

THE GOVERNMENT OF CANADA BOND MARKET

Discussion on market structure

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Overview

- **Trends in Government of Canada bond and bond futures**

- The 10-year tenor is the key sector in terms of trading volume in both Government of Canada bonds and bond futures
- Benchmark bond volumes have declined slightly relative to non-benchmark bonds
- Relative trading volume of 2- and 5-year Government of Canada bonds has declined in contrast to an increase in 2- and 5-year bond futures

- **Different types of electronic trading platforms**

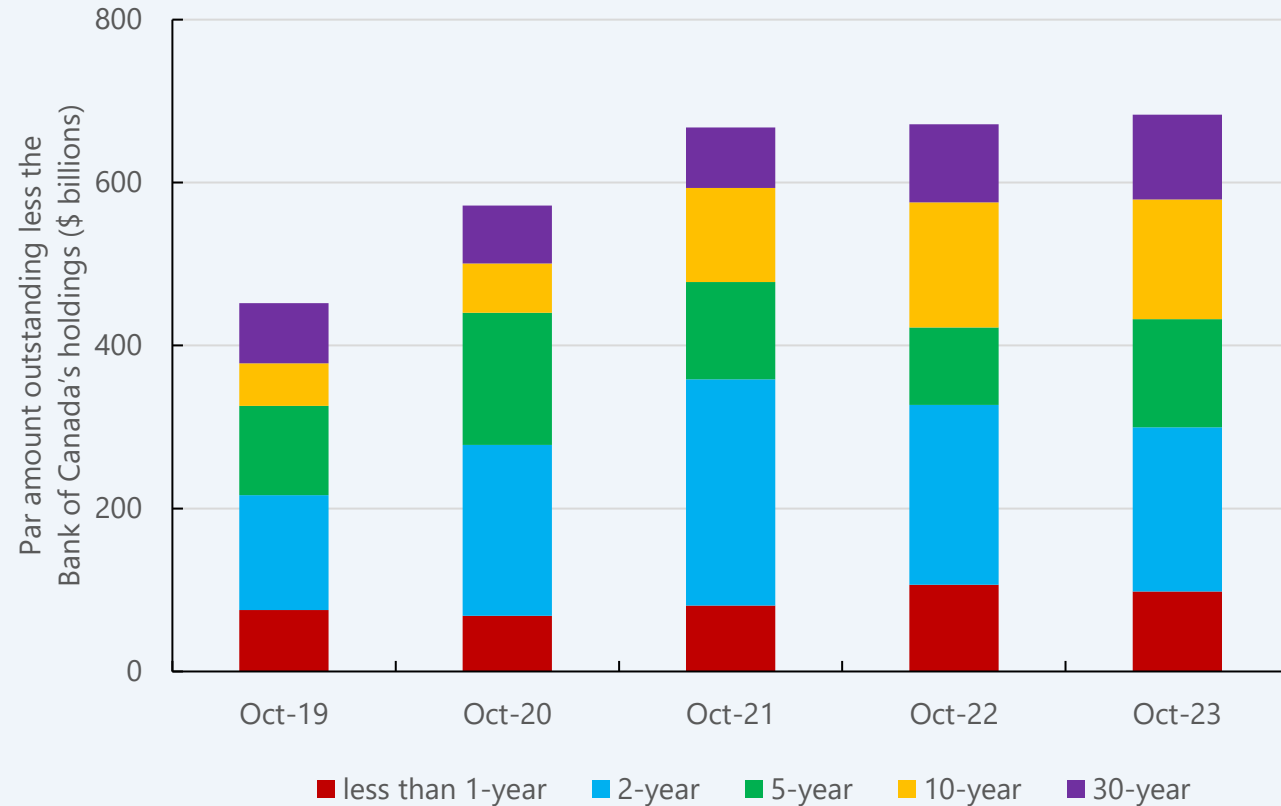
- Benchmark bonds are transacted more on electronic platforms than non-benchmark bonds, led by the dealer-to-dealer market segment, but benchmark bond volumes on electronic platforms have declined recently
- Transaction sizes on electronic platforms for Government of Canada bonds are significantly larger compared to bond futures

- **Investigating the potential for all-to-all trading**

- On average, about half of client Government of Canada bond transactions and most bond futures transactions can be offset with other clients each day
- The share of offsetting client transactions have been stable for both bonds and bond futures

Free float of Government of Canada bonds has shifted to longer tenors

Chart 1: Free float of Government of Canada bonds



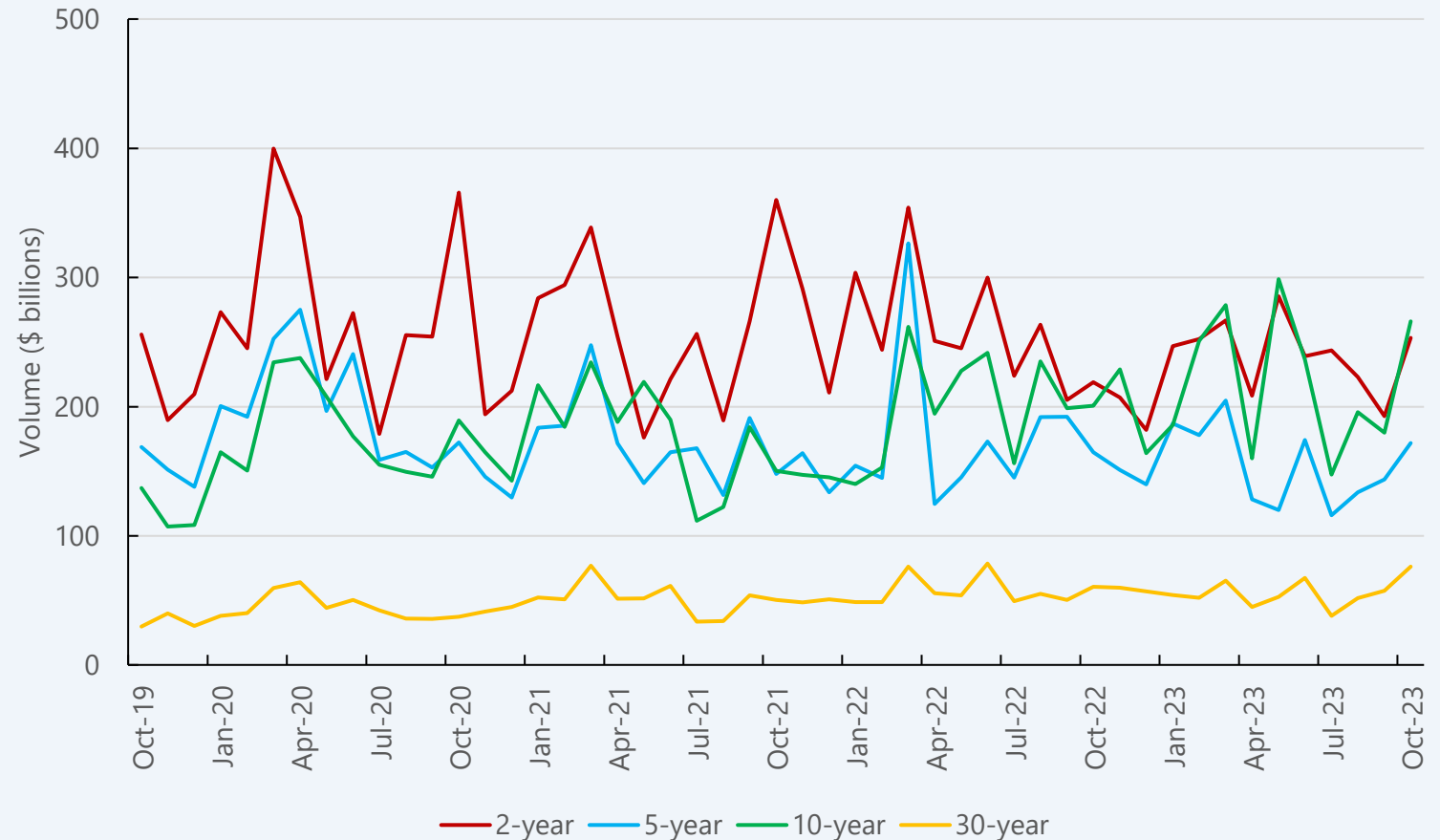
Notes: We divide bonds into groups based on their tenor. For non-benchmark bonds, we determine tenors based on their term-to-maturity. We classify bonds with remaining term-to-maturities of less than 1-year as a tenor of less than 1-year. Bonds with remaining term-to-maturities between 1- and 3-years as a tenor of 2-year. Bonds with remaining term-to-maturities of between 3- and 8-years are classified as a tenor of 5-year. Bonds with remaining term-to-maturities of between 8- and 12-years are classified as a tenor of 10-year. Bonds with remaining term-to-maturities of greater than 12-years are classified as a tenor of 30-year.

