2025 CORRA Sunset Review

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Executive Summary

CORRA's methodology[1] is overseen by the Bank of Canada's internal CORRA Oversight Committee, which is advised by an industry-led CORRA Advisory Group (CAG). The Bank monitors the methodology for calculating CORRA on an ongoing basis to ensure it remains appropriate in light of any major changes to the structure of the Canadian repo market. Formal reviews of the methodology are undertaken by the Bank and approved by the Bank's internal CORRA Oversight Committee in consultation with CAG and the Canadian Fixed Income Forum (CFIF), which oversees CAG. These reviews take place under two distinct scenarios: the sunset provision and ad-hoc reviews.

The sunset provision is a mandatory review of the CORRA methodology every 5 years to ensure CORRA remains representative of the market it measures, and the data source and the data providers remain optimal for the calculation of the benchmark. The depth of the review depends on the degree of any changes in the Canadian repo market since the prior review.

This is the first sunset review of CORRA. Since the Bank became the administrator of CORRA in June 2020, there have been several changes to Government of Canada (GoC) debt and repo markets:

- The GoC securities market has grown rapidly since the COVID pandemic.[2]
- The Bank became a larger holder of GoC securities following exceptional asset purchases undertaken during COVID and is now more active and at times a large participant in the repo market.
- The GoC through its morning Receiver General (AM RG) auctions, has also become a large participant in the repo market.
- The industry move from T+2 to T+1 settlement in the cash bond market on May 27, 2024 has shifted volumes from the tomorrow/next repo market into the overnight repo market, increasing the amount of CORRA-eligible transactions and changing the shape of CORRA's distribution[3].

During the CORRA sunset review discussion at the October 3, 2024 CFIF meeting, CFIF members agreed with CAG's determination that CORRA remains representative and fit for purpose, and that CORRA did not require any major changes to the calculation methodology. CFIF members also agreed with CAG's recommendation that the scope of the review would include an analysis of, and, if applicable, recommend potential changes to the following:

1. **CORRA's trim method:** Would a different method be more effective at removing specials from CORRA?
2. **Minimum Volume Threshold (MVT) for a fallback calculation:** Should the MVT be increased, now that CORRA volumes are higher?
3. **BoC and GoC overnight repo transactions:** With the Bank and the GoC more active repo participants, should these transactions now be included into CORRA's calculation?

At the CAG meeting on January 16, 2025, CAG agreed that the following important caveats be considered in the sunset review:

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[1] Methodology for calculating the Canadian Overnight Repo Rate Average (CORRA) - Bank of Canada
[2] GoC total debt outstanding has grown from $705bn as of the end of 2019 to $1,498bn as of July 2025.
[3] CORRA: Explaining the rise in volumes and resulting upward pressure - Bank of Canada

- **The bar for any change in methodology is high given that CORRA remains representative.** Making required changes to financial benchmarks helps preserve their robustness and reinforce confidence in them. However, methodology changes can also have material implications including having an effect on the pricing of financial instruments, the valuation of outstanding assets and liabilities and hedging strategies.
- **CORRA's methodology should be robust across changing market environments.** Any change that is made in response to current market conditions should also consider the impact of different market environments.
- **Results need to be interpreted with care.** The analysis of potential methodological changes is limited by a lack of a true counterfactual. Simulating new methods (e.g., trim rate, BoC/GoC repo trade inclusion) using historical data implicitly (and potentially falsely) assumes no change in market participant behaviours, even as CORRA and other reported statistics would have been different.
- **The introduction of the Canadian Collateral Management Service (CCMS)**, a tri-party collateral management service offered by the TMX Group and Clearstream, will structurally change the Canadian repo market.[4] Through the trading of general collateral (GC) baskets, the service will enable the clear identification of GC trades. Therefore, these trades will not require trimming, which will require changes to CORRA's methodology. However, it would be premature to recommend methodological changes to account for CCMS in this sunset review due to the risk of having to make subsequent revisions as market participants broaden their adoption of CCMS.

Over the course of 2025, Bank staff conducted their analysis and consulted CAG members on the direction of the analysis and findings at the group's quarterly meetings. Views and feedback provided by CAG members were taken into consideration in coming to the final recommendations for the 2025 sunset review, which were endorsed by CAG at the October 16, 2025 meeting.

The recommendations were then presented to and endorsed by CFIF members at the forum's meeting on November 6, 2025. With both CAG and CFIF endorsements, the Bank's internal CORRA Oversight Committee, which oversees the methodology and production of CORRA, approved the recommendations at the committee's meeting on November 17, 2025.

Adopted recommendations for the 2025 CORRA Sunset Review

1. **No change to CORRA's trim method, but an ad hoc review should be considered later as CCMS adoption progresses and GC basket gains traction**. The analysis suggested that some improvements could be made by using a different trim method. However, taking into consideration the above caveats, and CCMS implementation in particular, the improvements were not material enough to warrant changing the trim method in this sunset review. An ad hoc review would likely be needed to account for tri-party transactions, such as GC baskets, as CCMS volumes become more significant.
2. **Change the MVT to be dynamic and calculated as 30 percent of the 5-day moving average of CORRA trimmed volumes**.[5] The dynamic MVT retains $3 billion as a minimum value to ensure representativeness in the possible, but unlikely event CORRA volumes were to decline significantly.

[4] The new repo tri-party Canadian Collateral Management Service: Benefits to the financial system and to the Bank of Canada - Bank of Canada

[5] The 5-day moving average is calculated using the most recent 5 days of CORRA trimmed volumes excluding the most recent day.

$$MVT = \max\left(\$3bn, 30\% * MA_{5-day}(CORRA\ trimmed\ volume)\right)$$

3. **Continue to exclude BoC and GoC overnight repo transactions.** Although the BoC and GoC are now at times large participants in the repo market, the initial rationale for excluding these transactions from CORRA remains relevant. Specifically, the BoC and GoC transactions do not necessarily reflect broader market conditions and only a subset of market participants are eligible counterparties to these trades. Moreover, the Bank's overnight repos generally clear at or near its policy rate, below the rates prevailing in the market. Including the Bank's overnight repos could therefore be perceived as influencing the benchmark, which would not be aligned with the International Organization of Securities Commission's (IOSCO) Principles for Financial Benchmarks.[6] Such perceptions could reduce confidence in CORRA as a financial benchmark.

Summary of Analysis

Section 1: Review of the trim method

The Bank became the administrator of CORRA on June 15, 2020. At that time, the underlying data for CORRA's calculation was broadened and the calculation methodology was modified.[7] CORRA is now derived from a broader set of overnight repo transactions data that dealers report to the Canadian Investment Regulatory Organization (CIRO). Since the data lack a reliable identifier for GC, the bottom 25th percentile (left tail) of the distribution of repo rates is trimmed from the calculation of CORRA. The intent of the trimming is to remove trades for specific collateral ('specials'), which are generally transacted at rates below those for GC.[8] CORRA is equal to the median rate of the distribution of remaining trades.

Chart 1 shows the effect that trimming has on the distribution of traded rates. A well-calibrated trim should lead to the remaining volume being more symmetrically clustered around the median repo rate for GC. Before trimming, the distribution generally has negative skewness[9] (blue line), indicative of a long left tail of repo transaction at low rates. After trimming (red line), the distribution becomes more symmetrical around the median (skewness close to zero), suggesting that the trim generally removes specials as intended.

