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Tracking the transition from CDOR to CORRA

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This document is intended to provide a high-level summary of the interest rate benchmark transition ongoing across global financial markets, with a particular focus on the Canadian transition away from CDOR to CORRA. This document is organized as follows: The first section provides global context for the transition efforts. The second section focuses on Canada's experience. The third section examines the adoption of CORRA-based products in Canada's financial markets. Finally, the appendix provides a (non-exhaustive) list of resources with more details on key aspects of the transition.

The global context

Interest rate benchmarks have been under scrutiny for more than a decade. Issues initially came into focus in the aftermath of the Global Financial Crisis when it was uncovered that LIBOR—the world's preeminent benchmark interest rate—had been manipulated by panel institutions. It was alleged that banks submitted artificially low borrowing costs to: (a) project financial strength and soundness while the financial crisis created tremendous uncertainty and/or (b) to realize gains on LIBOR-linked derivative products sometimes via coordinated manipulation with other institutions.

In 2012, the UK Financial Services Authority's (FSA) *Wheatley Review of LIBOR*, triggered by the LIBOR-manipulation scandal, was published. Alternatives to LIBOR were discussed but the final recommendation was for LIBOR to be retained as a benchmark interest rate but with a comprehensive reform. Recommended changes included a transfer of administration from the British Bankers' Association to an independent party, stricter submission standards, using a more transactions-based approach, ceasing publication of some currencies and maturities where underlying trade data were deemed insufficient and the continued consideration into the long-term future and appropriateness of LIBOR as a benchmark rate.

In addition to the mistrust the scandal generated, unsecured interbank lending—the initial use case for LIBOR—was in decline, partially in response to regulation imposed in the aftermath of the Global Financial Crisis. Liquidity in longer maturity settings worsened as banks generally moved towards shorter-term funding sources. The result was fewer panel banks submitting rates to the LIBOR administrator and those that did increasingly relied on "expert judgement". By mid-2013 and owing to these factors, five of the ten currencies that had once been reported were discontinued (NZD, DKK, CAD, SEK, AUD) and several maturities were dropped. The number of currency-maturity pairs declined from 150 to 35.

In July 2013, the International Organization of Securities Commissions (IOSCO) *Principles for Financial Benchmarks* final report was released, garnering approval from the G-20 and Financial Stability Board (FSB). This called for a benchmark with strong governance arrangements devoid of conflicts of interest, a transparent and transactions-based design, an unambiguous methodology and an accountability framework that allows for a straightforward auditing procedure.

In 2014, the FSB presented *Reforming Major Interest Rate Benchmarks*, describing the findings of the OSSG's research on the three largest IBOR's (LIBOR, EURIBOR and TIBOR). The FSB's report endorsed the adoption of the IOSCO Principles for Financial Benchmarks and found that, while progress had been made by IBOR administrators in improving each of the benchmark rate's quality, there was more to be done to ensure the principles would be adequately implemented. The report ultimately recommended a multiple-rate approach, whereby existing IBOR's would be strengthened to meet IOSCO Principles and an additional, risk-free rate would be developed that would be better-suited for many derivative transactions (in the case of USD LIBOR, that risk-free rate turned out to be the Secured Overnight Financing Rate, or SOFR).

For the following three years, the focus shifted from a broader, global analysis to individual jurisdictions. Benchmark administrators focused on reforming existing IBORs, generally to make them more transaction based. Meanwhile, central banks initiated working groups to establish alternative reference rates compliant with the IOSCO Principles. Industry groups focused on developing more robust fallback language for derivative and cash products in case of discontinued rate publication. During these years, the conventional wisdom was that most nations would operate under a multiple-rate system consisting of both an IBOR-style rate and a new or already-existing (but refined) risk-free rate.

This was upended in July 2017, when Andrew Bailey of the UK's Financial Conduct Authority (FCA) announced that it would not compel panel banks to provide LIBOR quotes beyond the end of 2021. While the Intercontinental Exchange (ICE) said it intended to continue publishing LIBOR (assuming banks continue to provide submissions on an entirely voluntary basis), the now-BoE Governor's speech generated a greater sense of urgency among policymakers, industry groups and financial market participants to ensure a replacement rate would be ready by 2022. By all accounts, this would prove to be the death blow for IBOR-style interest rates.