Source: Bank of Canada

Sample period: October 1, 2019 to October 31, 2023

The relative trading volume of 2- and 5-year Government of Canada bonds has declined

Chart 2: Monthly trading volumes of Government of Canada bonds

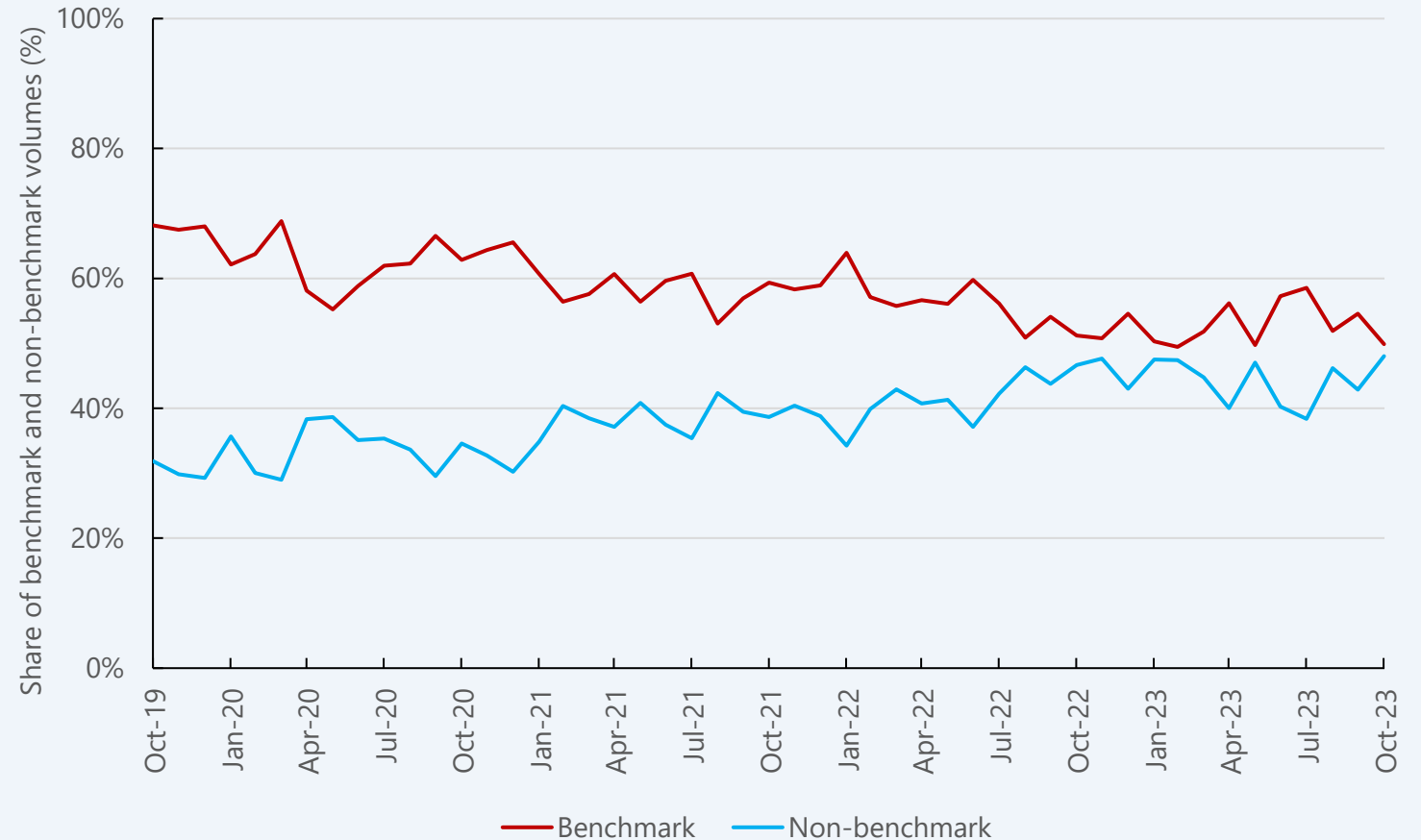


Notes: See Slide 3 for classification of bond tenors. We exclude bonds with term-to-maturities of less than 1-year. We exclude transactions with the Bank of Canada. Primary market transactions are also not captured in the data.

Source: MTRS and Bank of Canada calculations

Sample period: October 1, 2019 to October 31, 2023

Chart 3: Share of monthly trading volumes of Government of Canada benchmark and non-benchmark bonds



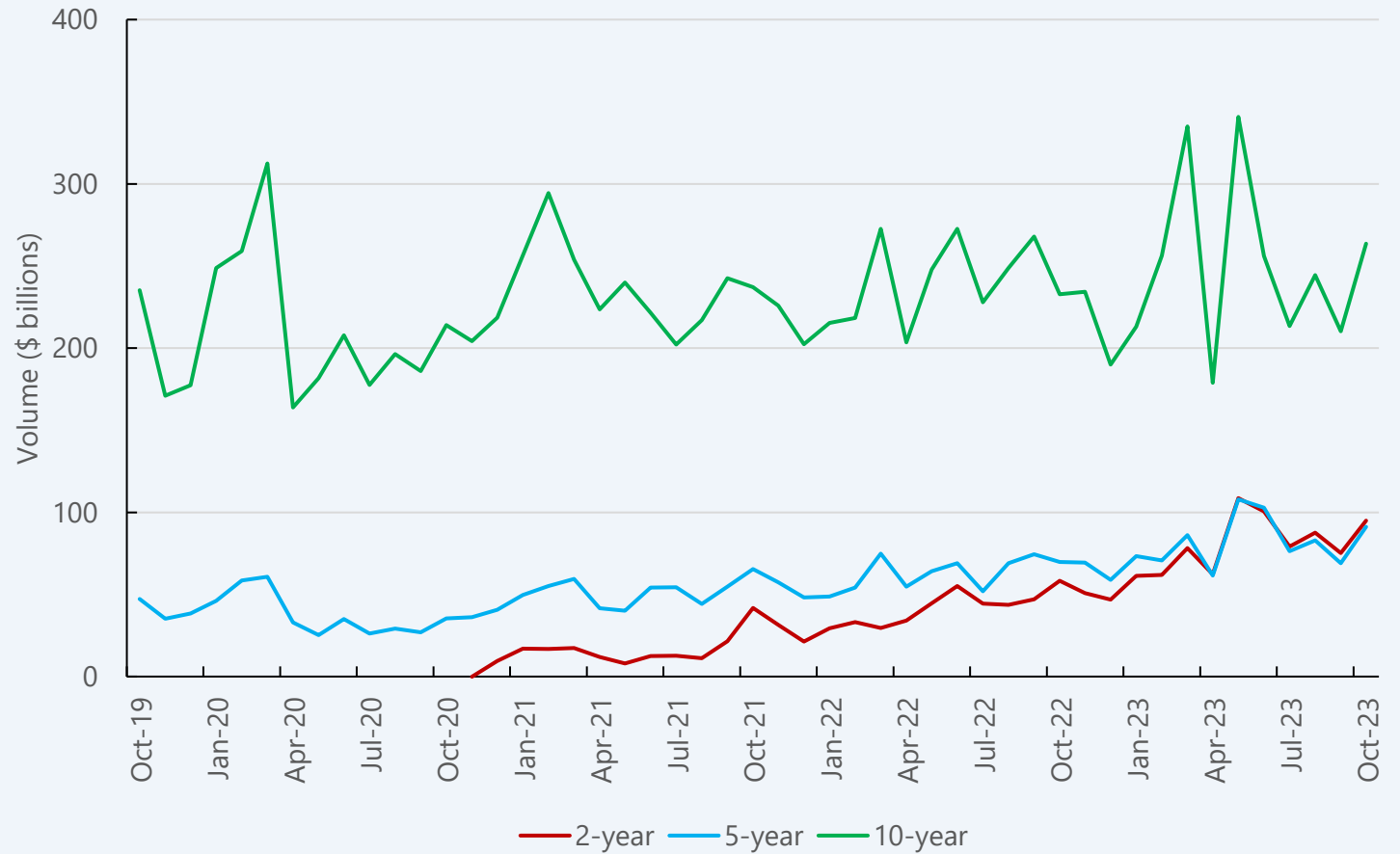
Notes: We exclude bonds with term-to-maturities of less than 1-year. We exclude transactions with the Bank of Canada. Primary market transactions are also not captured in the data.

Source: MTRS and Bank of Canada calculations

Sample period: October 1, 2019 to October 31, 2023

Benchmark bond trading volumes have been declining relative to non-benchmark bonds

Chart 4: Monthly trading volumes of Government of Canada bond futures



Trading volumes of 10-year bond futures have been relatively stable, while volumes of the 2- and 5-year bond futures have steadily increased

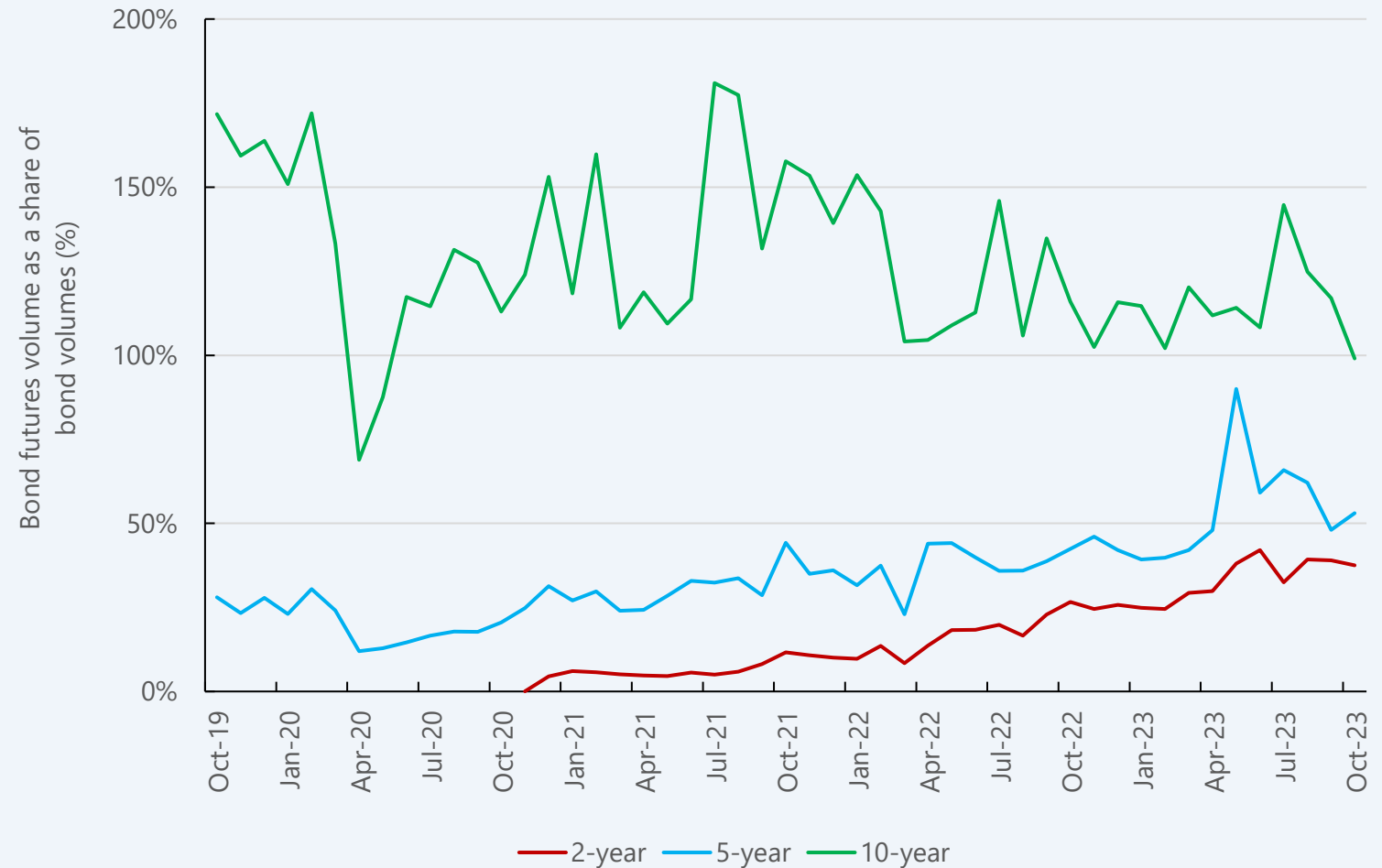
Notes: We present futures transaction volumes by bond tenor. The 2-year tenor corresponds to the CGZ contract. The 5-year tenor corresponds to the CGF contract. The 10-year tenor corresponds to the CGB contract. We exclude the LGB contract given its very low transaction volumes. Volumes exclude transactions related to rolling over contracts.