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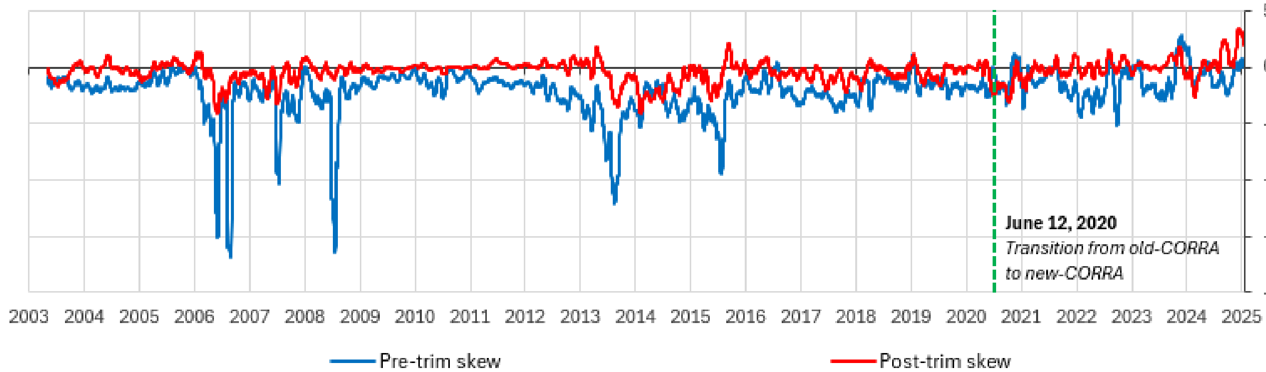
[6] See https://www.iosco.org/library/pubdocs/pdf/ioscopd415.pdf

[7] Methodology for calculating the Canadian Overnight Repo Rate Average (CORRA) - Bank of Canada

[8] Appendix B of the CIRO MTRS 2.0 Guide shows that one of the data fields in the repo transactions file is populated to specify if the trade was conducted for the purpose of funding (using 'GC' collateral) or not. Since MTRS 2.0's inception there has been noted data quality issues with this field. One obvious reason for the lack of quality in this field is because historically in Canada there has been no defined GC basket in repo, as all bilateral repo transactions are against specific collateral whether they are deemed GC or not.

[9] Skewness measures the asymmetry of a distribution. For the distribution of traded repo rates, a negative (left) skew means the volume distribution has a long left tail of relatively lower repo rates, with the bulk of the trading volume concentrated on the right (at relatively higher repo rates).

Chart 1: Most of the time, the untrimmed CORRA distribution is negatively skewed, then symmetric after trimming
20-day moving average of the spread between the 75th percentile and 25th percentiles' absolute distance from the median (skew proxy)



Source: CDS, MTRS, BoC calculations

Last observation: January 2025

Several market transitions since 2020 have prompted discussions about the accuracy of the current trim method:

- The increase in the BoC's ownership share of GoC bonds following its QE response to the COVID pandemic created an imbalance in the supply and demand for cash and collateral, resulting in a temporary increase in the prevalence of GoC securities trading on special that moved the mass of the distribution to the left. In such an environment, the 25% trim may not be sufficient to remove all specials.
- The industry's move from a T+2 to T+1 settlement shifted some funding transactions into the overnight market, moving mass into the right tail of the distribution of CORRA-eligible transactions. In particular, a notable amount of hedge fund repo trades at relatively higher rates increased the weight of the CORRA distribution's right tail[10]. In such an environment, the 25% trim may remove too many trades, including some legitimate GC trades in addition to specials.

Trim Method Options

Trimming sorts trades by repo rate and then discards trades whose rates are below a cutoff value, so that they are no longer part of the CORRA calculation. In addition to the current method, we assess two potential other increasingly complex options to trim the distribution, based on the following criteria (see Appendix A for a full description of the trim methods):

1. **Volume**: the current method, which trims a static bottom 25th percentile (other percentiles are considered)
2. **Fixed spread**: trims a time-varying percentage of volume, based on repo rates below a fixed 10bp-spread to CORRA (other spreads are considered)
3. **Dynamic spread**: trims a time-varying percentage of volume, based on a dynamically estimated spread to CORRA

Criteria for evaluating trim methods options

We simulate CORRA (and the distribution's other percentiles) historically under the different trim methodologies described above and evaluate how each method performs against the criteria described in Table 1.

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[10] CORRA: Explaining the rise in volumes and resulting upward pressure

Table 1: Brief description of criteria used to evaluate trim methods

Criterion	Description
How well does the methodology's trimmed median (i.e., CORRA) track overnight GC?	• We construct a daily overnight GC proxy from 2003 onwards of volume-weighted overnight GC repo rates executed on interdealer broker platforms[11]. **The less the methodology's trimmed median (CORRA) deviates from the GC Proxy, the better its performance.**
How volatile is the methodology's trimmed median (i.e., CORRA)?	• For each methodology, we track the volatility of the trimmed median (CORRA). **A robust benchmark should generally move with the market, not exhibit excessive idiosyncratic volatility, and be easily understood by market participants.**
How well does the methodology's trim rate track repo specials?	• We construct a daily Specials Proxy since 2003 of average repo rates for bonds that are most likely on special (a basket of 10 ISINs with the lowest repo rates for any given day). Post-2020 the basket also includes the 10 ISINs the BoC owned the largest share of (as a percentage of float). **The less the methodology's trim rate deviates from the Specials Proxy, the better its performance.**
How volatile is the methodology's trimmed volume amount?	• For each methodology, we track the magnitude and volatility of trimmed volume. The 'true' amount of daily volume required for trimming specials is unknown and time-varying. A robust benchmark requires sufficient and generally stable volume so that fallback calculations would be rarely triggered and only for a short period. **It is generally preferred that the volume trimmed by methodology is neither excessive nor highly volatile.**

Scoring trim method options

A simple qualitative points system was used to award points to the top three performing trim methods for each criterion. The best-performing method received 3 points, the second-best received 2 points and third-best received 1 point.

[11] These types of trades typically represent about 30% of CORRA trimmed volumes.

Table 2: Performance[1] of trim methods by criteria (3 = *relative*ly best performer)

Trim method options:		Criteria:	GC Proxy	Specials Proxy	Volume Stability	Rate Stability	Total Score
	Option 1: Volume	Trim rate at percentile					
		25th (current methodology)	3	0	1	0	4
		20th	2	0	0	0	2
		15th	1	0	0	0	1
		10th	0	3	0	0	3
	Option 2: Fixed spread	Trim rate at spread to prior day's CORRA					
		-15bp	0	0	3	0	3
		-10bp	0	2	2	0	4
		-5bp	0	0	0	3	3
		Trim rate at spread to BoC policy rate					
		-15bp	0	1	0	0	1
		-10bp	0	0	0	0	0
		-5bp	0	0	0	1	1
	Option 3: Dynamic spread	Trim rate using 'Bond Rate' method					
			0	0	0	2	2

[1]Performance of trim method options across criteria was assessed from April 3, 2003 to February 28, 2025.

Assessment: CORRA's trim methodology should not be changed

With no trim method options clearly outperforming others across all criteria (see Table 2), we inspect the two methods with the most points more closely (Appendix B provides a detailed description of how each methodology performs against the stated criteria).

