Capital Markets

Canadian Banks

A review of mortgage payment shock

RBC Imagine™

Thinking further forward

EQUITY RESEARCH | OCTOBER 30, 2023

For Required Non-U.S. Analyst and Conflicts Disclosures, see page 31.

EQUITY RESEARCH

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RBC Imagine™: Canadian Banks

A review of mortgage payment shock

We believe a significant number of mortgages are coming due in the next three years (around 60% of all outstanding mortgages at the Canadian chartered banks) and that payment shock (the increase in payment at renewal) could be significant and represents a tail risk to Canadian banks. Unless there are significant declines in interest rates, we believe that credit losses will *inevitably* rise, perhaps *significantly in 2025 and beyond*. This report also explores strong proactive actions by the banks that should help mitigate the shock. We are not changing our estimates with this report but feel confident that our tepid outlook for revenue growth of ~4% in 2024 and ~3% in 2025 in Canada retail banking is reasonable as we believe banks will be managing through this phenomenon carefully with slow loan growth, low NIMs, and fee pressure. We will revisit PCL estimates at year-end. This report amalgamates data from many sources and attempts to size payment shock and provide clarity on timing. Data on Canada's mortgage market is incomplete/spotty so there are many assumptions and estimates in this report and thus possibly a fair margin of error in some estimates.

We believe there will be more than $186 billion of mortgages renewing in 2024 at the chartered banks in Canada and at current interest rates (for example, the 5-year fixed mortgage rate of 5.54% is over 180 bps higher than five years ago), a weighted average payment shock of 32% could be expected. We are not a fan of “averages”, and this report provides a distribution of outcomes (see Exhibit 4 for details).

In 2025, we believe there will be ~$315 billion of mortgages renewing at chartered banks in Canada but with many more variable-rate mortgages (with many of them currently negatively amortizing). The weighted average payment shock will likely be similar at 33% but with a wider distribution of outcomes. **Fiscal 2026 renewals have the largest proportion of variable-rate mortgages and consequently, unless rates fall meaningfully, the payment shock could be as high as 48% on a weighted average basis.**

Interest rate assumptions at renewal are *critical*. For example, a -100 bps decline in mortgage rates from current levels would reduce the payment shock from 30%+ to 20%+ for the 2025 renewal year. Variable-rate mortgagors are set to see significant payment shock, perhaps as high as 84% by 2026 if interest rates do not decline. Interest rates would need to decline significantly to “save” this cohort. For example, to reduce payment shock to 20% for the entire variable-rate cohort, we would need to see the Bank of Canada overnight rate fall to 0.25% by July 2026 — perhaps an unreasonable expectation at the moment.

We believe mortgage payment shock will likely impact loan/revenue growth, mortgage delinquency (though modestly), and losses on other forms of credit (spillover effect). We expect loan and revenue growth to be subdued for 2024. We are not concerned about mortgage losses as current mortgage delinquency rates and unemployment rates remain below pre-pandemic levels. We are also comfortable with the Q3/23 average Ontario mortgage loan-to-value ratio at ~53%. We believe there may be spillover of credit losses onto other loans (i.e., unsecured credit and auto loans), but we do not yet see evidence of significant credit deterioration except for a specific subset of commercial real estate (office space).

The Canadian banks are not sitting still and being rather proactive to reduce payment shock for their customers, which could have a significant impact. Customers are given a range of options including increasing monthly payments, switching to a fixed rate, making a lump sum payment, or extending the amortization period. We will continue to track the growth of mortgages with 30+ year amortization periods to assess the effectiveness of these measures (unless interest rates change). We will also keep a close eye on NA and BNS's credit card and mortgage delinquencies for early indications of stress on credit, as their adjustable-rate mortgagors are already experiencing mortgage payment increases.