Source: Montreal Exchange and Bank of Canada calculations

Sample period: October 1, 2019 to October 31, 2023

Bond futures' share of trading volumes in the 10-year sector has been relatively stable, while the 2- and 5-year bond futures' shares have increased

Chart 5: Monthly trading volumes of Government of Canada bond futures as a share of equivalent tenor bond volumes



Notes: We exclude bonds with term-to-maturities of greater than 12-years as well as the LGB futures contract, given low transaction volumes in the 30-year sector. Volumes exclude transactions related to rolling over contracts.

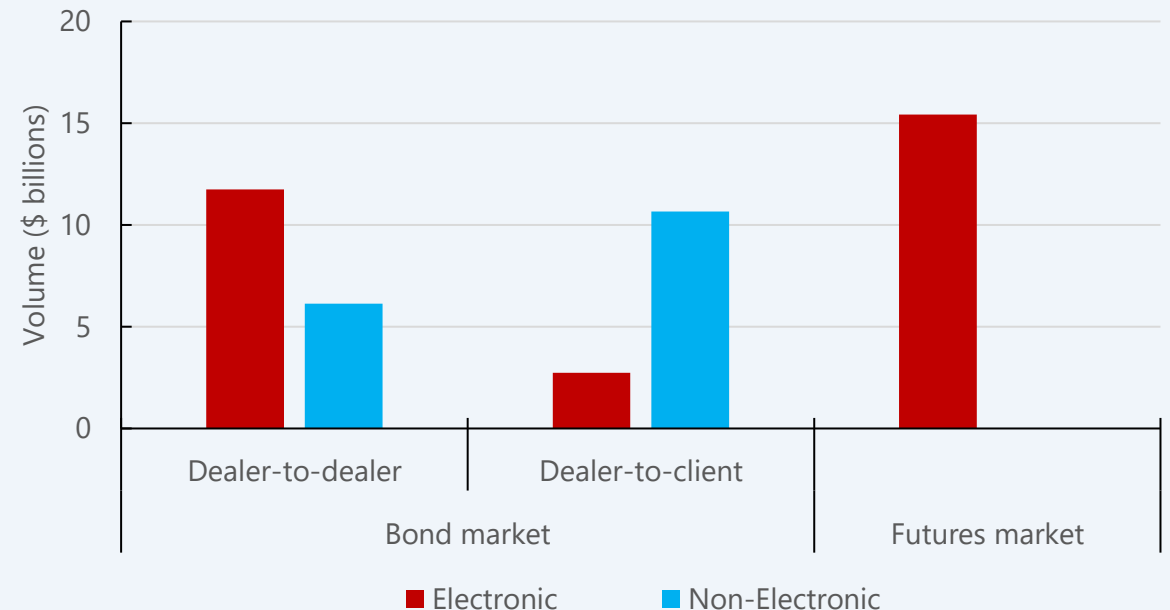
Source: Montreal Exchange and Bank of Canada calculations

Sample period: October 1, 2019 to October 31, 2023

Different trading venues for Government of Canada securities

- Electronic platforms in the Government of Canada bond market serve different market segments
 - **Dealer-to-dealer:** Through interdealer bond brokers, dealers can submit electronic limit orders, or execute voice-negotiated trades
 - **Dealer-to-client:** Clients can send requests for quotes for desired quantities of bonds to a set of dealers
 - **All-to-all:** Any participant that is a member of the platform can place limit orders and transact with any other member participant

Chart 6: Average daily Government of Canada bond and futures trading volumes by market segment

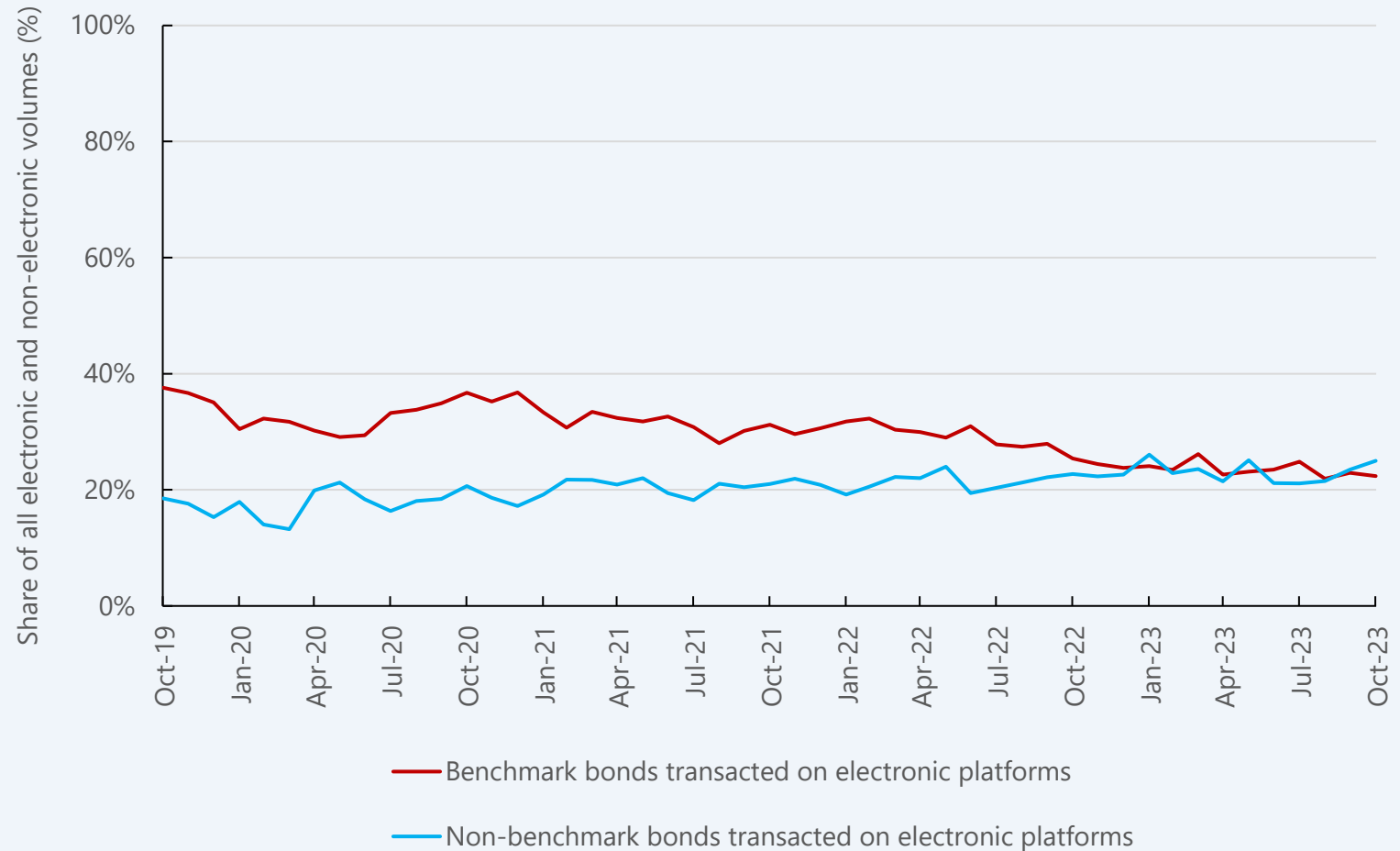


Notes: We identify electronic transactions as those that are reported with a trading venue field of an electronic platform, have a counterparty that is an electronic platform, or that are transactions conducted with the Canadian Deposit Clearing Corporation. We thereby assume that all transactions conducted with the Canadian Deposit Clearing Corporation are conducted electronically. Electronic platforms include Freedom International Brokerage Company, Tullet Prebon Electronic and Voice Interdealer Broker, TMX Shorcan, and CanDeal. Transactions executed electronically on Bloomberg and Perimeter Markets Inc. are excluded given incomplete data. We exclude transactions with the Bank of Canada. Primary market transactions are also not captured in the data. Futures volumes exclude transactions related to rolling over contracts.

Source: MTRS, Montreal Exchange, and Bank of Canada calculations

Sample period: October 1, 2019 to October 31, 2023

Chart 7: Share of monthly trading volumes of Government of Canada benchmark and non-benchmark bonds on electronic platforms



Share of benchmark bond trading volumes on electronic platforms have declined

Notes: See notes on Slide 8 for methodology on identifying transactions on electronic platforms.