Overall, the current 25th percentile trim method and the 10bps spread to CORRA method performed the best across all criteria and received the same number of total points. These two methods ranked within the top 3 against more than one criterion, while most others did so for only one criterion. The 25th percentile method mirrored the GC proxy particularly well, while the 10bps spread method was a good proxy for specials and trimmed a fairly stable percentage of volume (Table 3).

Table 3: Overview of the quantitative performance of different trim methodologies

Evaluation Criteria:	Score	GC Proxy	Specials proxy (mean)	Volume Stability	Rate Stability
	(points)	(mean)	Sum(10 ISINs, BoC Holdings)	(mean. [std. dev.])	(std. dev.)
Method		Sum of abs. dev. from proxy	sum of total abs. deviations	avg. % volume trimmed, [st. dev]	rate volatility
(Current) 25th percentile	4	+0.4bp	+14bp	25% [0%]	+2.7bp
CORRA - 10bps	4	+1.5bp	+4bp	9% [8%]	+2.7bp
10th percentile	3	+1.7bp	+2bp	10% [0%]	+2.8bp
CORRA - 15bps	3	+2.3bp	+9bp	5% [6%]	+2.8bp
CORRA - 5bps	3	+2.8bp	+13bp	21% [15%]	+2.6bp

The analysis suggests that some improvements against certain criteria could be made by using a different trim method. However, the potential improvements appear relatively modest, and interpreting the results requires care given the high degree of approximation underpinning the analysis. In this context, there is a risk of falsely calibrating the trim methodology if the performance results are interpreted with too much precision. For example, on some days, the 10bps spread methodology would have trimmed up to 48% of volume in the historical simulation, a large amount. In addition, this methodology depends on a lagged value of CORRA, which can exacerbate an unwanted mechanical persistence in the benchmark (e.g., in an environment of dissipating repo pressures, using a spread to a lagged (high) CORRA value can result in overaggressive trimming that keeps the benchmark artificially elevated).

Finally, the expected increased adoption of CCMS triparty will likely trigger an ad hoc review to account for features like GC baskets, which do not need to be trimmed. Thus, any potential improvements from using a different trim method are not material enough to warrant a change now and may need to be reversed once the methodology is updated to account for CCMS basket trades. Instead, Bank staff recommended the industry to leave the current 25th percentile trim method unchanged and to consider an ad-hoc sunset review once greater CCMS adoption is realized.

Section 2: Minimum volume threshold for the fallback calculation

Benchmark interest rates should exhibit robust underlying volumes. CORRA's minimum value threshold (MVT) is meant to ensure that the benchmark rate represents broad conditions in the market for overnight GC repo funding in GoC securities. If CORRA's trimmed volume for the day is below the MVT (currently $3bn), CORRA will be set at the 'fallback rate' using the approved fallback methodology.[12]

At current volumes, the $3bn MVT is likely no longer representative of the market (Chart 2). When CORRA's new methodology was developed, the $3bn static MVT represented around 30% of average daily volume of about $10bn. However, following the industry move to T+1 settlement in May 2024, CORRA trimmed volumes increased to around $40bn on average. Thus, a $3bn MVT now represents less than 10% of the daily average CORRA trimmed volumes.

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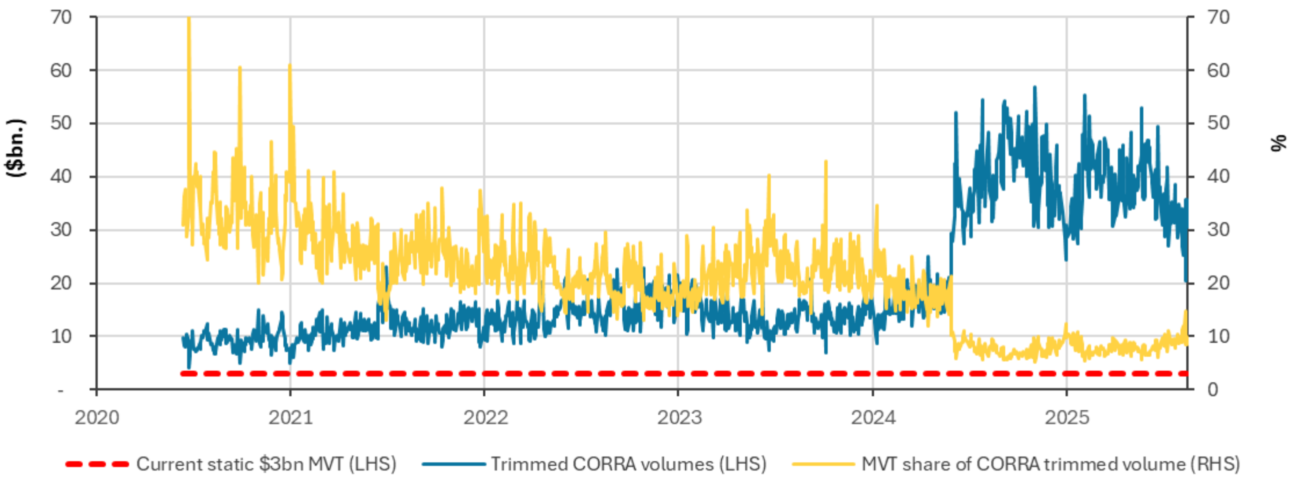
[12] The fallback rate is equal to the Bank of Canada target for the overnight rate for that day plus the mean spread over the previous five business days between CORRA and the Bank of Canada target on those days. When the published CORRA rate for a given day is the fallback rate, this will be clearly identified on the website. As of August 15, 2025, the fallback rate has only ever been published once. On August 11th, 2025, due to technical issues at CIRO, CORRA was unable to be published by the required time of 11amET and as a result the fallback rate was used.

Chart 2: The minimum volume threshold has become a smaller share of CORRA trimmed volumes

CORRA trimmed volumes, minimum volume threshold (MVT), and its share of trimmed volume.



Source: Bank of Canada

Last observation: 15/08/25

Assessment: Changing to a dynamic MVT would be an improvement

Two options for a revised MVT were considered — a higher static MVT, and a more dynamic MVT.[13] The static MVT could be revised higher to $10-15bn, which would be similar to the 30% volume share prior to T+1 settlement. However, the primary drawback of this continued static approach is that the MVT may need to be updated again if volumes change materially, either up or down. Among the catalysts that could change CORRA volumes in the medium-term are:

- A change in participation in the GoC markets from participants like hedge funds
- Increased issuance by the government
- An increase in collateral efficiency as CCMS is broadly adopted

If volumes were to increase, the MVT may again become too small to be representative. If volumes were to decline materially, there is a risk that CORRA could be set using the fallback rate for an extended period.

A dynamic MVT would likely eliminate the need for future revisions. With a dynamic calculation, the new MVT would adjust with changes in daily market volumes. An appropriate parameterization should be easy to understand, setting a minimum dynamic threshold that is responsive to changes in volume, but not overly sensitive to single day swings. Table 4 shows MVT amounts and the number of included submitters for MVT volume shares between 25% and 40% of daily trimmed CORRA volume. Volume shares of 30% and higher capture at least two and up to half the number of submitters. An MVT that, on average, captures a larger number of submitters is desirable since with more submitters, it is more likely that the transactions are representative of the market as opposed to the specific circumstances or counterparty base of one or two submitters.

