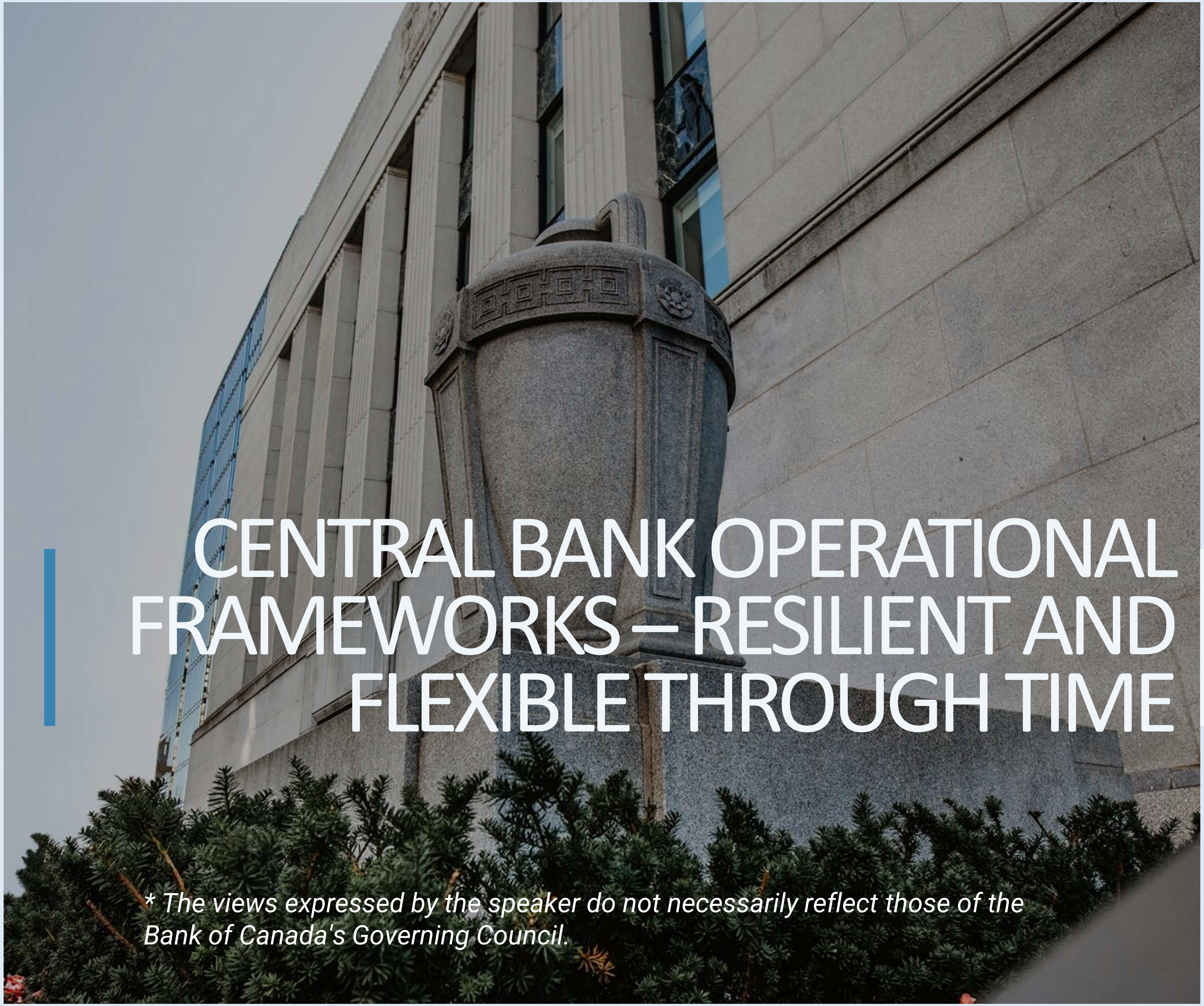

CENTRAL BANK OPERATIONAL FRAMEWORKS – RESILIENT AND FLEXIBLE THROUGH TIME

** The views expressed by the speaker do not necessarily reflect those of the Bank of Canada's Governing Council.*

BANK OF CANADA
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Center for Latin American Monetary Studies (CEMLA)

XII Meeting on Central Banking Operations

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** I would like to thank Andriy Stolyarov for his excellent assistance in preparing this presentation*

Outline for talk

Evolution of the Bank of Canada framework for market operations:

1. Pre-COVID (post GFC to early 2020)
2. During COVID – the BoC response
3. “Post” COVID” (ie now)

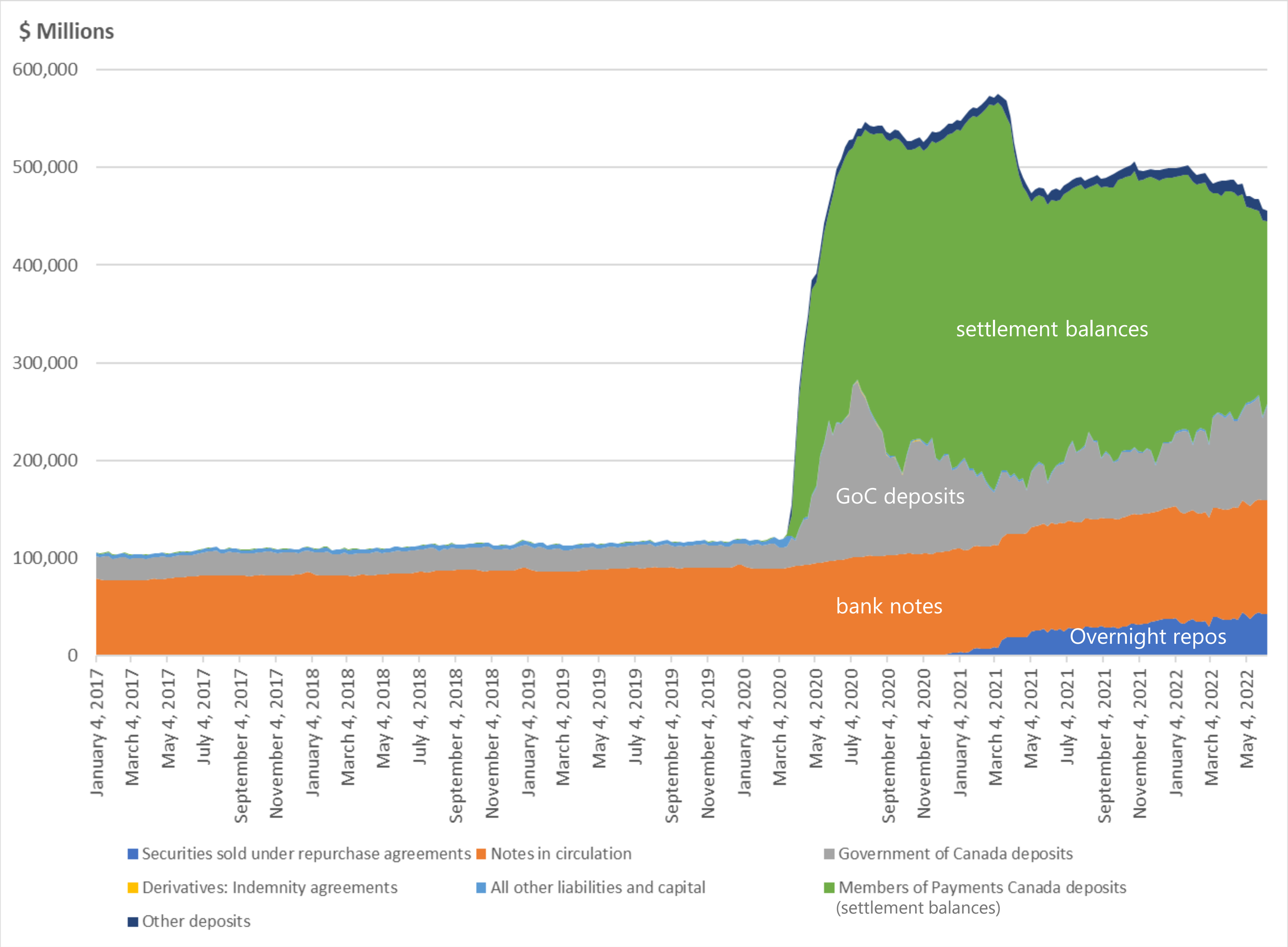

Pre-COVID

Historically the Bank's balance sheet has been liability-driven

- The size of the Bank's balance sheet has traditionally been **driven by growth in its liabilities – mostly bank notes in circulation**
- Liability growth was exogenously determined, therefore balance sheet growth was **slow, passive and predictable**
- **Regular asset purchases** were mostly Government of Canada securities acquired at primary auctions, along with federal and provincial government securities acquired through **term repo operations**