RBC Imagine™
Thinking further forward

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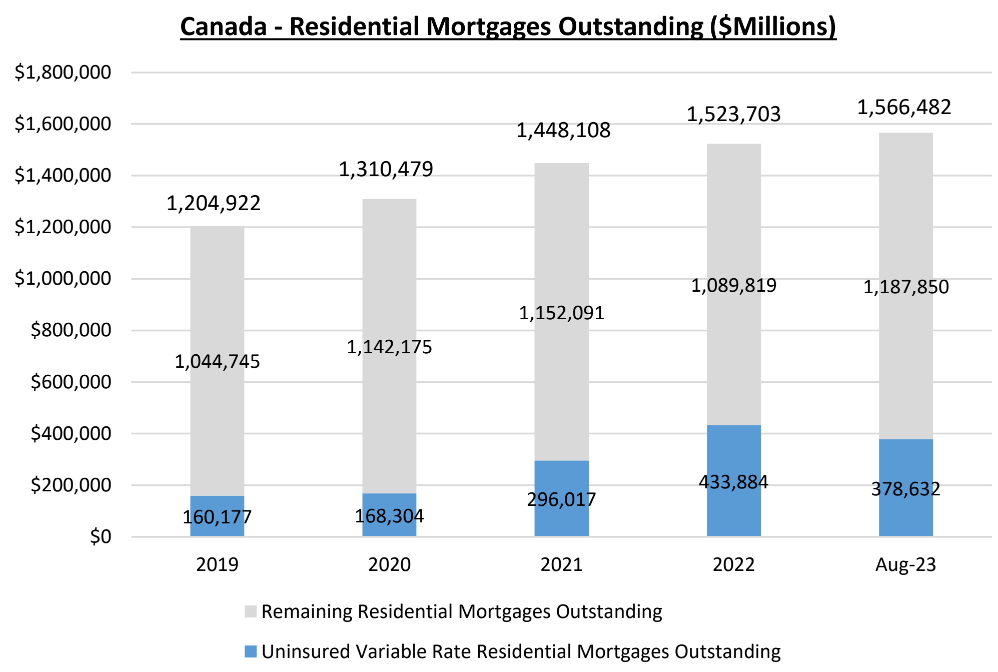
RBC Imagine™ is a suite of future-focused research looking at disruptive forces and potential transformations beyond the near-term forecast horizon.

Mortgage payment shock: happening now and rising over time

The Canadian mortgage market is approximately $2.1 trillion in size, with about $1.6 trillion at Canada's chartered banks according to Statistics Canada (see Exhibit 1) (and of this, $1.1 trillion is on the balance sheets of the large Canadian banks we cover based on August OSFI data). Canadian residential mortgages represent approximately 35% of total loans for the Canadian banks we cover.

There are almost $380 billion variable-rate uninsured mortgages outstanding, with somewhere in the vicinity of $260 billion that have amortization periods greater than 35 years. Of the large Canadian banks we cover, BMO, CM, and TD's negatively amortizing mortgages total $128 billion, and the bulk of these will start maturing in H2/2025 and throughout 2026 (for the purposes of this report, negatively amortizing mortgages are defined as variable-rate mortgages with monthly interest payments that exceed the fixed payment term and are therefore adding to the mortgage balance with each payment).

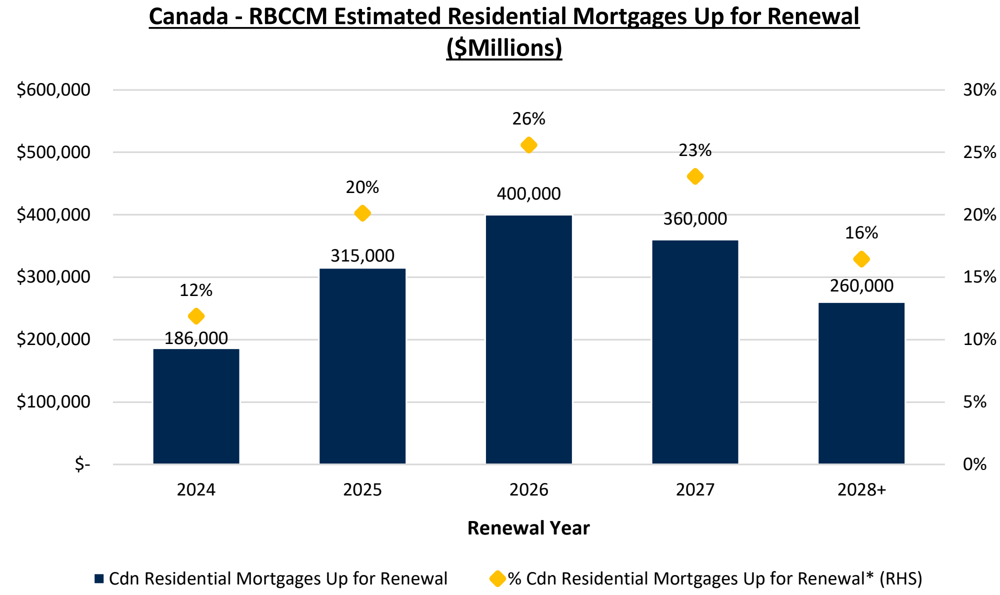
Exhibit 1 - There are approximately $1.6 trillion in Canadian residential mortgages outstanding at the Canadian chartered banks



Represents data for all outstanding residential mortgages in Canada by Canadian chartered banks.
Source: Statistics Canada, RBC Capital Markets