The decline in benchmark bond electronic trading volumes is led by the dealer-to-dealer market segment

Chart 8: Share of monthly trading volumes of benchmark bonds on electronic platforms

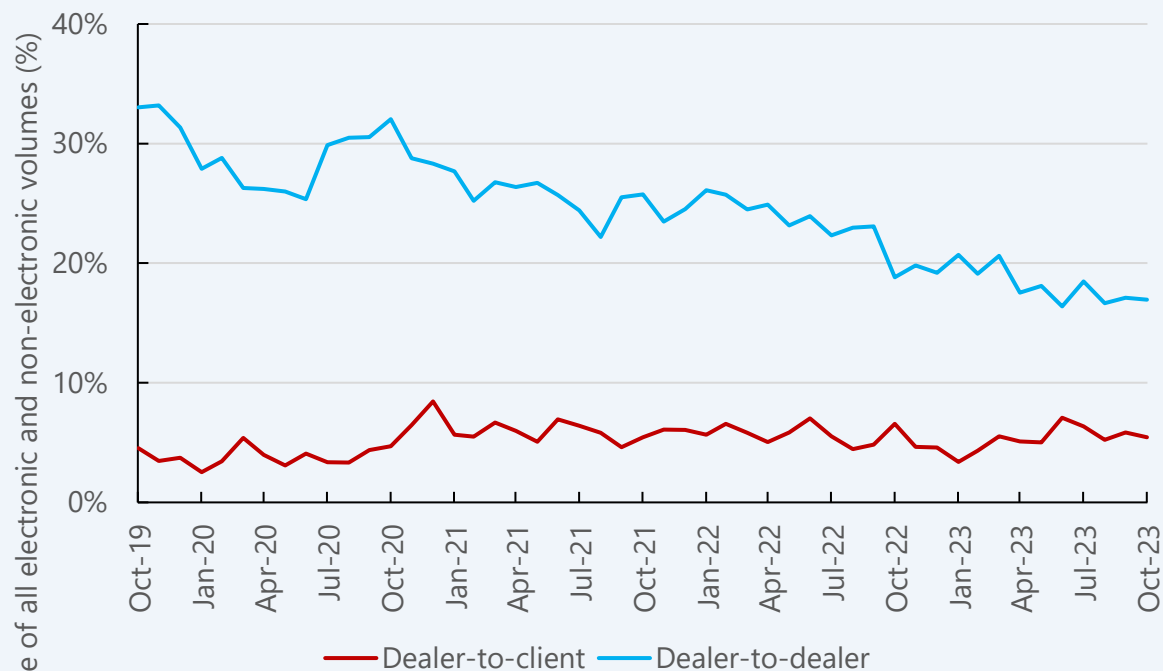
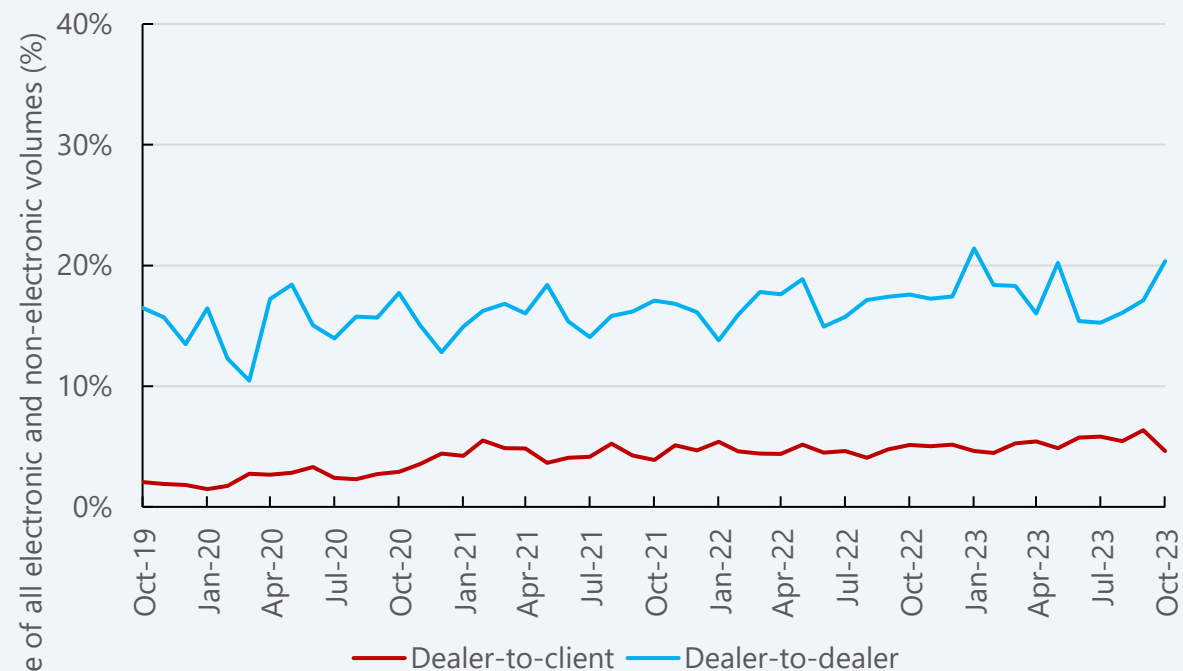


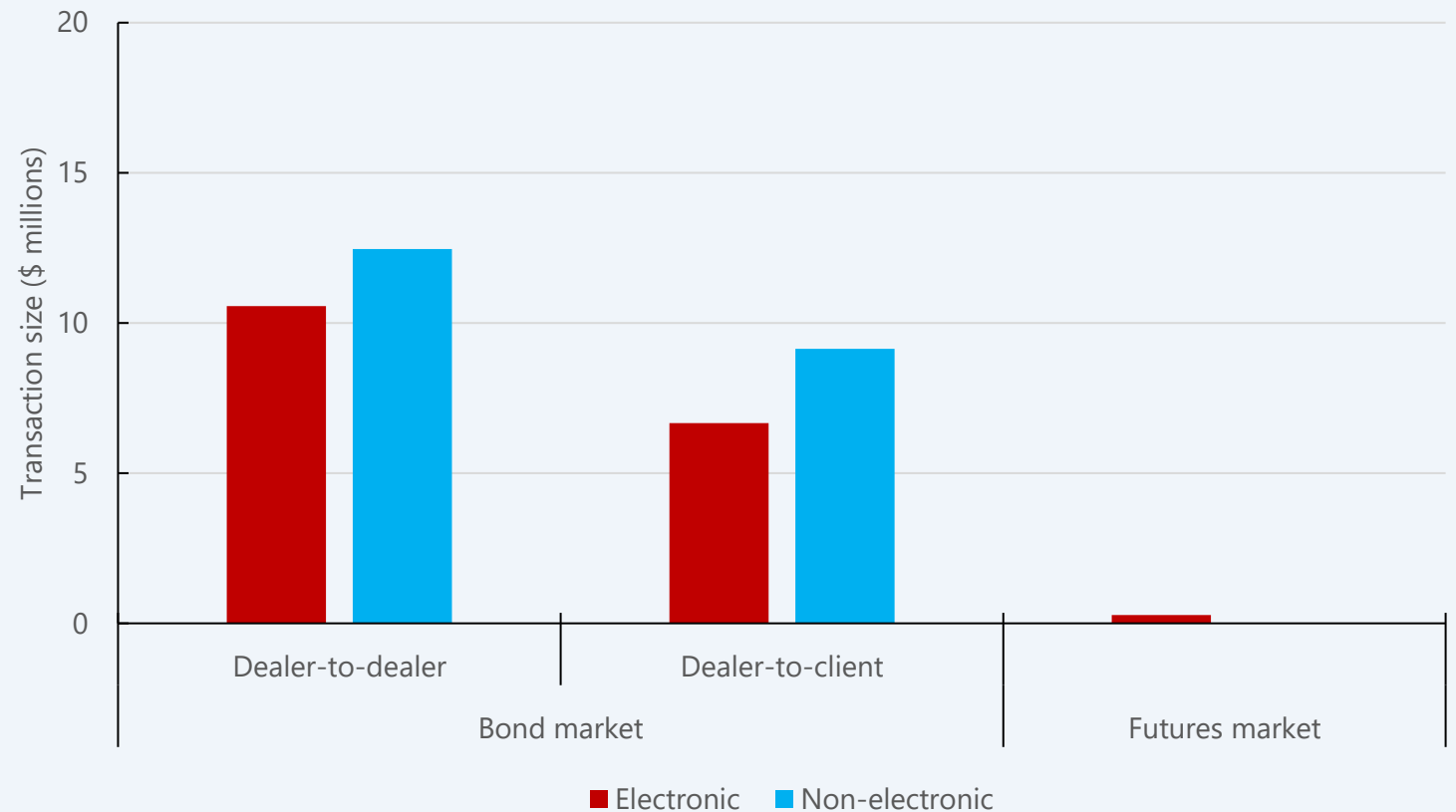
Chart 9: Share of monthly trading volumes of non-benchmark bonds on electronic platforms



Notes: See notes on Slide 8 for methodology on identifying transactions on electronic platforms. We identify dealer-to-dealer transactions as those between a Government of Canada Securities Distributor (GSD) and a non-GSD dealer or between two GSDs. We classify all transactions with the Canadian Deposit Clearing Corporation as dealer-to-dealer. Dealer-to-client transactions are those between a GSD and counterparties other than those in the dealer-to-dealer market segment. We exclude transactions with the Bank of Canada. Primary market transactions are also not captured in the data.

Transaction sizes differ across market structure and segments

Chart 10: Average transaction size by market segment



Notes: See notes on Slide 8 for methodology of identifying electronic transactions and Slide 10 for market segments.