The Canadian experience

Canada's dominant benchmark interest rate was the Canadian Dollar Offered Rate (CDOR). While there are obvious similarities between LIBOR and CDOR, there are some fundamental differences. CDOR is a committed *lending rate*, while LIBOR is a *borrowing rate*. CDOR is the rate at which banks are willing to extend credit to corporate clients utilizing a Bankers' Acceptance facility. LIBOR is intended to reflect the rate at which a contributor believes it can borrow from other financial institutions. Still, there are/were some considerable issues with CDOR.

Like LIBOR, CDOR is largely reliant on "expert judgement" and thus, not market-determined or based on a large volume of observable transactions. Its survey-based nature—there are just six submitting institutions—mean it is exposed to manipulation risk and not consistent with global best practices. Proportionality is also a concern. In other words, the $70-$100 billion in BAs sold to investors each year became the basis for over $20 trillion in financial products directly referencing CDOR. Moreover, while 90% of CDOR exposure had been based on the 3-month term, 90% of BA trading volumes were in the 1-month sector. Additionally, the BA lending model is no longer seen as an ideal way for banks to lend to corporate clients in the Basel III regulatory environment. The Liquidity Coverage Ratio and the Net Stable Funding Ratio made BA issuance more balance sheet intensive, effectively penalizing banks for issuing these products.

Canada's transition efforts really began in 2018 when the Bank of Canada and the Canadian Fixed Income Forum (CFIF) established the Canadian Alternative Reference Rate Working Group (CARR) to "identify and seek to develop a new term risk-free Canadian dollar interest rate benchmark". Not long after CARR's establishment, an enhanced version of the already existing Canadian Overnight Repo Rate Average (CORRA) was proposed as the Canadian overnight risk-free benchmark rate. At the time, it was expected that CDOR would continue to operate alongside CORRA.

What is (enhanced) CORRA?

CORRA is Canada's overnight risk-free rate that represents the cost of overnight lending via general collateral repo transactions secured by Government of Canada treasury bills and bonds. The transactions on which CORRA is set are for an overnight term and same-day settlement. CORRA tends to track very closely to, but necessarily exactly match, the Bank of Canada's overnight target.

Under the "old" CORRA, the rate was calculated as the volume-weighted average of overnight repo transactions collateralized by general Government of Canada securities, as reported by designated inter-dealer brokers. This methodology was based on a small number of repo transactions conducted through a limited set of counterparties which often resulted in an insufficient transactions volume to be compliant with the IOSCO Principles.

Fulfilling CARR's mandate, a number of recommendations were made to enhance CORRA to make it more robust and reliable. Firstly, it recommended expanding the counterparty types to include any GoC repo transaction between unaffiliated parties. To prevent 'special' securities from unduly influencing the rate, CARR recommended using a volume-weighted trimmed median whereby the lowest 25th percentile of trades (by repo rate), would be removed from the calculation. Ultimately, these enhancements were approved by the Canadian Fixed-Income Forum and were implemented starting in June 2020.

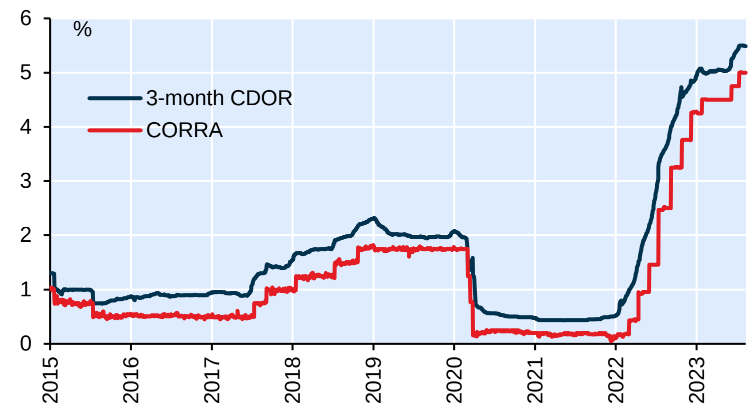
Proposed enhancements to CORRA were unanimously approved by CFIF and the Bank of Canada announced it would become the administrator of CORRA, taking over from Refinitiv. Helping to develop the CORRA environment, the Montreal Exchange launched three-month CORRA futures in June 2020 (one-month futures would eventually follow as well). A CORRA compounded index also began to be published in 2021. Throughout this time, CARR facilitated the transition to CORRA by publishing recommended conventions for FRNs, loans, swaps and other financial market instruments as well as developing contingencies (i.e., fallback language) in the event that CDOR became discontinued.