[13] See Determining a New Minimum Volume Threshold Consultation

Table 4: MVTs that are 25-40% of CORRA trimmed volume will *typically* capture 4-6 submitters

		Number of submitters that could be included in the MVT[b]		
MVT's share of average daily CORRA trimmed volume[a]	MVT	From	To	Average
25%[b]	$9.5 billion	1	7	4
30%	$11.4 billion	2	7	4
35%	$13.3 billion	2	8	5
40%	$15.2 billion	3	9	6

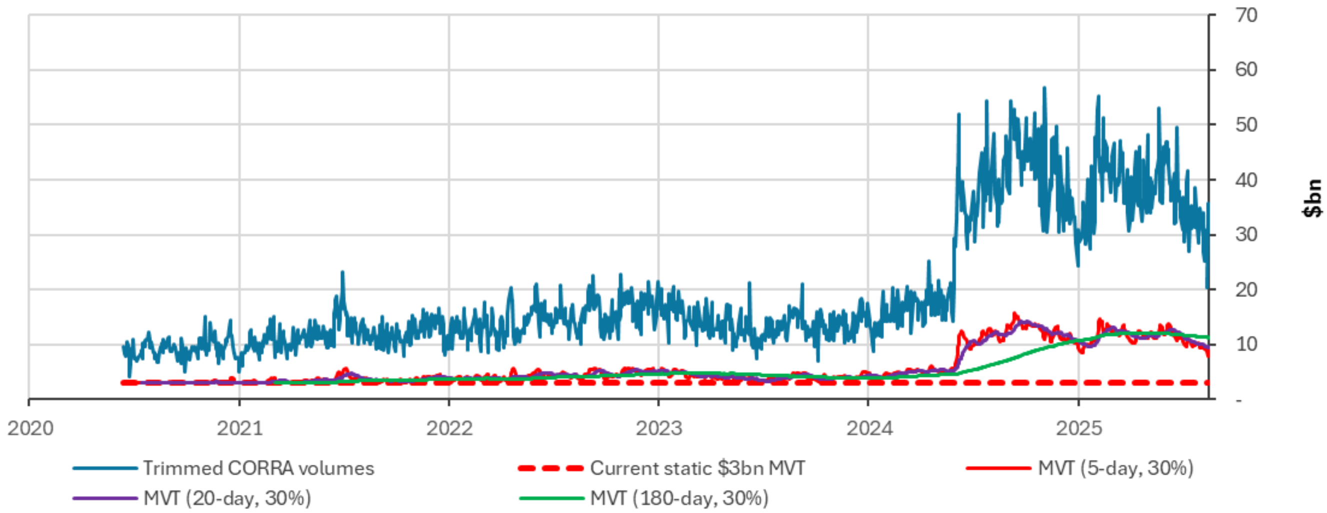
[a]Average daily CORRA trimmed volumes from May 2024 to July 2025.

[b]Determined using the submitters average daily CORRA trimmed volume.

Basing the MVT on a moving average ensures that the amount adapts to changing conditions while also avoiding large day-to-day fluctuations. Shorter lookback windows for the moving average result in a relatively more sensitive MVT, reacting faster to changes in CORRA trimmed volumes (e.g., T+1 transition). Longer lookback windows produce a relatively more stable MVT but are slower to adjust to repo volume changes. In the event of a swift and sustained decline in repo volumes, this could result in CORRA remaining in the fallback zone for an extended period of time until enough higher-volume days have fallen out of the moving average calculation. For example, using a 60-day moving average, if CORRA trimmed volumes move lower by 75% and remain around this new level, CORRA could remain at the fallback level for nearly 3 weeks. In general, remaining in fallback for several days is undesirable as the fallback rate might not be representative of the new prevailing market conditions. A 5-day moving average would strike an appropriate balance between the MVT's sensitivity to changes in the market, and the risk of remaining in fallback for an extended period of time. Chart 3 shows examples of how different dynamic MVTs adjust with CORRA volumes and compare to the current static $3bn.

Chart 3: More dynamic minimum volume thresholds adjust to faster changes in CORRA trimmed volumes

CORRA trimmed volume, static and dynamic minimum volume thresholds ('MVT')



Source: Bank of Canada

Last observation: 18/08/25

To strike an appropriate balance between MVT responsiveness and stability, and to ensure that an adequate number of submitters is included, the MVT will be set to 30% of the 5-day moving average of previously published trimmed CORRA volumes.[14] A 30% share is also consistent with the approximate percentage of average of trimmed volumes when the $3bn MVT was initially set. In the unlikely event that CORRA volumes drop drastically and on a sustained basis, such that the 30% share of trimmed would drop below the current $3bn MVT, the $3bn hard floor is retained in the dynamic calculation.

Thus, on a given day *t,* the dynamic MVT is the higher of $3bn or 30% of a 5-day moving average (MA) of CORRA trimmed volumes:

$$\mathrm{MVT}_t = \max\left(\$3bn, 30\% * MA_{5-day}(CORRA\ trimmed\ volume)\right)$$

Section 3: The exclusion of BoC and GoC transactions

The current CORRA methodology excludes repos conducted with the Bank or the GoC. Based on the Canadian Alternative Reference Rate Working Group's work on the design of CORRA's new methodology, which was consulted on in 2019, it was determined that these types of trades should be excluded from CORRA's calculation because they were only conducted infrequently and/or with a subset of participants and thus did not reflect broad funding market conditions[15]. Moreover, the Bank's overnight repos generally clear at or near its policy rate, below the rates prevailing in the market. Including the Bank's overnight repos could therefore be perceived as influencing the benchmark, which would not be aligned with the International Organization of Securities Commission's (IOSCO) Principles for Financial Benchmarks.[16] Such perceptions could reduce confidence in CORRA as a financial benchmark.

The Bank of Canada and GoC are now more active in repo markets with larger sizes (although the Bank of Canada's activity is more ad-hoc). This resulted in questions from market participants on whether these trades should be included in the CORRA calculation going forward. From July 17, 2024 to February

[14] The 5-day moving average is calculated using the most recent five days of trimmed CORRA volumes excluding the most recent day.

[15] Results from the CARR Consultation on Enhancements to the Canadian Overnight Repo Rate Average

[16] See https://www.iosco.org/library/pubdocs/pdf/ioscopd415.pdf

3, 2025 the BoC conducted at least one overnight repo (OR) round every day — typically for volumes of at least $8bn. And since its reintroduction in February 2024, the AM RG auction's average daily size has increased, with recent total overnight volume as high as $5bn.

Assessment: BoC and GoC repos should continue to be excluded from the CORRA calculation

Although the size of repo trades with the BoC and GoC has increased, the initial justification for the exclusion of these trades has not changed. Despite recent periods of increased activity, the Bank's operations continue to be ad-hoc, as warranted by market conditions. For example, the Bank conducted ORs on only two days between February 3rd and September 2nd, 2025. Similarly, AM RG offerings are dependent on the level of balances in the Receiver General account. The trades with the Bank and the GoC are also not necessarily reflective of broader conditions in the overnight GoC GC repo market, as they are either conducted at more favourable rates and/or with a subset of participants. For instance, to reinforce its target for the overnight rate, the Bank sets the minimum bid rate for the OR at target, with only primary dealers as eligible counterparties. The AM RG minimum bid rate is set at the Bank's deposit rate and participation, while broader than in the OR, is still limited to a subset of market participants. In addition, the AM RG's eligible collateral extends beyond GoCs.