Source: MTRS, Montreal Exchange and Bank of Canada calculations

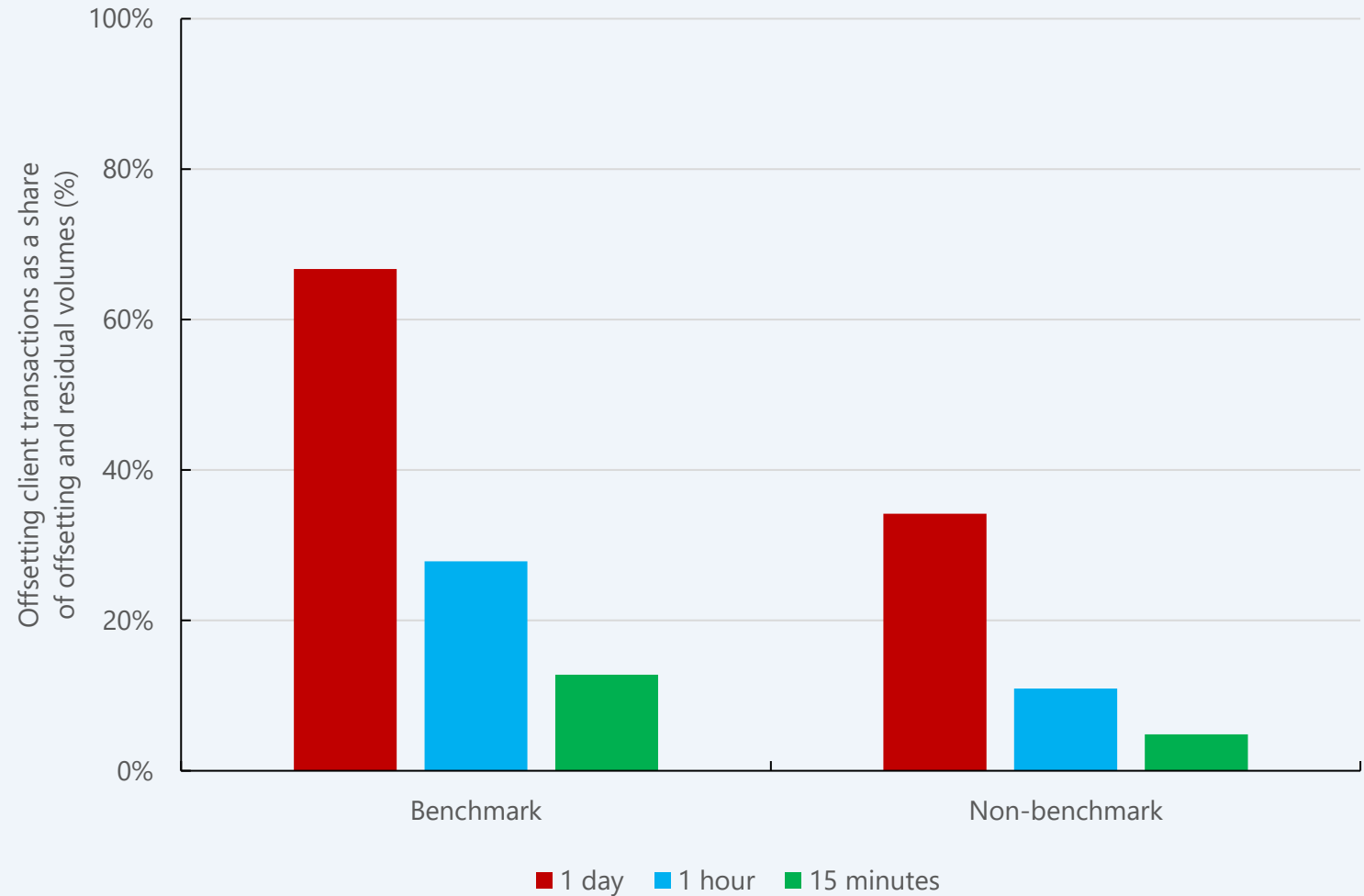
Sample period: January 1, 2020 to June 9, 2023

Offsetting clients' transaction analysis

- To better understand the risk transfer taking place in the Government of Canada bond market, we calculate the share of clients' transactions that could be offset by other clients, following the methodology of [Chaboud et al. \(2023\)](#)
- We assess offsetting client transactions to be those that originate from another client and are in the opposite direction, and for the same bond, and have the same transaction and settlement dates

On average, about half of client transactions can be offset with other clients at the daily time interval

Chart 11: Average daily share of offsetting client transactions



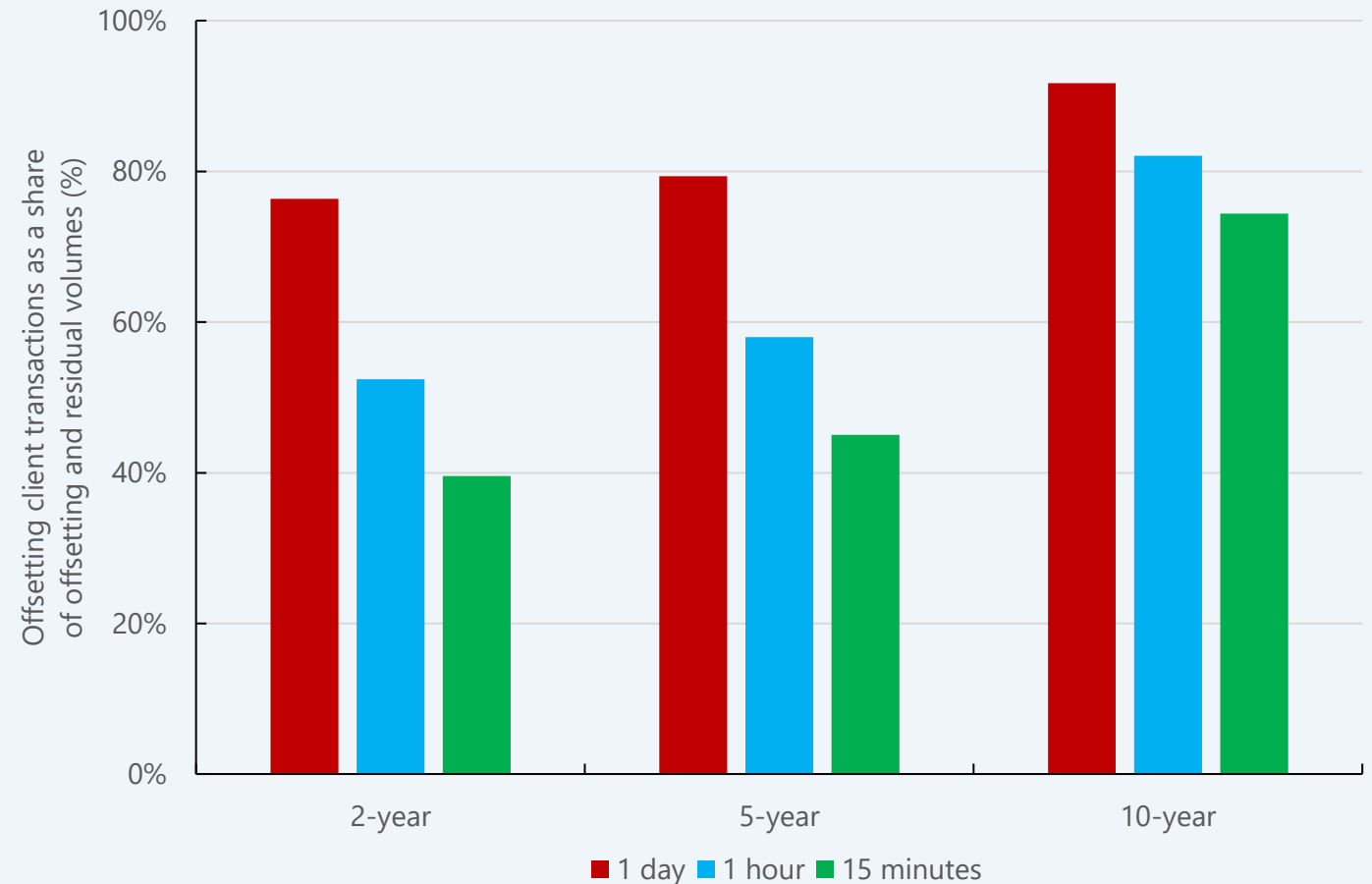
Notes: We measure offsetting client transactions at the 1-hour and 15-minute intervals by separating the trading day into non-overlapping hourly and 15-minute intervals.