⬆ Liabilities (Bank Notes) → ⬆ Assets (GoC Bonds)

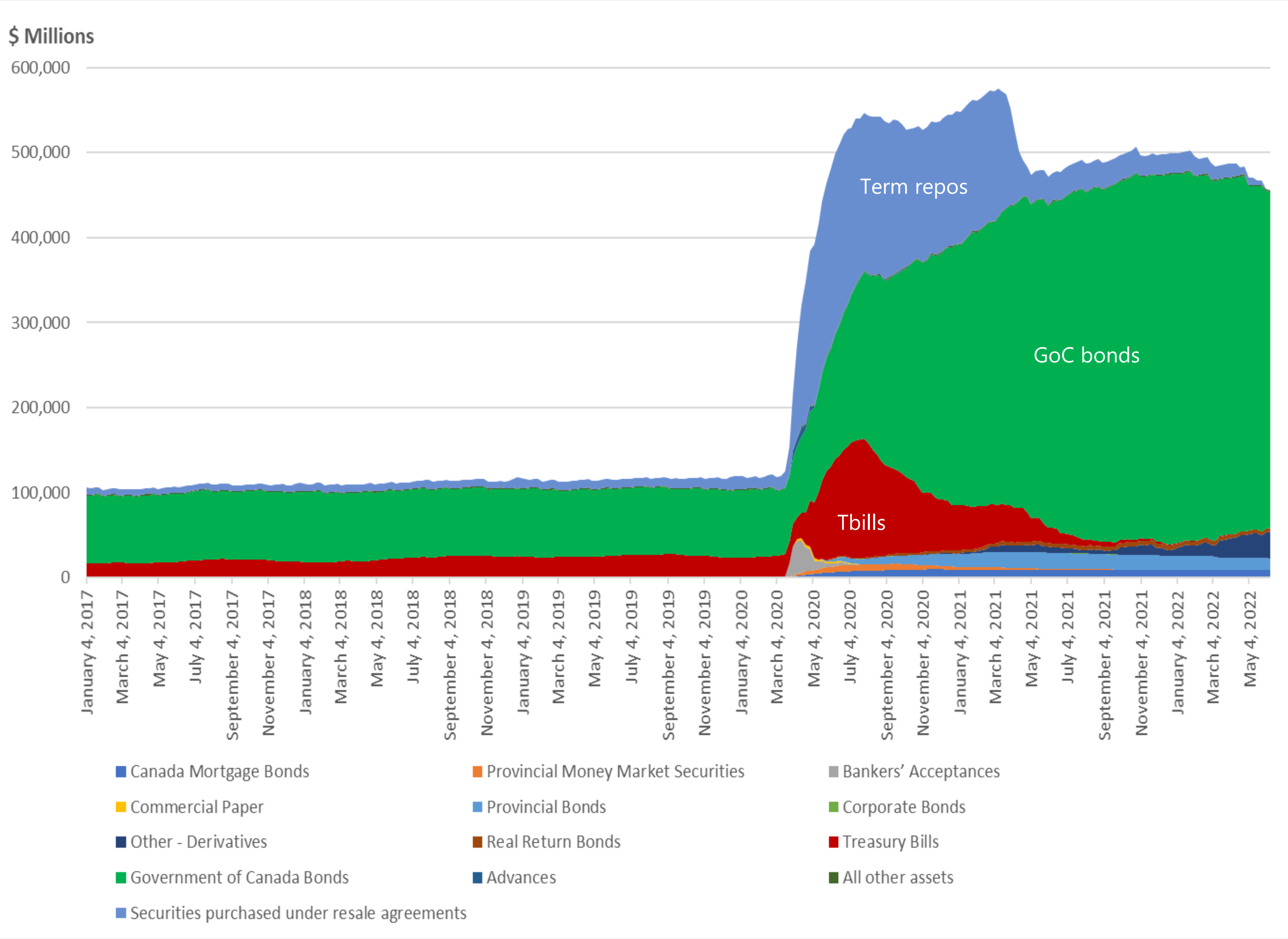
Pre COVID, BoC liabilities were very stable, consisting mostly of bank notes and Government of Canada Deposits



Source: Bank of Canada calculations

Last observation: June 15, 2022

Size and composition of BoC assets also very stable, expanded significantly as a result of COVID response