In addition, the historical impact of including these types of trades would have been minimal and including them might be viewed as not being aligned with the IOSCO Principles for Financial Benchmarks. For example, from July 17th 2024 to January 31st 2025, had BoC OR trades been included into the CORRA calculation, the average impact would have resulted in CORRA being slightly less than 1bp lower. Regarding AM RG transactions, while total volumes have increased, only a subset of these trades are for an overnight term *and* the collateral provided is broader, mostly non-GoCs. Instead of enhancing CORRA, the inclusion of these trades may be perceived as influencing CORRA, which would not be aligned with the IOSCO principles. This could undermine confidence in CORRA as a benchmark.

Appendix A: Detailed description of trim method options

Volume-based approach

The current method used to calculate CORRA is a volume-based approach, which trims the bottom 25th percentile. Under a volume-based approach, a fixed percentage of the lowest rates of the sorted distribution is discarded. This method is simple to understand and results in a stable proportion of volume for which to calculate CORRA.

While the method is simple, a key challenge is that the true percentage of specials is not a constant fixed percentage, but varies over time and market environment. The current approach can therefore result in some degree of over- or under-trimming.

In addition to the 25th percentile currently in use, the 20th, 15th and 10th percentiles were assessed.

Fixed spread-based approach

Under a spread-based approach, any transaction with a rate lower than a defined spread below a chosen reference rate is discarded. The main benefit to this method is that it is more aligned with how market participants generally view specials in the market.

Among the challenges of this approach is the lack of industry consensus around the exact magnitude of the spread that would define specialness. Next, the degree of specialness varies across market- and rate environments, which can also lead to a large degree of over- or under-trimming using this method. Since the trim is spread-based, the volume that is trimmed varies over time and it is possible to trim a large enough proportion of the distribution that the fallback rate would be required to calculate CORRA.

Another drawback is that this method requires a reference rate from which to subtract the spread. While it would be reasonable to subtract the spread from the prior day's CORRA, this adds to an existing mechanical persistence in CORRA.[17] Alternatively, the Bank's target for the overnight rate could be used as the reference rate. However, recent years have shown there can be long periods of time where CORRA is either structurally above or below the BoC policy target, which would again lead to a large degree of over- or under-trimming.

We analyzed spreads of -15bps, -10bps and -5bps to the prior day's CORRA and to the Bank's target rate.

Dynamic spread-based approach

This approach determines a dynamic specialness spread by calculating a "threshold rate" and then trimming all transactions at rates below the threshold. Since market- and rate environments change, the threshold rate is determined dynamically using the CORRA-eligible transactions.

To calculate the threshold rate, we use the 'bond rate method' that was part of the analysis leading up to the enhancement of CORRA in 2020. This method determines a time-varying threshold rate from the lower end of rates of a group of bonds that, based on their volume-weighted average repo rates, were least likely on special (see Box 1 for a detailed description).

[17] What has been putting upward pressure on CORRA? - Bank of Canada

While this approach aims to adjust the percentage of trimmed volume based on market conditions, it is inherently complex and, by construction, influenced by the characteristics of the right tail of the distribution of transactions. In certain environments, this could also lead to aggressive trimming, requiring the use of the fallback if the remaining volume is too low.

Box 1: Calculation steps for the bond rate method

For eligible repos transacted on a given day,

i. Calculate each bond's volume-weighted average repo rate.
ii. Sort the bonds by their average repo rate and identify bonds in the upper volume-weighted 30th percentile by average repo rate. Call these the least special bonds.
iii. From the set of all transactions involving the least special bonds, calculate the lower volume-weighted 10th percentile repo rate and call this the cut off.
iv. From all repos above the cut off, calculate volume weighted average.

The intuition behind the methodology is to first identify the range of general collateral repo rates from bonds that are likely trading only as general collateral. Steps (i) and (ii) identify the bonds that are likely trading only as general collateral. Step (iii) identifies a lower level of rates at which these bonds trade. Step (iv) calculates a final rate based on only the general collateral trading range for that day. This results in specialness being a dynamic spread to CORRA.

Appendix B: Criteria used to evaluate trim methods and their performance

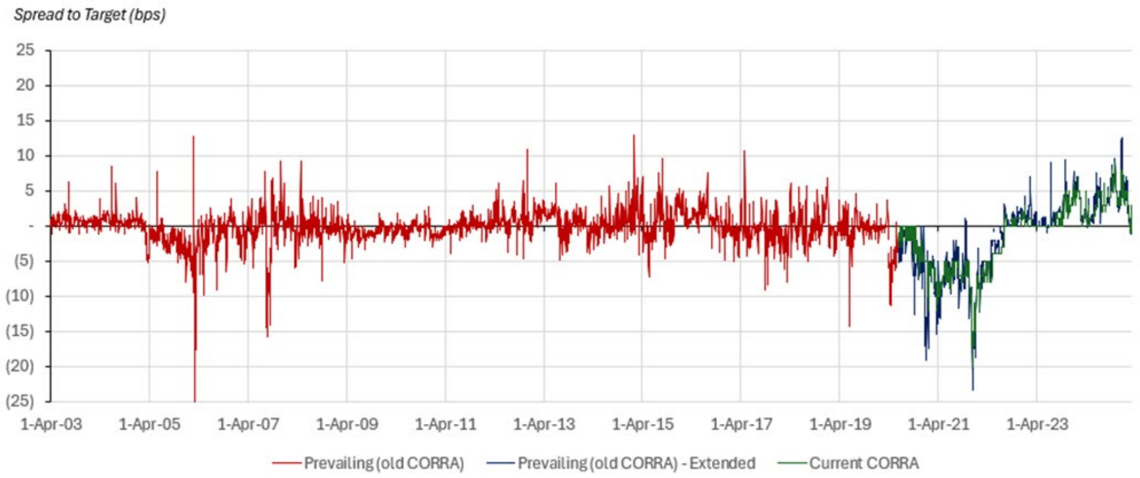
Criterion 1: How well does the methodology's trimmed median (i.e. CORRA) track overnight GC?

The intent of trimming data from CORRA's distribution is to remove special trades so that the median of the trimmed distribution is a representative measure of the cost of overnight GC. One way to assess the performance of different trim methods is to compare their resultant distribution's trimmed median (i.e., CORRA) to another benchmark for overnight GC (i.e. a 'GC Proxy').

Prior to June 2020 (when the Bank became the CORRA administrator), CORRA was calculated as the volume-weighted average rate of overnight GC trades through interdealer brokers. Chart A1 extends this "old CORRA" (red line) from June 2020 to the present (blue line), using same methodology. The two combined series are used as a GC Proxy against which the new CORRA methods are benchmarked.

In evaluating each trim method, the less its resulting CORRA deviates from the GC Proxy, the better its performance.