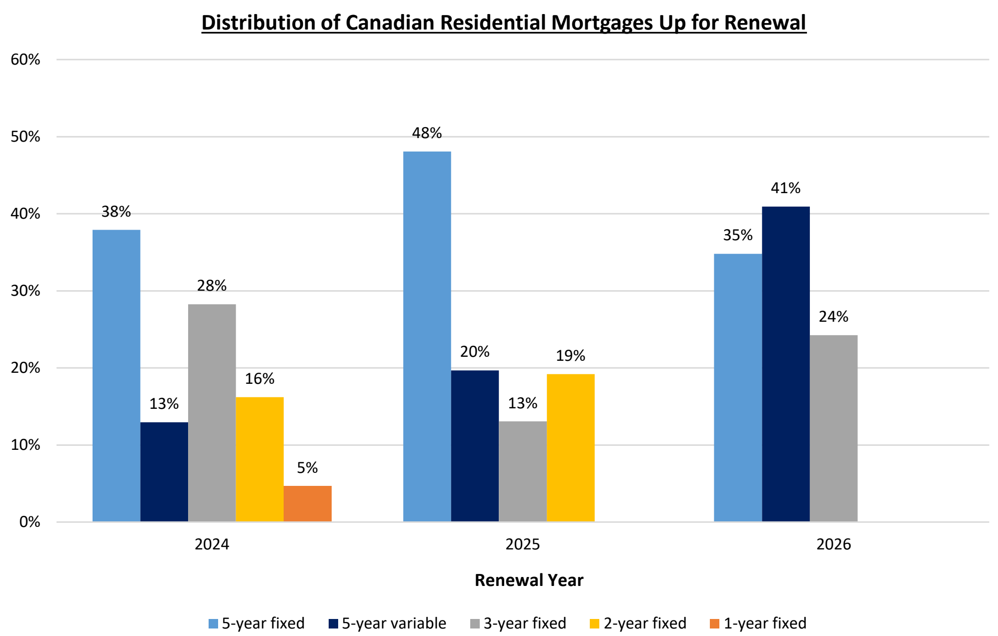
We believe a significant portion of these mortgages will be renewing in the next 3 years, and 2025 and 2026 renewal years are large cohorts. See Exhibit 2 and Exhibit 3 for our approximations for the industry.

Exhibit 2 - Estimated Canadian residential mortgages up for renewal at the Canadian chartered banks



Distributions do not add up to 100% as renewals in the remainder of FY23 are not shown. Mortgages up for renewal at the Canadian chartered banks.
Source: Company reports, RBC Capital Markets estimates