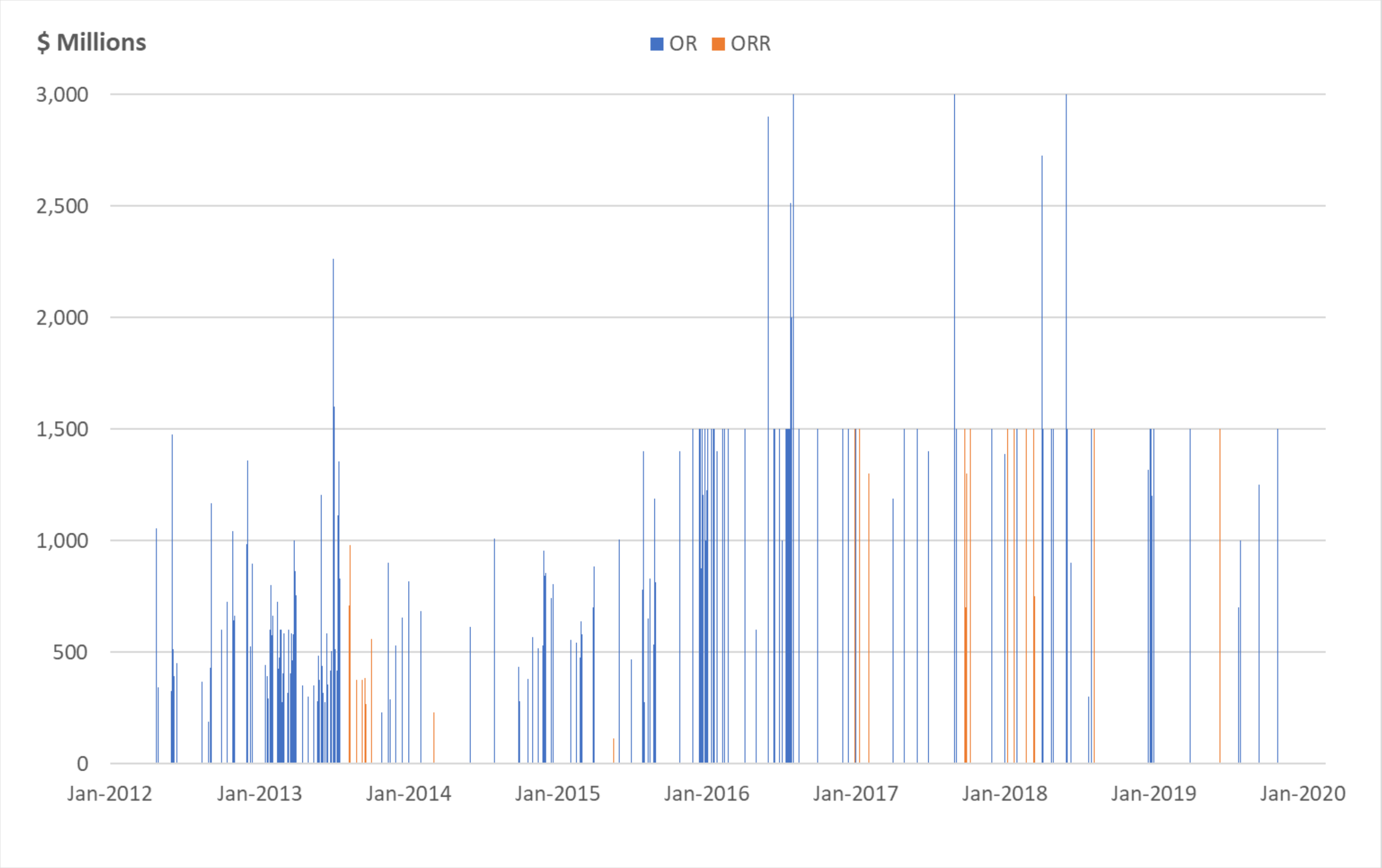


Source: Bank of Canada calculations

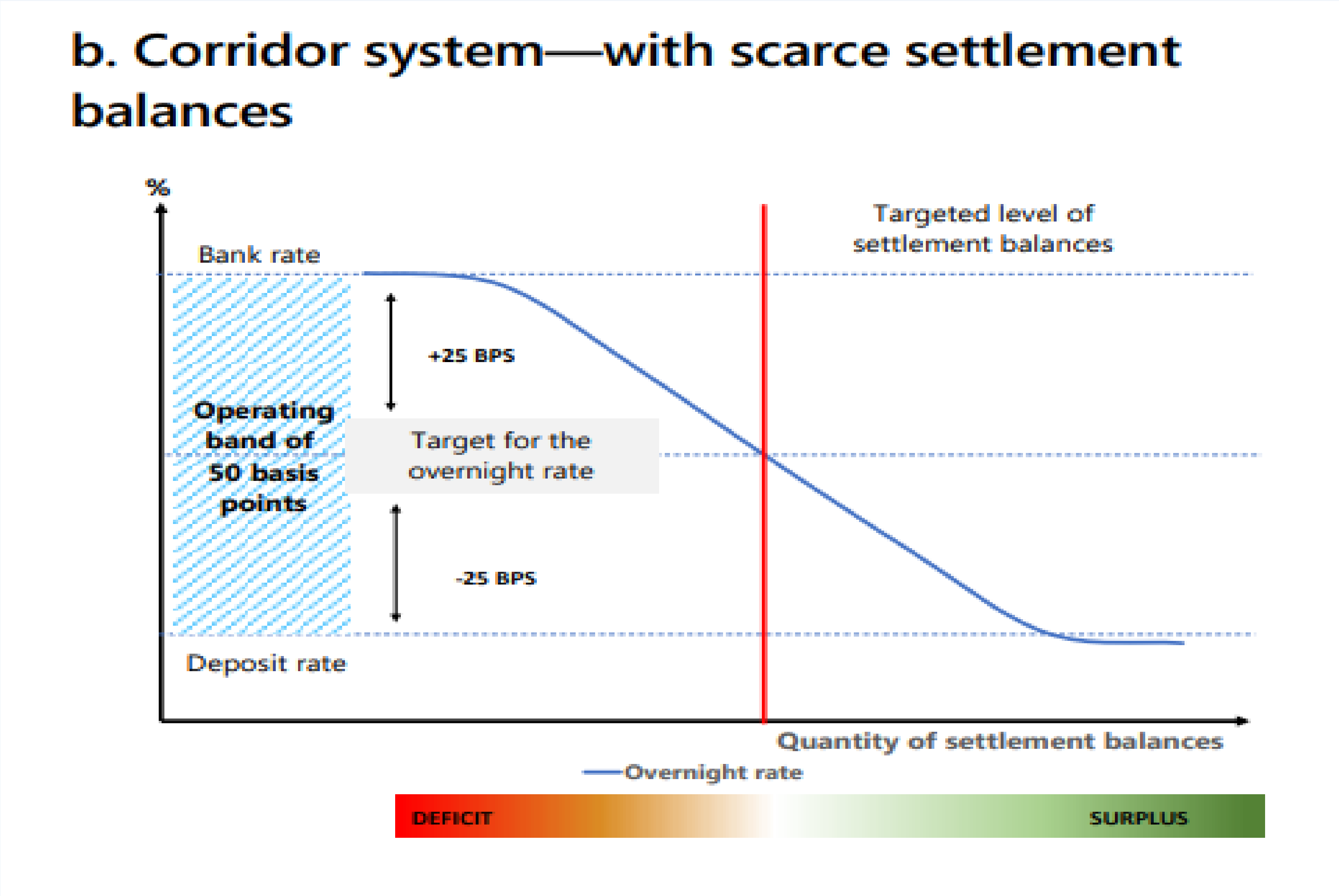
Last observation: June 15, 2022

Pre-COVID overnight repos and overnight reverse repos of relatively small size used periodically to reinforce policy rate

- **Overnight Repo (OR)** and **Overnight Reverse Repo (ORR)** operations offered to Primary Dealers at the Bank's discretion to reinforce the target overnight rate
- ORs used when general collateral trading at rates above target in overnight repo market, ORRs when below target

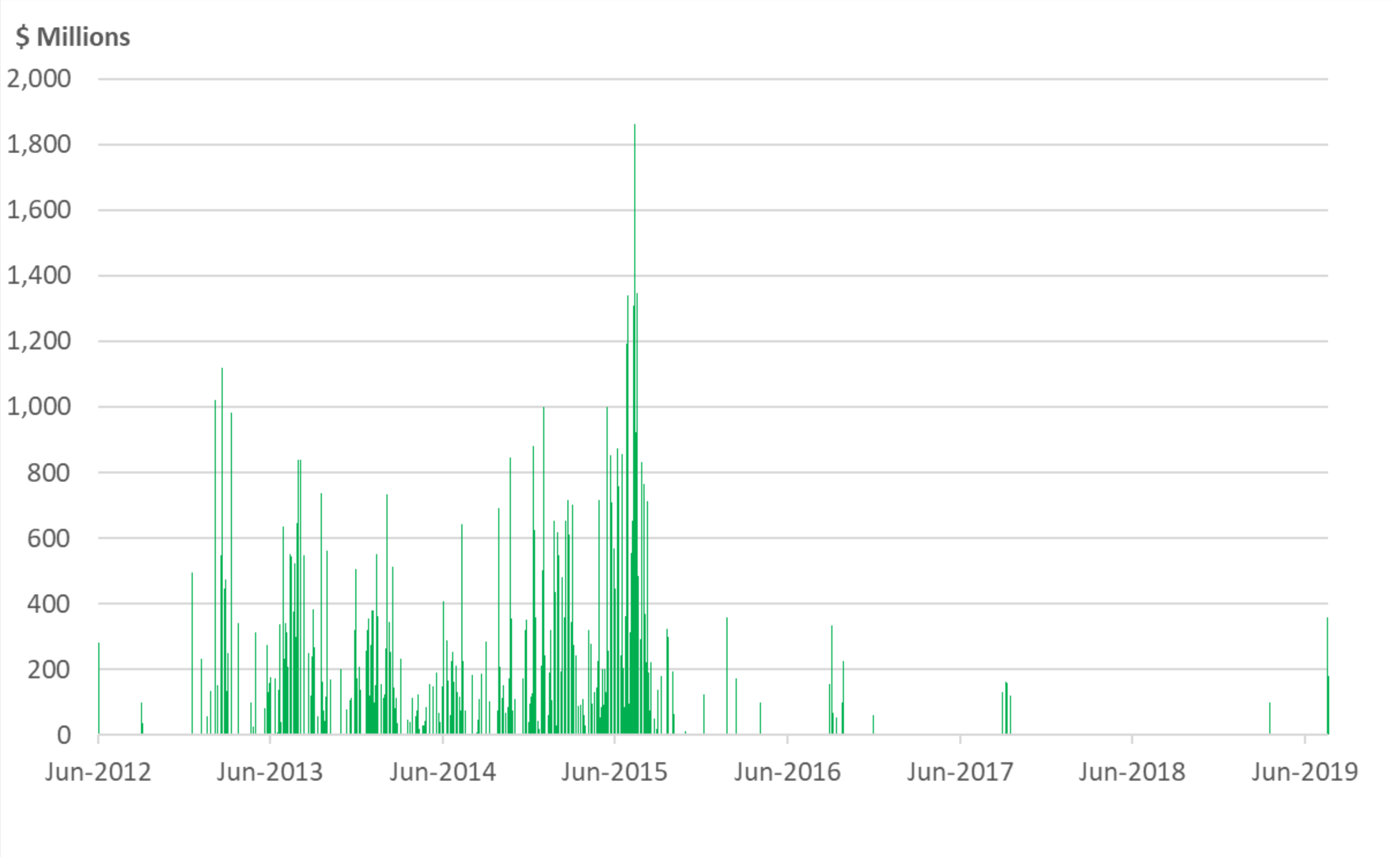


Before COVID, implemented monetary policy using 50 bp corridor system with near-zero settlement balances



