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# The Dealer-to-Client Repo Market: A Buoy on a Swaying Sea

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# Abstract

In 2024, the overnight funding market experienced sustained pressure and the benchmark Canadian Overnight Repo Rate Average (CORRA) rose to 7 basis points above the Bank of Canada's target overnight rate. Settlement balances were declining, but hedge fund borrowing also grew by over $30 billion, increasing the client share of total repo volumes. With limited balance sheets and substantial market power, dealers raised clients' rates, which increasingly influenced CORRA. Overall, this episode highlights the effect that dealers' balance sheet constraints and bargaining power have on where CORRA settles but downplays the role of the settlement balances channel in the dealer-to-client market.



*Topics: Financial markets; Interest rates; Monetary policy implementation; Market structure and pricing; Financial institutions*
*JEL codes: D4, D53, E43, E44, E52, G12*



# Résumé

En 2024, le marché du financement à un jour a subi des pressions soutenues, au point que le taux de référence CORRA (Canadian Overnight Repo Rate Average) a été jusqu'à dépasser de 7 points le taux cible du financement à un jour de la Banque du Canada. Les soldes de règlement avaient diminué, mais dans le même temps, les emprunts des fonds de couverture ont aussi grimpé de plus de 30 milliards de dollars, avec un accroissement de la part des opérations de pension effectuées entre les courtiers et leurs clients dans le volume total des opérations de pension. Proches de leurs contraintes de bilan, et forts de leur emprise importante sur le marché, les courtiers ont augmenté les taux qu'ils offraient à leurs clients, ce qui a influencé de plus en plus le taux CORRA. Dans l'ensemble, cet épisode met en lumière l'effet des contraintes de bilan et du pouvoir de négociation des courtiers sur le niveau du taux CORRA, mais il minimise le rôle du canal des soldes de règlement dans le segment courtier-client.



*Sujets : Marchés financiers; Taux d'intérêt; Mise en œuvre de la politique monétaire; Structure de marché et établissement des prix; Institutions financières*
*Codes JEL : D4, D53, E43, E44, E52, G12*

# Introduction

The buoys drift in the distance, ignored by most aboard. The passengers focus on the journey—the destination, the weather, the comfort of the ride. The buoy is for the people steering the vessel.

In Canada's financial system, the Canadian Overnight Repo Rate Average (CORRA) serves a similar role as the buoy. CORRA is the median interest rate that reflects the cost of secured overnight borrowing against Government of Canada (GoC) bonds. Most Canadians have no reason to follow this benchmark rate. But for those piloting large institutions—bankers, traders and risk managers—it's a key marker. This is because the Bank of Canada sets a target for the overnight interest rate to keep inflation low and stable. The Bank carries out monetary policy by making changes to its target when required. Targeting the overnight rate in this way influences the rates on corporate loans and consumer mortgages, and ultimately the rest of the economy.

Beginning in 2024, CORRA began to drift above the Bank's target. Not sharply, not suddenly—but persistently. This benchmark rate hovered just a little higher than expected day after day, suggesting a shift in the current. To passengers, the ride felt stable: inflation was easing, markets were functioning and the vessel stayed on course. But the buoy—CORRA—was telling its own story, one of underlying tension and changing conditions beneath the surface. To address the spread between CORRA and its target, the Bank began intervening more actively. During that period, for a time, the Bank supplied more than $8 billion every day in funds through repurchase agreement (repo) operations.[1]

Interestingly, the core of the overnight market—where banks and dealers transact with each other—appeared nearly aligned with the target. It was at the edges of the overnight market that the drift was visible in transactions between dealers and their clients. Pension funds, hedge funds and other asset managers were transacting at rates notably different than those prevailing in transactions between dealers themselves. This pattern held for overnight GoC bond transactions that are included in the CORRA benchmark as well as across other transactions that had longer maturities, were secured with other collateral, or that would be settled the next day.[2]

**Chart 1** compares the median of the spreads between these rates and the Bank's target for both dealer-to-client (D2C) and dealer-to-dealer (D2D) transactions (excluding transactions involving related parties). Between the summer of 2020 and the summer of

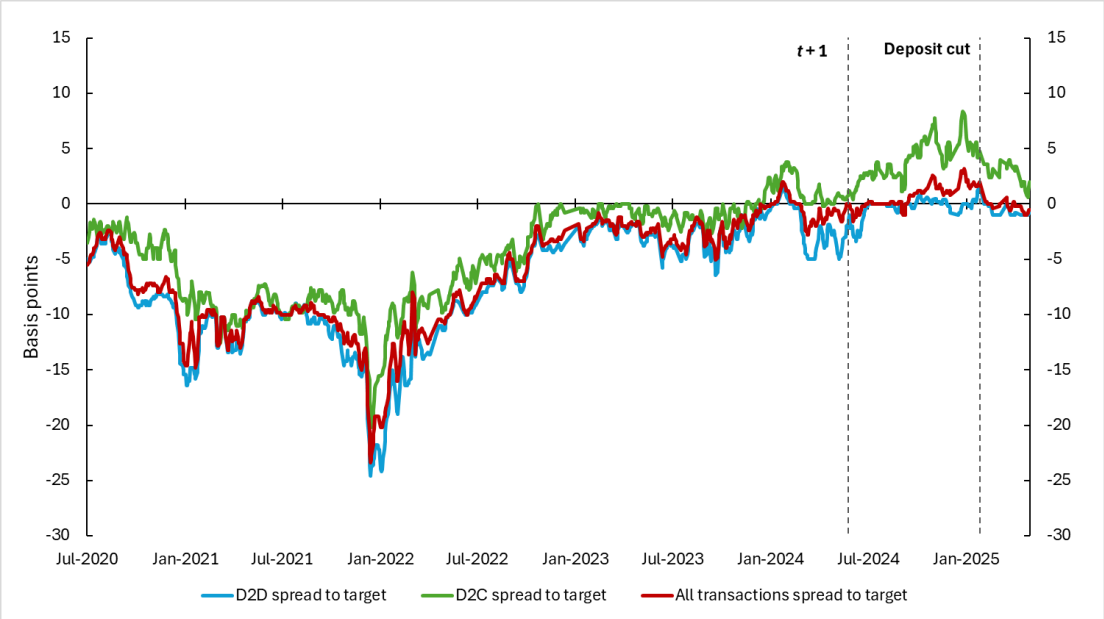
[1] Bank of Canada, "Bank of Canada announces a change to Overnight Repo operations," market notice (October 24, 2024).