Exhibit 3 - Distribution of residential mortgages in Canada by renewal year

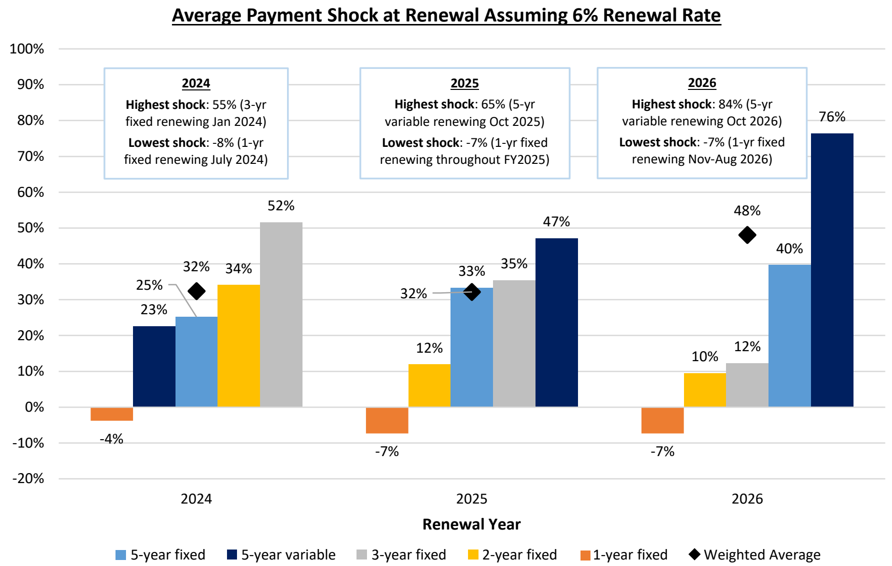


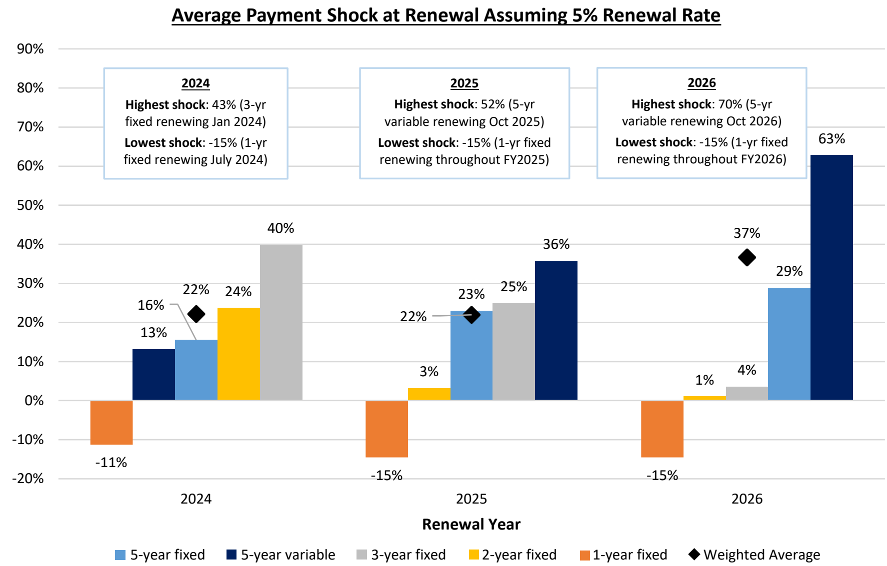
Distribution for Canadian chartered banks according to terms set at origination.
Data is not readily available to reliably estimate the proportion of 4-year fixed-rate mortgages and hence, the proportion of residential mortgages up for renewal in the 5-year fixed bucket is likely overstated.
Source: Statistics Canada, RBC Capital Markets

Mortgage payment shock, the renewal rate matters *a lot…*

- We believe there will be over $186 billion of mortgages renewing in fiscal 2024 at the Canadian chartered banks, with an average weighted increase in mortgage payment over 30%. Today, most (over 50%) of mortgagors are choosing a 3-year fixed-rate mortgage, which is currently around 6% (five years ago, the 5-year fixed mortgage rate was 3.58%). Exhibit 4 also highlights that the weighted average payment shock (we refer to the increase in payment at renewal as the "payment shock") would be reduced to 22% if the renewal rate was 5% rather than 6%.
- For 2025, we estimate there will be approximately $315 billion of mortgages renewing at the chartered banks, and the weighted average payment shock (assuming interest rates do not change from current levels) will also be over 30% with a wider distribution of outcomes. Once again – a -100 bps lower assumed renewal rate (which is probably realistic as this lines up with RBC Economics' expectations) shows a much lower weighted average shock of 23%.
- The 2026 cohort of renewals is: a) large (approximately $400 billion or 26% of the current stock of mortgages at the Canadian chartered banks), and b) contains many variable-rate mortgages (with fixed payments) that were originated in 2021. Because many of these mortgages have balances that are growing (currently negatively amortizing), the payment shock could be high, at almost 50% on a weighted average basis. This cohort of mortgages is far into the future – so the renewal rate is very important to this estimation. By 2026, there may be some customers hitting trigger points (discussed later) where they would be forced to renew a little bit ahead of schedule. The size of this cohort is somewhat of a moving target because we believe many customers are being proactive with their mortgages ahead of their renewal date (we will discuss this more later) but at the same time, many Canadians have been taking out shorter-term mortgages that *add* to this cohort. See Appendix I for payment shocks assuming a 4% renewal rate, which depicts a more manageable increase in payments.
- As our exhibit shows, the renewal rate matters and in most mortgage contracts the renewal rate is based around Canada's prime rate. Notably, the variable-rate mortgages renewing in 2026 are likely to have a significant payment shock. While lower rates will help, Exhibit 6 highlights that in order to bring the payment shock down to 20% (a level we view as manageable), the Bank of Canada (BoC) overnight rate would need to fall very quickly to 0.25%.