Meanwhile, the future of CDOR increasingly came into question as CARR's mandate was also expanded to include an "in-depth analysis of CDOR". Shortly after, in May 2021, Refinitiv announced it would no longer be publishing 6- and 12-month CDOR settings. Ultimately, CARR's in-depth analysis determined that it was not possible to reform CDOR into a sustainable benchmark over the longer run. This led to the recommendation that CDOR's publication be ceased after June 30, 2024, as part of a two-stage transition plan. In May 2022, after consultation with key stakeholders, Refinitiv Benchmark Services, CDOR's administrator, announced the cessation of the publication of CDOR at the end of June 2024.

By the end of the first stage of the transition (June 30th, 2023), it was expected that market participants transitioned all new derivatives (bilateral, cleared and exchange traded) and securities transactions to CORRA benchmarks, with limited exceptions. During the second stage (which we're now in), market participants are allowed to continue transacting in new CDOR based loans (with robust fallback language) and can hedge CDOR based loans with CDOR based derivatives. However, after stage two ends on June 28, 2024, no CDOR rates will be published and any residual exposure to CDOR will revert to agreed-upon CDOR fallbacks.

Meanwhile, once it became clear that CDOR would soon cease to exist, market participants expressed strong interest in having a forward-looking term rate to provide a more 'like-for-like' CDOR substitute. While possible to construct a term rate using CORRA (compounding-in-arrears), this method does not provide 100% cash flow certainty and would require more significant infrastructural changes to implement. As a result, in January 2023, CARR announced it would be developing a 1- and 3-month Term CORRA benchmark. That is set to be launched on September 5, 2023, and will be limited to loans and trade finance, and associated derivatives.

Chart: A longer-term perspective on CDOR/CORRA basis
3-month CDOR vs. CORRA since 2015



Source: NBF, Bloomberg

Table: Official spread adjustments after index cessation event
Official spread adjustments between adjusted reference rate and CDOR

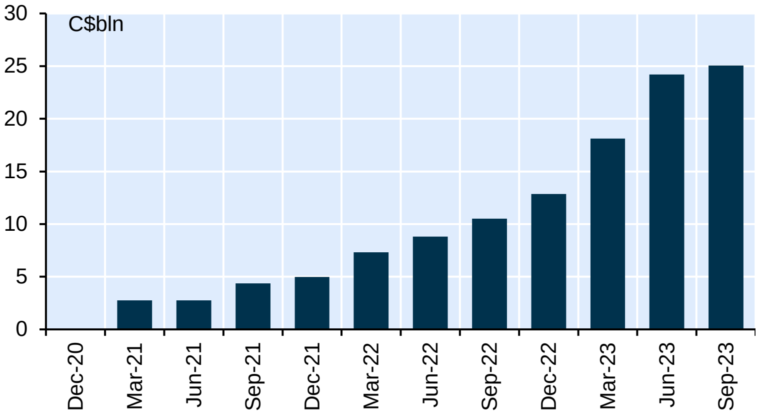
Term	Spread adjustment (bps)
1-month	29.547
2-month	30.190
3-month	32.138
6-month	49.375
1-year	54.820

Source: NBF, Bloomberg | Note: The spread adjustment accounts for the economic difference between the replacement rate and CDOR in the fallback methodology.

CORRA adoption

Issuance in cash bonds referencing CORRA has quickly risen over recent years. Starting with a $500 million CORRA FRN issued in February 2021, there's been over $25 billion in CORRA-referenced issuance with over $20 billion outstanding as of August 2023. Issuers of CORRA-referenced bonds predominantly include private sector financial institutions and the Canada Mortgage and Housing Corporation (CMHC). In May 2022, Canada's housing agency officially adopted CORRA as the reference rate for its regular quarterly floating rate note offerings—an important milestone in the transition.

