform or enhance the Canadian overnight risk-free rate known as CORRA (Canadian Overnight Repo Rate Average). CARR's role also included supporting the adoption of, and transition to, CORRA as a key financial benchmark for Canadian derivatives and securities.

Following CARR's initial work focused on reforming CORRA, the Bank of Canada took over the administration of CORRA, as a public good, and started publishing it in June 2020 using the enhanced calculation methodology developed by CARR. The enhanced calculation captures a much broader set of underlying overnight repo transactions.

In October 2020, CFIF expanded CARR's mandate to include the analysis and review of CDOR and its efficacy as a benchmark. It was recognized that global benchmark reform was resulting in jurisdictions moving from the use of credit-sensitive benchmarks to ones based on risk-free rates. Upon completion of its review and analysis, CFIF also asked CARR to make recommendations based on that analysis.[5]

Along with its expanded mandate, CARR's membership was broadened to 18 institutions (with equal representation from the buy- and sell-sides) plus the Bank of Canada, and the seniority of the members was raised.[6] Although CARR is not a regulatory body, as the national working group, its recommendations reflect a broad consensus of views across senior members of the Canadian financial industry—including all six CDOR contributing banks.

3. Overview of Canada's interest rate benchmark regime

Canada's market-based wholesale interest rate benchmark regime is currently composed of two main benchmarks: CDOR and CORRA. CDOR is Canada's survey-based credit sensitive benchmark administered and published by RBSL. CDOR is a forward-looking term rate that reflects both bank credit and term risk. CORRA is Canada's overnight risk-free rate, incorporating neither term nor credit risk. See Table 1 for a

[3] This work was primarily focussed on the three key global interest rate benchmarks: LIBOR, Euribor and TIBOR.
[4] Please see https://www.iosco.org/news/pdf/IOSCONEWS289.pdf
[5] In addition to this, CARR also oversees the CORRA Advisory Group.
[6] See Annex 1 for an overview of CARR's membership. Please see CARR's website for further information.

comparison of the major differences between the two Canadian benchmarks. As noted in the previous section, CARR's early work focused on reforming CORRA, but its efforts have since shifted to CDOR.

Table 1: Key characteristics of CDOR and CORRA

Canadian Dollar Offered Rate (CDOR)	Canadian Overnight Repo Rate Average (CORRA)
• Credit based measure that incorporates both term and bank credit risk premium • Measures the rate that Canadian banks are willing to lend to clients with existing credit agreements via bankers' acceptances • Survey-based rate • Submitted rates lack transparency • Forward-looking term rate (payment is known in advance) published for 1-, 2- and 3-month tenors • Administrator: Refinitiv • Publication delay for free usage	• Risk-free measure that reflects the overnight risk-free rate, closely tracks the Bank of Canada's Target Rate • Measures the cost of overnight lending via general collateral repo transactions secured by Government of Canada debt • Transparent and transaction-based (i.e. reflects actual market transactions) • Overnight rate • Needs to be compounded in arrears to calculate the payment over the specified payment period • Administrator: Bank of Canada • No publication delay for free usage

CORRA

CORRA, originally developed in 1997, is a transaction-based overnight risk-free interest rate benchmark that measures the secured (i.e. collateralized) overnight funding rate in Canada for Government of Canada "general collateral". As part of its early work on benchmark reform, CARR developed a series of enhancements to CORRA, which were implemented when the Bank of Canada became CORRA's administrator in June 2020.

The Bank of Canada calculates CORRA based on overnight repo transactions[7] between any two unaffiliated counterparties that are collateralized by Government of Canada securities. As part of its role as administrator, the Bank of Canada established the CORRA Advisory Group (CAG) to advise the Bank of Canada on changes in repo market functioning and emerging methodology issues, as well as on methodology or production changes undertaken as part of methodology reviews.[8]

The Bank of Canada provides CORRA data on its website at no cost as a public good. While CORRA has in the past been generally used only in overnight index swaps (a type of interest rate swap or derivative) and exchange traded derivatives (futures), a CORRA based floating rate note market began to develop in early 2020. Canada Mortgage and Housing Corporation (CMHC) also recently announced that they will be moving their Canada Mortgage Bond (CMB) program to reference CORRA instead of CDOR in early 2022.[9]

[7] For an explanation of repos and an overview of the Canadian repo market, please see https://www.bankofcanada.ca/2016/03/staff-discussion-paper-2016-8/

[8] The CORRA methodology will be reviewed at least every five years. An earlier review can take place if there are observed major structural changes to the underlying repo market.

[9] Canada Housing Trust is the largest FRN issuer in Canada with CMHC as the guarantor.

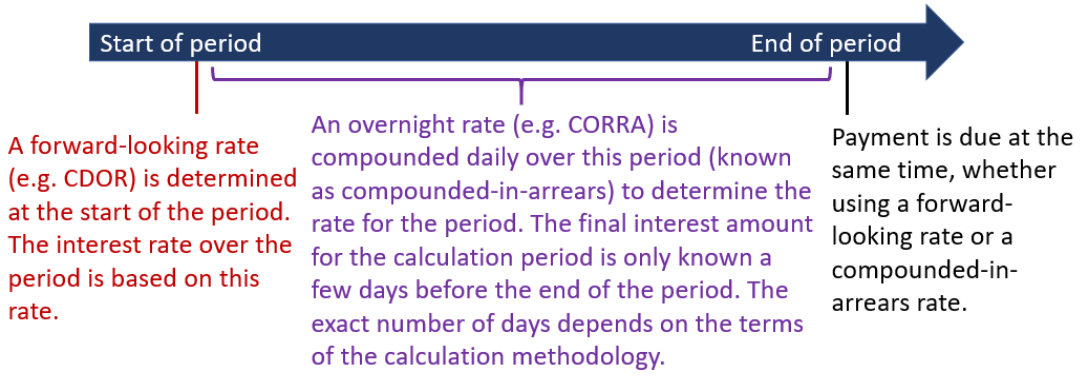
Globally, bank lending is also transitioning to reference RFRs in LIBOR currency jurisdictions, either to the overnight rate or to a mix of the overnight rate and term RFRs.[10]

To make it easier to use CORRA in loans and FRNs, the Bank of Canada began publishing a CORRA Compounded Index in April 2021. Similar indices are being published in other major jurisdictions and are being used to calculate coupon payment in certain financial products.

Difference in the calculation methodology for using CORRA and CDOR

While CDOR is a forward-looking rate (i.e. 3-month CDOR tells you the interest rate that will apply over the *next* three months), CORRA is an overnight rate, reflecting activity occurring over the previous day. To transform an overnight rate like CORRA into a rate that spans a period of, for example, three months, the daily CORRA settings would need to be compounded over the interest period (see Figure 1).

Figure 1 – Difference between forward-looking rates (like CDOR) and in-arrears rates (like CORRA)



4. Overview of CDOR

4.1 Definition

CDOR is currently the primary wholesale interest rate benchmark in Canada, referenced in over $20 trillion of gross notional exposure. It was originally developed in the 1980s as a survey-based benchmark to determine the interest rate for BA credit facilities and it continues in that role today. CDOR is a unique interest rate benchmark, since it measures the average rate at which Canadian banks are *willing to lend* to corporate borrowers with existing committed BA credit facilities, while other global credit sensitive rates, also known as interbank offered rates (e.g. LIBOR, Euribor, TIBOR), measure the rate at which banks are *able to borrow*.[11] The rate reflects the daily base lending rate for all borrowers for the applicable borrowing tenors and does not factor in the credit standing of a specific counterparty. A borrower-specific stamping fee, which reflects the individual borrower's credit standing, is added to the CDOR rate to determine the full borrowing cost for the client.

[10] While Euribor is still available as a potential option for euro-based loans, it is expected that at least some of the multi-currency loans with a euro option will adopt the euro short-term rate as the lending benchmark.

[11] As described in RBSL's CDOR Methodology, "CDOR is a committed bank lending rate or "executable rate" at which each CDOR Contributor is obligated to lend funds to corporate borrowers with existing committed credit facilities referencing CDOR, plus a stamping fee (if applicable)".

As a result of how CDOR is defined, it cannot be directly tied to transparent market-determined transactions, which is the approach supported globally by regulators and increasingly adopted by other credit sensitive benchmarks. CDOR's predominant reliance on expert judgement, based on a variety of factors, rather than arm's-length transactions or directly executable quotes on regulated trading platforms puts CDOR increasingly at odds with other credit sensitive benchmarks.

CDOR has been administered by Refinitiv Benchmark Services (UK) Limited (RBSL) since December 31, 2014. Three CDOR tenors are currently published: 1-, 2-, and 3-month.[12]

4.2 Role of the CDOR administrator and contributor

As the CDOR administrator, RBSL is responsible for:

1. Collecting the input data needed to calculate CDOR from the contributing banks
2. Determining and publishing the three CDOR tenors, together with the individual submitted rates from the contributing banks
3. All aspects of governance, oversight, and integrity of the benchmark

RBSL has published the following documents with respect to CDOR:

1. CDOR Methodology
2. CDOR Benchmark Statement
3. CDOR Contributor Code of Conduct
4. RBSL Benchmark Methodology Change and Cessation Policy

An independent CDOR Oversight Committee is responsible for oversight, scrutiny, and challenge over all aspects of the provision of the benchmark.

The CDOR contributing banks provide their CDOR submissions to RBSL on a voluntary non-compensatory basis.

Each contributing bank is required to document its submission policies, procedures, templates, and daily records in respect to data sources and expert judgement used to determine its CDOR contributions to RBSL as noted within the CDOR Contributor Code of Conduct (CCoC). The CDOR CCoC also outlines the various organisational arrangements and governance, as well as systems and controls that each contributing bank should have with respect to its submission. The contributing banks are required to certify on an annual basis that they are in compliance with the obligations of the CDOR CCoC.

Contributing banks can withdraw from the CDOR panel with a minimum of six months notice.

RBSL conducts a review of the CDOR methodology on at least an annual basis to determine whether the benchmark is still representative of the underlying market.

4.3 CDOR submission process and methodology

CDOR is calculated based on submissions from the six CDOR contributing banks: Bank of Montreal, Bank of Nova Scotia, Canadian Imperial Bank of Commerce, National Bank of Canada, Toronto-Dominion Bank,

[12] The 6- and 12-month CDOR tenors were discontinued by RBSL effective May 17, 2021 due to the limited underlying use of 6- and 12-month BA loan drawdowns and therefore the creation of 6- and 12-month BAs.

and the Royal Bank of Canada.[13] These six banks account for approximately 94% of the BAs sold into the market.

The submission and calculation processes are as follows:

- Between 9:40 and 10:10 ET, contributing banks provide RBSL with the rate they are willing to lend their balance sheet to corporate borrowers with existing BA facilities that reference CDOR[14] for the 1-, 2-, and 3-month tenors.
- The highest and lowest submissions are dropped for each tenor.
- A simple arithmetic average of the remaining quotes is calculated to set the daily CDOR benchmark.

CDOR and the individual contributing bank submitted quotes are published at 10:15 ET by RBSL.