Source: Bank of Canada Staff Discussion Paper—2022-13, https://www.bankofcanada.ca/wp-content/uploads/2022/06/sdp2022-13.pdf

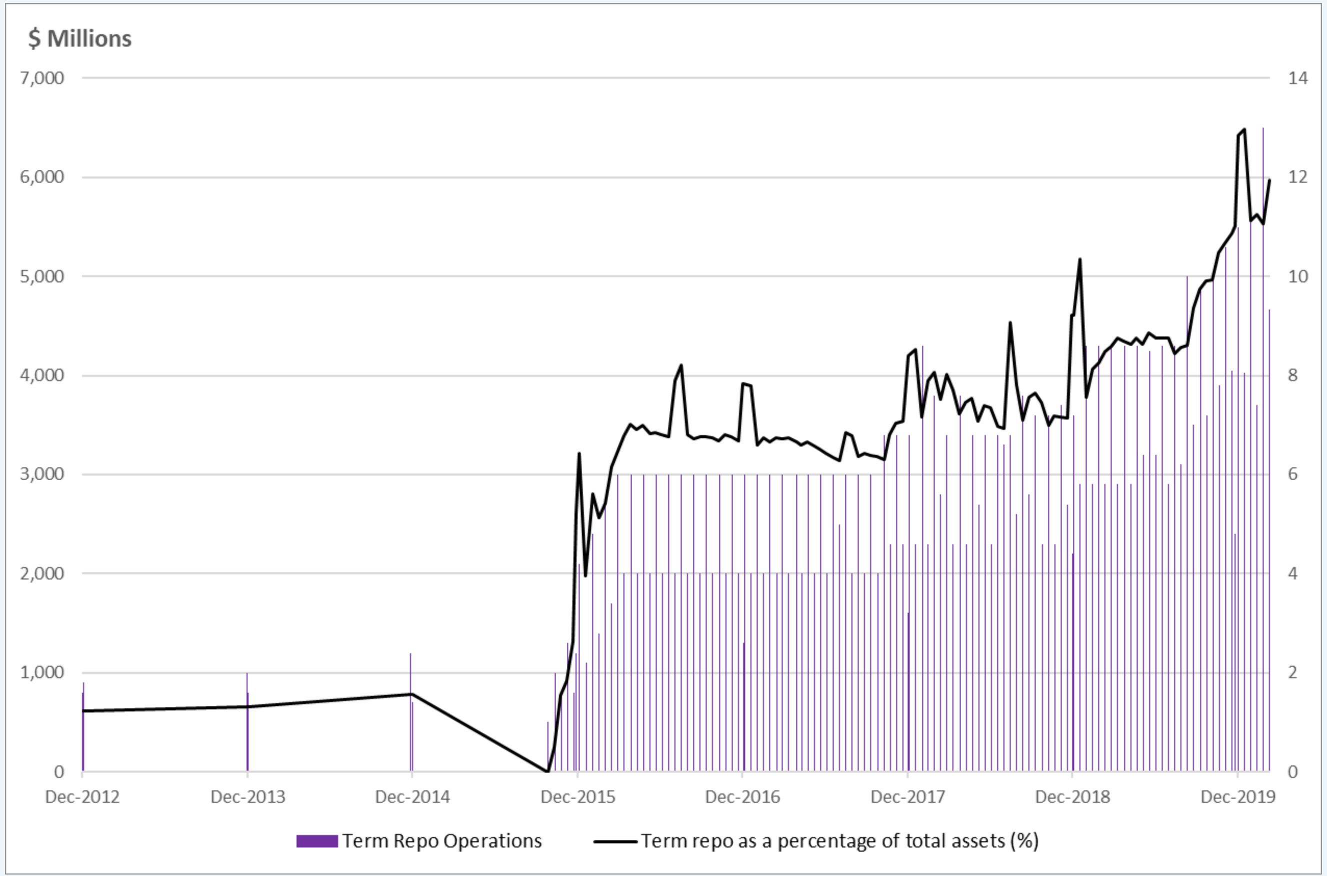
- **Sec Lending** program was used to make a portion of the Bank's holdings of GoC bills and bonds available when they were trading (or were unavailable) at or below a minimum threshold in the overnight repo market
- The peak of sec lending activity was in 2015 when the highest volume and highest number of operations were conducted
- Program utilization low prior to that and subsequently between end 2015 and end 2019



Securities-lending was also used sporadically to make specific Government of Canada securities in high demand available

Pre-COVID, Bank used Term Repo operations to acquire assets for balance sheet purposes

- In normal times, **Term Repo** program was used to acquire assets to offset normal needs on liability side – primarily growing bank notes in circulation and government deposits
- Bank accepted Government of Canada, provincial, and government guaranteed securities (including mortgaged-backed securities) as collateral
- Term repo operations were typically conducted on bi-weekly basis and offered at 1- and 3-month tenors



Central banks have special mandate to provide liquidity and restore confidence in a crisis

- In stress times, may need to **take calculated risks and adjust risk appetite** to successfully implement mandate
- **Accepting "good" collateral is key tool** for managing risk – what constitutes acceptable collateral **can change with prevailing circumstances**
- **Asset purchases** can also be required and effective at restoring functioning of markets and reaching broader set of participants
- Through asset purchases central banks can expand balance sheets and **provide liquidity to buffer tail events**
- In addition to providing liquidity, asset purchases **influence market prices** and all holders of a given asset
- Can also **address dysfunctions driven by capital constraints** by removing risk from private balance sheets

During COVID

Guiding principles to Bank of Canada intervention in response to financial market turmoil

(developed at time of GFC)

Central bank intervention should:

- target market failures that are of system-wide importance;
- be well suited to the problem;
- be graduated, commensurate with the severity of the problem;
- be designed to be efficient and non-distortionary;
- mitigate moral hazard

Bank of Canada actions during the COVID-19 crisis:

Extended Term Repo operations

- Significantly ramped up **term repos**, including:
  - Broadened collateral:
    - Allowed full range of securities eligible for Standing Liquidity Facility
    - Allowed exceptional eligibility of Lynx participants' BAs/BDNs
  - Increased size, frequency and maturity of term repos

- As short-term funding conditions improved, saw **reduced take-up** in many extraordinary facilities, including extended term repo operations
  - Scaled back starting in June 2020 after substantial improvements in short-term funding conditions

Bank of Canada actions during the COVID-19 crisis:

Expanded access to counterparties

- **Lending and repo facilities** introduced to support market functioning and provide liquidity to financial institutions without regular direct access to Bank of Canada facilities:
  - **Standing Term Liquidity Facility (STLF)** activated permanently in March 2020 to provide access to liquidity to eligible financial institutions
  - **Contingent Term Repo Facility (CTRF)** introduced in 2015 for potential use in times of severe market stress activated for the first time in March 2020, with commitment to leave active for 1 year

Bank of Canada actions during the COVID-19 crisis:

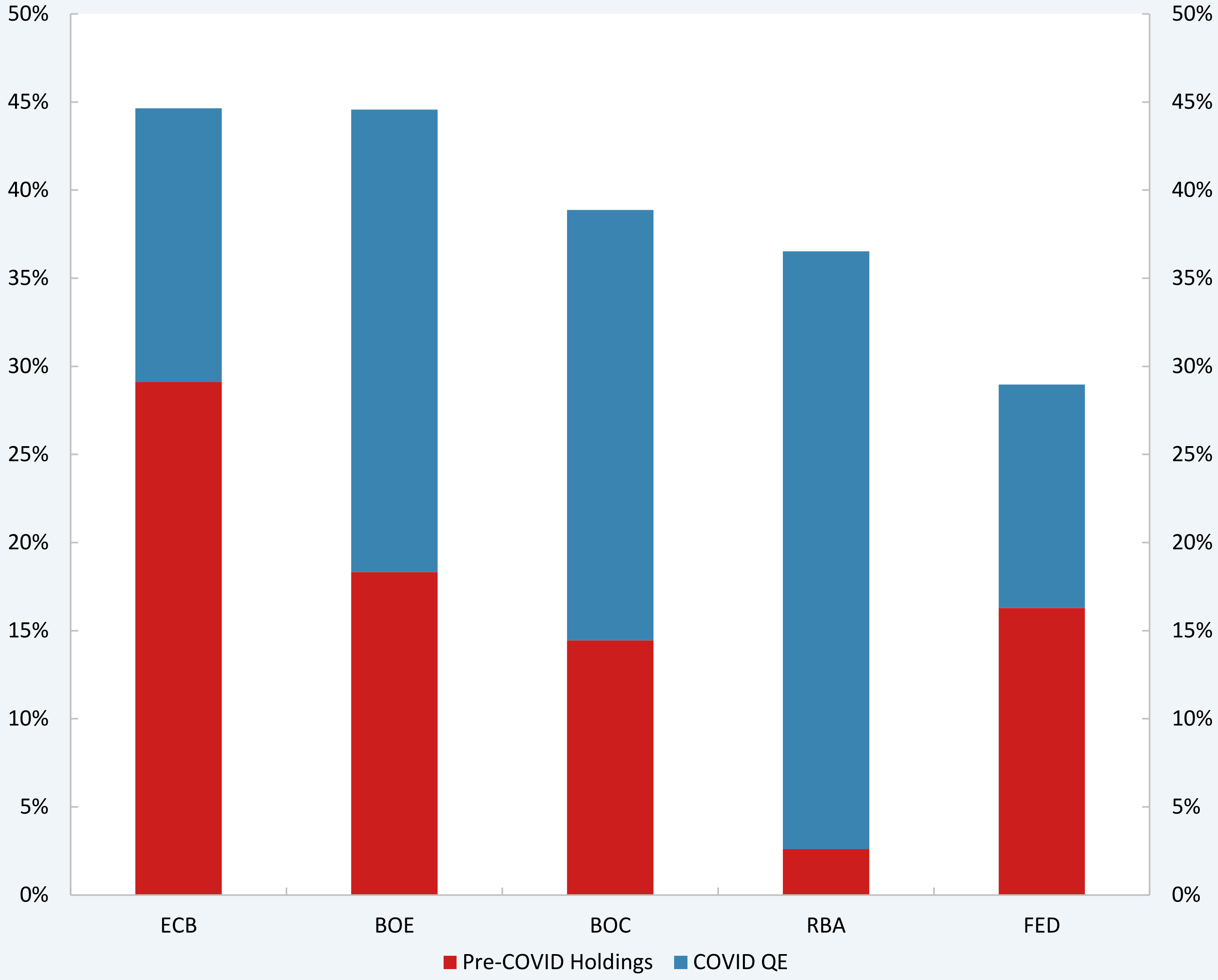
Various asset purchase programs aimed at restoring functioning of important markets

Program name	Cumulative amount purchased	End date
Bankers' Acceptance Purchase Facility (BAPF)	$47bln	Discontinued Oct 26, 2020
Canada Mortgage Bond Purchase Program (CMBP)	$8.0bln	Discontinued Oct 26, 2020
Commercial Paper Purchase Program (CPPP)	$3.5bln	Discontinued Apr 2, 2021
Corporate Bond Purchase Program (CBPP)	$254mm (out of max $10 bn)	Discontinued May 26, 2021
Provincial Bond Purchase Program (PBPP)	$17.6bln (out of max $50 bn)	Discontinued May 7, 2021
Provincial Money Market Purchase Program (PMMP)	$12bln	Discontinued Nov 16, 2020

Bank of Canada actions during the COVID-19 crisis:

Introduced QE to add monetary stimulus once policy rate reached ELB

Information from central banks and Bloomberg (percentages of overall bond markets)

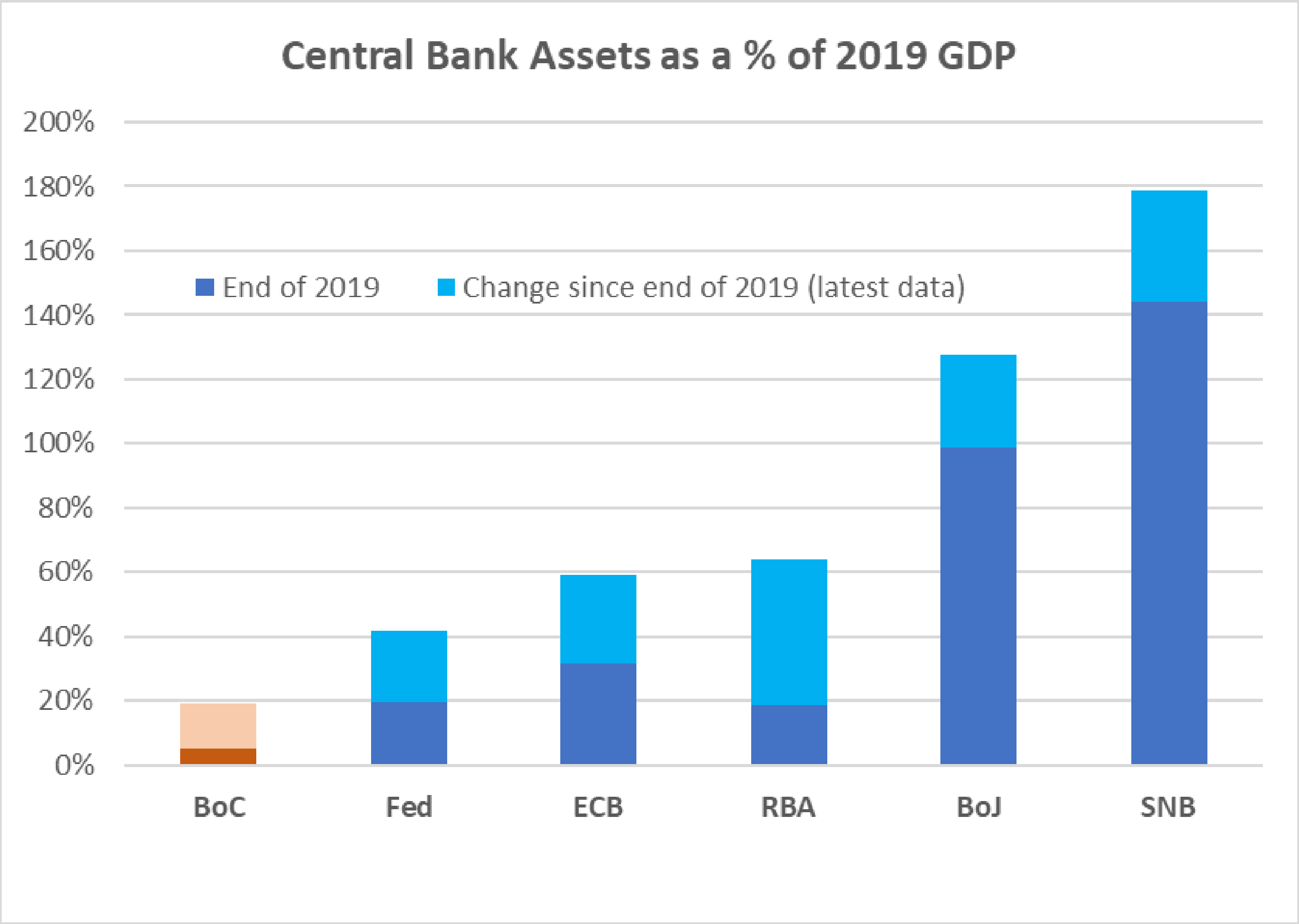


Last Observation: May 27, 2022

As a result of QE (and other crisis programs), central bank assets expanded significantly as a share of GDP