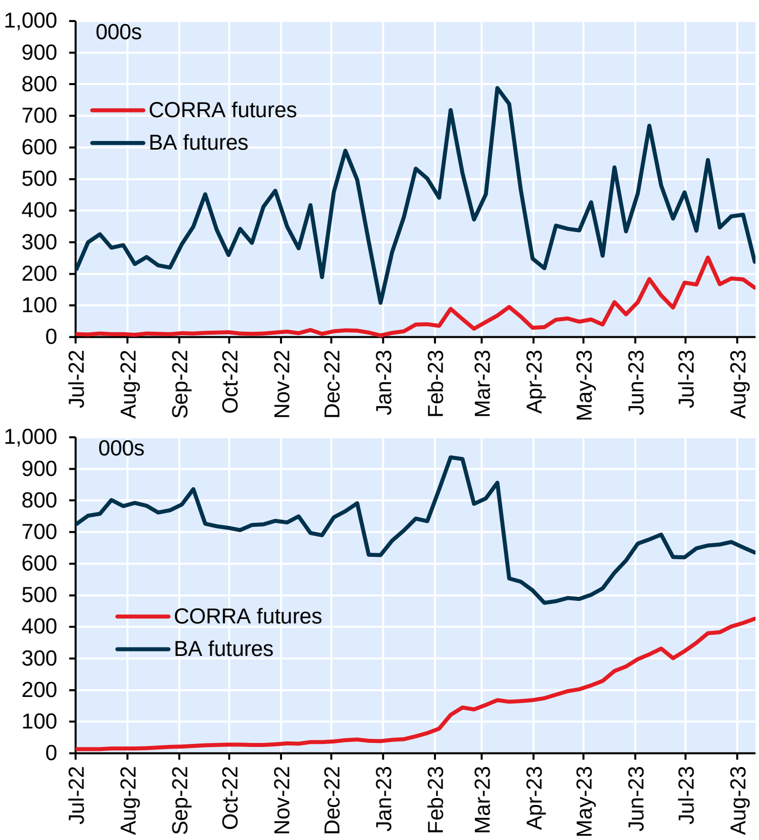
Chart: Bond issuance referencing CORRA is picking up steam
Cumulative CORRA-linked bond issuance by quarter



Source: NBF, Bloomberg | Note: As per Bloomberg's SRCH function as at 13-Aug-23

Interest rate futures have also seen increased usage, particularly over the course of 2023. Weekly trading volumes in CORRA futures have steadily climbed throughout the year and while Bankers' Acceptance futures volumes are still greater, the gap has been narrowing quickly. This momentum can also be seen in the open interest in these interest rate futures. Early in 2023, open interest in CORRA futures was negligible. By early August, it had risen tenfold, and now represents more than half of the open interest in BA futures.

Charts: CORRA interest rate futures activity is picking up
Weekly trading volume (top) and weekly open interest (bottom) in BAX (CDOR) and 1- and 3-month CORRA futures



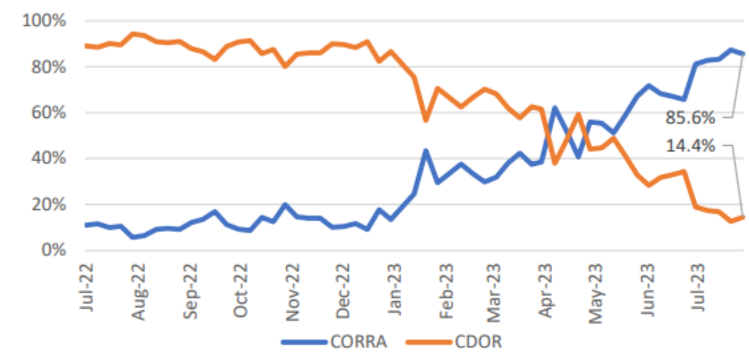
Source: NBF, Bloomberg

In the derivatives space, the transition to CORRA linked interest swaps has been even more impressive. A year ago, new LCH-cleared CAD interest rate swap volume in CORRA was only 10% of CDOR-based swaps. Today, more than 80% of total volume is based on CORRA, per CARR's weekly derivatives monitor:

Exhibit: CARR's weekly derivatives transition update
CAD new LCH-cleared maturity-weighted notional volume (DV01) (%)