4.4 How contributing banks determine their CDOR submission

As a part of its work in analyzing CDOR, CARR surveyed the six CDOR contributing banks on how they *determine* their submissions (i.e. how expert judgment was developed and exercised), where these submissions were made and the controls around these submissions. CARR found that CDOR submissions reflected a multitude of factors including, but not limited to, secondary BA transaction levels, BA futures levels, CORRA and OIS swap rates, T-bill rates, bank credit spreads, the supply and demand for BAs, and other periodic influences such as extraordinary monetary policy and regulation. Expert judgement, based on market knowledge and firm specific guidelines, was used by the submitters to combine these different factors into a single submission for each tenor. All banks also have relatively similar oversight and controls around the submission process, incorporating all aspects of the CDOR Contributor Code of Conduct established by RBSL for their submissions, although the functional area responsible for submitting the rate varied between the six banks. Efforts have been made by RBSL and the CDOR contributing banks to provide structure around this expert judgement, including the documentation of inputs.

4.5 Uses of CDOR

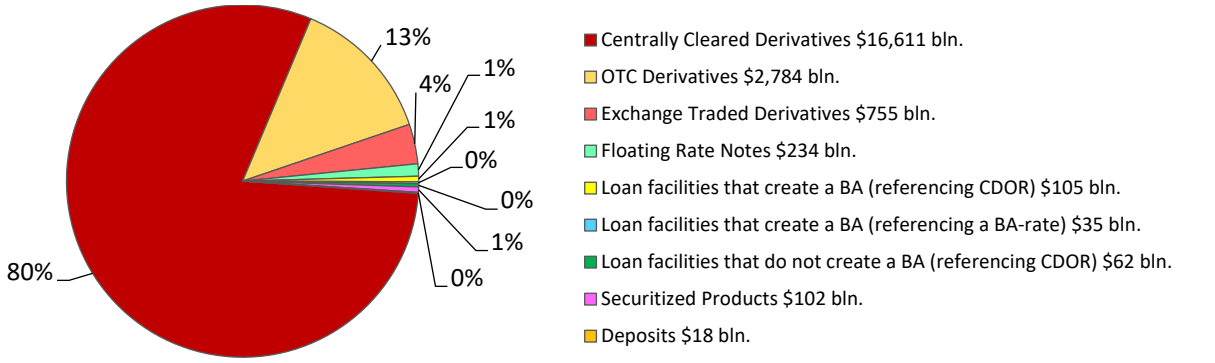
CDOR is used in a wide range of Canadian wholesale financial products. Although it was originally developed to establish a benchmark reference rate for BA based borrowings, today these BA borrowings only represent about one percent of the approximately $20 trillion of gross notional exposure to CDOR. The vast majority (97%) of this exposure is related to derivatives, primarily cleared interest rate swaps. The remaining exposure is split between floating-rate notes, loans, and securitized products. CDOR currently represents the primary benchmark for all of the product categories listed. [15] See Figure 2 for a percentage break-down of exposure by product category.

[13] CDOR's panel used to also include Merrill Lynch Canada (until 2012), Deutsche Bank Securities Limited (until 2014) and HSBC Bank Canada (until 2018).

[14] The submitted CDOR rates are benchmark rates for the three CDOR tenors, not a rate specific to any type of borrower or amount of funding.

[15] An individual bank's prime rate is the primary benchmark used for retail lending products, including lines of credit, HELOCs, and floating rate mortgages. Prime is also used for some types of commercial/corporate lending products or clients.

Figure 2 – Total gross notional value of products referencing CDOR



Source: Survey results, LCH, CME, CMHC, Bloomberg

Last observation: 31/10/2020

While only representing 1% of total aggregate notional exposure, CDOR remains an important interest rate benchmark for wholesale lending in Canada, with nearly $220 billion worth of loans referencing CDOR at end-October 2020. Just over 70% of these loans resulted in the creation of BAs, with the remaining 30% of loans referencing CDOR but made through loan facilities that did not result in the creation of a BA.

5. Overview of BA market

BAs have played an important role in the Canadian financial system: BA-based loans are a major source of funding for middle-market and larger Canadian companies. BAs created from these loans are an important short-term asset for investors ranging from pension funds to money market mutual funds held by retail investors.

5.1 BA lending model

The structure of BA-based loans was originally developed in the 1960's as a way to develop a corporate loan market in Canada. At their core, BA credit facilities are committed credit lines offered by banks to their corporate and commercial clients: when these clients borrow against their credit line, a short-term security (the bankers' acceptance or BA) with the same maturity is created that the bank can either hold on its balance sheet or sell to the market.[16] Mechanically, the process works as follows:

- A corporate borrower establishes a BA facility – essentially an undrawn committed line of credit for a specific term, usually between 3 and 5 years.
- When needed, the corporate borrower provides notice to the bank that they intend to draw against their BA facility for a specific amount (up to the undrawn amount of the credit line) and term determined by the borrower.
    - Clients can borrow up to terms of 3- or 6-months and in some cases up to 1-year depending on the loan agreement. The vast majority of borrowings via a BA facility are for 1 month as borrowers wish to minimize their borrowing costs and have no refinancing risk as the facilities are committed. In general, the borrowings are rolled from month-to-month.

[16] BA-based credit facilities are mostly committed but can also be uncommitted. For the sake of brevity, this paper will refer to them as committed facilities.

- The interest rate on this loan is generally based on the prevailing CDOR rate plus a "stamping fee".
  - For example, if CDOR is set at 0.50% and a borrower has a 1.00% "stamping fee", they will pay a 1.50% interest rate on their BA loan for that specific term of the drawdown.
- After CDOR is set, the bank approves the draw, a BA with the same term as the draw is created, and the corporate borrower receives its funds, net of the aggregate interest due for the specific term of the draw down.[17] The newly created BA is either retained on the bank's balance sheet or is transferred to the bank/dealer to be sold into the market. If sold into the market the BA becomes a liability of the issuing bank. When an investor buys a BA security the investor is unaware of the name of the corporation whose drawdown created the BA as it is irrelevant to the investor because the credit risk of the BA security is that of the issuing bank.
- When BA-based lending was first established, the sale of the BAs funded the loan drawdown, but changes to bank funding models in order to better match assets and liabilities, including as a result of regulation introduced over the past decade, mean that the sale of the BA no longer funds the loan drawdown (see Section 5.2). If BAs are sold into the market, they are mostly used to fund other short-term investments. BA facilities used by companies for general funding are now primarily funded using longer-term liabilities and deposits, especially since most corporates roll their monthly draws, to better match the behavioural and contractual nature of the loan.

The process for issuance of a BA and the relative roles of the participants is shown in Figure 3.

As a part of its analysis of CDOR, CARR surveyed Canadian financial institutions on their loan exposures to CDOR and BA based facilities at the end of October 2020. As of that date, Canadian banks had issued about $220 billion in loans that either resulted in a BA or which referenced CDOR but did not create a BA, of this total about $155 billion were BA related loans.

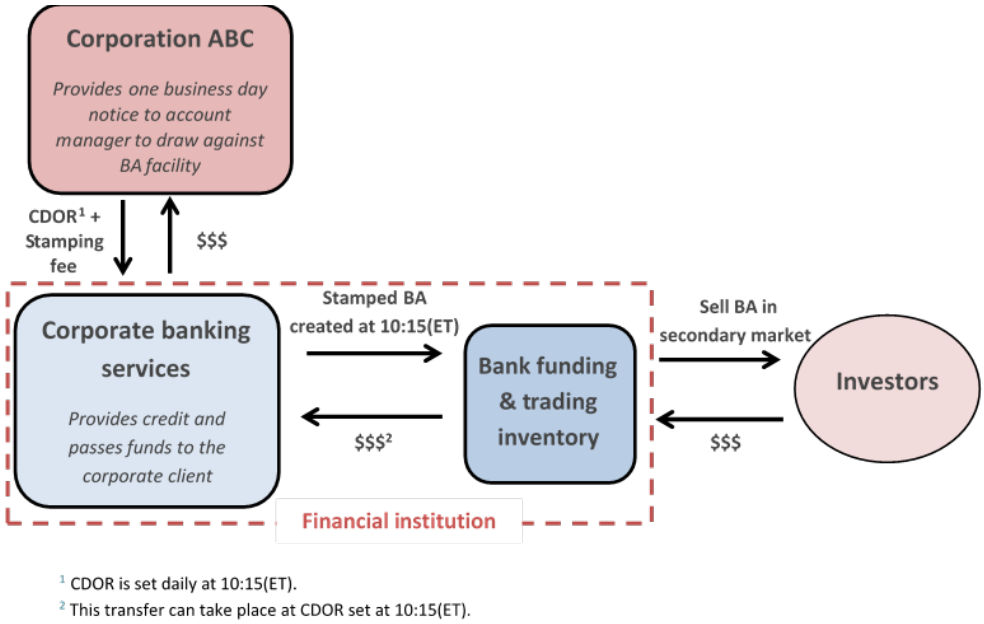
About 94% of BAs issued come from the six CDOR-contributing banks: Bank of Montreal, Bank of Nova Scotia, Canadian Imperial Bank of Commerce, National Bank Canada, Royal Bank of Canada and Toronto-Dominion Bank.[18] The composition of BA originations has been relatively stable among the CDOR-contributing banks over time.

Most BAs are 1-month in duration as the BA mirrors the length of the drawdown. While the length of this period depends on the borrower's cash flow requirements, interest rate expectations and the CDOR interest rate curve, most companies borrow for 1 month. As a result, BA issuance volume is primarily in the 1-month tenor, with lesser amounts in the 2- and 3-month tenors. In fact, 1-month BAs have made up around 90% of average daily trading volume since 2015. See Figure 4 for recent BA issuance by tenor.

[17] This is referred to as the BA being "stamped". Historically, a banker's acceptance was a promise that a company would pay a bank a certain amount of money. The bank would physically stamp this piece of paper, and in doing so turn the company's promissory note into a liability of the bank. For more details see A Primer on the Canadian Bankers' Acceptance Market.

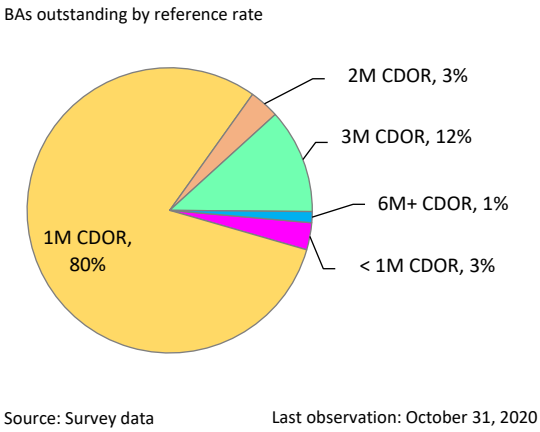
[18] HSBC accounts for most of the remaining BAs. They withdrew from the CDOR panel in January 2018.

Figure 3: The BA process and its use of CDOR



[1] CDOR is set daily at 10:15(ET).
[2] This transfer can take place at CDOR set at 10:15(ET).

Figure 4: BA liabilities



Source: Survey data Last observation: October 31, 2020

5.2 Impact of Basel III regulation

After the Global Financial Crisis, global authorities sought to improve the resiliency of the global financial system by reducing banks' reliance on short-term wholesale funding. A key component of these efforts was the introduction of Basel III regulations, which, among other things, prescribed minimum liquidity levels and maximum leverage measures, as well as promoted the use of more stable and longer-term funding for bank assets. Some of these Basel requirements, including the Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR), have made BA-based loans more capital- and liquidity-intensive. In general:

- Establishing a BA facility is a balance sheet obligation that impacts these ratios.
- Draws on BA facilities require a percentage of term funding to satisfy LCR and NSFR requirements.

- The sale of BAs creates a cash outflow that must be funded once the BA's term falls below the LCR's 30-day horizon.