[2] Repo transactions are collateralized to mitigate counterparty default risk. Collateral typically consists of GoC securities but also provincial and Crown corporation bonds.

2022, D2C and D2D transactions tended to settle around a similar level, that at the time was below the target rate. By the end of 2023, both D2C and D2D transactions converged around the target rate, on average. However, this pattern changed in 2024: D2C rates started to drift up and away from the target rate, while D2D rates remained closer to the target.

**Chart 1: Dealer-to-customer and dealer-to-dealer repo rate spreads**

Spreads to Bank of Canada target rate 5-day rolling mean




Note: Sample includes repo transactions across all types of collateral, terms and settlement between July 2, 2020, and March 31, 2025, after trimming the lowest 25% of rates for each day. The chart plots the spread between the Bank of Canada target rate and the volume-weighted median of dealer-to-client (D2C) rates, dealer-to-dealer (D2D) rates between unrelated parties, and all repo rates. The vertical lines correspond to the $t + 1$ transition (May 27, 2024) and the deposit rate cut (Jan 29, 2025), respectively.

The spreads between repo rates and the target rate are a measure of client markup. Analysts and commentators have suggested several economic channels to explain why this markup is not the same for D2C and D2D transactions. In this paper, we explore three non–mutually exclusive channels:

- dealer balance sheets
- client bargaining power
- bank settlement balances

Empirically, we find that each channel helps explain why the rates for individual D2C transactions drifted away from the rates for similar D2D transactions. The effects are economically significant. They also interact and can add up. However, our findings indicate that to date: the **balance sheet** and **bargaining power** channels play a larger

role in determining the D2C spread relative to the D2D rate than the **settlement balances** channel.

The effects of these channels are apparent for individual transactions as well as overall, across all transactions. Our analysis suggests that the aggregated D2C rate drifts above the D2D rate following the $t + 1$ transition because a large fraction of D2C transactions have three key features: most involve **hedge funds** borrowing funds from **dealers whose balance sheet is more constrained** and **who exercise strong bargaining power**.

We find a similar shift across the narrower set of transactions whose rates contribute to the calculation of CORRA (i.e., GoC overnight repos and reverse repos).

Empirically, this shift in D2C rates can explain the upward drift in CORRA in 2024.[3] If we remove from the calculations all long repo positions of hedge funds starting in the summer of 2024, then the re-computed CORRA deviations decrease from around 5 basis points (bps) *above* the policy rate to 2.5 bps *below* the policy rate, on average. In contrast, excluding trades from dealers holding the larger share of settlement balances shows no effect on the benchmark rate. This underscores the impact of client transactions as well as the importance of looking beyond the D2D market.

Our results have important implications for policies that aim to bring CORRA closer to or in line with the Bank's target rate. CORRA includes overnight repo transactions involving GoC bonds as collateral between banks or between banks and their clients. The Bank of Canada can control the quantity of outstanding settlement balances, but it has no direct influence on the bargaining power exercised by dealers in transactions with clients nor on dealer balance sheet constraints. The Bank can offset the effects that demand for settlement balances might have on CORRA by setting the total amount of settlement balances in the payment system. However, insulating CORRA from the effects of bargaining power and balance sheet constraints on client markups is more complex. Mitigating the influence of these channels may require changes to the design and infrastructure of the Canadian money market, which could involve costs, inefficiencies and other potential side effects. This creates several trade-offs against the benefits of limiting variations in CORRA.

[3] This is consistent with earlier analysis in Plong and Maru (2024a; 2024b) following the accelerated settlement date for bond market transactions from $t + 2$ to $t + 1$ on May 27, 2024.

# Why D2C repo rates deviate from D2D rates: Economic channels

Repo and reverse repo transactions (together, *repo transactions* in this paper) are used by investment dealers and their clients to borrow and lend funds for short periods of time. Three economic channels determine the spread between the rates in D2D and D2C repo transactions.

## Balance sheet channel

Banking regulations set a lower bound on the equity capital ratio and liquidity ratio of bank holding companies (BHCs). The capital ratio is set to cover losses that may arise from banking or trading activities. The liquidity ratio is set to minimize the mismatch between cash inflows and outflows in stress scenarios.[4] As a result of this regulatory constraint, how dealers manage imbalances between transactions with borrowers and with lenders depends on the opportunity costs the dealer faces using its own balance sheet or its BHC's balance sheet capacity along other business lines (e.g., commercial lending). We expect dealers to increase the spread for D2C repo transactions when their balance sheet capacity is limited. However, the direction of causation between balance sheet space and D2C transactions can go either way. In one direction, a given dealer may be posting larger D2C spreads due to internal or regulatory limits. In the other direction, absorbing large D2C imbalances contributes to a tighter balance sheet.

## Bargaining power channel

Transactions between dealers and their clients in over-the-counter markets involve bargaining power. Clients in the repo market typically form a trading relationship with only one or a few dealers and rely on them as a lender of funds or securities. This gives dealers bargaining power when it is costly for a client to form a new trading relationship. Consequently, clients who have relationships with several dealers and clients who make up a large share of a dealer's transaction volume may benefit from lower markups.[5]

[4] However, repos were temporarily exempt from these regulations during the COVID-19 crisis to provide relief to dealers and enhance intermediation capacity. This exemption concluded on April 1, 2023, shortly before CORRA began to sit above the target rate.

[5] Dealer bargaining power is important for explaining repo rates in both the US and European markets (Eisenschmidt, Ma and Zhang 2024; Huber 2023), suggesting it may also be relevant in the Canadian market.

## Bank settlement balances channel

The Bank sets the aggregate level of settlement balances that can be used to satisfy obligations in the payments system.[6] For example, quantitative easing created ample settlement balances in the aftermath of the COVID-19 crisis. However, while the Bank can determine the outstanding stock of settlement balances, each financial institution with access to settlement balances manages its own level of holdings. Therefore, overall repo rates (and thus CORRA as well) may rise if some banks bid for scarce settlement balances in the D2D repo market, either to meet their payment needs or as a precaution (Gravelle 2025). A higher concentration of settlement balances in the hands of a few dealers might amplify this effect.