Exhibit 4 - Payment shocks assuming 6% and 5% mortgage rates at renewal





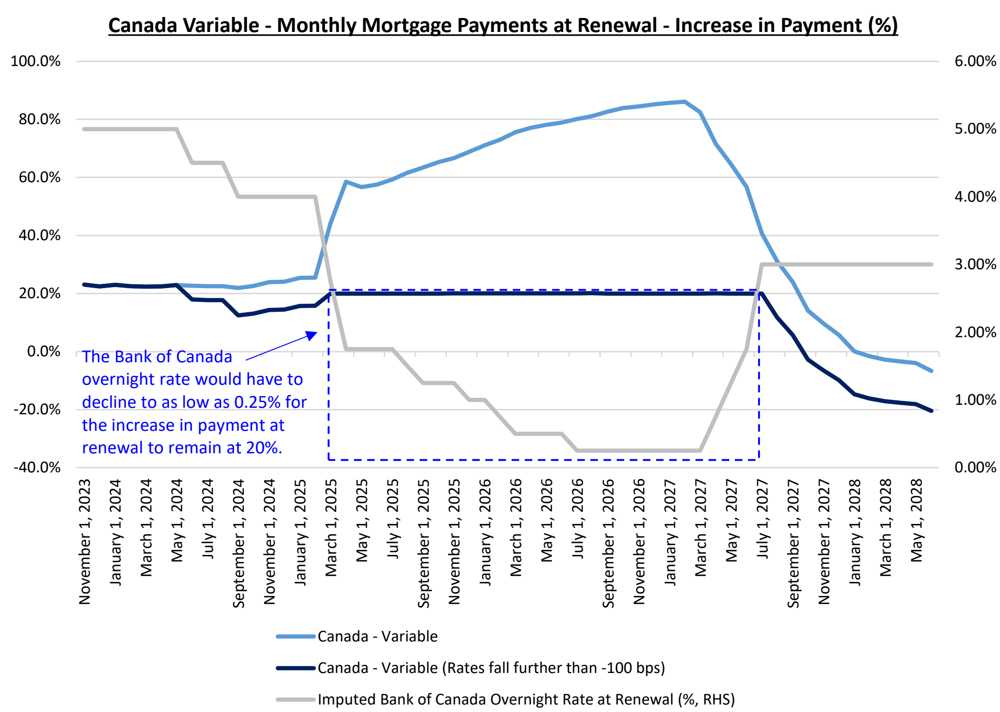
Average increase in mortgage payment at renewal is weighted by the distribution of mortgages up for renewal in each fiscal year by term. Data is not readily available to reliably estimate the proportion of 4-year fixed-rate mortgages and hence, the weighted average impact is likely overstating the 5-year fixed bucket.
Source: CREA, Haver, Statistics Canada, RBC Capital Markets

Exhibit 5 - Chartered banks' fixed and variable mortgage rates when funds were advanced

	Nov-19*	Nov-20*	Oct-23**
Mortgage Rates			
Variable Insured	4.00%	2.07%	6.30%
Variable Uninsured	3.72%	1.95%	
Fixed Insured			
< 1 year	5.50%	5.45%	5.89%
> 1 year to < 3 years	3.33%	2.78%	5.89%
> 3 years to < 5 years	2.84%	1.93%	5.74%
> 5 years	2.83%	1.96%	5.54%
Fixed Uninsured			
< 1 year	5.16%	5.00%	
> 1 year to < 3 years	3.40%	3.00%	
> 3 years to < 5 years	2.90%	2.03%	
> 5 years	2.90%	2.00%	

* Based on funds advanced by the Canadian charted banks as disclosed by Statistics Canada.
** Latest available Ontario rates from RateSpy does not differentiate between uninsured and insured.
Source: Statistics Canada, RateSpy, RBC Capital Markets

Exhibit 6 - The Bank of Canada policy rate would have to decrease significantly for the increase in payments to be kept at 20%