Together, these rules have made BAs less efficient as a funding tool, especially since they generally have only a 1-month term. While these new regulations have made banks more resilient, an unintended consequence is that they have impacted the longer-term viability of the BA construct as a funding tool, which continues to be only used in Canada. For example, Basel III's requirement that banks must maintain an LCR of over 100% impacts BAs sold to market because liabilities maturing in less than one month are considered by the LCR as potential runoffs, and thus need to be backed by high-quality liquid assets (HQLAs).[19] Since most BAs have a 1-month term, most BAs fall into this category. As a result, for every dollar of newly issued BAs a bank sells into the market, the bank must retain a dollar of HQLA in order to not negatively impact the banks' LCR ratio. This dynamic reduces banks' incentive to sell BAs, which also reduces the availability of BAs to investors.

As a result of these regulatory changes banks have increasingly started to (a) offer CDOR based loan products that do not create a BA, (b) hold more BAs on their balance sheet and/or (c) issue longer dated debt instruments as an alternative to selling BAs. This move to introduce non-BA type loans is a recent phenomenon and is driven by a reduced desire for the legacy BA lending model, and which aligns more with the lending structure prevalent in other major jurisdictions. In CARR's survey of key Canadian lenders, it found that banks fell into roughly three groups with respect to their use of non-BA based loans:

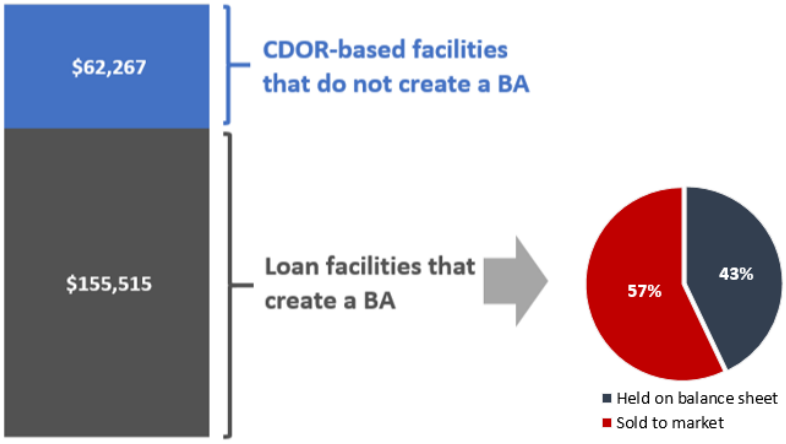
i. banks for which about 85% of CDOR-based loans resulted in BAs,
ii. banks for which about 65% of CDOR-based loans resulted in BAs, and
iii. banks that made CDOR-based loans but did not create any BAs.

CARR also found that banks in group ii largely used to be in group i, but have moved to increasingly offer CDOR-based lending facilities that do not result in the creation of a BA, since clients in some infrastructure projects, as well as some smaller commercial clients, prefer to borrow based on CDOR without having to roll their BA funding every month. The third grouping is primarily composed of either smaller domestic based banks, or those international banks that have a presence in Canada.

Banks have also increasingly kept the BAs created from the BA loan drawdown on their balance sheet (i.e. they have not sold the BA into the market). Currently about 43% of the BAs created are kept on the balance sheet, this trend began to increase in 2016/17 and is largely driven by the increasing regulatory costs related to short-term wholesale bank funding discussed above. See Figure 5 for the breakdown of the loans referencing CDOR.

[19] HQLAs, given their quality and liquidity, have a lower return than other assets that banks could potentially invest in.

Figure 5 – Overview of loans based on CDOR (CAD millions, as at end-October 2020)



Source: Survey data

Last observation: October 31, 2020

5.3 BAs interconnectedness with CDOR

BAs are inherently interconnected with CDOR. CDOR was created to support the BA lending model by providing a rate at which banks would offer their balance sheet to their corporate customers. At the same time, where BAs trade when sold into the secondary market is an important input into the decision-making process of a contributing bank's CDOR submitter. However, an important distinction should be made: while the price at which a BA security trades in the market is the rate at which an investor will pay to own a short-term bank credit instrument (i.e. the BA rate), it is not, however, the price at which a bank will offer out its balance sheet under a BA credit facility (i.e. CDOR). The difference between the level where BA securities trade and CDOR sets is called the BA/CDOR basis. The magnitude of the "basis" is impacted by the factors that a CDOR submitter employs when using expert judgement to set CDOR, including, but not limited to:

- Supply and demand for alternative money market instruments
- The cost of term funding for banks (bank credit spreads)
- Extraordinary monetary policy
- Bank regulation
- Supply and demand for BAs
- Market stress

5.4 Uses of BAs

BA lending facilities are a widely used corporate lending product

BA credit facilities are an important source of funding for Canadian companies. BA credit facilities provide a reliable source of committed funds, allowing borrowers to draw down funds against their credit line for specified periods of time. This allows companies to minimize the excess cash they have on hand at any given time. Most companies often renew (or "roll") their BA-based lending on a monthly basis to minimize their outstanding loan amount.

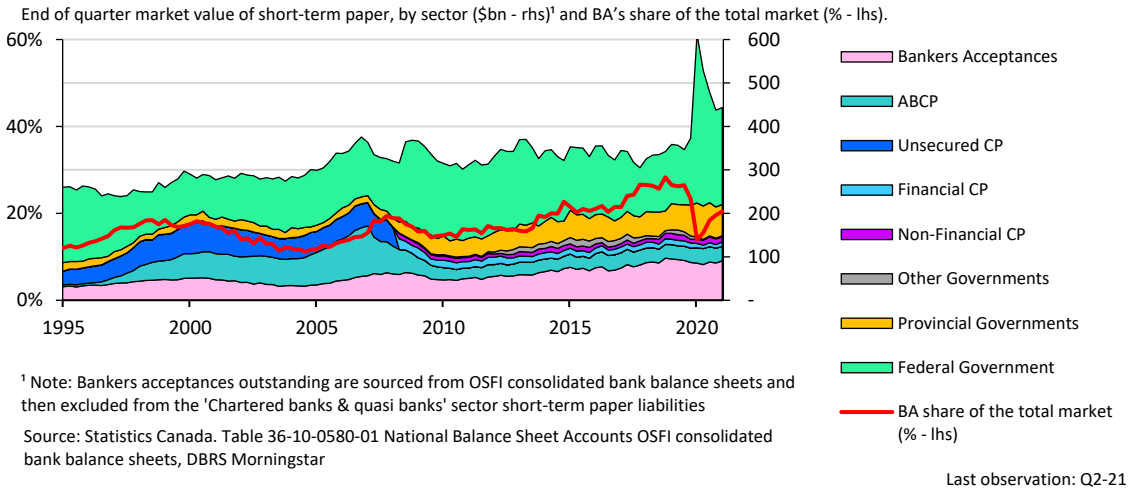
In discussions with CARR, corporate borrowers noted that BA credit facilities are an attractive source of funding primarily because they allowed borrowing over a specific term (e.g. 1-month or 3-month) with

the rate known in advance. They also have, in general, a cost advantage relative to prime based funding.[20] Another important consideration is that borrowers can easily hedge, if necessary, the resulting loan (especially if the pricing is based on CDOR) to a fixed rate using an interest rate swap. The companies CARR spoke to also noted that they regularly monitor their cost of borrowing, and would consider other alternative lending options if they had similar features to BA-based loans, especially if they reference a forward looking term rate, and/or potentially result in an overall lower cost of borrowing. Borrowers also wanted to have the option to effectively hedge using any new alternative rate. The creation of the BA, as a result of the drawdown, was not an important consideration that most borrowers focused on in respect to the structure of their loan facility.

BAs are a key Canadian money market asset

BAs are an important short-term investment asset, currently comprising about 20% of the notional outstanding in the Canadian money market (Figure 6). They are the second largest money market instrument after Government of Canada (GoC) treasury bills, and account for most of the product availability in the 1-month maturity bucket. A wide variety of firms invest in BAs including insurance companies, pension funds, money market funds,[21] corporations, bank treasuries, government agencies and asset managers. For these investors, BAs offer a relatively attractive yield over other short-term assets, including GoC and provincial treasury bills, while still being highly liquid and well-rated (since they share the same credit rating as their issuing bank).[22]

Figure 6: Evolution of money market instruments over time



[1] Note: Bankers acceptances outstanding are sourced from OSFI consolidated bank balance sheets and then excluded from the 'Chartered banks & quasi banks' sector short-term paper liabilities

Source: Statistics Canada. Table 36-10-0580-01 National Balance Sheet Accounts OSFI consolidated bank balance sheets, DBRS Morningstar

Last observation: Q2-21

[20] Most borrowers often have access to both BA- and prime-based facilities. While prime-based facilities are generally more expensive than BA-based facilities, they can be usually prepaid at any point in time. Therefore, borrowers tend to use prime-based facilities for very short-term (days) funding needs whereas BA-based facilities are used for specific, fixed duration, borrowing needs and, since they can be rolled over if needed, they can be also used to fund longer dated borrowing needs.

[21] Money market funds are governed by National Instrument 81-102, which includes minimum liquidity requirements, maximum term to maturity provisions, maximum issuer concentration protocols, and other constraints that significantly limit the scope of investable assets. For these funds, BAs are an important investable asset.

[22] For example, since 2019, BAs have yielded about 20bps more than equivalent term Government of Canada treasury bills.

As a part of its work, CARR held a targeted workshop with a group of investors to better understand why investors buy BAs. Two of the key features of BAs noted by investors were their credit ratings as bank-issued debt instruments, and their frequent maturities (due to most BAs having a maturity of one month or less) which allows investors to better ladder their investments against potential daily cash flow needs.

CARR also discussed possible substitutes to BAs with these investors. While other money market instruments can also play a key role in their short-term portfolios, many of these instruments were not directly seen as being equivalent to BAs. Some investors subject to CSA regulation, specifically National Instrument 81-102, also noted that they are constrained through this regulation in the type of potential alternative money market instruments that they can invest in. The range of potential alternative money market instruments include:

- **Government of Canada T-bills** – These are a viable alternative as they represent the largest segment of the Canadian money market, are issued on a regular basis and are liquid, however they are substantially lower yielding than BAs. GoC T-bills are also currently only issued in 3-, 6- and 12-month maturities, and shorter-dated (1-month) T-bills are not available in sufficient quantities in the secondary market.
- **Provincial T-bills –** These are also a viable option however, similar to GoC T-bills, they are issued in longer tenors. Their issuance is also less regular than that of GoC T-bills.
- **Asset Backed Commercial Paper (ABCP) –** This the fourth largest product segment in the Canadian money market, and while it provides a slightly higher yield than BAs, issuance is dependent on the growth of the underlying assets supporting the program.
- **Commercial paper** – This is seen by investors, at best, as a partial substitute, as few corporates have as high of credit ratings as BA issuers, and issuance is dependent on the needs of a specific issuer and therefore CP issuance does not have the frequency or consistency of BA issuance.
- **Term reverse repo** – While this could be a viable option for some more sophisticated investors, term reverse repo is a type of transaction and not a type of tradeable security. As a result, investors using these would need to have the ability to execute both reverse repos (for investing cash) and repos (for obtaining cash) to be able to manage their cash or liquidity needs. These are also operationally more complex than traditional money market securities, including from a daily valuation of collateral (margining) perspective. However, they are a secured product and therefore potentially lower risk. The available yield depends on the counterparty type and the collateral underlying the repo.
- **Deposit accounts –** While these could potentially offer an attractive option, they require investors to open an account with the specific deposit taking institution, a process which was seen as somewhat unwieldy due to regulatory account opening requirements (e.g. know-your-client requirements). Term deposits were also subject to potential early redemption fees.
- **Bearer Deposit Notes (BDNs) –** These were seen as an equivalent credit to BAs since they are issued by the same entities, however BDNs are generally issued for longer maturities (they typically range from three months up to one year). As a result of their longer duration and currently smaller investor base, they are perceived by some as being less liquid than shorter dated BAs.[23]

[23] BAs are also currently subject to more-lenient regulatory treatment under Basel III's Net Stable Funding Ratio than BDNs.