The amount of settlement balances a bank treasury holds can also affect the rate its dealer charges its clients. Note that this can go both ways. In one direction, the treasury might hold more settlement balances than other banks because its dealer is more active in the repo market. In this case, the higher holdings help manage the payments system flows generated by this activity. In the other direction, dealers might charge more onerous rates because their treasury has a higher desired stock of settlement balances. In that case, a bank's higher stock of settlement balances might crowd its balance sheet, competing with its own clients' borrowing needs. Note that in this case, the settlement balances channel interacts with and amplifies the balance sheet channel.

# Empirical proxies

We use a panel regression to measure the degree to which each economic channel affects the variations in the spreads between D2C transactions relative to the D2D rate. We use observable features of transactions that together help us gauge how the three economic channels influence the D2C spread. The features capturing the **settlement balances channel** include:

- the dealer's *settlement balances share* of its BHC's assets, measured as the ratio of the dealer's settlement balances relative to its total book assets
- the *settlement balances concentration,* measured as the sum of the square of each dealer's share of settlement balances

We expect that a lower *settlement balances share* and a higher *settlement balances concentration* are associated with a higher spread between D2C and D2D transactions involving the same dealer.

[6] For more information on settlement balances and their role in the Canadian payments system, see Arjani and McVanel (2006) and, more recently, Chu et al. (2022) and Witmer (2024).

Next, we consider the following features to proxy for the dealer's **balance sheet** channel:

- the *leverage spread,* which measures the difference between a dealer BHC's Tier 1 capital ratio and its regulatory threshold
- the *repo imbalance*, which is the absolute difference between the dealer's cumulative client repo volume minus its cumulative client reverse repo volume (both measured over the previous day), divided by the sum of its repo and reverse repo volumes (in absolute values)

We expect that D2C spreads are higher when transactions involve a dealer with a lower leverage spread or a dealer managing a larger repo imbalance.

The variables proxying for the **bargaining power** channel include:

- the *client's share* of a dealer's total volume
- the *number of dealers* a client trades with

We expect that a transaction will feature a lower D2C spread when a client is more important to a dealer, and when a client has a larger dealer network.

Finally, we include in the regression the *dealer's number of clients* and the *client's trading volume* to control for the effect of dealer and client size, respectively. We also include a set of **transactional** features that capture differences in contractual terms. In the following analysis, we consider the following transactional features:

- securities-specific fixed effects
- the *repo settlement date* (e.g., same-day versus tomorrow-next)
- the *repo term* or maturity date
- the *collateral type* (e.g., GoC, Canada Mortgage Bond [CMB], provincial)

Essentially, some variations in the average D2C repo spread reflect changes over time in the composition of contractual terms across all transactions.

# Why D2C repo rates drift from D2D rates: Marginal effects

We estimate a panel regression linking the features of D2C repo transactions with the transaction's *signed spread*. The signed spread is calculated as the difference between a given D2C repo rate and the D2D rate for the day. We multiply this difference by –1 when the client does a reverse repo (lends cash to the dealer) and leave the sign unchanged

when the client does a repo (borrows cash from the dealer).[7] This reflects the fact that clients lend funds to dealers at rates below the benchmark but borrow funds from dealers at rates above the benchmark (unless in certain cases when the transaction involves collateral that is "on special").

We include in our sample all Canadian-dollar D2C transactions between non-affiliated parties that settle on the trading day (same-day transactions) or the following day (tomorrow-next transactions), across three collateral types—GoC, CMBs and provincial bonds—and for any maturity.[8] We use this broad set of transactions because we are interested in the effects of bargaining power, balance sheet constraints and the liquidity channel across the broad funding market.

To interpret the estimation results, we multiply each coefficient estimate by the standard deviation of the corresponding feature (**Chart 2**).[9] The resulting marginal effect measures how a D2C transaction's *signed spread* changes when we vary each feature by one standard deviation and hold all other features the same. A one standard deviation is a useful gauge of a typical change in our sample. We do not report the results for features that have a relatively small marginal impact on the spread.

We find that all three economic channels of interest exhibit some association with the D2C transaction rates, and these observed relationships are consistent with economic intuition. The following **balance sheet** features exhibit a positive association (note that the numerical change for each marginal effect corresponds to one standard deviation of the variable of interest):

- Increasing the dealer's *repo imbalance* by 0.12 as a share of its gross repo volume on the previous day raises the *signed spread* by over 0.3 bps (balance sheet channel).
- Tightening the dealer's *leverage spread* by 0.31 as a share of its risk-weighted assets increases the *signed spread* by 0.2 bps (balance sheet channel).

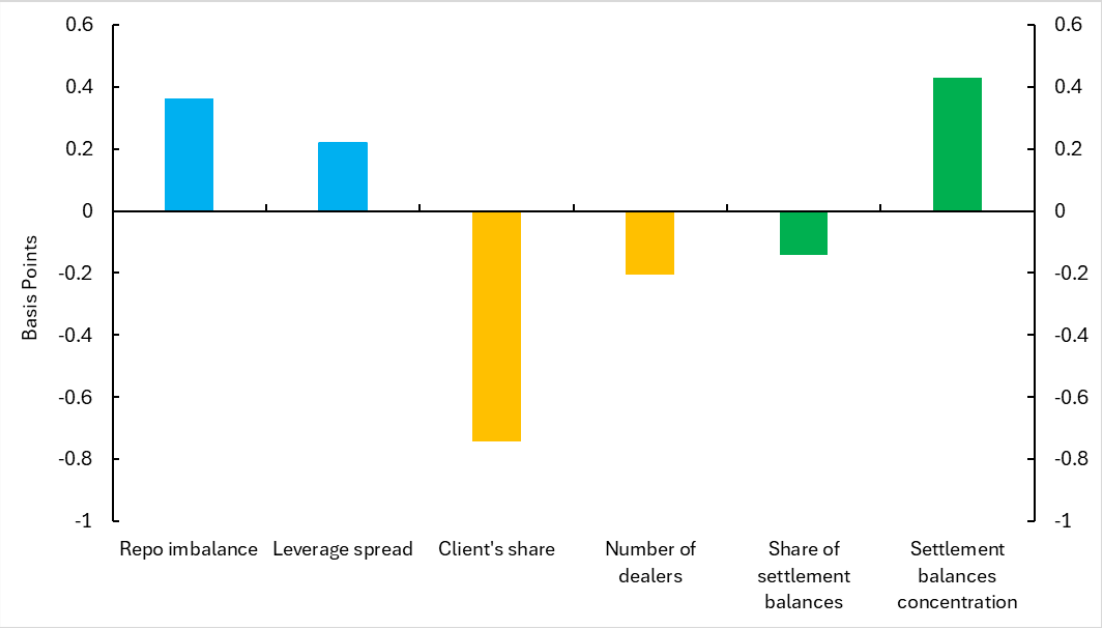
[7] The D2D rate is distinct for each collateral type and for each day. To compute the D2D rate for each day and type, we trim the bottom 25% of all D2D rates. We then calculate the daily volume-weighted median of all bilateral transactions between two government securities distributor dealers within collateral groupings (GoC, provincial, corporate and others).