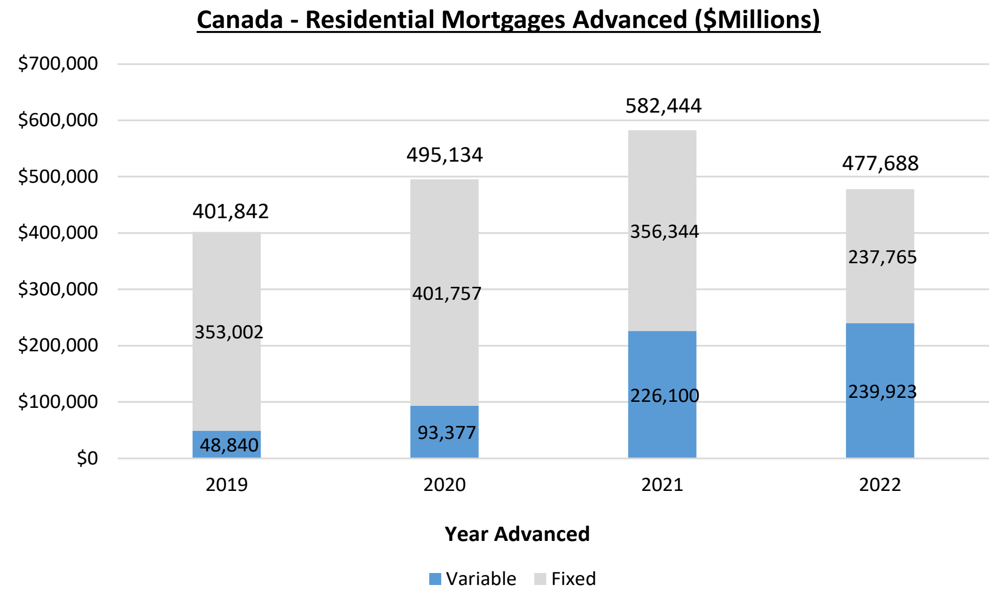


Source: CREA, Haver, Statistics Canada, RBC Capital Markets

Another way to look at the data is by vintage…

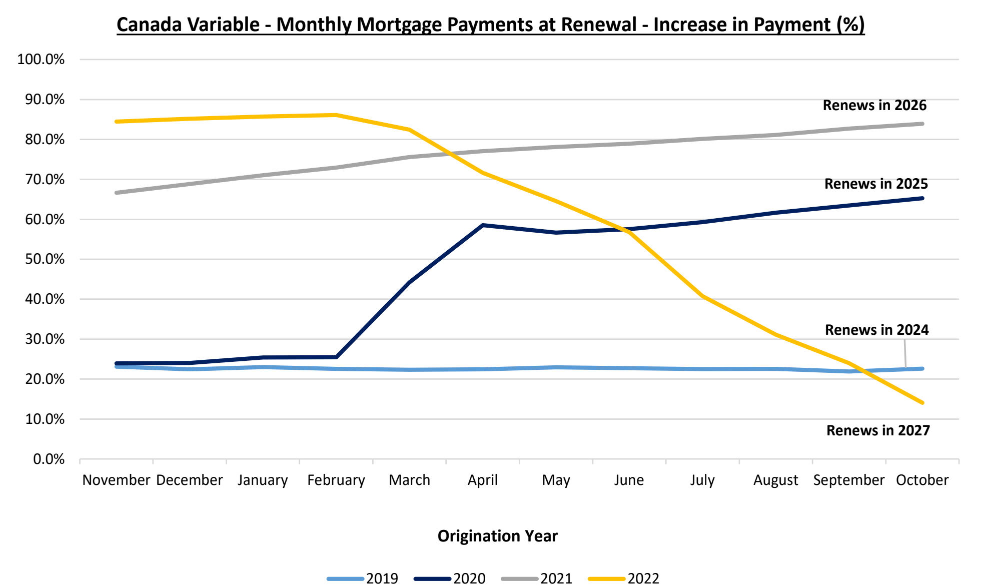
Pure origination data is not readily available in Canada, so we approximate originations using funds advanced data from Statistics Canada. For 2024, there will be far more fixed-rate mortgages renewing than variable ones but interestingly enough, the mortgage payments will increase more for fixed-rate mortgages than variable in 2024.

Exhibit 7 - Canadian residential mortgages advanced (the closest thing available to "originations")



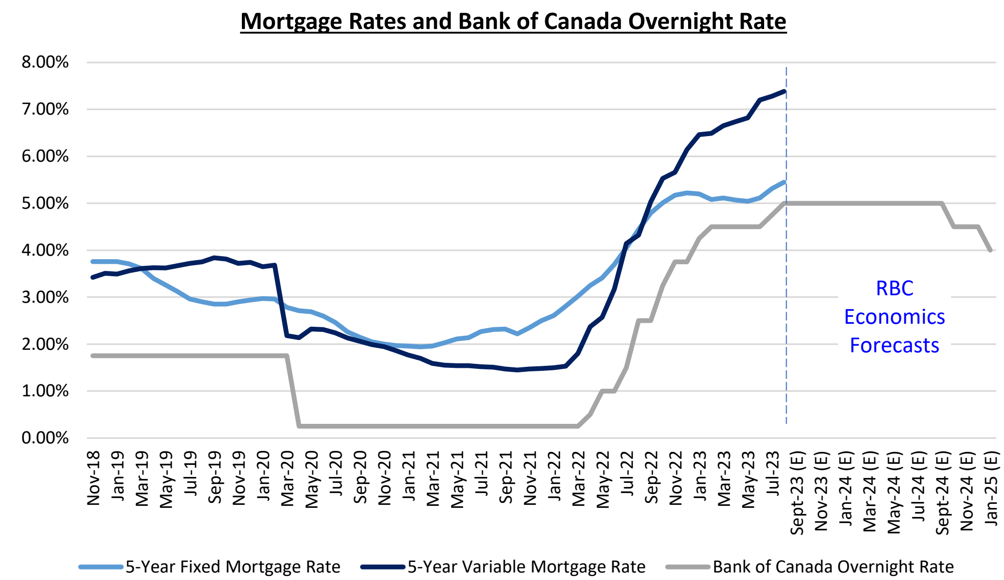
Represents data for all advanced Canadian residential mortgages by Canadian chartered banks.
Source: Statistics Canada, RBC Capital Markets