Chart A1: GC Proxy Benchmark



Source: Bank of Canada
Last Observation: February 28, 2025

For every business day between April 3, 2003 and February 28, 2025 the difference between each trim method's resultant CORRA and the GC Proxy was observed. The summary of results is shown in Table 1A. Over the entire sample, on average, small fixed spreads to either the Bank's target rate or the prior day's CORRA performed the best, but the relative improvement from the current percentile methodology was marginal at only a fraction of a basis point on average. For example, if trimming was done at a constant 5bp spread to prior CORRA, the average spread to the GC proxy was 0.04bp over the entire sample period compared to -0.18bp using the current methodology. The performance of each trim method was also evaluated over various time periods (e.g. varying times of specialness, changes in CORRA methodology, T+1 transition). In more recent periods, the percentile methods generally performed better than others. In particular, the current 25th percentile method produces the smallest average deviation from the GC Proxy (0.15bps absolute value) post-2020.

We also repeat the analysis using mean absolute spreads to avoid positive spreads and negative spreads canceling out. Table 1A.1 shows the results, which are qualitatively similar to those using average spreads.

Table 1A: Mean Spreads to GC Proxy Benchmark

	Mean spread to GC Proxy (bps)				
Observation Period	**Full Sample**	**Pre-2020 (Old CORRA)**	**Post-2020 (new CORRA pre-T+1)**	**Post-2020 (new CORRA post-T+1)**	
Start Date	April 3, 2003	April 3, 2003	June 12, 2020	May 28, 2024	
End Date	February 28, 2025	June 11, 2020	May 27, 2024	February 28, 2025	
Methodology Description		**(A)**	**(B)**	**(C)**	**Sum of Absolute Values of (A),(B) & (C)**
CORRA with 25% Trim Rate	-0.18	-0.20	-0.09	-0.15	0.44
CORRA with 20% Trim Rate	-0.28	-0.29	-0.23	-0.36	0.88
CORRA with 15% Trim Rate	-0.39	-0.39	-0.35	-0.53	1.27
CORRA with 10% Trim Rate	-0.51	-0.50	-0.52	-0.66	1.68
CORRA 15bps spread to prior CORRA	-0.57	-0.51	-0.76	-0.99	2.26
CORRA 10bps spread to prior CORRA	-0.42	-0.41	-0.45	-0.69	1.54
CORRA 5bps spread to prior CORRA	0.04	-0.16	0.48	2.13	2.76
CORRA 15bps spread to Target	-0.52	-0.48	-0.59	-1.13	2.19
CORRA 10bps spread to Target	-0.32	-0.35	-0.04	-1.00	1.39
CORRA 5bps spread to Target	0.06	-0.10	0.95	-0.75	1.80
Bond Rate Method	-0.45	-0.37	-0.75	-0.97	2.09

Table 1A.1: Mean Absolute Spreads to GC Proxy Benchmark

Observation Period	Mean Absolute spread to GC Proxy (bps) Full Sample	Pre-2020 (Old CORRA)	Post-2020 (new CORRA pre-T+1)	Post-2020 (new CORRA post-T+1)	
Start Date	April 3, 2003	April 3, 2003	June 12, 2020	May 28, 2024	
End Date	February 28, 2025	June 11, 2020	May 27, 2024	February 28, 2025	
Methodology Description		**(A)**	**(B)**	**(C)**	**Sum of Absolute Values of (A),(B) & (C)**
CORRA with 25% Trim Rate	1.13	1.16	1.09	0.57	2.82
CORRA with 20% Trim Rate	1.16	1.19	1.09	0.63	2.91
CORRA with 15% Trim Rate	1.19	1.22	1.13	0.70	3.05
CORRA with 10% Trim Rate	1.23	1.26	1.19	0.77	3.22
CORRA 15bps spread to prior CORRA	1.24	1.24	1.30	1.05	3.58
CORRA 10bps spread to prior CORRA	1.19	1.20	1.19	0.82	3.21
CORRA 5bps spread to prior CORRA	1.12	1.19	0.64	2.18	4.00
CORRA 15bps spread to Target	1.25	1.22	1.40	1.18	3.81
CORRA 10bps spread to Target	1.24	1.19	1.53	1.06	3.77
CORRA 5bps spread to Target	1.33	1.23	1.93	0.86	4.02
Bond Rate Method	1.18	1.12	1.46	1.23	3.82

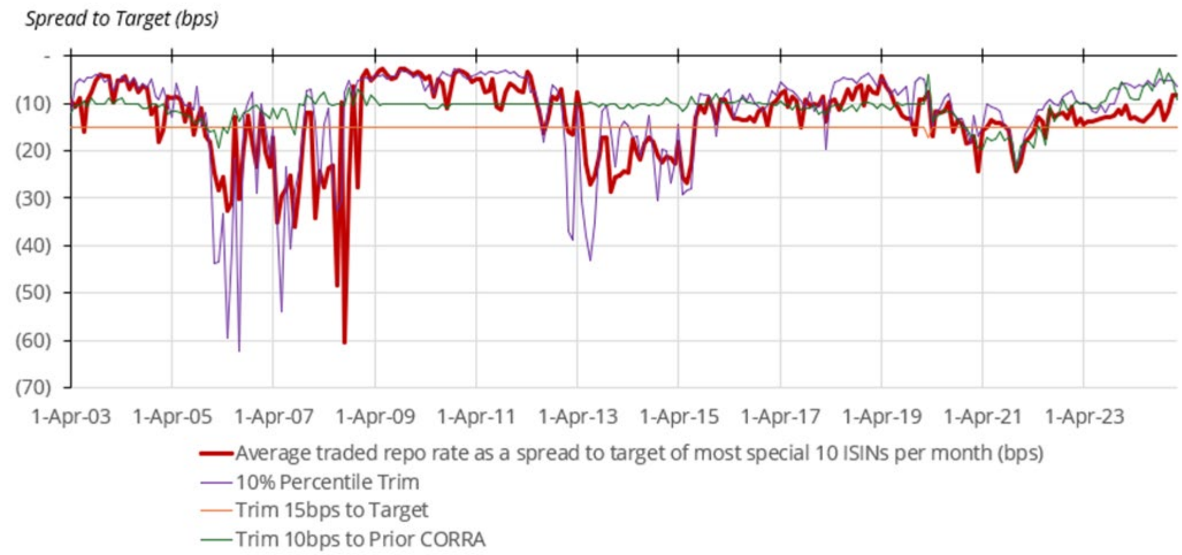
Criterion 2: How well does the methodology's trim rate track repo specials?

Instead of looking at the trim as the *lowest* rate for overnight GC, it can also be interpreted as the *highest* rate at which specials traded. Hence, another way to assess the performance of different trim methods is to compare the trim rate to a benchmark rate for special trades, i.e. a 'Specials Proxy'.

We construct two Specials Proxies are constructed as the average repo rate for GoC bonds within a custom basket of bonds that are most likely to be on special: the first proxy uses the basket of bonds most likely trading on special since 2003 (i.e., those with the ten lowest repo rates). The second proxy includes the 10 bonds the Bank owned the largest share of (as a percentage of the bonds outstanding) since 2020 as part of its QE holdings. It is generally understood that these bonds were regularly trading on special — as evidenced by their relatively high demand in the Bank' securities repo/lending facilities. Charts 2A and 2B show the two methods' special proxy separately and how each compares to select trim methods' trim rate.