- **Foreign money market instruments swapped to Canadian dollars –** These were seen as a viable option for more sophisticated investors, but their relative attractiveness was dependent on the foreign exchange basis between Canadian dollars and the foreign currency.

While investors preference was clearly to continue to have access to BAs, most acknowledge that should BA issuance substantially decline they would need to look at other alternatives investment options, and most likely would replace their BA purchases with a combination of a number of the above options. It was also hoped that other viable alternatives would develop and that regulatory or firm specific constraints on using some the above options would be reduced or even removed. Bank treasuries also noted that should they reduce the issuance of BAs they would increase the usage of longer-dated BDNs, similar to what happened in Australia with their shorter-dated BA issuance moving to longer-dated negotiable certificates of deposit. However, CARR acknowledges that currently there is no equivalent instrument to fully replace BAs in the 1-month tenor should their issuance decline or disappear.

6. International comparisons to CDOR

In recent years, there have been significant reforms to global benchmarks like LIBOR, Euribor and BBSW. These other benchmarks—which like CDOR are interest rate benchmarks that reflect bank credit risk—have been transformed to comply with international best practices for benchmark design. This includes basing the benchmark settings as much as possible on arm's-length transactions, either through well-defined waterfall of inputs starting with transactions or making them primarily transaction or executable quote based through a complete redesign of the specific jurisdiction's money market structure. However, even where significant changes were made to benchmark design and oversight, some contributing banks have left the benchmark panels, and in the case of LIBOR the benchmark will be discontinued due to most contributing banks wanting to leave the voluntary panel.

LIBOR

LIBOR was one of the earliest interbank benchmarks to be reformed. Concerns of manipulation of the benchmark led to the 2012 Wheatley Review of LIBOR. This review provided a set of substantial recommendations aimed at improving the robustness of LIBOR, including that LIBOR be transferred to a new administrator. The new administrator was also expected to develop a hierarchy (or waterfall) of inputs for LIBOR settings, aimed at prioritizing transactions and executable quotes over expert judgement.

These reforms were quickly implemented. ICE Benchmark Administration (IBA) took over as administrator of LIBOR in 2014. To implement the remaining Wheatley recommendations, IBA published in 2016 a Roadmap for LIBOR, which explicitly adopted a transaction-based three level waterfall methodology for determining each LIBOR tenor, which was implemented in 2019. IBA's waterfall methodology uses (1) eligible transaction data where available, (2) transaction-derived data otherwise, and (3) if neither is available, market and transaction data-based expert judgement using each bank's own internally approved procedure which is based on a set of permitted inputs and agreed with the IBA.

Box 1 - The IBA's Waterfall Methodology[24]

Level 1 (Transaction-Based) - Where a Contributor Bank has sufficient eligible transactions, a volume weighted average price ("VWAP") of such eligible transactions, with a higher weighting for transactions booked closer to 11:00 London time. Eligibility criteria for transactions are specified by IBA.

Level 2 (Transaction-Derived) - Where a Contributor Bank has insufficient eligible transactions to make a Level 1 submission, it will seek to make a submission based on transaction-derived data, including time-weighted historical eligible transactions adjusted for market movements and linear interpolation. Eligibility criteria for transaction derived data are specified by IBA.

Level 3 (Expert Judgement) - Where a Contributor Bank has insufficient eligible transactions or transaction-derived data to make a Level 1 or a Level 2 submission, it will submit the rate at which it could fund itself at 11:00 London time with reference to the unsecured, wholesale funding market. Each Contributor Bank agrees its defined Level 3 submission methodology with IBA, basing its rate on transactional data, related market instruments, broker quotes and other market observations.

Level 1 and Level 2 submissions are mathematically based on transaction data and the methodology is common to all contributing banks. There is no discretion for contributors. A Contributor Bank must ensure that its LIBOR submissions are Level 1 and 2 (Transaction-based) where the bank has the minimum transactional data.

Banks must establish their Level 3 (Expert Judgement) benchmark submissions on the basis of internally approved procedures and inputs allowed by IBA. A bank must review this methodology as and when market circumstances require, to ensure that its LIBOR submissions remain credible and robust at all times.

Regulatory authorities also took steps to improve oversight of the benchmark, with LIBOR being designated under the EU Benchmark Regulation as a "critical benchmark" in December 2017. This subjected the rate to a more stringent set of regulatory requirements that enshrined many of the IOSCO principles.

Despite these significant improvements to LIBOR's calculation methodology and oversight, many contributing banks still wanted to leave the LIBOR panel, in part due to the lack of underlying transactions on which to base their submissions. As a result, many LIBOR tenors will cease at the end of 2021, with the remaining key US dollar LIBOR tenors being discontinued at the end of June 2023.

Euribor

Euribor's reform largely began after it was designated a critical benchmark under the EU Benchmark Regulation in 2016. To implement the many requirements imposed by these rules, Euribor's administrator, EMMI, developed a "hybrid methodology" for Euribor submissions tied to a transaction waterfall, very similar to the one developed for LIBOR. After two consultations, EMMI phased in the new methodology during 2019.

[24] As per IBA's LIBOR documentation

Australian Bank Bill Swap Rate (BBSW)

As discussed in Box 2, the reform of Australia's BBSW is of particular interest since Australia had a BA-based lending model very similar to that of Canada. However, a major distinction between BBSW and CDOR is that the original BBSW survey-based rate represented the rate at which Prime Bank Bills (i.e. bankers' acceptances) traded, so it was a borrowing rate (similar to LIBOR and Euribor) and not a lending rate like CDOR in its definition. The definition of bank bills was also expanded in the 1990s to include not only BAs but also negotiable certificates of deposit (NCDs). After four contributing banks withdrew from the BBSW panel in 2013, its survey methodology was replaced with a National Best Bid and Offer methodology (i.e. it was based on executable bids and offers for prime bank paper in the interbank market).

The rate was again reformed in 2018 to address a decline in liquidity around the rate setting window. ASX, BBSW's new administrator, began calculating BBSW directly as the volume-weighted average price of all eligible primary and secondary market transactions in prime bank paper in an expanded calculation window with an explicit multi-level waterfall for submission. At the same time, the definition of BBSW's underlying market was also broadened beyond interbank trading to include a wider range of counterparties (e.g. trades conducted by private sector and government investment funds). To achieve this change in methodology, the Australian money market was fundamentally transformed from a voice-based bilateral market to a fully electronic one with trading becoming concentrated in the BBSW calculation window on designated execution platforms.

Box 2 – Changes to Australian short-term bank funding and its impact on BBSW reforms

As part of its work on reviewing the future of CDOR, CARR held a series of discussions with authorities and market participants in Australia to understand the motivations and outcomes of the reform of Australia's BBSW benchmark. The BBSW was initially structured similar to CDOR, with both being set up as survey-based rates used to determine the underlying interest rate on BA-based lending. The key difference between the two rates was the side of the market the rates measured: while CDOR's administrator asked contributing banks for *the interest rate at which banks are willing to lend to clients with existing BA agreements*, BBSW's administrator asked contributing banks for *the rate at which banks can sell their bank bills to the market*.

Changes in Australia's market began slowly, centred on the BA market. As was the case in Canada, loans taken out through Australian bank bill lending facilities used to result in the creation of BAs that were sold to fund the loan. These BAs tended to be 1-month in duration, reflecting the tendency of borrowers to draw for a month at a time. In the 1990s, Australian banks began to move away from using BAs to fund the loan drawdown, and as a result the banks began to sell longer-dated negotiable certificates of deposit (NCDs, equivalent to Canadian bearer deposit notes), while holding increasing share of BAs created on the balance sheet. By the end of the 1990s NCD issuance was already much higher than that of BAs.

Although acceptance-based loans kept growing, peaking at about A$150 billion in 2009, banks sold an increasingly smaller share of these BAs, instead holding the BAs on their balance sheets. As noted earlier, these BAs were increasingly replaced by longer-dated NCDs. Post-global financial crisis regulatory reforms exacerbated this shift even further, with banks withdrawing completely from offering the BA lending model. As a result, BBSW is today underpinned by only NCDs.

Except for the differences in definition, the evolution of CDOR and BAs in Canada has shown remarkable similarities with the Australian experience until the post-crisis period. The difference in definition, however, have made it extremely difficult or impossible for CDOR to follow BBSW's final step and transform into a transaction-based benchmark.

7. Benchmark regulation and oversight in Canada

Global context

Over the past decade, jurisdictions around the globe have introduced regulatory regimes for financial benchmarks. The first jurisdiction to do so was the UK, which introduced its regime in 2012 after concerns arose about the integrity of LIBOR and the subsequent "Wheatley Review of LIBOR". In 2013, IOSCO published a set of 19 high-level principles for financial benchmarks, which establish an overarching framework for financial benchmarks, including for their governance by administrators and submitters (in the case of survey-based benchmarks). These principles provide guidance on the structure of a benchmark, especially emphasizing that to the extent possible it should be determined by arm's-length transactions from an actively traded market. These principles provide the basis of benchmark regulation in all jurisdictions, including the European Union (EU). The EU introduced their Benchmark Regulation (BMR) in 2016, which went into effect in 2018. This EU BMR is seen as the gold standard for benchmark regulation and it forms the basis for the Canada's new benchmark regulation.

Canadian benchmark regulation and administrative oversight

CDOR's oversight framework contains three key elements: (i) the Office of the Superintendent of Financial Institutions' (OSFI) supervisory framework, (ii) the Canadian Securities Administrators' (CSA) multilateral instrument for designated benchmarks and benchmark administrators, and (iii) Refinitiv's code of conduct for benchmark contributors.

The first part of this framework relates to the governance and risk controls surrounding banks' CDOR submission process: OSFI's E-20 guidelines for CDOR benchmark-setting submissions was introduced in September 2014. These guidelines include specific requirements for contributing banks on Governance, Internal Controls, Internal Audit, and OFSI's Supervisory Assessment.

The second part of Canada's framework is the CSA's Multilateral Instrument 25-102. Based on EU benchmark regulation, MI 25-102 was adopted by securities regulatory authorities in seven Canadian provinces in April 2021 and was subsequently adopted by securities regulatory authorities in two Canadian territories. The rule sets out requirements that apply to benchmark administrators, contributors, and certain regulated users of benchmarks that have been designated by provincial securities authorities. The rule is meant to improve the legal basis on which provincial securities authorities can take enforcement or other regulatory action against these parties.

MI 25-102 is a designation-based regime. Similarly, to the EU benchmark regulation, when a benchmark takes on a more important role in an economy, it can be designated under MI 25-102 as "critical" and be subjected to a higher level of regulatory scrutiny. On September 15, 2021 the Ontario Securities Commission (OSC) and the Autorité des marchés financiers (AMF) designated CDOR as a critical interest rate benchmark and designated Refinitiv Benchmark Services (UK) Limited (RBSL) as a designated benchmark administrator. This designation is a key development for CDOR because, while CDOR and its

administrator have been regulated by UK authorities (RBSL is based in the UK), CDOR is not viewed as a critical benchmark in the UK due to the more limited use of CDOR by UK based entities. Both LIBOR and Euribor are for example deemed a critical benchmark in their respective jurisdictions by their regulatory authorities.