Exhibit 8 - Payment shock for variable-rate mortgages



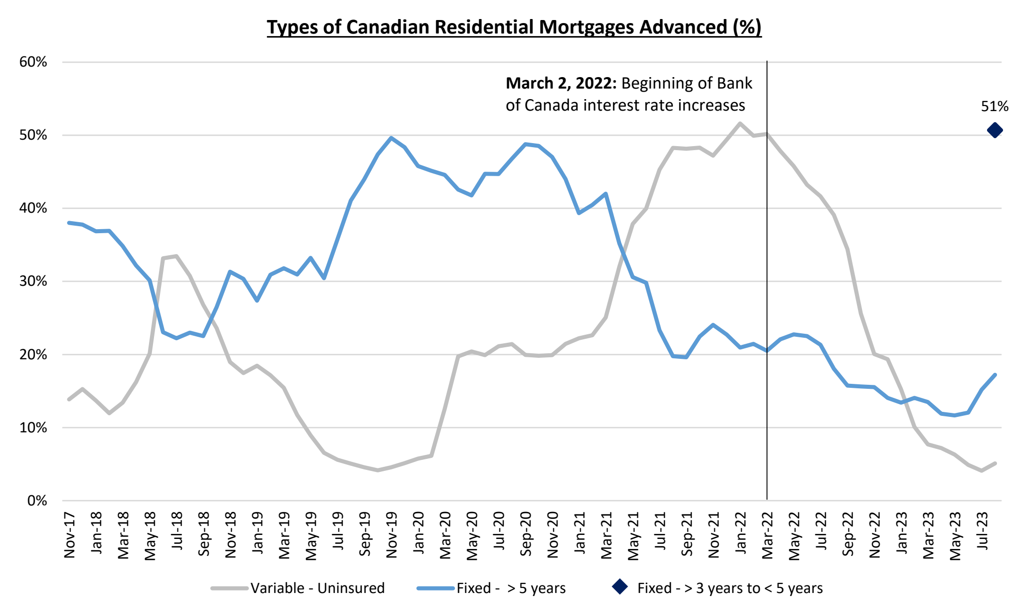
Assumes that mortgages will renew at a 3-year fixed rate of 6%.
Source: CREA, Haver, Statistics Canada, RBC Capital Markets

Exhibit 9 - RBC Economics forecasts the BoC overnight rate to decrease -100 bps in 2024



RBC Economics forecasts as of October 2023.
Source: Statistics Canada, RBC Capital Markets, RBC Economics

Exhibit 10 - 5-year fixed-rate mortgages were popular until variable rates declined in 2020/21



Data includes Canadian chartered banks only.
Source: Statistics Canada, RBC Capital Markets

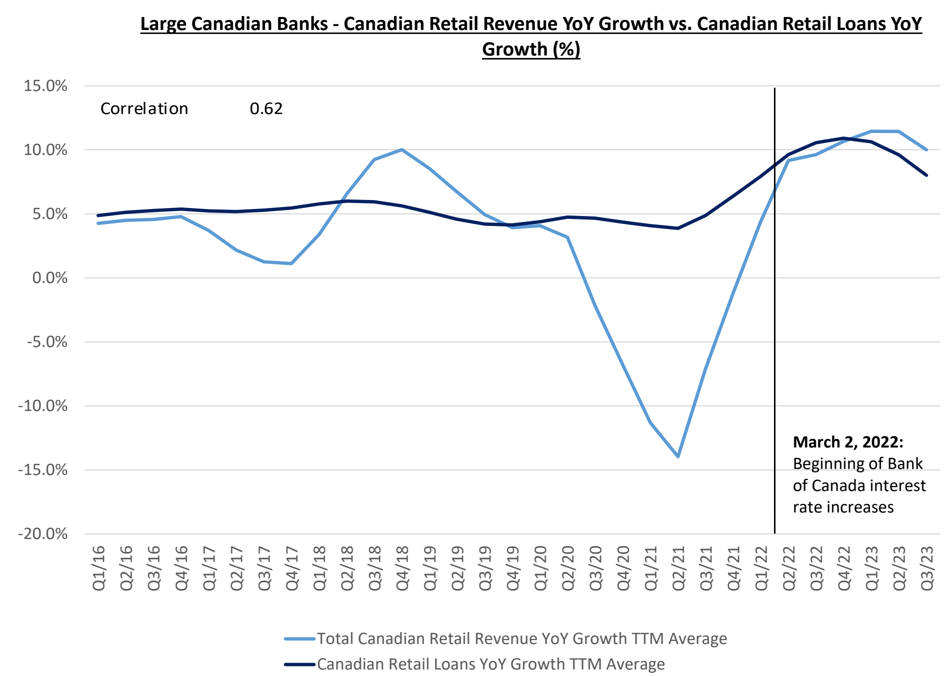
Possible impacts of (high) mortgage payment shock

Some have suggested that mortgage payment shock could be viewed as a tail risk possibility because mortgage payment shock hits harder out in 2025 and very hard in 2026, and it is difficult to see interest rates staying this high for that long. And indeed, RBC Economics forecasts suggest a -100 bps decline in interest rates in H2/24. In our view, this will create some relief, as the payment shock for variable-rate mortgages in 2025 will decrease from around 47% on average to 36%.