Source: MTRS and Bank of Canada calculations

Sample period: January 1, 2020 to May 31, 2023

Offsetting client transactions are significantly higher for bond futures

Chart 12: Average daily share of offsetting client transactions



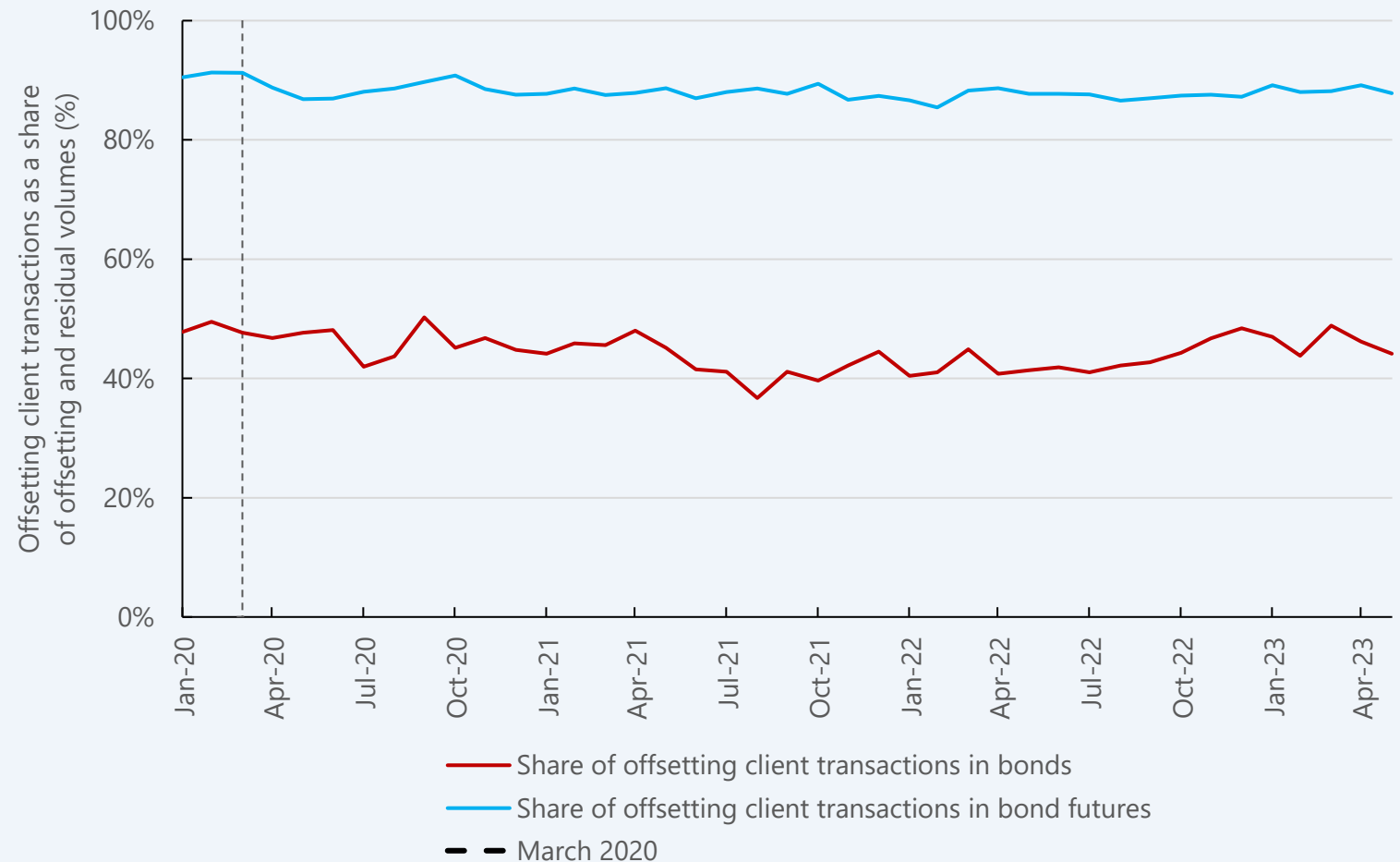
Notes: We measure offsetting client transactions at the 1-hour and 15-minute intervals by separating the trading day into non-overlapping hourly and 15-minute intervals.

Source: Montreal Exchange and Bank of Canada calculations

Sample period: January 1, 2020 to May 31, 2023

The share of offsetting client transactions have been stable for both bonds and bond futures

Chart 13: Monthly share of offsetting client transactions in Government of Canada bond and futures markets



Notes: The share of offsetting client transactions is the volume of offsetting client transactions divided by the total of the offsetting and residual client transactions.

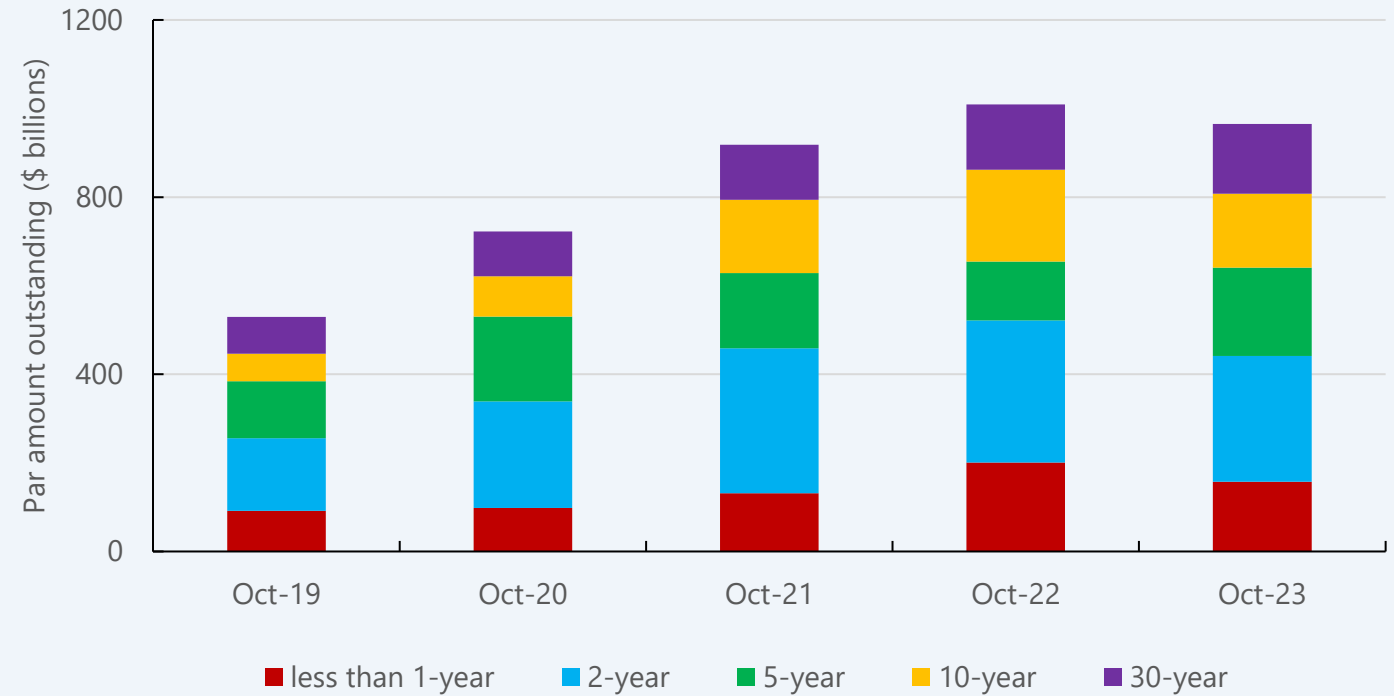
Source: MTRS, Montreal Exchange, and Bank of Canada calculations

Sample period: January 1, 2020 to May 31, 2023

Appendix

Amount outstanding of Government of Canada bonds

Chart 14: Amount outstanding of Government of Canada bonds



Notes: See Slide 3 for bond tenor classifications. Amount outstanding includes holdings of the Bank of Canada.

Source: Bank of Canada

Sample period: October 1, 2019 to October 31, 2023

Benchmark bond volumes have declined slightly, replaced by non-benchmark bonds

Chart 15: Share of monthly transaction volumes of Government of Canada benchmark bonds

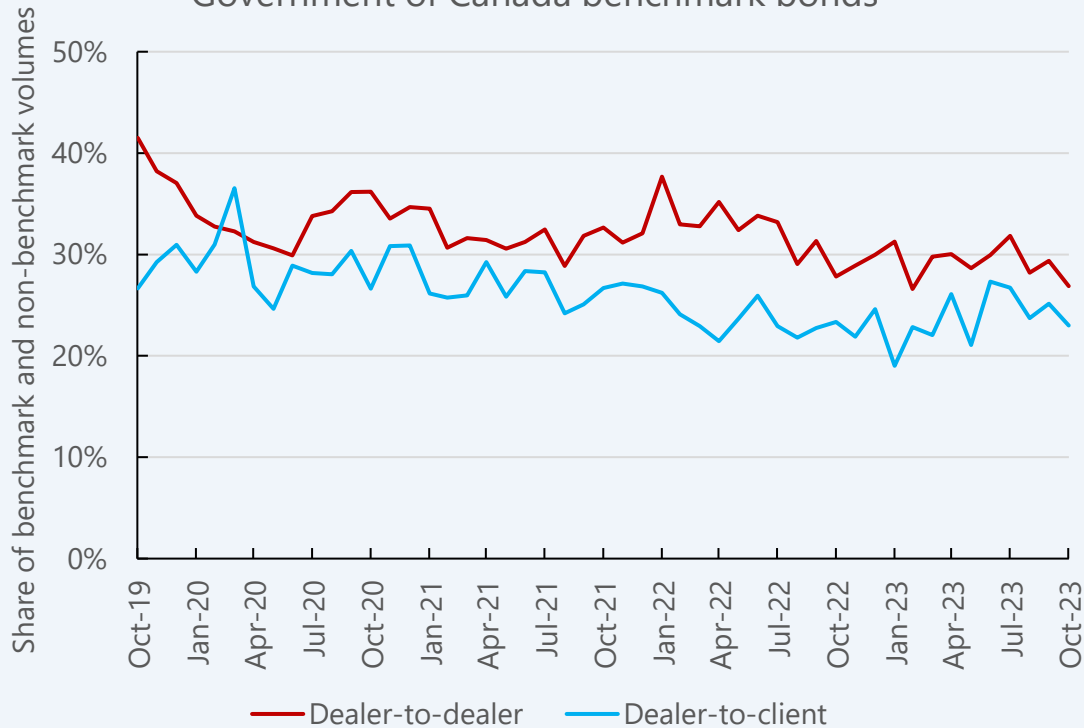
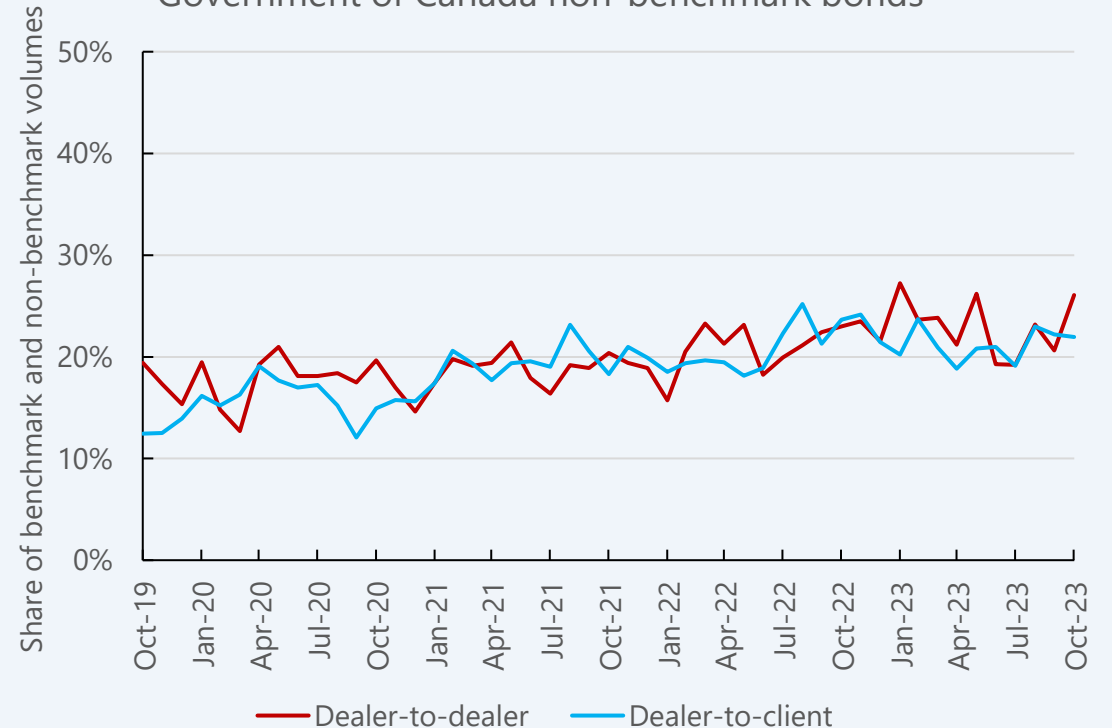