The final element of Canada's framework for benchmark oversight is RBSL's CDOR Contributors Code of Conduct mentioned in Section 4.2. The Code was first developed voluntarily by the CDOR contributing banks in 2013-14 through the Investment Industry Regulatory Organization of Canada (IIROC). Banks that submit to CDOR agree to adhere to this code of conduct, which includes minimum standards for submission methodology, internal oversight, and record retention. The code was later formally adopted by Thomson Reuters (Refinitiv) when it became the administrator for CDOR at the end of 2014. To reflect the introduction of MI 25-102, Refinitiv released an updated version of the Code in September 2021. All six banks have attested that they will adhere to the updated code.

8. CDOR and global best practices for benchmarks

The primary focus of CARR's analysis is on CDOR's efficacy and resiliency as a benchmark going forward, but it is also the extent to which CDOR meets the new, higher standards that global benchmarks are now expected to meet.

Recent reforms to CDOR have focused on the submission process rather than its underlying structure, including the BA market. The CDOR submission process has been subject to enhanced oversight, including a code of conduct initially published by IIROC in 2014 and new supervisory guidelines from OSFI in 2014. However, a fulsome analysis of the architectural underpinnings of CDOR was deemed prudent given the global reforms to banking regulation and the changes made to the submission processes of other major global credit sensitive benchmarks.

The analysis pointed to four aspects of CDOR's architecture that could potentially pose major risks to its future robustness. These risks are discussed in detail below.

8.1 Transparency

Due to its definition and role as a lending rate, the way CDOR is set lacks transparency. As a result, market participants cannot replicate, or invest in, the published CDOR rate. This is not the case for other global credit sensitive benchmarks like BBSW that represent borrowing rates and which, as a result, are now more closely tied to actual arm's-length transactions.

Most global benchmarks have transitioned over the last few years to be more transaction-based (through defined waterfalls of input data) or to be purely transaction-based, with each day's settings being based on actual arm's-length transactions that occur on the market. Such purely transaction-based benchmarks include the US Secured Overnight Financing Rate (SOFR) and Canada's CORRA, both of which are based on overnight repo market transactions.

Since CDOR is a lending rate and is set predominantly using expert judgement rather than specific observable market transactions, it lacks the transparency that is now a feature of other critical global benchmarks. IOSCO, a global consortium of securities regulators, developed a set of principles for financial benchmarks in 2013. A key feature of these principles is that benchmarks should be based on a hierarchy of data inputs, with data from market transactions being seen as the highest-quality input and expert

judgement being seen as the lowest-quality input. IOSCO's principles say that benchmarks should be set based on transaction data because it can be easily observed and monitored, as well as audited or reviewed by regulators. While efforts have been made since 2014 to provide controls and structure around the expert judgement used to determine CDOR submissions, initially through a voluntary code of conduct (recently refined by RBSL to incorporate the new Canadian benchmark rules), expert judgement is nonetheless seen globally as a less desirable benchmark input. This is especially true for benchmarks that are deemed critical.

IOSCO also underscores the importance of "data sufficiency" including the requirement that the transactions that support a benchmark must be sufficient in both normal functioning markets as well as in stress periods.[25] This is of particular concern for CDOR. Although CDOR does not tie in directly to BA securities, BAs provide a valuable input into the expert judgement of CDOR setters, so sufficient BA transaction volumes are needed to support the robustness of CDOR. The COVID pandemic provided us with a unique window into a market stress scenario for BA volumes. The Investment Industry Regulatory Organization of Canada (IIROC) publishes, on a T + 1 basis for informational purposes only, a transaction based 1- and 3-month BA rate based on BA transactions reported to its Market Trade Reporting System.[26] If there is inadequate volume on a given day, IIROC publishes the prior day's rate rather than one based on that day's transactions. In March 2020, IIROC was not able to publish a new 3-month BA rate for 7 consecutive days as their minimum criteria was not met. This was the first real test of BA volumes in a crisis since IIROC began publishing BA data in January 2019. CARR therefore had additional concerns related to the transparency of CDOR, particularly in the 3-month tenor, given the lack of data resiliency of longer-dated BA securities in stress conditions.

8.2 Proportionality

Benchmark regulators are broadly concerned with the "inverted pyramid" issue, succinctly described in IOSCO's 2021 statement on credit sensitive benchmarks:

> "*The disproportionality between the low/modest volume of transactions underlying credit sensitive rates and the increasingly higher volumes of activity in markets referencing them - the so-called inverted pyramid problem - raises concerns about market integrity, conduct risks and financial stability risks. The decline in the underlying activity of some of the credit sensitive rates during stress periods, such as the COVID-19 pandemic, raises additional regulatory concern.*"

CARR's survey on the size and scope of CDOR illustrate the extent to which this is currently an issue for CDOR: $70-100 billion worth of BAs (sold to market) provide the pricing mechanism for over $20 trillion in gross notional exposure of products directly referencing CDOR. There is also a related maturity mismatch between the term of the underlying loan drawdowns and the CDOR rate that is referenced by most products: nearly 90% of the CDOR exposure reference the 3-month CDOR rate, but approximately 90% of the traded BA volume is in the 1-month BA tenor since corporates primarily draw down funds for a 1-month term.

To address the inverse pyramid problem, IOSCO's Principle 6 says that the design of a benchmark should take into account relevant factors including the "relative size of the underlying market in relation to the volume of trading in the market that references the Benchmark". In other words, the greater the extent

[25] See IOSCO's Principle 7.
[26] For more details see IIROC's BA data website.

to which an inverted pyramid occurs, the more robust the design of the underlying benchmark should be. As noted earlier, however, CDOR's settings are rooted predominantly in expert judgement, the least preferred benchmark input according to IOSCO's Principle 8 (Hierarchy of Data Inputs). CDOR's inverted pyramid problem is thus exacerbated by its lack of transparency.

8.3 Sustainability

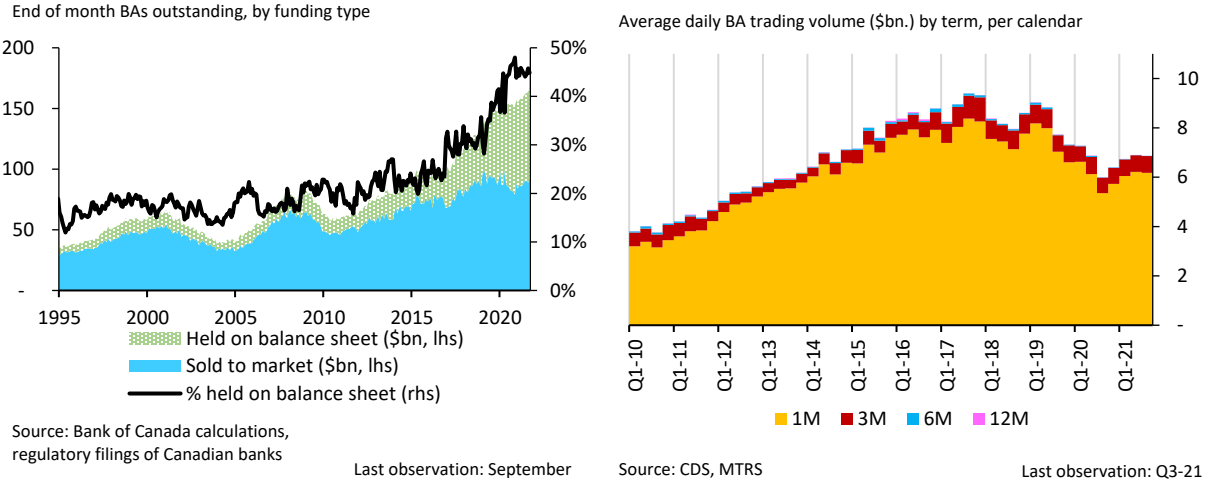
CDOR was developed as a key component of the BA lending model, with the goal of providing an agreed-to pricing benchmark that was publicly available. Its existence depends on Canadian banks continuing to support the BA lending model. Bankers' acceptances used to be a much more widely used globally as a funding instrument for bank loans. However, as loan and bank funding markets developed, and as banks wanted to have a better match between their assets and liabilities, more and more jurisdictions moved away from the BA lending model.

The introduction of Basel III banking rules after the financial crisis, particularly the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR), have made BAs a considerably less-attractive funding mechanism. The LCR and NSFR were developed to discourage banks from relying on short-term funding, especially for longer-dated assets, and thus penalize banks for issuing short-term debt instruments like BAs. After Basel III was introduced, Australia, the last major jurisdiction to widely use the BA lending model, fully moved away from using BAs for bank lending. [27] Today, Canada is the only major jurisdiction where BAs remain the commonly-used platform for bank lending.

In Canada, the future of BAs is also not certain. As noted above, Basel III regulations have reduced the effectiveness of BAs as a short-term funding tool for bank treasuries. Canadian banks have a clear preference to separate loan drawdowns from their funding and to increase the term of their funding, as is the case for banks globally and which has been demonstrated by the Australian example described in Box 2. This preference in Canada is clearly demonstrated by both the growth of CDOR-based loans that do not create a BA and the increased holding of BAs on Canadian banks' balance sheet (which has risen from about 20% of issuance prior to 2017 to about 43% today (Figure 7 LHS)), as well as their desire to issue longer dated (3-months and longer) BDNs as their primary Canadian short term unsecured funding tool. Should these trends continue, the amount of BAs sold into the market will continue to decline in the future, with the shorter-dated BAs being replaced by longer dated BDNs. This would substantially impact the integrity of CDOR, particularly given the proportionality and transparency issues noted above, and diminish the viability of CDOR under its current definition. BA daily trading volumes have already begun to decline and are down over 25% since peaking in 2017 (Figure 7 RHS).

[27] In Australia, the shorter-dated bank acceptances were replaced by longer-dated negotiable certificates of deposit and as a result the tenor of the money market funding instruments issued by the banks lengthened from 1-month to 3- to 6-months.

Figure 7: BA secondary market trading volumes and share of BAs held on balance sheet



8.4 Fragility

LIBOR's cessation was caused by banks no longer wishing to provide a LIBOR submission to the voluntary rate, despite efforts by LIBOR's administrator to reform the rate, which included the introduction of a clear waterfall of inputs on which they could base their submissions. CDOR's survey-based panel began to shrink in 2012 and has now been reduced in size from nine to six banks, with the departure of Merrill Lynch Canada (2012), Deutsche Bank Securities (2014) and HSBC Bank Canada (2018). Since the highest and lowest observations are dropped when CDOR is calculated, this means a maximum of four banks provide data for each CDOR setting, which are used to price over $20 trillion in gross notional exposure in the financial system. If the panel were to shrink further, it could undermine the credibility of CDOR. The increased regulatory burden associated with the September 2021 designation of CDOR as a "critical interest rate benchmark" may impact the desire of some banks to remain on the voluntary CDOR panel over the long term. The loss of even one contributing bank would potentially imperil the viability of CDOR.

With the end of LIBOR soon approaching, global liquidity is also shifting from credit sensitive rates like USD LIBOR to risk-free rates like SOFR. As this occurs CARR expects Canadian financial products to increasingly reference Canada's risk-free rate, CORRA. This shift in global liquidity to RFRs, including CORRA, could also reduce the need to continue to contribute to CDOR.