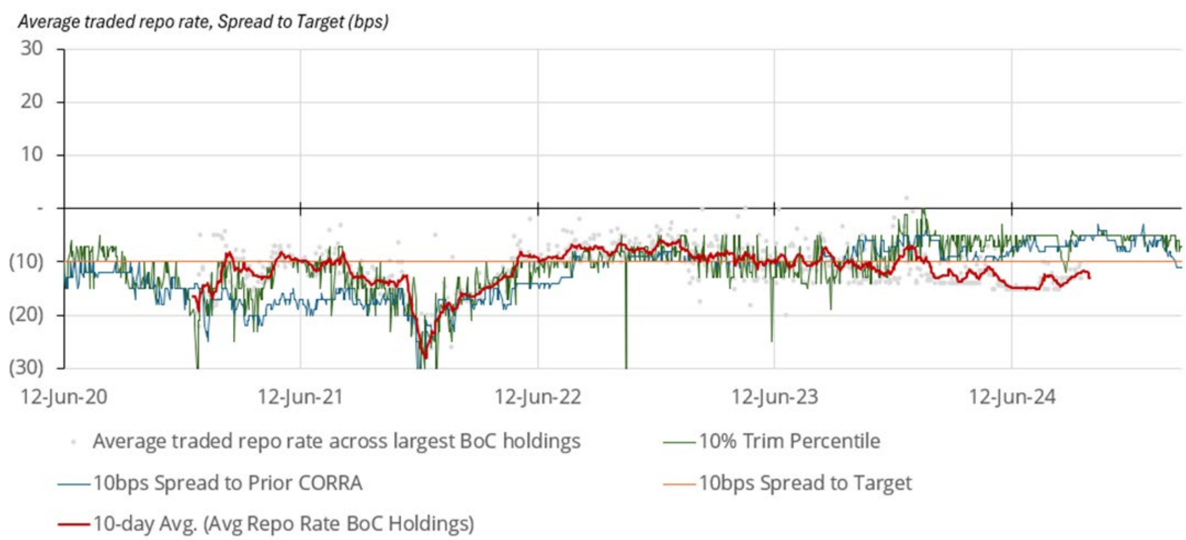
To evaluate each trim method, we calculate an absolute mean deviation from the two Specials Proxies (**Table 2A**). The smaller a method's absolute deviation, the better its performance.

Chart 2A: Top 10 Special ISIN Basket vs Trim Rates



Source: Bank of Canada
Last Observation: February 28, 2025

Chart 2B: BoC Holdings Basket vs Trim Rates



Source: Bank of Canada
Last Observation: February 28, 2025

Table 2A: Mean Spread of Trim Rate to Specials Basket & BoC Holdings Basket

Mean spread to Specials Basket Proxy (bps)			
Observation Period			
Start Date	April 3, 2003	January 1, 2021	
End Date	February 28, 2025	February 28, 2025	
Methodology	**Mean Spread to Specials Basket (Top 10 ISINs), (A)**	**Mean Spread to Specials Basket (BoC Holdings), (B)**	**Abs(A) + Abs(B)**
CORRA 25% Trim Methodology	8.82	5.13	13.95
CORRA 20% Trim Methodology	7.29	3.79	11.08
CORRA 15% Trim Methodology	5.04	2.11	7.14
CORRA 10% Trim Methodology	1.49	0.25	1.74
CORRA Trim 15bps spread to prior CORRA	-2.61	-6.36	8.98
CORRA Trim 10bps spread to prior CORRA	2.53	-1.15	3.68
CORRA Trim 5bps spread to prior CORRA	7.97	4.23	12.20
CORRA Trim 15bps to Target	-1.57	-3.59	5.17
CORRA Trim 10bps to Target	3.43	1.41	4.83
CORRA Trim 5bps to Target	8.43	6.41	14.83
Bond Rate Method	8.84	4.15	12.99

Note: (A)+(B) is the summation of absolute values.

The 10th percentile trim tracks the level the closest when evaluated over both special proxies (**Table 2A**), on average over the entire time period. The 10bp-spread-to-CORRA method also performs well, as does using a constant 15bps spread to target. However, although using a 15bps spread to target performs well on average, there is no variation to account for the varying degree of specialness over time. In general, the "static" level of specialness inherent in the constant spread methodologies completely overlooks the time-varying nature of repo specials.

Criterion 3: How volatile is the trim methodology's volume amount?

Ideally, the trim methodology should remove a consistent amount of volume from the CORRA-eligible trades with limited volatility. In extreme scenarios, the ideal methodology would minimize the need to use a fallback rate due to too much volume having been trimmed.

Evaluating the maximum and minimum volume trimmed (**Table 3**) shows an inherent flaw of the spread-based methods under consideration: implausibly high or low trimmed amounts. For example, both the spread to prior CORRA and spread to target trim methodologies would, on certain days, have trimmed 90-100% of eligible trades. **Charts 3A & 3B** depict total trimmed volume of CORRA-eligible trades when trimming as a spread to target and prior CORRA respectively.

Table 3: Min / Max of Amount Trimmed (%)

Min / Max of Amount Trimmed (%)			
Observation Period			
Start Date	April 3, 2003	April 3, 2003	June 12, 2020
End Date	February 28, 2025	June 11, 2020	February 28, 2025
Methodology Description	**Min / Max**	**Min / Max**	**Min / Max**
Current CORRA	25% / 25%	25% / 25%	25% / 25%
CORRA 15bps spread to prior CORRA	0% / 59%	0% / 59%	0% / 35%
CORRA 10bps spread to prior CORRA	0% / 61%	0% / 61%	0% / 48%
CORRA 5bps spread to prior CORRA	0% / 99%	0% / 99%	1% / 95%
CORRA with 25% Trim Rate	25% / 25%	25% / 25%	25% / 25%
CORRA with 20% Trim Rate	20% / 20%	20% / 20%	20% / 20%
CORRA with 15% Trim Rate	15% / 15%	15% / 15%	15% / 15%
CORRA with 10% Trim Rate	10% / 10%	10% / 10%	10% / 10%
CORRA 15bps spread to Target	0% / 93%	0% / 93%	0% / 88%
CORRA 10bps spread to Target	0% / 100%	0% / 100%	0% / 90%
CORRA 5bps spread to Target	0% / 100%	0% / 100%	3% / 98%
Bond Rate Method	0% / 72%	0% / 72%	0% / 46%

Chart 3A: Trimmed Volume Spread to Target (%)