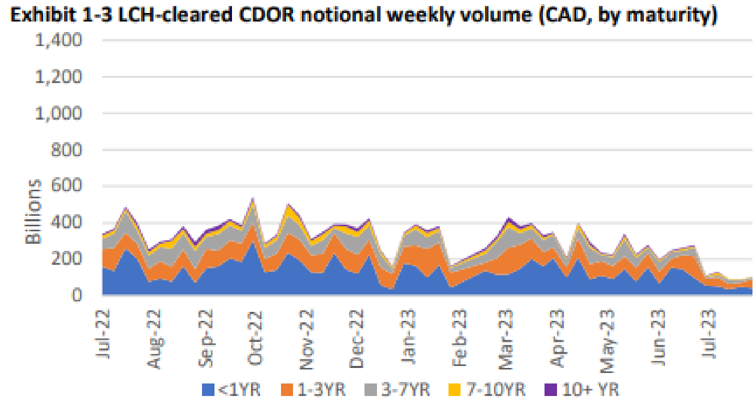
CORRA IR swap DV01 as % of total CAD IR swap DV01:	This week	85.6%
	Last week	87.3%

Exhibit 1-1 CAD new LCH-cleared maturity-weighted notional volume (DV01) (%)



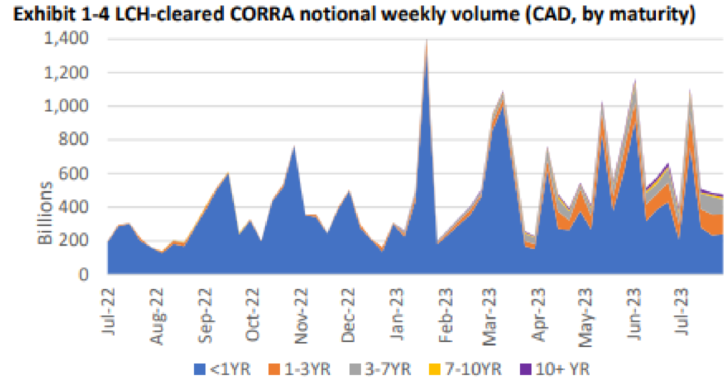
Source: LSEG and CARR

Exhibit 1-3 LCH-cleared CDOR notional weekly volume (CAD, by maturity)



Source: LSEG and CARR

Exhibit 1-4 LCH-cleared CORRA notional weekly volume (CAD, by maturity)



Source: LSEG and CARR

Note: The above charts are pulled from CARR's [weekly derivatives transition update.]

Main resources:

- Canadian Alternative Reference Rate Working Group: Key documents (CARR): https://www.bankofcanada.ca/markets/canadian-alternative-reference-rate-working-group/canadian-alternative-reference-rate-working-group-key-documents/
- CDOR Transition Frequently Asked Questions (CARR): https://www.bankofcanada.ca/wp-content/uploads/2023/08/cdor-transition-faqs.pdf

Additional CORRA-CDOR transition resources:

Organization	Document	Hyperlink
CARR	CARR's overview of the transition from CDOR to CORRA	Link
CARR	CARR Terms of Reference	Link
CARR	CARR Milestones – One-page transition timeline	Link
CARR	CARR's Review of CDOR: Analysis and Recommendations	Link
TMX	CDOR Transition Webcast Series	Link
CARR	Enhancements to CORRA's Methodology	Link
Bloomberg	IBOR Fallbacks: Spread Fixing Event for CAD CDOR	Link
CARR	Weekly Derivatives Transition Update	Link

Conventions and fallback language:

Organization	Document	Hyperlink
CARR	CORRA FRN Conventions	Link
CARR	CORRA Loan Conventions	Link
CARR	CDOR FRN Fallback Language	Link
CARR	CORRA FRN Fallback Language	Link
ISDA	ISDA's Fallbacks Supplement	Link
CARR	Methodology for CORRA Compounded-In-Arrears	Link
TMX	Methodology for Term CORRA	Link

The global benchmark reform perspective:

Organization	Document	Hyperlink
IOSCO	IOSCO Principles	Link
FSB	Reforming Major Interest Rate Benchmarks	Link
ISDA	Benchmark Reform and Transition from LIBOR Informational Page	Link
ARRC	A User's Guide to SOFR	Link
ISDA	IBOR Fallback Protocol	Link
CARR	Risk-Free Rates in Other Jurisdictions	Link

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