Departures by contributing banks could begin at any time, although contributing banks are required to provide RBSL at least six months' notice before stopping their contribution. Each contributing bank departing the panel would increase the frailties associated with the remaining panel, making it more likely that the remaining banks would want to potentially also leave the panel.

9. Potential for reforming CDOR

Given the issues outlined above, CARR discussed the potential for reforming CDOR, similar to what had been done with CORRA and other global credit sensitive benchmarks. This included either introducing a transaction-based waterfall methodology similar to the approaches followed by LIBOR and Euribor, or by making it primarily transaction based as had been done by ASX with BBSW.

9.1 Viability of a waterfall methodology

In reviewing the submission methodology supporting CDOR settings, it was evident that CDOR submitters use a waterfall philosophy governed by expert judgement rather than the strictly delineated waterfalls used by the IBA for LIBOR (Box 1 in Section 6) and EMMI for Euribor. In practice, the factors that influence CDOR submissions vary depending on the strength of those influences at any given time. These factors can be shorter-term influences like supply and demand for BAs or the market price for bank credit. They can also be longer-term or persistent influences like the impact of regulation or sustained extraordinary monetary policy.

The flexibility in CDOR submitters' waterfall approach results from the definition of CDOR. Since CDOR's definition is not tied to specific, observable transactions, it is not possible to create a binding waterfall of inputs to CDOR submissions in which the first step is based on transactions. The second step in LIBOR and Euribor waterfalls is derived from market transactions using interpolation methods. For example, if a submitter has an observed 1-month and 3-month rate, a submission for a 2-month rate could be a linear interpolation between the two. However, without a rich set of transaction data, it is impossible to derive or interpolate to a level based on two data points. This leaves CDOR as a benchmark inherently reliant upon expert judgement. CARR concluded that CDOR does not definitionally or practically support the development of a formal waterfall of data inputs.

9.2 Viability of a transaction-based approach

CARR also explored the viability of redefining CDOR to be fundamentally transaction based, as in Australia. Two critical issues arose when considering this option.

The first issue was that, if CDOR reflected the rate at which BA securities transacted in the market, it would be a "legally" different benchmark. After discussing the issue with CARR's Accounting, Tax and Regulatory subgroup, CARR concluded that this redefinition would require a material change to CDOR's stated description and therefore would constitute a new benchmark. Apart from the "legal" definition, economically a benchmark based on BA security transactions would differ from the existing level of CDOR by the current CDOR/BA basis. When CORRA or the UK's SONIA were reformed, the difference between the old and new benchmarks were around 1bp or less. With a current CDOR/BA basis over 20 bps, a change to BA transactions would constitute an economically different rate and it would likely lead to contract frustration.

The second issue is that, even if the CDOR/BA basis were small, CDOR's long term viability is imperiled by the fact that BAs are no longer an effective funding tool for the banks and their use would be expected to decline in the future. This issue was explained in greater detail in Section 5.2. CARR also considered that bank treasurers could choose to continue to issue BAs for uneconomic reasons. In this scenario, Canada would still be left with CDOR's proportionality issue, wherein the predominant volume of BA issuance is 1-month and the vast majority of the exposure is tied to 3-month CDOR.

CARR concluded that while a transaction-based approach is architecturally appealing, in the case of CDOR it is both "legally" and economically impossible without creating a new benchmark.

10. Recommendations

10.1 Background to the recommendation

CARR's analysis of CDOR clearly demonstrates that CDOR, as currently structured, is not a sustainable benchmark over the longer-term. CARR also concluded that reforming CDOR is not an option.

The issues highlighted in the above sections are expected to deteriorate over time. CDOR's reliance on expert judgment means that it lacks transparency relative to other benchmarks. A small number of BA transactions are used to determine a benchmark that affects the valuations of trillions of dollars' worth of exposure in the Canadian financial system. This situation will be exacerbated in the future as the number of bankers' acceptances sold into the market shrinks. The structural issues with BAs and CDOR, described in this paper, may compel CDOR contributing banks to depart the voluntary panel at any time in the future. If contributing banks withdraw from the panel, CDOR's fragility will increase, potentially impelling other banks to also leave. A disorderly collapse of CDOR would pose systemic risks to the Canadian financial system.

If CDOR is expected to eventually cease, CARR believes a carefully managed prescribed transition is both necessary and prudent. A disorderly collapse of the CDOR panel would have significant financial and reputational repercussions for the Canadian financial system. For example, many contracts and financial instruments reference CDOR but do not have adequate legal or contractual language to describe what happens if CDOR is permanently ceased. While these contracts and financial instruments could be renegotiated, it would take a significant amount of time to do so. Carefully managing the transition away from CDOR, as authorities and the private sector have done for LIBOR, could help mitigate the risks to the Canadian financial system and its participants.

Given these conclusions, CARR deliberated on the best approach to pre-emptively address them, specifically whether to recommend that CDOR should be reformed or discontinued. Reforming CDOR to align with other global critical benchmarks and become primarily a transaction-based benchmark would require substantial changes to CDOR's definition that would effectively render it a new benchmark given the large CDOR/BA basis that exists. Such a reform would require CDOR's definition to change from being a lending rate to a borrowing rate. However, even after these changes, the rate would remain vulnerable to a decline in the underlying BA market.

The other option CARR contemplated was to recommend that CDOR be discontinued. This discontinuation would need to be carefully managed: time would need to be provided for Canada's public and private sectors to develop tools, recommendations, and timelines to provide a smooth transition, much as occurred for LIBOR. Alternative lending products would also need to be developed by market participants. CARR felt that a CDOR transition sequenced after the end of the LIBOR transition would allow Canada to leverage the experience and lessons learned in the different LIBOR jurisdictions.

CARR's recommendation is the culmination of a tremendous amount of data analysis, economic analysis, due diligence and discussion with a wide variety of stakeholders in the Canadian financial system including banks, pension funds, insurance companies, asset managers, corporate borrowers, and public sector entities. These recommendations for the future of CDOR have been unanimously endorsed by CARR and CFIF members.

10.2 CARR Recommendation

CARR recommends that RBSL should cease the calculation and publication of CDOR after June 30, 2024. CARR proposes a two-staged approach to the transition from CDOR. The first stage would run until June 30, 2023, and the second and final stage would end on June 30, 2024. By the end of stage one we would expect all new derivative contracts and securities[28] to have transitioned to using CORRA, with no new CDOR exposure after that date except with limited exceptions. Those exceptions include derivatives that hedge or reduce CDOR exposures of derivatives or securities transacted before June 30, 2023 or in loan agreements[29] transacted before June 30, 2024. The second stage to June 30, 2024 would provide firms with additional time to transition their loan agreements and deal with potential issues related to the redocumentation of "legacy" securities. The longer time window would also allow for more existing CDOR-based securities exposures to mature. Approximately $95 billion in floating rate notes and securitized products referencing CDOR would remain outstanding after the end-date of June 30, 2024.

The decision to cease CDOR ultimately lies solely with RBSL and CARR's recommendation does not constitute a public statement or publication of information that CDOR has ceased or will cease. As outlined in Section 12.2, for RBSL to cease publication of CDOR, it will first need to determine that it is necessary to cease permanently or indefinitely the provision of the benchmark, including whether cessation is the appropriate course of corrective action. RBSL is required to consult on any proposed end-date and later publish a notice of an end-date ahead of any actual cessation date. It is this notice that would trigger the credit spread adjustment calculation under ISDA's derivative CDOR fallbacks, as well as CARR's recommended CDOR floating rate note fallbacks. The actual fallbacks would only apply once CDOR is no longer published. CARR expects Refinitiv to provide more clarity as to their actions in the near future.

The recommended timeline would provide time for stakeholders to transition CDOR exposures to other alternative benchmarks. In the case of Canadian dollar derivatives and securities, CARR expects these products will transition to CORRA (calculated in-arrears) and can do so within the shorter timeframe given the experience and lessons learned from the LIBOR transition. Loan products may also transition to CORRA in-arrears, but CARR will consider the various options for loan products and will consult by the end of Q1-2022 on the potential need for any additional new benchmarks for loan products, including a forward-looking "term CORRA".[30] Any new Canadian benchmarks would be expected to be IOSCO compliant and meet new global standards for robustness. If they became broadly used in the Canadian financial system, they would likely be designated under the recently introduced Canadian benchmark regulation.

Should RBSL agree with CARR's analysis and recommendations and announce that they will discontinue the publication of CDOR following a public consultation, the transition from CDOR to CORRA will benefit from the resources dedicated to the ongoing LIBOR transition. It will also benefit from work already done by the International Swaps and Derivatives Association (ISDA) to facilitate the move to overnight risk-free rates. CDOR was included, along with other major global credit sensitive benchmarks, in ISDA's recently

[28] Securities include any financial instruments that reference CDOR and that are considered to be securities under any applicable securities law.
[29] Loan agreements include any credit facilities between a corporate borrower and a bank or a syndicate of banks that use CDOR as a reference rate, or those with a private lender.
[30] The usage of a potential "term CORRA" could be restricted to certain uses, such as loans and the hedging of those loans.

completed work to develop and incorporate more robust fallbacks to derivatives transacted under ISDA agreements.

CARR has already laid some of the groundwork required to support a successful transition having completed its work on enhancing CORRA, provided recommended robust CDOR fallbacks and CORRA conventions for those products currently referencing CDOR. However, CARR recognizes that there is much work yet to be done should RBSL cease publication of CDOR, including infrastructure changes, potential changes to governing laws or regulations, and the potential development of new benchmarks. All of these factors have been considered in the development of the two-stage recommended transition plan.

CARR would continue to work with CDOR's stakeholders, including Canadian authorities, to develop the tools and milestones necessary to enable a smooth transition away from CDOR. To this end, and to reduce the risks to Canadian financial markets posed by an abrupt transition, CARR expects that the six CDOR contributing banks will continue to remain on the CDOR panel and will support BA issuance, to the extent possible, until CDOR's recommended cessation date of June 30, 2024.

While CARR's recommendation is only with respect to CDOR, the end of CDOR may have implications for the issuance of BAs, with banks potentially moving away from issuing short-dated BAs in favour of other forms of funding. CFIF will work with industry to assess the potential impact of reduced BA issuance and determine what additional work, if any, is needed to support the investment community in adapting to any resulting changes.

11. Preparation for transition

As the global transition away from LIBOR has illustrated, moving away from a major interest rate benchmark is complex and requires collaboration across a range of stakeholders. The degree of complexity depends on the types of products and market participants referencing the benchmarks, including whether there are retail products referencing the benchmark. In comparison to the transition away from the five LIBOR currencies, should RBSL cease the publication of CDOR, a Canadian transition is simpler given that financial products referencing CDOR are chiefly institutional (rather than retail) and comparatively short dated. The Canadian transition would also benefit from the work already done by CARR over the past three years to enhance CORRA and support its usage, and the work done globally to transition from LIBOR to alternative RFRs. Notwithstanding the comparative advantages noted above, CARR understands that CDOR is endemic to the existing financial infrastructure and changing such a core element of the financial architecture must be well planned and effectively executed.

Notwithstanding that RBSL has a specific governance process to follow,[31] CARR has and will continue to prepare the Canadian market for a smooth transition in the event that RBSL ultimately agrees with CARR's recommendation. These preparations are described below.

[31] For RBSL to cease publication of CDOR, it will first need to determine that it is necessary to cease the provision of the benchmark, including whether cessation is the appropriate course of corrective action. RBSL is required to consult on any proposed end-date and later publish a notice of end-date ahead of any actual cessation date. It is this notice that would trigger the credit spread adjustment calculation under ISDA's derivative CDOR fallbacks, as well as CARR's recommended CDOR floating rate note fallbacks. The actual fallbacks would only apply once CDOR is no longer published. CARR expects Refinitiv to provide more clarity as to their actions in the near future.