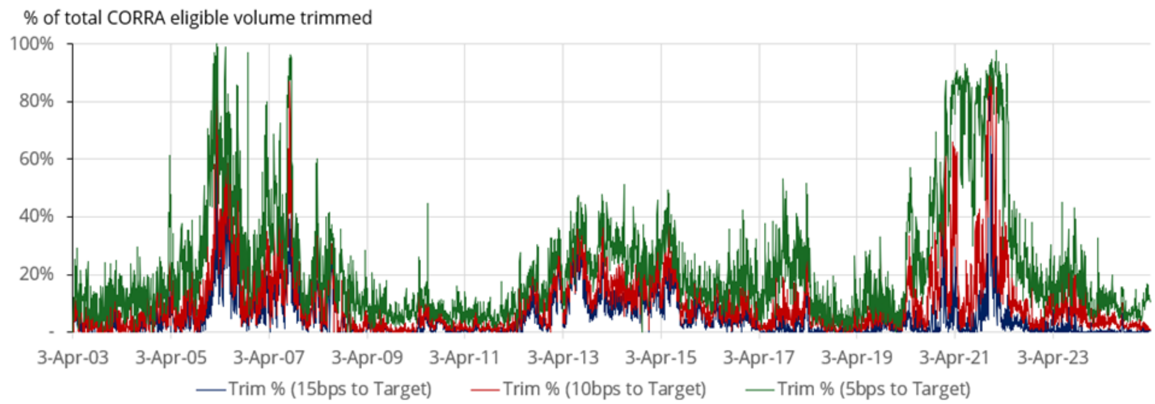
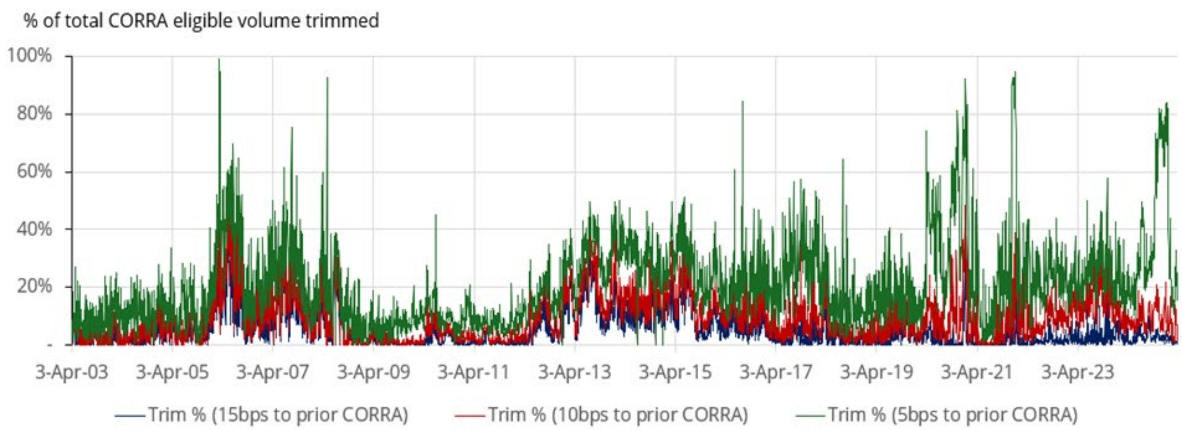


Chart 3B: Trimmed Volume Spread to CORRA (%)



Criterion 4: How volatile is the trim methodology's trimmed median (i.e. CORRA)?

Evaluating the stability of CORRA is important as it contributes to the overall robustness and confidence of the benchmark rate. The ideal trim methodology would result in a CORRA rate that has enough variance over time to be a reliable market indicator, yet without being overly volatile. The tables below displays the standard deviation of CORRA as spread to target (**Table 4A**), the percent of times CORRA gaps under each methodology (**Table 4B**), and the percent of time the trim rate is equal to CORRA (**Table 4C**). Ideally, the methodology should result in a CORRA with a low standard deviation, a low incidence of gapping, and should not have many instances where the trim rate equals CORRA.

Trimming as a fixed *spread to prior CORRA* is more volatile - a result of this methodology having a dependency on the prior CORRA settings, which creates a persistence that prolongs CORRA deviations away from target for longer. This dynamic works to increase the standard deviation relative to the target rate when CORRA is elevated as depicted in **Table 4A** below. Trimming CORRA via a fixed *spread to target* results in a more stable CORRA, evident by the lower standard deviation as a spread to target. However, a notable downside to the spread to target methodology is the frequency at which the trim rate is equal to CORRA (observed in **Table 4C**).

Considering overall standard deviation, frequency of large gapping in CORRA and the number instances CORRA sets at its respective trim rate, the 3 highest-ranked methods are: 5bp spread to prior CORRA, Bond Rate method and 5bp spread to target.

Table 4A: Standard Deviation Spread to Target

Standard Deviation of Spread to Target (bps)				
Start Date	April 3, 2003	April 3, 2003	June 12, 2020	
End Date	February 28, 2025	June 11, 2020	February 28, 2025	
Methodology Description	**(A)**	**(B)**	**(C)**	**(A) + (B) + (C)**
CORRA (BoC)	3.10	2.41	4.71	10.22
CORRA 15bps spread to prior CORRA	2.78	1.75	4.79	9.32
CORRA 10bps spread to prior CORRA	2.69	1.65	4.73	9.07
CORRA 5bps spread to prior CORRA	2.61	1.40	4.94	8.94
CORRA with 25% Trim Rate[1]	2.65	1.62	4.71	8.97
CORRA with 20% Trim Rate	2.69	1.68	4.72	9.09
CORRA with 15% Trim Rate	2.73	1.76	4.72	9.21
CORRA with 10% Trim Rate	2.80	1.87	4.73	9.40
CORRA 15bps spread to Target	2.55	1.60	4.39	8.54
CORRA 10bps spread to Target	2.27	1.42	3.97	7.66
CORRA 5bps spread to Target	2.18	1.75	3.27	7.20
Bond Rate Method	2.60	1.52	4.59	8.71

[1] This will not be equal to current CORRA when the date range is earlier than June 12, 2020, as this marked the shift to "new-CORRA" (i.e., when CORRA swithed to a median calculation vs. an average).

Table 4B: CORRA Gapping Frequency (%)

Instances (as % of total) of day over day CORRA gap sizes per respective methodology				
Observation Period: January 2003 - February 2025				
	Day over day gap size (% of total)			
Methodology Description	**3bps**	**4bps**	**5bps**	**6bps+**
CORRA (15bps Spread to Prior CORRA)	2.9%	0.9%	0.5%	0.2%
CORRA (10bps Spread to Prior CORRA)	2.6%	0.5%	0.4%	0.2%
CORRA (5bps Spread to Prior CORRA)	1.2%	0.5%	0.2%	0.1%
CORRA (25% trim)	1.9%	0.7%	0.6%	0.4%
CORRA (20% trim)	2.7%	0.7%	0.6%	0.4%
CORRA (15% trim)	2.8%	0.9%	0.5%	0.4%
CORRA (10% trim)	3.4%	0.9%	0.5%	0.4%
CORRA (15bps spread to Target)	2.8%	0.9%	0.4%	0.2%
CORRA (10bps spread to Target)	2.4%	0.6%	0.4%	0.2%
CORRA (5bps spread to Target)	1.0%	0.4%	0.3%	0.2%
Bond Rate Method	2.3%	0.7%	0.3%	0.3%

Table 4C: Frequency of trim rate equal to CORRA Tabular (%)

Instances (as % of total) where trim rate equals CORRA	
Observation Period: January 2003 - February 2025	
Methodology Description	**Trim Rate equals CORRA (%)**
Trim Rate (15bps Spread to Prior CORRA)	-
Trim Rate (10bps Spread to Prior CORRA)	-
Trim Rate (5bps Spread to Prior CORRA)	0.05%
Trim Rate (25% trim)	4.49%
Trim Rate (20% trim)	1.13%
Trim Rate (15% trim)	0.24%
Trim Rate (10% trim)	0.13%
Trim Rate (15bps spread to Target)	0.02%
Trim Rate (10bps spread to Target)	0.31%
Trim Rate (5bps spread to Target)	6.01%
Bond Rate Trim Rate (Bps) Spread to Target	0.11%