[8] In a tomorrow-next repo or reverse repo transaction, the date at which the security is exchanged between the parties to the transaction is one day after the agreement date.

[9] We report the regression coefficient estimates in **Table A-2** in the Appendix.

**Chart 2: Marginal effects, dealer-to-client transaction features**

Effect of a one standard deviation increase on dealer-to-client spread




Note: This chart shows the product of the sample standard deviation for each feature multiplied by the coefficient estimates for the feature in a panel regression for the *signed spread* across dealer-to-client (D2C) transactions. The *signed spread* is the D2C transaction spread signed with +1 if the transaction is a reverse repo for the dealer and -1 if it is a repo for the dealer. Regression results are reported in **Table A-2** of the Appendix. The effect of leverage spread is multiplied by –1 to facilitate interpretation. bps is basis points.

The following **bargaining power** features exhibit a negative association:

- Increasing the c*lient's share* of dealer volume by 0.03 as a share of the dealer volume lowers the *signed spread* by 0.7 bps.
- Increasing a client's *number of dealers* by roughly 50% reduces the *signed spread* by 0.2 bps.

One **settlement balance** feature has a significant positive association:

- Increasing the *settlement balances concentration* by 0.02 increases the *signed spread* by 0.4 bps.

In summary, we find that both the **balance sheet** and **bargaining power** channels have the potential to be as important as the **settlement balances** channel to explain the spreads of individual D2C transactions.

The panel regression in this section measures the partial correlation that each feature has with the D2C spread in a transaction. It is important to determine whether the relative importance of the three channels changes when we aggregate all transactions together to construct the benchmark rate. Their importance can change because these features are correlated across transactions: they could amplify or offset each other

when we aggregate trades, and the average effect across the aggregated trades in a day could be different than the marginal effect measured with the panel regression.

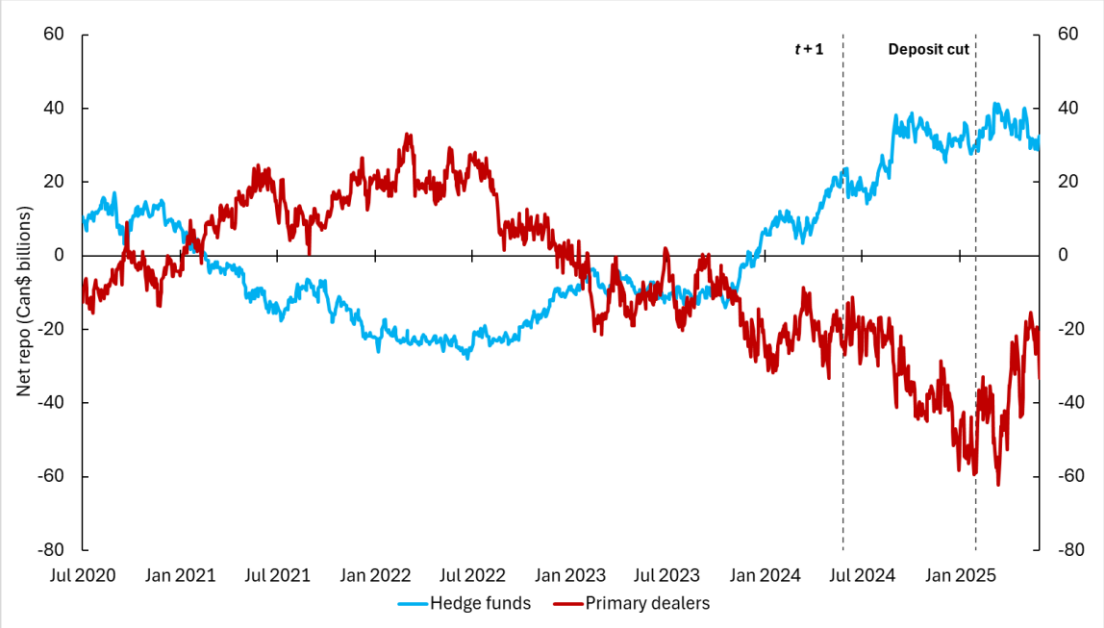
In the Appendix, we report the results of a similar regression but in which we assess the relationships between the aggregated (volume-weighted) D2C spreads and each of the aggregated features (also volume-weighted). Overall, we reach similar conclusions qualitatively and quantitatively, although some of the coefficients are estimated with less precision in the aggregated sample (compare **Table A-2** and **Table A-3** in the Appendix).

## Hedge funds and the D2C repo market

Among dealer clients, hedge funds noticeably increased their net repo positions starting late in 2023 and early 2024 to fund long positions in GoC bonds (Plong and Maru 2024b). This trend was discussed in the Bank of Canada's *Financial Stability Report—2024*, and its growth has continued since then. By year-end 2024, the aggregate net repo positions backed by GoC bonds held by hedge funds had increased by roughly $30 billion (**Chart 3**).

In addition, it is the Canadian dealers (or their BHCs) that are absorbing most of the variations in hedge funds' repo positions (**Chart 3**). Hedge funds' and dealers' net positions are closely and inversely related. The correlation is -0.87 at the daily frequency, and the correlation between the daily changes in repo positions is -0.52. However, the correlation should be zero if dealers were running a matched book across clients—matching their trades with hedge funds and trades with other clients. Instead, the data imply that hedge funds' growing holdings are funded from the dealers' or BHC's balance sheet.