Chart 16: Share of monthly transaction volumes of Government of Canada non-benchmark bonds



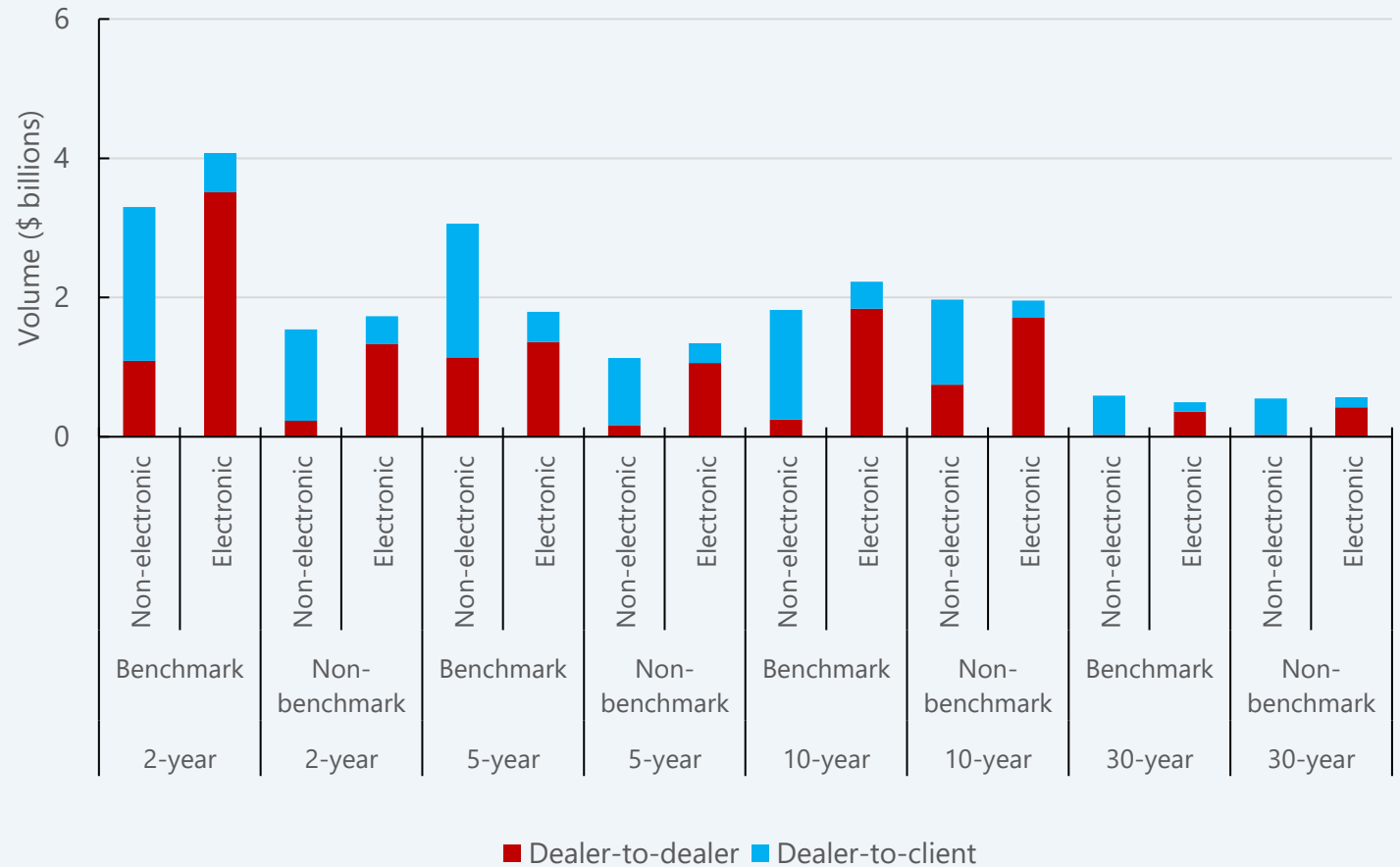
Notes: See notes on Slide 10 for methodology of identifying market segments.

Source: MTRS and Bank of Canada calculations

Sample period: October 1, 2019 to October 31, 2023

Chart 17: Average daily trading volume of dealer-to-dealer and dealer-to-client market segments broken down by tenor and benchmark status

Trading volume by market segment broken down by venue, tenor, and benchmark status



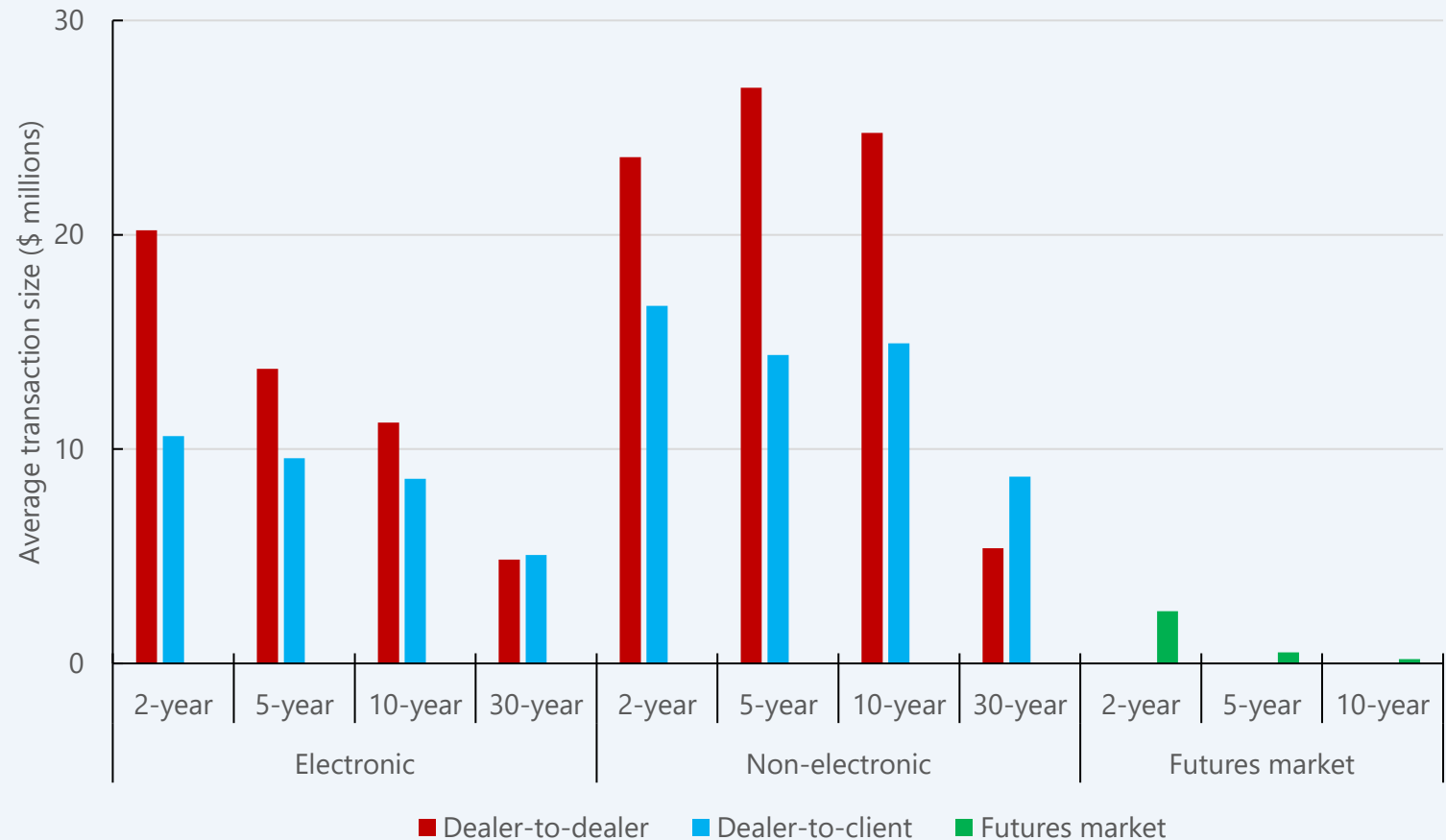
Notes: See notes on Slide 4 for bond tenor classifications. See notes on Slide 8 for methodology on identifying electronic transactions and on Slide 10 for market segment definitions.