11.1 CORRA has been enhanced and conventions and infrastructure have been developed

CORRA is well-known and has been a benchmark since 1997. Since its introduction, CORRA has been used as the floating rate benchmark for overnight index swaps and has been the rate for calculating the Price Alignment Interest (PAI) for CDOR-based cleared interest rate swaps since 2010.

CARR's first task as a working group was to review and, if necessary, to enhance CORRA's calculation methodology, which it did in 2019-20. This was similar to what was done in the UK with SONIA, and in contrast to what was done in the US and EU where they introduced new RFRs. Having a benchmark that is already familiar to most market participants facilitates a potentially easier and shorter transition. The Bank of Canada took over the administration of CORRA from Refinitiv in June 2020.

The Bank of Canada has also started publishing the CORRA compounded in-arrears index in April 2021 to make it easier for market participants to use CORRA in various financial instruments to calculate their payment. These types of RFR indices have been developed in other jurisdictions as well to facilitate the use of RFR across the financial system.

CARR also worked with the Montreal Exchange to develop and launch a CORRA futures contracts. While CORRA futures volume still remains low, the development work has been done and the contract is available for use.

CARR has also already developed a set of recommended market conventions/methodologies for using CORRA in certain securities or loan products, including floating rate notes and multi- and single-currency loan facilities. CARR has worked with other national working groups, including ARRC, to develop global inter-bank conventions for cross-currency basis swaps, including a CORRA convention for the Canadian dollar leg.

Some Canadian banks have already started issuing CORRA in-arrears based FRNs and the Canada Housing Trust (CHT), Canada's largest FRN issuer, recently announced that, starting in 2022, the Canada Mortgage Bonds Program will move to CORRA as the reference rate for new floating rate Canada Mortgage Bond (CMB) offerings issued by the CHT and guaranteed by CMHC. CARR's CORRA FRN conventions align with those for CHT's CMB Program. CMHC, in collaboration with the Mortgage Backed Securities Industry Association (MBSIA), has launched a new MBS pool classification for floating rate mortgages referencing CORRA.

CARR has also published recommended fallback language for CORRA-based FRNs to align with global regulatory norms and best practices.

11.2 ISDA and CARR recommended fallbacks already in place

In October 2020, ISDA published robust fallback language for derivatives governed by ISDA master agreements, including derivatives referencing CDOR. In ISDA's fallback language, if the credit-sensitive benchmark used in derivatives governed by an ISDA master agreement in a given jurisdiction ceases to be published, the derivatives' reference rate "falls back" to the jurisdiction's recommended overnight RFR (calculated in arrears) plus a credit spread adjustment (based on a five year median between the credit sensitive rate and the respective RFR) calculated and published by Bloomberg. For CDOR-based derivatives, if CDOR ceases the rate falls back to CORRA plus the applicable credit spread.

This new robust fallback language applies to any new swaps transacted after January 25, 2021. ISDA also developed a global protocol to allow the new fallbacks to be incorporated into any legacy transaction entered into before January 25, 2021. The new robust fallbacks would apply if both counterparties had signed the protocol. For centrally cleared swaps the new fallbacks would automatically apply since they have been incorporated into the various CCPs' rulebooks. Nevertheless, most major Canadian market participants active in derivatives have signed the ISDA protocol.

CARR has also published recommended fallback language for CDOR-based FRNs or bonds that reference CDOR in their structure, based on ISDA's robust fallback language. This allows for consistency and hedge effectiveness if the issuer or the investor choose to swap the underlying cash flows. This more robust fallback language and/or a prior interim language has been largely adopted by the market since May 2019. We encourage all market participants to use CARR's recommended fallback language for any future issuance of securities that reference CDOR.

CARR is also currently working on recommended CDOR fallback language for loans, however, most borrowers that have a CDOR borrowing option also have the option to draw down using the prime rate should CDOR not be available.

11.3 Employing best practices learned from the LIBOR transition

There are a number of attributes that Canada benefits from in the benchmark reform effort. They include having had an RFR already in place and used as the benchmark for Canadian dollar OIS swaps, so CARR only needed to reform its underlying methodology to ensure it was up to new global standards. Also, the use of CDOR and CORRA is largely limited to sophisticated institutional market participants and a majority of the non-derivative exposure is comparatively short dated (i.e. 3 years and less). These characteristics would all help facilitate a smooth transition. But perhaps the attribute most helpful to a successful transition derives from the lessons learned from the LIBOR jurisdictions in their transitions. A CDOR transition would benefit by being sequenced after the bulk of the LIBOR transition has taken place enabling CARR to adopt best practices and avoid unnecessary pitfalls. Some of these benefits have already been noted including a well known and robust RFR in addition to a full slate of conventions and fallbacks, but CARR also anticipates taking advantage of global best practices including the use of firm milestones through transition, a well articulated strategy with respect to a term risk free rate and the identification of issues related to accounting, tax and legacy exposures with plans to address each.

Those Canadian participants that have LIBOR exposure, have also had to go through a similar transition with respect to LIBOR so are well-versed with the issues and the work that needs to be done. In many cases they will already have LIBOR transition teams that are resolving any transition issues for LIBOR, and these teams can be leveraged for the transition away from CDOR.

Finally, as a result of the LIBOR transition, all major global infrastructures and systems have been updated to work with most global RFRs. If these infrastructures and systems are not already prepared for CORRA-based products or calculations, the system providers understand, based on their experience with the LIBOR transitions, the system changes required to move to using a new overnight benchmark. The CORRA-based overnight index swap market has been active, for shorter duration swaps, since the late 1990s, so many major active derivative participants should already be set-up to transact CORRA based derivatives.

12. Next steps

12.1 Next steps for CARR

CARR will begin an extensive outreach effort in January, through the various industry associations, to raise awareness of the need to transition from CDOR and the potential changes ahead for CDOR. CARR will also develop and consult on recommended timelines and applicable milestones in Q1-2022 to plan for a smooth and effective transition should RBSL decide to cease the publication of CDOR. This would include launching a CORRA first initiative for Canadian dollar derivatives in advance of June 30, 2023.

CARR will also begin the work of determining whether any alternative benchmarks need to be considered as part of the transition plan for loan products, or more specifically if there is a need for a forward-looking term CORRA rate to support the loan market. CARR will consult on its recommendations for alternative rates by the end of Q1-2022. CARR will also consider what potential changes, if any, may be required for revolving loan facilities that would reference either CORRA or a term-CORRA. CARR is aware of the implications for banks in benchmarking committed but undrawn loans to CORRA, as risk free rates act very differently to credit sensitive rates in times of economic or funding stress. CFIF will work with industry to assess the potential impact of reduced BA issuance and determine what additional work, if any, is needed to support the investment community in adapting to any resulting changes.

CARR has also recently restructured its Accounting, Tax and Regulation (ATR) subgroup, which will work with all stakeholders including the official sector to analyse any issues which could impede a smooth transition from CDOR, including proposing solutions to identified issues. The membership of the ATR group has been expanded to include a much broader range of stakeholders.

The key objectives of ATR are to:

- ensure there is no impediment for market participants (e.g. banks, insurance companies, corporate entities) to use CORRA as a funding/hedging instrument from accounting, tax, and regulatory perspectives; and
- understand various accounting, tax, and regulatory impacts from CDOR's cessation and identify any unintended consequences including any unique issues that may arise from transition in Canada.

If material challenges are identified, the ATR will seek to identify potential mitigants for CARR's consideration.

CARR intends to develop a set of recommendations for how and when Canadian firms should transition away from CDOR. In the meantime, market participants with exposure to CDOR should start to gain a better understanding of the upcoming changes, either by starting a dialogue with their dealers/banks, as well as participating in the various outreach activities of CARR or its members, including keeping abreast of any market notices or material published by CARR on the CARR webpage, as well as any relevant entities that are involved in the transition process including RBSL.

12.2 Regulatory requirements and RBSL governance regarding a potential cessation of CDOR

The CSA's Multilateral Instrument 25-102 (MI 25-102) *Designated Benchmarks and Benchmark Administrators* provides a number of requirements that apply to RBSL in the event of a cessation of a designed critical benchmark like CDOR. Two parts are particularly relevant to the cessation of CDOR: Parts 5 and 8.

Part 5 of the instrument requires designated benchmark administrators to publish the procedures the administrator will follow in the event of the "cessation of the designated benchmark, including procedures for advance notice of the implementation of a significant change or a cessation".

In Part 8 of MI 25-102, the CSA provides additional specific requirements for administrators of designated critical benchmarks, including that such administrators must promptly notify the regulator or securities regulatory authority of a decision to cease providing a designated critical benchmark, and that within 4 weeks of that notice, such administrators must submit a plan for how the designated critical benchmark can cease. The designated benchmark administrator must continue to provide the designated critical benchmark until the designated benchmark administrator receives notice from the regulator or securities regulatory authority authorizing the cessation or 12 months have elapsed from the submission of the plan submitted to the relevant regulator or authority (unless the written notice of cessation was extended).[32]

In line with these requirements, RBSL has published a *Benchmark Methodology Change and Cessation Policy*. This policy covers potential reasons for the cessation of a benchmark as well as the cessation procedures (and some additional procedures for critical benchmarks such as CDOR).

For RBSL to cease the publication of CDOR, it will first need to determine that it is necessary for RBSL to cease the provision of the benchmark, including whether cessation is the appropriate course of corrective action. The decision to cease the benchmark will require RBSL Board approval:

> "[I]t may be that RBSL takes the view that the Benchmark is no longer representative of its intended interest or market, and that this cannot be remedied by a corrective change to the Benchmark methodology, design, or other aspect of the processes and procedures around the creation and usage of the Benchmark. All proposed cessations are subject to final approval by RBSL's Board."

As part of this process RBSL would need to consult on any proposal to cease the publication of CDOR, before announcing their decision. If their decision was to cease CDOR they need to provide at least six months notice before doing so.

[32] Additionally, such administrators could cease providing the designated benchmark if either: 1) the designation of the benchmark was revoked or varied to reflect that the designated benchmark is no longer a designated critical benchmark; or 2) the provision of the designated critical benchmark has been transitioned to another designated benchmark administrator.

Annex 1 – CARR membership

The table below details the membership of the Canadian Alternative Reference Rate working group.

CARR has a number of subgroups and workstreams that include a much broader set of firms. CARR also regularly works with other stakeholder groups like the Canadian Bankers Association (CBA), the Canadian Bond Investors' Association (CBIA), the Canadian Treasurers Association (CTA), the Investment Industry Association of Canada (IIAC), the International Swaps and Derivatives Association (ISDA), Canadian regulatory authorities and other national benchmarks working groups.