**Chart 3: Net repo positions of hedge funds and primary dealers**

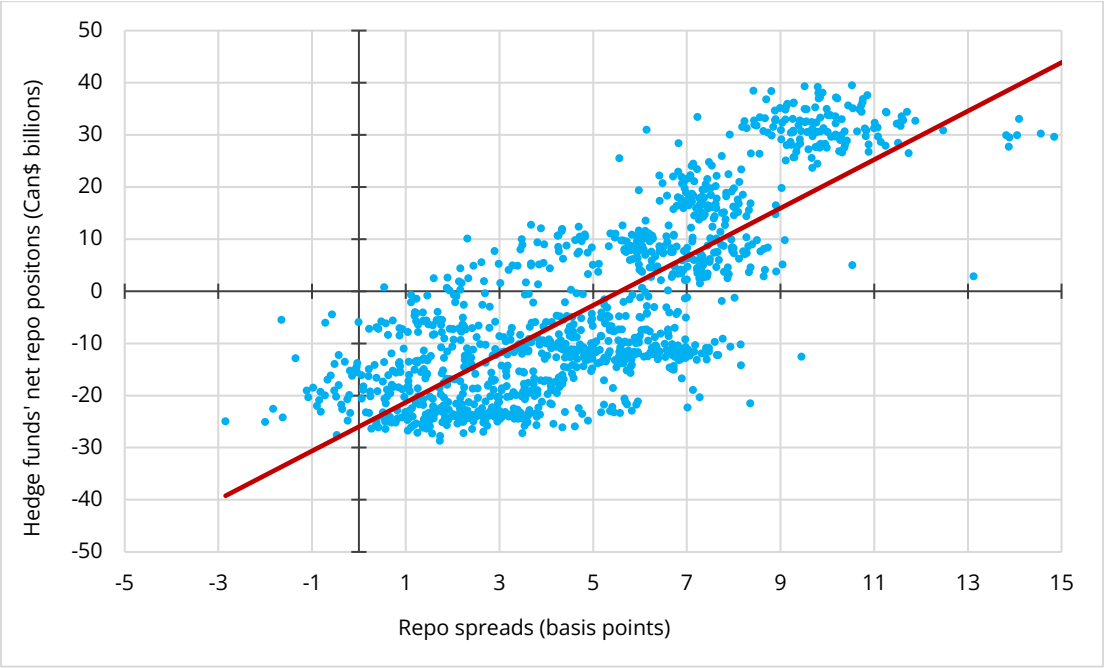



Note: The net repo position is calculated as total Government of Canada (GoC) bond repo positions minus total reverse repo positions. Total positions are determined by adding together all GoC repos and reverse repos separately over time for each counterparty and dropping positions as they mature. The blue line is hedge funds' net repo position against primary dealers; the red line is primary dealers' net repo position against all of their clients. The vertical dashed lines mark the *t* + 1 transition (May 27, 2025) and deposit rate cut (Jan 31, 2025), respectively. The sample period is from July 2, 2020, to March 31, 2025. Primary dealer positions are accumulated from 2016 onward, while hedge fund positions begin on October 18, 2019, when counterparty Legal Entity Identifiers become available.

The fact that dealers are largely taking the other side of hedge funds' positions suggests that the **balance sheet** and **bargaining power** channels explain the rise in repo rates during this period. Indeed, we find a strong positive association between the aggregated net repo positions across hedge funds and the average repo rate spread across hedge funds' overnight repo positions (**Chart 4**).[10]

[10] We compare hedge funds' net repo positions across all maturities with the average hedge funds' *overnight* repo rate. We do this because the rate on older term and open transactions does not reflect current marginal funding conditions, and measuring the spread of new term repo transactions introduces additional measurement errors.

**Chart 4: Hedge fund repo spreads and net repo positions**




Note: See **Chart 3** for details about net repo positions. Hedge funds' repo spread is calculated as the difference between their average overnight repo rate and the dealer-to-dealer average overnight repo rate. The sample period is from July 2, 2020, to March 31, 2025. The red line represents the best linear fit: $\text{repo spread}_{HF} = 4.91[0.056] + 0.13[0.003] \times \text{net repo positions}_{HF}$, with standard errors in brackets.

The positive relationship is meaningful. It indicates that these variations in net repo positions mostly reflect shifts in hedge funds' demand for funds, and these variations are drawing the dealers' supply curve. This is consistent with the presence of the **balance sheet** and **bargaining power** channels. Demand shifts from hedge funds drove both the net repo positions and the D2C rates higher.

The magnitude of this slope is also significant: an increase of $30 billion in hedge funds' net repo position for GoC bonds is associated with an increase in the average repo rate on these transactions of roughly 4 bps above the D2D rate (30 x 0.13 = 3.9). This example roughly captures the increase in hedge funds' net repo position and nearly all the rise in the hedge funds' average repo rate since the end of 2023.

# Impact on the overnight market

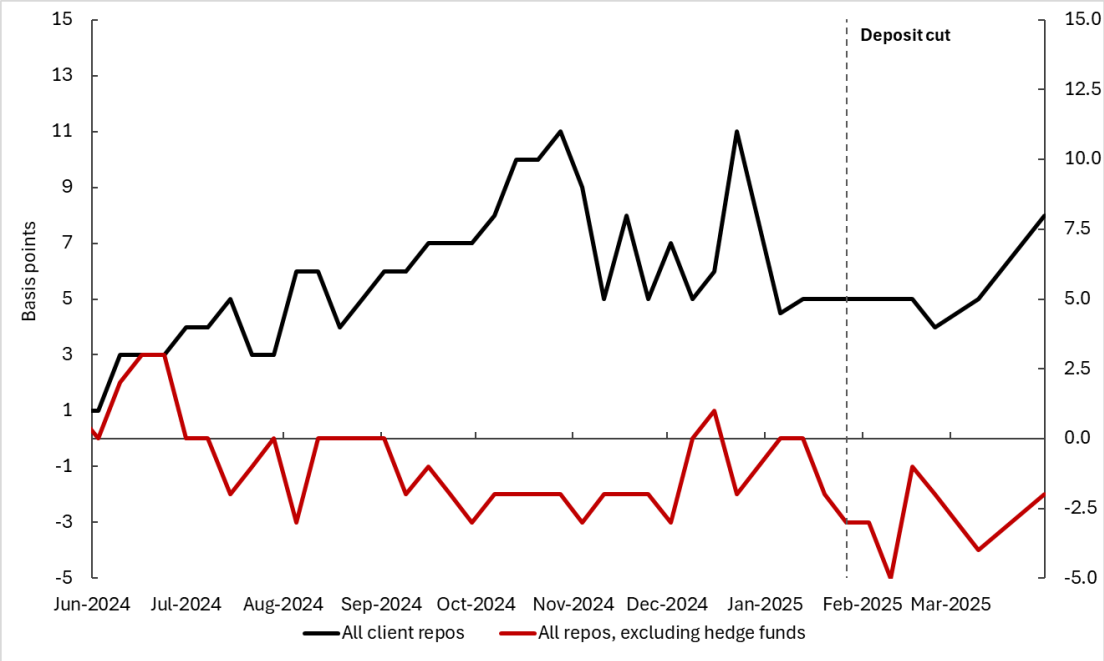
Given the magnitude of the effect of hedge fund net repo positions, a natural question is whether the growth in D2C volume due to hedge funds' activities was also driving changes in the overnight repo market for GoC bonds. The answer is largely yes.