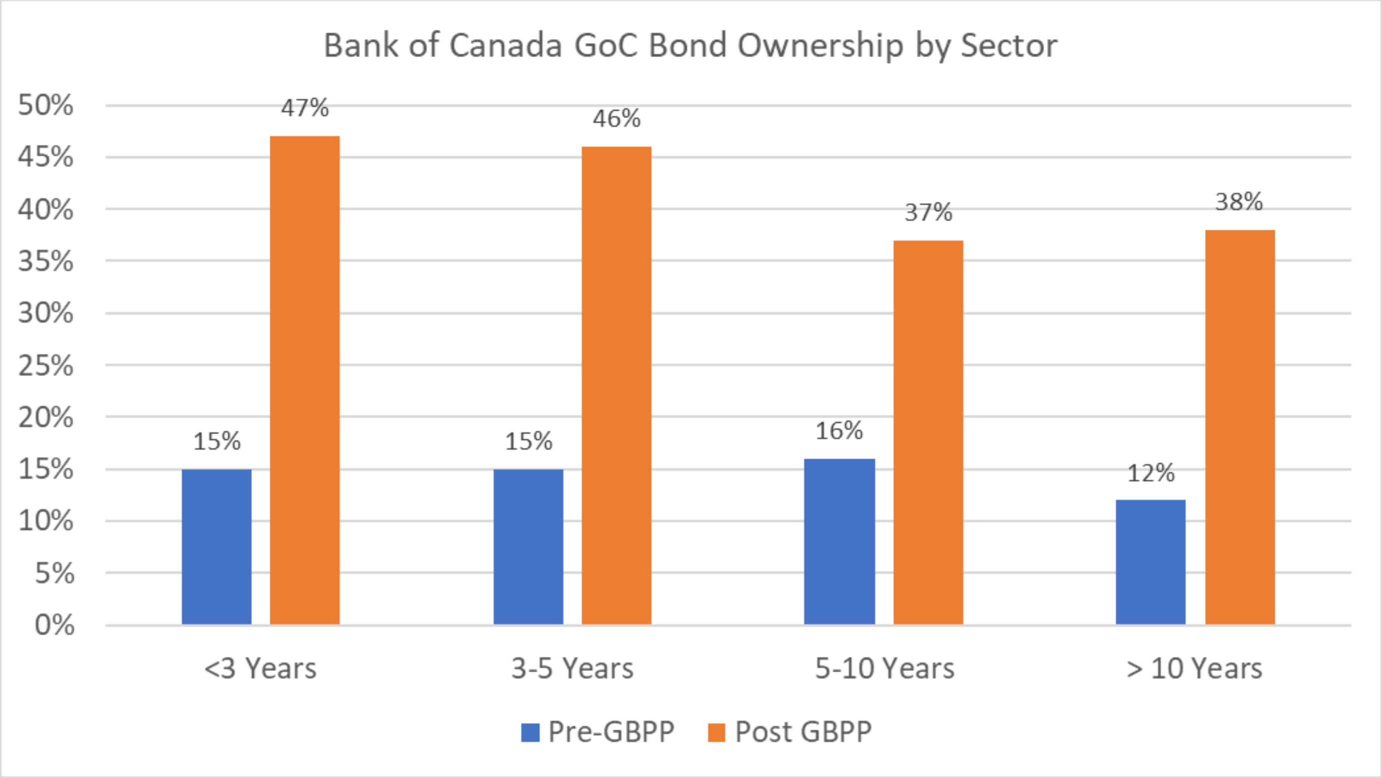
Source: Bloomberg, OECD

Based on 2019 GDP figures, latest balance sheet observations June 2022



Bank holdings of nominal GoC bonds grew substantially as share of amount outstanding

- Prior to Government Bond Purchase Program, Bank held **14% of outstanding GoC bonds**
- The Bank's share of outstanding GoC bonds, across maturity sectors, **increased to ~40%** by end of QE program
- **Securities Repo Operations (SRO) introduced in July 2020** to support liquidity in repo and GoC markets by lending a portion of the Bank's holdings on daily basis



Source: Bank of Canada, excluding RRBs

By end of QE reinvestment stage, Bank purchased around $415 bn GoC bonds

- The Bank purchased ~$339bln of GoC bonds via Government Bond Purchase Program (GBPP) and~$76bln via routine primary market purchases
- **399 GBPP operations** conducted over ~2 years **across all maturity sectors,** including inflation-linked bonds (RRBs)
- **Weighted average maturity (WAM)** of GoC bonds purchased **6.1 years**
- Given scale of purchases, Bank's GoC holdings **increased ~5x times from pre-Covid levels**

Sector	Total # of Operations	Average Number of Bonds per Operation	Total Amount Purchased ($billions)	% of Total Purchases	Average Coverage
<2 Year	31	6	31.9	9%	2.7x
2 Year	93	5	137.5	41%	3.4x
5 Year	91	4	73.9	22%	3.6x
10 Year	88	5	59.4	17%	3.4x
30 Year	90	5	33.7	10%	3.2x
RRB	6	7	2.8	1%	2.2x
Total	**399**		**339.2**		

Source: Bank of Canada

Evolution of the Bank's Government Bond Purchase Program

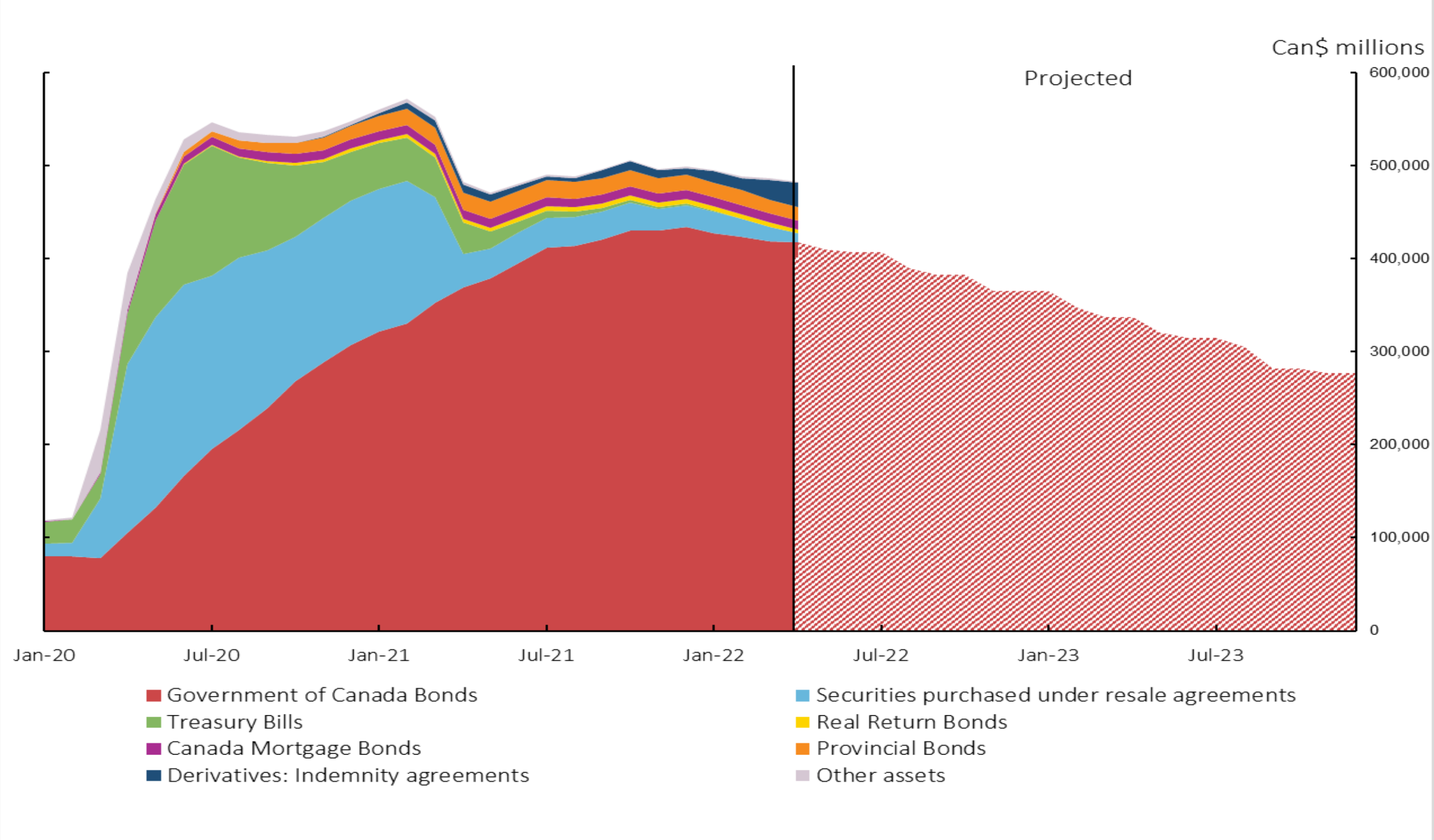
	GBPP Launch	Objective Change	Recalibration	Reduction #1	Reduction #2	QE Reinvestment	Quantitative Tightening (QT)
	April 2020	*July 2020*	*November 2020*	*Late April – Mid July 2021*	*Mid July – October 2021*	*November 2021 – Late April 2022*	*Since Late April 2022 (on-going)*
Objective	Address strains in GoC bond market	Support economic recovery	More direct impact on borrowing rates by buying more longer-term bonds	Reduction in amount of incremental stimulus added		Maintain stimulus by holding total GoC holdings roughly constant	Reduce monetary policy stimulus by gradually shrinking balance sheet
Purchase pace	Minimum $5bln/week	Minimum $5bln/week	Minimum $4bln/week	Target $3bln/week	Target $2bln/week	Target range of $4-5bln/month (primary & secondary)	No primary or secondary purchase
Details	- Purchases across the yield curve - Reverse auctions	- Continue purchases to support recovery	- Increase purchases in long end - Discontinue purchases <2Y sector	- RRB purchases reduced, then discontinued - Purchase composition by sector maintained - Primary purchases maintained		- Adjust purchases to offset maturities over time	- GoC bonds no longer replaced - Balance sheet declines naturally over time - No bond sales