Category	Type of firm	Firm
Co-chairs	Private Sector	CIBC
	Public sector	Bank of Canada
Buy-side	Global asset manager	Invesco
	Pension plan	AIMCO
	Pension plan	OTPP
	Pension plan	PSP Investments
	Insurance Co	Sun Life Financial
	Public sector	CMHC
	Public sector	Ontario Financing Authority
	Public sector	Quebec Ministry of Finance
	Corporate issuer	Rogers Communication
Sell-side	Big-6 bank	BMO
	Big-6 bank	NBC
	Big-6 bank	RBC
	Big-6 bank	Scotiabank
	Big-6 bank	TD Bank
	Credit Union	Central1
	International bank	Bank of America-Merrill Lynch
	International bank	Morgan Stanley
Observer	Infrastructure provider	LCH
	Infrastructure provider	Montreal Exchange
	Academic	Rotman School of Management
	Legal	McMillan LLP
	CORRA Advisory Group chair	National Bank

Annex 2 – CARR-recommended conventions and fallback language

CARR has developed a set of recommendations and tools aimed at easing the transition to CORRA, linked to below:

- Recommended legal fallback language for:
  - floating rate notes referencing CDOR
  - floating rate notes referencing CORRA
- Recommended conventions for:
  - Loans based on CORRA
  - FRNs referencing CORRA
  - Inter-bank swaps referencing CDOR and SOFR, CORRA and SOFR
- A CORRA compounded-in-arrears index published by the Bank of Canada

Annex 3 – Size and scope of CDOR and BAs

To improve CARR's understanding of the current size and scope of the use of both CDOR and BAs, it surveyed key financial institutions in Canada on CDOR-related exposures. CARR thanks all those firms that provided data for this exercise. This section provides the key statistical findings as a public good.

The data presented in this annex largely reflect positions as of end-October 31, 2020 (some institutions had slightly different year-ends and provided data as of slightly different dates). It is based on voluntary submission of data and is not to be used for commercial purposes. Numbers may not add up due to rounding.

A3.1 BA and CDOR-based assets

BA & CDOR Based Assets ($ millions)	
Loan facilities that create a BA*	**155,515**
Revolver – CDOR Screen Average	***51,356***
Revolver – Specific CDOR (i.e. of the institution)	***3,727***
Revolver – Other (e.g. BA-based rate)	***15,504***
Non-Revolver – CDOR Screen Average	***49,058***
Non-Revolver – Specific CDOR (i.e. of the institution)	***368***
Non-Revolver – Other (e.g. BA-base rate)	***19,356***
Other Loans	***16,146***
CDOR-based facilities that do not create a BA	**62,267**
Revolver – CDOR Screen Average	***20,544***
Revolver – Specific CDOR (i.e. of the institution)	***4,923***
Non-Revolver – CDOR Screen Average	***21,327***
Non-Revolver – Specific CDOR (i.e. of the institution)	***1,487***
Other Loans	***13,986***
Total	**217,782**
Loan facilities that create a BA percentage of total	***71%***

**Across all borrower types (corporate, commercial, and other).*
Note: the survey only asked for drawn amounts.
Last observation: October 31, 2020
Source: Survey data

A3.2 BA Liabilities

Bankers Acceptance ('BA') Liabilities ($ millions)						
	Underlying CDOR Tenor					
	< 1M	1M	2M	3M	6M+	**Total**
Held on Balance Sheet	1,884	56,554	408	6,054	159	**65,059**
Sold to Market	2,979	66,282	4,363	11,298	1,644	**86,565**
Total	**4,863**	**122,836**	**4,771**	**17,352**	**1,803**	**151,624**
% sold to market	61%	54%	91%	65%	91%	**57%**

Last observation: October 31, 2020
Source: Survey data

A3.3 Bearer Deposit Notes (BDNs)

Bearer Deposit Notes (BDNs) ($ millions)					
	Remaining Term				
	< 3M	3-6M	6-9M	> 9M	**Total**
Total	**9,259**	**7,807**	**157**	**8,453**	**25,675**

Last observation: October 31, 2020
Source: Survey data

A3.4 Derivatives

Centrally Cleared Derivatives ($ millions)

	Underlying Reference Rate							
	CORRA	1M CDOR	2M CDOR	3M CDOR	6M CDOR	12M CDOR	Prime	**Total**
Interest Rate Swaps	1,771,507	1,251,650	-	13,670,774	2,311	-	-	**16,696,242**
Forward Rate Agreements	-	-	-	-	-	-	-	**-**
Cross Currency Swaps	-	-	-	1,405,323	-	-	-	**1,405,323**
Other Derivatives	-	184,878	-	96,049	-	-	-	**280,927**
Total	**1,771,507**	**1,436,528**	**-**	**15,172,146**	**2,311**	**-**	**-**	**18,382,492**

Last observation: October 31, 2020
Source: LCH, CME

Exchange Traded Derivatives ($ millions)

	Underlying Reference Rate*		
	CORRA	3M CDOR	**Total**
Interest Rate Options	-	19,876	**19,876**
Interest Rate Futures	980	734,921	**735,901**
Other Exchange Traded Derivatives	-	-	**-**
Total	**980**	**754,797**	**755,777**

**Not enough observations were reported to include products referencing 1M CDOR, 2M CDOR, 12M CDOR, and Prime.*
Last observation: October 31, 2020
Source: Survey data

OTC Derivatives ($ millions)					
	Underlying Reference Rate*				
	CORRA	1M CDOR	3M CDOR	**Total**	*% CDOR*
Interest Rate Swaps**	36,652	278,189	1,092,009	**1,406,850**	*97%*
Polled FIs	*21,992*	*79,590*	*374,902*	***476,483***	*95%*
Other FIs	*19,788*	*130,399*	*549,390*	***699,577***	*97%*
Non-FI (Corporate, etc.)	*5,868*	*107,995*	*355,168*	***469,031***	*99%*
Forward Rate Agreements**	-	-	19,143	**19,413**	*100%*
Polled FIs	-	-	*6,526*	***6,526***	*100%*
Other FIs	-	-	*13,930*	***13,930***	*100%*
Non-FI (Corporate, etc.)	-	-	*1,950*	***1,950***	*100%*
Interest Rate Options**		8,186	19,696	**27,881**	*100%*
Polled FIs	-	*1,356*	*14,506*	***15,862***	*100%*
Other FIs	-	*1,795*	*5,782*	***7,577***	*100%*
Non-FI (Corporate, etc.)	-	*5,713*	*6,661*	***12,374***	*100%*
Cross Currency Swaps**	4	24,710	1,245,006	**1,269,720**	*100%*
Polled FIs	-	*27,905*	*1,152,868*	***1,180,773***	*100%*
Other FIs	*2*	*1,502*	*471,021*	***472,525***	*100%*
Non-FI (Corporate, etc.)	*2*	*9,256*	*197,551*	***206,809***	*100%*
Total Return Swaps**	11,049	16,707	16,081	**43,837**	*75%*
Polled FIs	-	*1,668*	*9,761*	***11,429***	*100%*
Other FIs	*4,579*	*14,665*	*5,390*	***24,634***	*81%*
Non-FI (Corporate, etc.)	*6,470*	*1,208*	*5,811*	***13,489***	*52%*
Other OTC Derivatives**	89	25,220	36,991	**62,300**	*100%*
Polled FIs	-	*813*	*22,290*	***23,103***	*100%*
Other FIs	*89*	*11,136*	*18,095*	***29,320***	*100%*
Non-FI (Corporate, etc.)	-	*13,677*	*7,752*	***21,429***	*100%*
Total**	**47,794**	**353,012**	**2,428,926**	**2,829,732**	***98%***

** Not enough observations were reported to include products referencing 2M CDOR, 12M CDOR, and Prime.*
*** Totals are adjusted for the double counting of Polled FI positions.*
Last observation: October 31, 2020
Source: Survey data

A3.5 Deposits

Deposits ($ millions)				
	Remaining Term			
	< 90d	90+d	**Total**	*% <90d*
Floating Rate Deposits and Term Deposits	1,199	2,680	**3,879**	*31%*
CORRA	-	1,129	**1,129**	
Bank of Canada Target Rate	-	108	**108**	
1M CDOR	684	994	**1,678**	
Other CDOR rates	515	449	**964**	
Interest Bearing Accounts	46,596	1,126	**47,722**	*100%*
CORRA	150	- *	**150**	
Bank of Canada Target Rate	34,761	-	**34,761**	
1M CDOR	11,685	- *	**11,685**	
Other CDOR rates	-	-	**-**	
Other Deposits	2,229	3,678	**5,907**	*38%*
CDOR rates	-	3,678	**3,678**	
Other non-CDOR rates	2,229	-	**2,229**	
Total	**50,024**	**6,358**	**56,382**	***89%***
% CDOR	*26%*	*81%*	***32%***	

** Not enough observations reported to be included*
Last observation: October 31, 2020
Source: Survey data

A3.6 Securitized products

Securitized Products ($ millions)						
	Remaining Term					
	< 1Y	1-3Y	3-5Y	> 5Y	**Total**	*% CDOR*
Asset-Backed Commercial Paper	26,672	1,240	553	- *	**28,465**	*81%*
Mortgage-Backed Securities	6,222	26,784	22,157	-	**55,163**	*100%*
Asset-Backed Securities	159	398	48	7,398	**8,003**	*100%*
Other Securitized Products**	501	24,839	9,723	697	**35,760**	*92%*
Total	**33,555**	**53,261**	**32,481**	**8,198**	**127,495**	***80%***

** Not enough observations reported to be included*
***Commercial MBS, CMOs, CLOs*
Last observation: October 31, 2020
Source: Survey data, CMHC

A3.7 Floating Rate Notes (FRNs)

Floating Rate Notes ($ millions)

	Remaining Term									
	< 1Y		1-3Y		3-5Y		> 5Y		**Total**	
	Amount	# of Sec.	Amount	# of Sec.	Amount	# of Sec.	Amount	# of Sec.	**Amount**	**# of Sec.**
Canadian Government	**13,315**	**5**	**29,118**	**14**	**19,433**	**34**	**-**	**-**	**61,865**	**28**
CORRA	-	-	*100*	*1*	-	-	-	-	***100***	***1***
1M CDOR	-	-	-	-	-	-	-	-	**-**	**-**
3M CDOR	*13,315*	*5*	*29,018*	*13*	*19,433*	*9*	-	-	***61,765***	***27***
Other CDOR	-	-	-	-	-	-	-	-	**-**	**-**
Canadian Corporate	**31,888**	**64**	**59,513**	**57**	**13,119**	**22**	**54,751**	**72**	**159,271**	**215**
CORRA	-	-	-	-	-	-	-	-	**-**	**-**
1M CDOR	*13,738*	*19*	*8,000*	*4*	*3*	*1*	-	-	***21,786***	***24***
3M CDOR	*18,105*	*45*	*51,498*	*50*	*13,116*	*21*	*53,550*	*68*	***136,268***	***184***
Other CDOR	-	-	*15*	*3*	-	-	*1,202*	*4*	***1,217***	***7***
Maples	**-**	**-**	**6,603**	**10**	**2,500**	**3**	**3,800**	**5**	**12,903**	**18**
CORRA	-	-	*3*	*1*	-	-	-	-	***3***	***1***
1M CDOR	-	-	-	-	-	-	*500*	*1*	***500***	***1***
3M CDOR	-	-	*6,600*	*9*	*2,500*	*3*	*3,300*	*4*	***12,400***	***16***
Other CDOR	-	-	-	-	-	-	-	-	**-**	**-**
Total	**45,202**	**69**	**95,233**	**81**	**35,051**	**34**	**58,551**	**77**	**234,038**	**261**
% CORRA	-	-	*0%*		-	-	-	-	***0%***	***1%***
% 1M CDOR	*60%*		*8%*		*0%*	*3%*	*0%*	*1%*	***10%***	***10%***
% 3M CDOR	*40%*		*91%*		*99%*	*97%*	*97%*	*94%*	***90%***	***87%***
% Other CDOR	-	-	*0%*		-	-	*2%*	*5%*	***1%***	***3%***

Last Observation: October 31, 2020
Source: Bloomberg