One way to measure this "hedge fund effect" is to calculate the weighted average D2C signed spread for overnight repo and reverse repo transactions with GoC bonds either by including or excluding repo trades between dealers and hedge funds. We focus on

the period after the large shift from tomorrow-next to same-day settlement date that occurred on May 27, 2024.[11] At the start of the period, the average overnight signed spread is similar whether we include or exclude hedge funds' transactions from the calculation. In other words, the signed spreads at the time were similar for hedge funds and other client types, e.g., pension funds, on average. Over time, hedge funds started paying larger overnight signed spreads as their net repo positions increased (**Chart 5**). Toward the end of 2024, the D2C signed spread was around 7 bps when hedge funds' transactions were included. In contrast, the signed spread was around 2 bps when hedge funds were excluded. In other words, most of the increased D2C overnight signed spread was due to transactions involving hedge funds.

**Chart 5: Dealer-to-client spreads with and without hedge fund overnight repos**

Signed client spread from dealer-to-dealer rate




Note: This chart shows the weekly volume-weighted median of signed spreads for Government of Canada same-day settlement repos and reverse repos with overnight maturity. The sample period is from May 27, 2024 (when the *t* + 1 settlement was implemented) to March 31, 2025, and the vertical line on January 29, 2025, is when the deposit rate was reduced by 5 basis points.

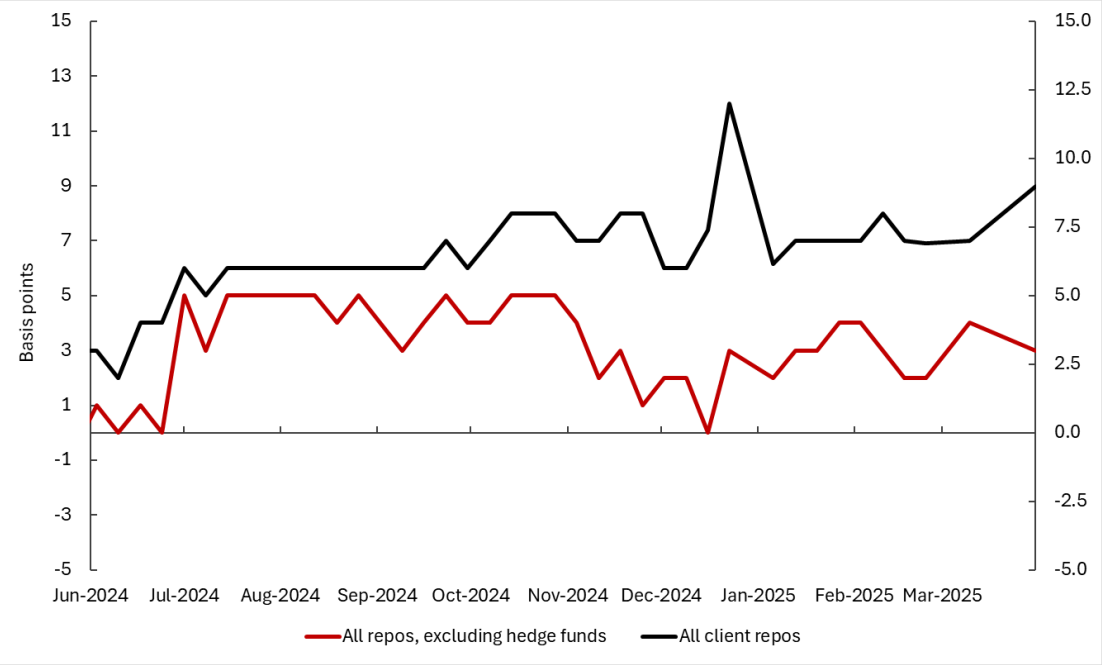
Given this large effect on average D2C transactions, could it be that hedge funds' transactions alone explain all or a large part of the increase in the average overnight D2C rate (which also contributes to CORRA)? To answer this, we calculate the volume-weighted average D2C rate with and without the hedge fund transactions.

[11] This shift affected the composition of CORRA and led to a greater share of D2C transactions with higher signed spreads. See Plong and Maru (2024b).

We find that aggregate hedge funds' D2C transactions can fully explain the increase in the average D2C GoC overnight repo rate (**Chart 6**). Consistent with Plong and Maru (2024a; 2024b), we find that hedge funds' repo positions became a source of pressure on the overnight D2C average rate starting around the summer of 2024. The wedge between the true benchmark rate and the alternative without hedge fund transactions gradually increased throughout the year, when hedge funds were increasing their net repo positions. In contrast, the volume-weighted median of the remaining overnight D2C transactions was 2.5 bps below the target overnight rate. This can be because, once we exclude the hedge fund transactions, the typical client transactions are reverse repos.

**Chart 6: Dealer-to-client rates with and without hedge fund overnight repos**

Client spread from target rate




Note: This chart displays the weekly weighted median of client rate spreads from the target rate for Government of Canada same-day settlement repos and reverse repos with overnight maturity. Where hedge funds are excluded, transactions are reweighted so the weights sum to one. The sample period is from May 27, 2024 (when $t + 1$ settlement was implemented) to March 31, 2025 and the vertical line at January 29, 2025, is when the deposit rate was reduced by 5 basis points.