“Post” COVID

Bank of Canada began quantitative tightening in April 2022

- **Quantitative tightening (QT)** announced at the Bank's April 2022 FAD decision
- Maturing Government of Canada bonds on the Bank's balance sheet **no longer replaced**
- Size of balance sheet will decline over time
- QT complement increases in the **policy rate, the primary policy instrument**
- Purchases of GoC securities discontinued in both primary and secondary markets

Under QT, GoC bond holdings projected to decline by roughly half over 3 years



Source: Bank of Canada

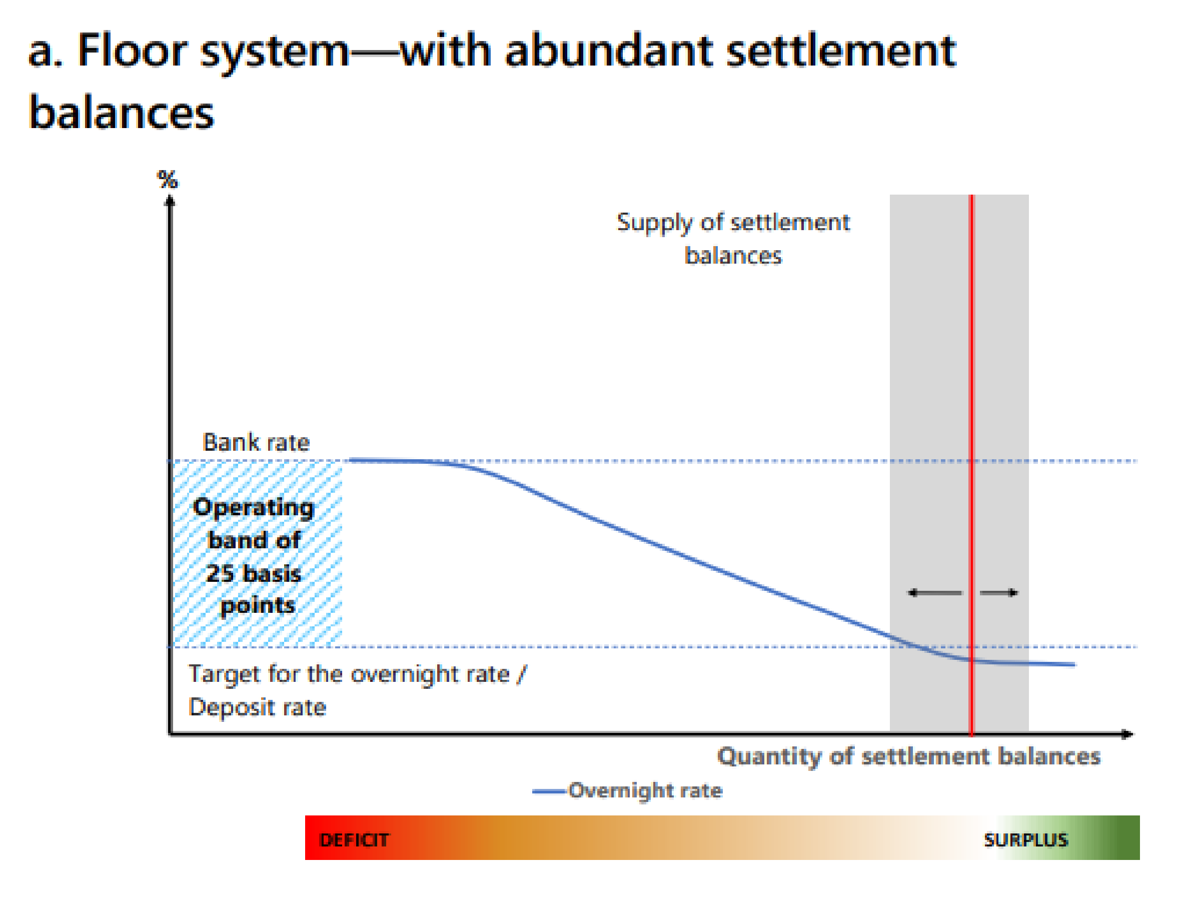
As of June 15, 2022, assuming no new purchases, projections based on par values

When will QT end?

- **Demand for Bank's liabilities** (settlement balance and bank notes) will determine ultimate size of balance sheet
- Growth of bank notes remains stable and predictable
- **Long-run equilibrium level of settlement balances yet to be determined**, but a lot lower than current levels
- **New range of settlement balances will be established based on several indicators:** market-based measures of overnight rate, general funding conditions, input from external stakeholders
- Once new equilibrium level of settlement balances is reached, Bank will start purchasing assets again on routine basis for balance sheet needs

BoC moved to floor system to implement monetary policy given high level of settlement balances

- Pre-2020, implemented monetary policy using **corridor system**, with 50bps operating band around target rate and minimal settlement balances
- Under **floor system**, deposit rate equal to target, 25bps between deposit and Bank rates
- Settlement balances elevated given the Bank's liquidity and asset purchase programs
- Most central banks now implement monetary policy using a version of floor system
- Will **continue under floor system going forward** since demand for central bank liabilities – settlement balances and deposits from financial institutions – has become larger and more variable