Source: MTRS and Bank of Canada calculations

Sample period: October 1, 2019 to October 31, 2023

Bonds and bond futures with longer tenors generally have smaller transaction sizes

Chart 18: Average transaction size of Government Canada bonds and futures



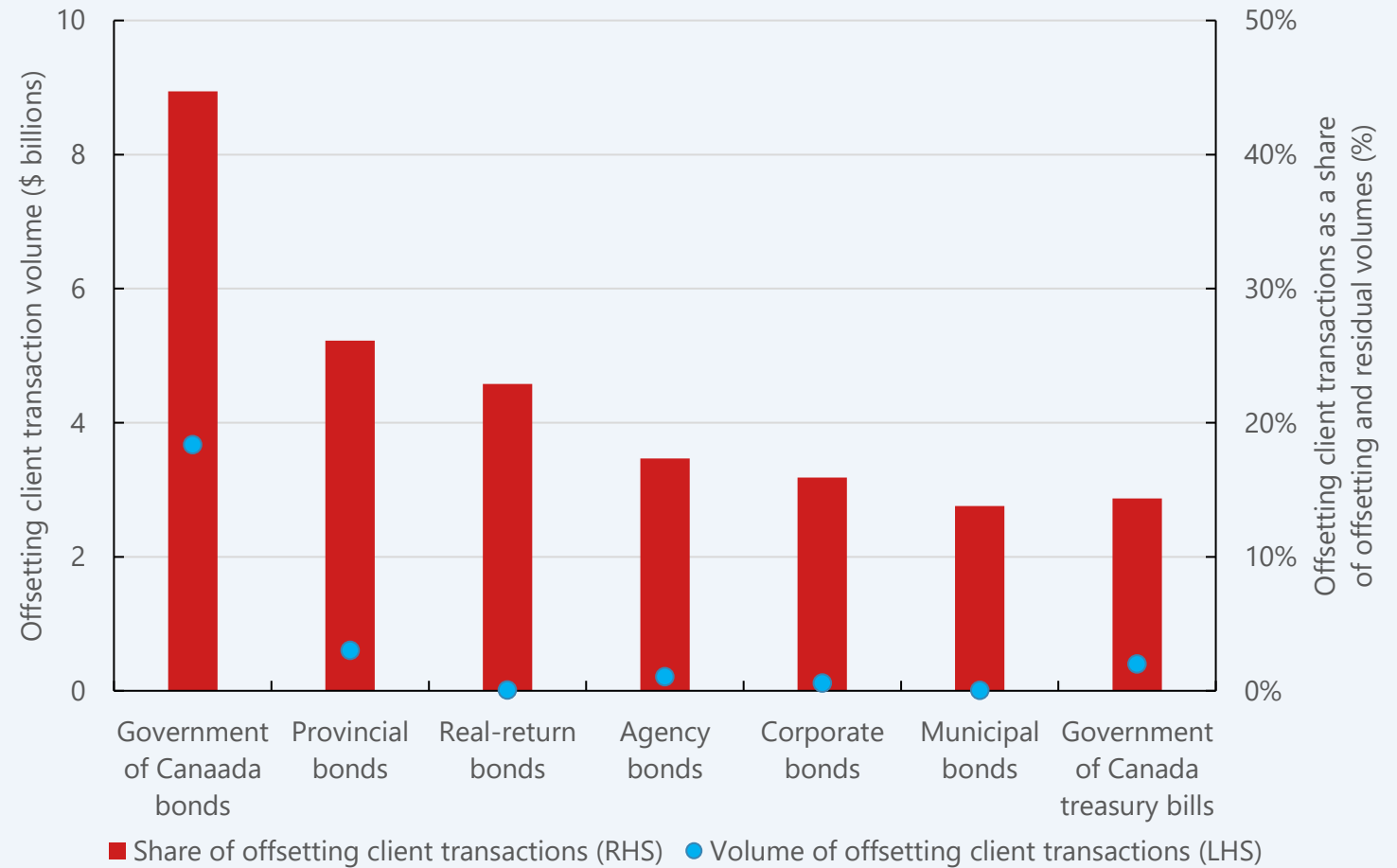
Notes: See notes on Slide 8 for methodology of identifying electronic transactions, on Slide 10 for market segments, on Slide 4 for classifying bonds by their tenor, and on Slide 6 for classifying bond futures by their tenor.

Source: MTRS, Montreal Exchange and Bank of Canada calculations

Sample period: January 1, 2020 to June 9, 2023

Offsetting client transactions by asset class

Chart 19: Average daily share and volume of offsetting client transactions by asset class



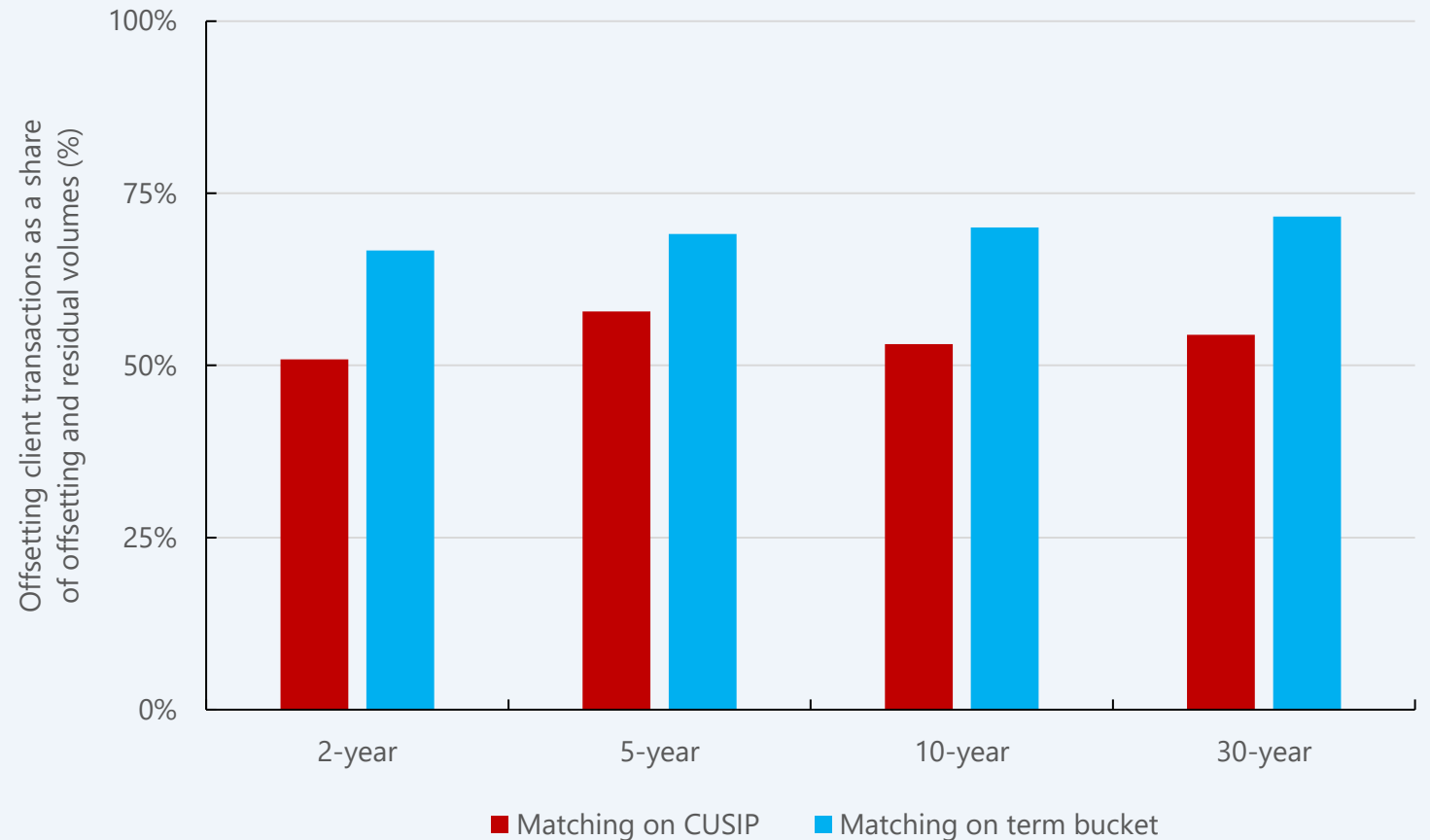
Notes: See slide 12 for methodology of calculating offsetting client transactions.

Source: MTRS and Bank of Canada calculations

Sample period: October 1, 2019 to October 31, 2023

Offsetting client transactions based on broader term-buckets

Chart 20: Share of offsetting client transactions by matching on broader term buckets



Notes: The "Matching on term bucket" group represents the share of clients' offsetting transactions of Government of Canada bonds within the same tenor, traded on the same day, and have the same settlement date. See notes on slide 4 for bond tenor classifications.

Source: MTRS and Bank of Canada calculations

Sample period: October 1, 2019 to June 9, 2023

Breakdown of daily share of offsetting client Government of Canada bond transactions

Table 1 - Breakdown of daily share of offsetting client transactions in bonds from January 2020 to May 31, 2023

Daily share of offsetting client transactions	Benchmark				Non-benchmark			
	2-year	5-year	10-year	30-year	2-year	5-year	10-year	30-year
Mean	54%	65%	59%	60%	22%	29%	36%	36%
Standard deviation	22%	19%	19%	23%	14%	14%	18%	20%
Low (10 th percentile)	25%	39%	34%	26%	6%	11%	13%	12%
High (90 th percentile)	83%	88%	83%	88%	43%	48%	61%	64%

Source: MTRS and Bank of Canada calculations

Sample period: January 1, 2020 to May 31, 2023

Breakdown of daily share of offsetting client Government of Canada bond futures transactions

Table 2 - Breakdown of daily share of offsetting client transactions in bond futures from January 2020 to May 31, 2023

Daily share of offsetting client transactions	2-year	5-year	10-year
Mean	67%	79%	92%
Standard deviation	26%	14%	6%
Low (10 th percentile)	26%	58%	84%
High (90 th percentile)	96%	96%	98%

Source: MTRS and Bank of Canada calculations

Sample period: January 1, 2020 to May 31, 2023