Note that removing hedge funds' transactions had a smaller effect on the D2C signed spread relative to the D2D rate than it had on the average signed spread across overnight D2D and D2C transactions relative to the target rate (compare **Chart 5** and **Chart 6**). This means that the D2D spread relative to the target was rising at the same time as the hedge funds' signed spread and net repo positions were rising. This suggests that some of the net repo positions were distributed through the D2D markets, putting upward pressure on overnight D2D rates.

As a result, we infer that the high signed spreads and positive CORRA deviations (above the policy target) in 2024 are due to the large volume of repo transactions between hedge funds and a small number of dealers managing balance sheet constraints and applying bargaining power. During this period, dealers were, on average, closer to their constraints and the transacting clients represented a smaller share of the dealers' trading volume.[12]

# Discussion

Overall, our analysis offers some key policy implications. First, understanding CORRA deviations above the Bank's target rate requires understanding the determinants of both D2D and D2C transactions, and the important determinants may not be the same in each segment of the market.

Second, policy-makers may have a greater tolerance for CORRA deviations when dealers' balance sheet constraints and their bargaining power with clients play a larger role in the D2C repo market. Alleviating these frictions may be difficult, since this would require relaxing dealer balance sheet constraints—likely through regulatory changes—or increasing competition in the Canadian repo market—likely through changes in the design or infrastructure of the repo market. Each of these approaches has its costs and side effects.

Third, if D2C transactions continue to be included in the CORRA benchmark, and if tolerance for deviations remains low, then changes to the monetary policy implementation framework might be needed to more directly influence the component of the CORRA benchmark that captures transactions in the D2C repo market. Ultimately, the segmentation between D2C and D2D transactions is tied to the dealers' BHCs' access to the payments system and their exclusive participation in the Bank's overnight repo facility.

# Conclusion

We identify economic channels that play an important role in the spread of D2C repo transactions relative to D2D rates. We find that dealer **balance sheets** and client **bargaining power** have economically significant correlations with D2C repo spreads. We also find that these channels help explain deviations of the broader CORRA benchmark above the Bank of Canada's target between the $t + 1$ settlement transition and the deposit rate cut in 2025. Our findings underscore the importance of both the D2C and

[12] In unreported tests, we remove repo transactions by dealers facing relatively tighter balance sheet constraints or remove repo transactions by dealers holding a greater stock or share of settlement balances. Neither scenario reduces the wedge between the average spread between repo rates and the policy target shown in **Chart 5** and **Chart 6**.

D2D markets in influencing CORRA. Ultimately, a more effective targeting of the overnight rate may require addressing the tension between the definition of benchmark CORRA, which includes D2C rates, and the design of the operational framework in place to implement monetary policy.

# Appendix

**Table A-1: Summary statistics**

| | Unit of measurement | Mean | Standard deviation |
|---|---|---|---|
| Settlement balances share | Share of dealer's assets | 0.03 | 0.02 |
| Settlement balances concentration | Share of dealer's volume | 0.16 | 0.02 |
| Dealers' leverage spread | Percent | 0.75 | 0.31 |
| Dealers' repo imbalance | Decimal | 0.15 | 0.12 |
| Clients' share of dealer volume | Decimal | 0.01 | 0.03 |
| Number of dealers | N | 2.96 | 1.69 |
| Log number of dealers | LN | 0.89 | 0.65 |
| Number of clients | N | 87.27 | 38.06 |
| Log number of clients | LN | 4.31 | 0.65 |
| Number of client trades | N | 171.64 | 282.93 |
| Log number of client trades | LN | 3.75 | 1.91 |

**Table A-2** reports regression estimates of dealer-to-client (D2C) repo transaction rates. The dependent variable is:

$SIGN \times (Repo \: rate – benchmark interdealer rate \: rate) $,

where $SIGN=1$ if the transaction is a repo from the client's perspective and $SIGN=-1$ if the transaction is a reverse repo from the client's perspective. The benchmark dealer-to-dealer (D2D) rate is the median inter-dealer rate in the same trading day after trimming the lowest 25% of rate-ranked volume within a collateral class for the day. The regression has ISIN-level fixed effects. The variable leverage spread is multiplied by –1 to ease interpretation. The variable *Log (number of clients)* is the log of the number of dealer clients in the repo market in the previous quarter. The variable *Log (number of trades)* is the log of the number of the client trades in the repo market in the previous quarter. The variable *Log (settlement balances share)* is the log of the dealers' lagged daily settlement balances as a share of their lagged total assets. The variable *settlement balances concentration* is an Herfindahl Index (HHI) measure of concentration of the Lynx balances distributed among all payments system members. Categorical dummy

variables for repo term, settlement day (overnight versus tomorrow-next) and trade size are included but not reported. Standard errors reported in parentheses are clustered by client legal entity identifier (LEI).

**Table A-2: Panel regression estimates**

| **Dependent variable** | **Median spread from dealer-to-dealer rate** |
|---|---|
| | **(1)** |
| Dealer's repo imbalance | 0.028*** |
| | (0.010) |
| Dealer's leverage spread X (-1) | 0.007* |
| | (0.004) |
| Client's share of dealer volume | -0.153** |
| | (0.067) |
| Log (number of clients) | -0.013** |
| | (0.005) |
| Log (number of dealers) | -0.003 |
| | (0.005) |
| Log (number of trades) | 0.002 |
| | (0.002) |
| Log (settlement balances share) | -0.002 |
| | (0.002) |
| Settlement balances concentration | 0.174*** |
| | (0.063) |
| Observations | 451969 |
| N. of groups | 935 |
| $R^2$ | 0.005 |

## Aggregated regression

We assess the association between proxies for the **settlement balances**, **balance sheet** and **bargaining power** channels after D2C transaction spreads are aggregated using their trading volumes as weights. This aggregation is similar in spirit to the method underlying the calculation of CORRA. Specifically, we estimate the following regression:

$$z_t = \alpha + \beta_1 x_{1,t} + \cdots + \beta_N x_{N,t} + \epsilon_t$$

$$z_t = \sum_i w_{i,t} \times signed\ spread_{i,t}$$

$$x_{n,t} = \sum_i w_{i,t} \times feature_{i,n,t},$$

where the weights $w_{i,t}$ are proportional to the trading volume for transaction $i$ on date $t$, and where $feature_{i,n,t}$ represents any one of the features for this transaction on that date. We average the aggregated data across every week to remove some of the noise in daily rates. We estimate this time-series regression by ordinary least squares; results are reported in **Table A-3**.