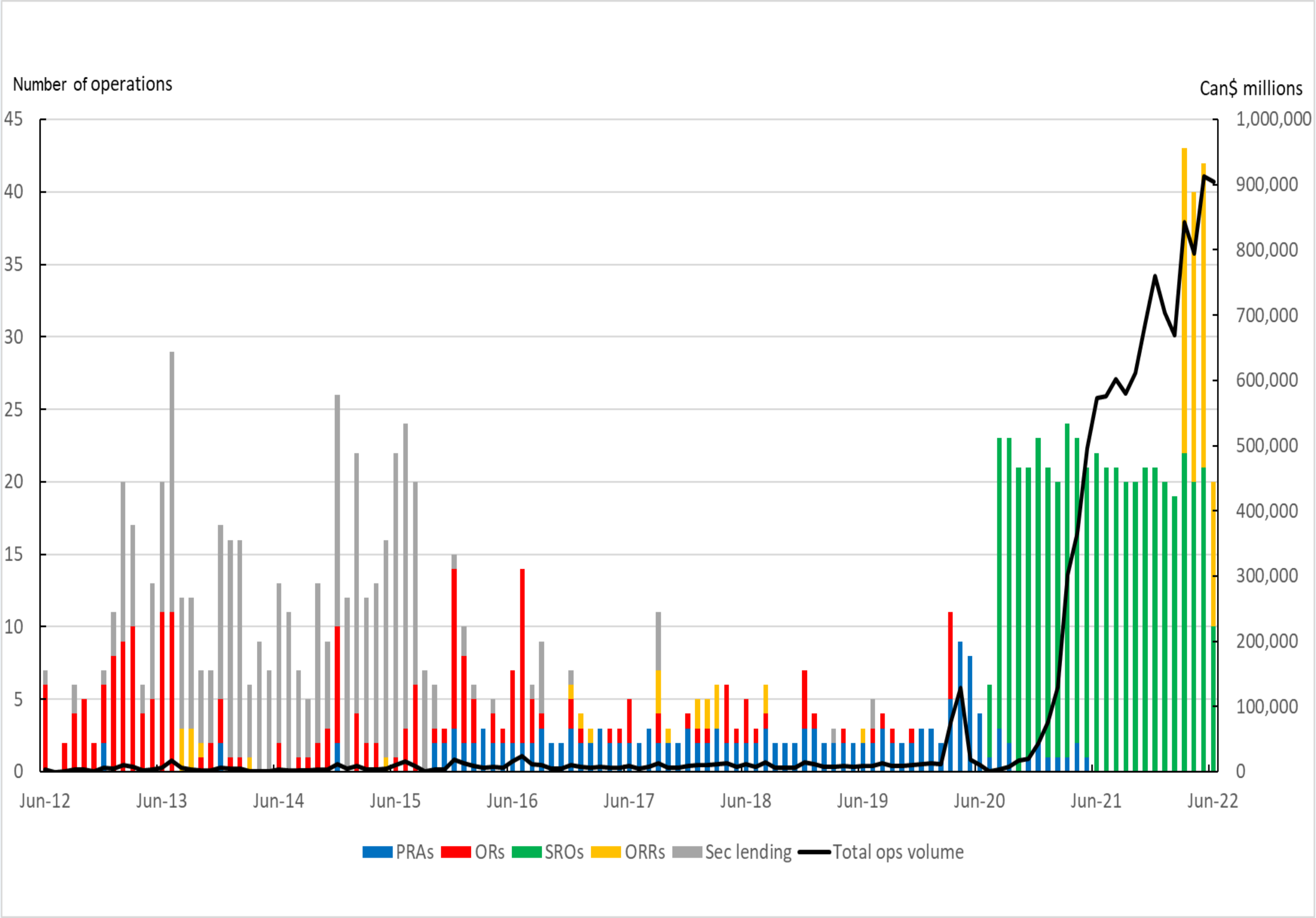


Source: Bank of Canada Staff Discussion Paper—2022-13, https://www.bankofcanada.ca/wp-content/uploads/2022/06/sdp2022-13.pdf

Bank has several tools to support floor system and achieve target for policy rate

- In environment of significant excess settlement balances, **overnight reverse repos (ORRs)** became important tool to drain excess liquidity and manage downward pressure on overnight rate
- Several minor adjustments made to reinforce overnight target rate in floor system
- **ORRs now fixed rate, full allotment operations at the Bank's target**, up to a predetermined dollar limit per counterparty
- Significantly **increased aggregate limit** for overnight reverse repos (ORR) and securities repo operations (SRO) for each primary dealer several times; now stands at $5 bn per PD
- Overnight Repos (ORs) still available to manage upward pressure on overnight rate if needed

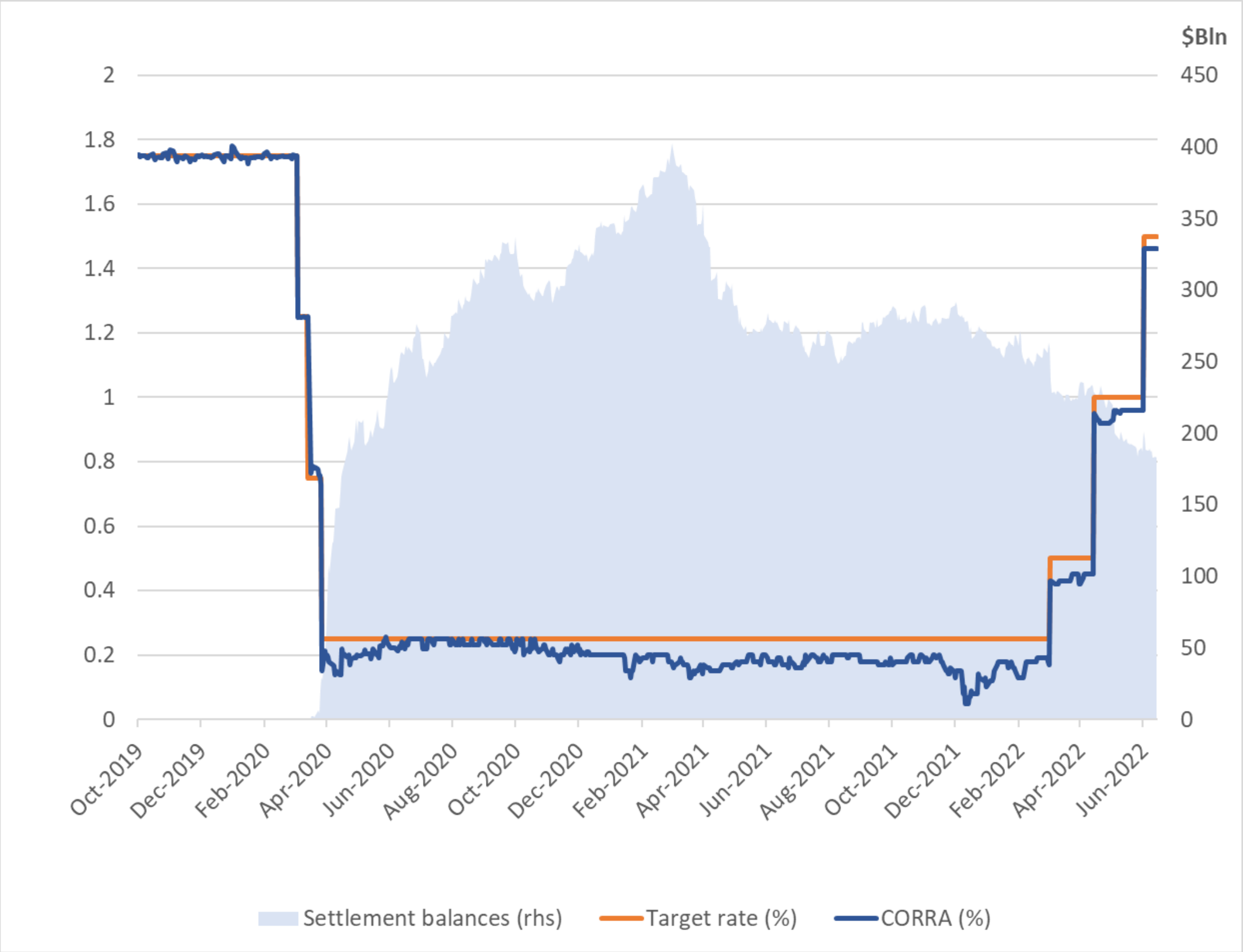
Both number and volume of money market operations have increased substantially



Source: Bank of Canada calculations

Last observation: June 15, 2022; June 2022 total figure is projected

Supported by the Bank's tools CORRA has consistently set only slightly below target since settlement balances increased



Source: Bloomberg

Last observation: June 15, 2022

Thank you
Gracias