The coefficient estimates in **Table A-2** and **Table A-3** are not directly comparable. This is because the panel regression in **Table A-2** is based on disaggregated transaction data, and the time-series regression in **Table A-3** is based on aggregated data. The former regression measures the partial correlation of each feature with the transaction-level D2C spread. The latter regression measures the partial correlation of the volume-weighted average of each feature with the average transaction markup. Nonetheless, we find that the two set estimates exhibit a similar pattern.

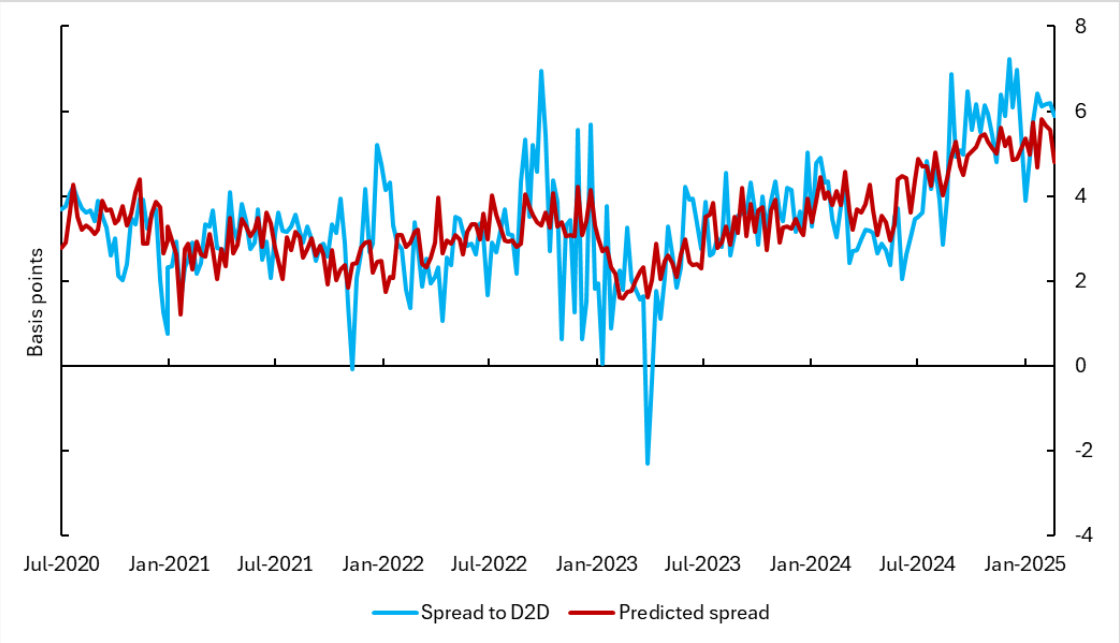
For the **balance sheet** channel, we continue to find a significant association for dealers' leverage spread in the aggregated results, but the repo imbalance becomes insignificant. For the **bargaining power** channel, we find that the association strengthens between the aggregated D2C and the number of dealers and the client share, relative to the association we find in the disaggregated results. For the **settlement balances** channel, we find that neither the settlement balance concentration nor the level of settlement balances is significant in the aggregated results. We also find that approximately 25% of the time-series variations in the aggregated D2C spread reflect the composition of contractual terms in the pool of repo transactions. However, these transactional features play no role in the variations of the CORRA benchmark, which focuses on transactions with the same contractual terms.

The D2C signed spread started to rise early in 2023, remained above 3 basis points throughout most of 2024, and stayed high until the end of our sample in March 2025 (**Chart A-1**). Note that the aggregated D2C signed spread captures all transactions entering CORRA as well as transactions with longer terms and with other collateral types.

This suggests that clients' funding conditions tightened for both overnight Government of Canada bond transactions and the broader repo market for other collateral types and repo maturities.

**Chart A-1: Aggregated dealer-to-client spread and fitted values**

Spread to dealer-to-dealer rate




Note: D2D is dealer-to-dealer. This chart reports the weekly average of daily volume-weighted dealer-to-client signed spreads. Fitted spreads are based on a time-series regression model assessing the volume-weighted effects of dealer bargaining power, dealer balance sheet constraints, and settlement balances. The regression results are reported in **Table A-3** in the Appendix.

The fitted value for the aggregated D2C signed spread is close to the observed value. This close fit indicates that the three channels we consider capture the drift in D2C funding conditions relative to the D2D market.

**Table A-3** reports the weekly time-series D2C repo transaction rate regression estimates. The dependent variable is:

$$SIGN \times (Repo \: rate - benchmark interdealer rate \: rate) $,

where $SIGN=1$ if the transaction is a repo from the client's perspective and $SIGN=-1$ if the transaction is a reverse repo from the client's perspective. The dependent and independent variables are weekly weighted averages of the transactions where the weight is proportional to the transaction size. The benchmark D2D rate is the median D2D rate in the same trading day after trimming the lowest 25% of rate-ranked volume within the collateral class for the day. The variable leverage spread is multiplied by -1 to ease interpretation. The independent variables are the same as those defined in the note beneath **Table A-2**. Repo term, collateral type, settlement date and transaction size

categorical dummy variables are included but not reported. Standard errors reported in parentheses control for autocorrelation with Newey-West with one lag.

**Table A-3: Time-series regression results**

| **Dependent variable** | **Median spread from dealer-to-dealer rate** |
|---|---|
| | **(1)** |
| Dealer's repo imbalance | 0.023 |
| | (0.020) |
| Dealer's leverage spread X (-1) | 0.013*** |
| | (0.005) |
| Client's share of dealer volume | -0.263* |
| | (0.149) |
| Log (number of clients) | -0.01 |
| | (0.021) |
| Log (number of dealers) | -0.049*** |
| | (0.019) |
| Log (number of trades) | 0.008 |
| | (0.008) |
| Settlement balances concentration | 0.099 |
| | (0.063) |
| Log (settlement balances share) | -0.005 |
| | (0.004) |
| Observations | 244 |
| $R^2$ | 0.448 |
| Adjusted $R^2$ | 0.401 |

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