Broadly speaking, the increase in mortgage payments will likely hit Canada's economy (a calculation best left to our economics department) with knock-on effects for the Canadian banks:

- **We believe weaker loan growth and revenue growth is the first most obvious impact.** Both the trailing-twelve-month (TTM) YoY Canadian retail loan growth and Canadian retail revenue growth have been decelerating for the large Canadian banks recently (Exhibit 11). We will revisit our loan growth/revenue assumptions at year-end, but we believe that guidance on revenues for 2024 may be disappointing. We currently assume ~4% revenue growth in Canada P&C businesses for 2024, after a year of ~8% growth in 2023 (Exhibit 12). We believe the spread on mortgages currently being underwritten or renewed, the so-called "front book", is flat or possibly mildly lower than the back book.

Exhibit 11 - YoY Canadian retail revenue growth and retail loan growth decreased recently



TTM: Trailing twelve months.
Note: Domestic/Canadian retail revenues are on a core basis, excluding special items. Growth based on total Big Six Banks.
Canadian retail loan data is based on quarterly average Canadian P&C loans.
Source: Company reports, RBC Capital Markets

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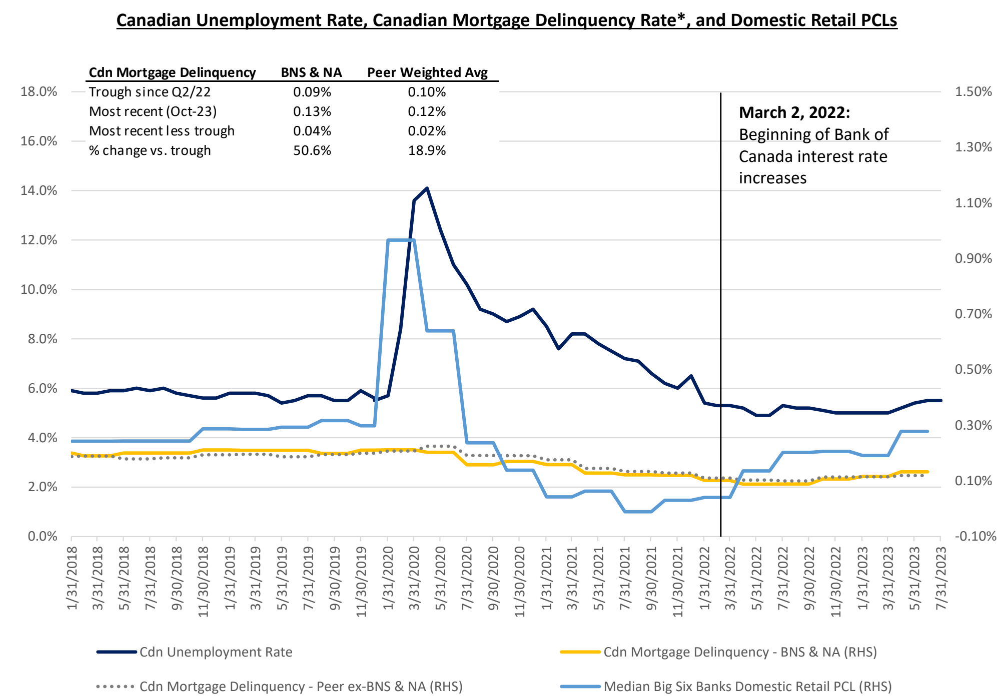
Exhibit 12 - We estimate ~4% growth in Canada P&C revenues in 2024, then ~3% in 2025

						CHG.				
$Millions	**2021**	**2022**	**2023E**	**2024E**	**2025E**	**2021**	**2022**	**2023E**	**2024E**	**2025E**
Canada P&C Revenue										
BMO	8,786	9,868	10,732	11,266	11,557	9.4%	12.3%	8.8%	5.0%	2.6%
BNS	10,898	12,030	12,748	13,226	13,640	5.8%	10.4%	6.0%	3.8%	3.1%
CM	12,820	14,147	14,851	15,668	16,349	6.5%	10.4%	5.0%	5.5%	4.3%
NA	3,615	4,034	4,519	4,710	4,856	6.6%	11.6%	12.0%	4.2%	3.1%
RY	17,570	19,282	n/a	n/a	n/a	4.3%	9.7%	n/a	n/a	n/a
TD	14,917	16,586	18,246	18,958	19,463	-17.1%	11.2%	10.0%	3.9%	2.7%
Total (ex-RY)	**51,036**	**56,665**	**61,096**	**63,827**	**65,865**	**-1.4%**	**11.0%**	**7.8%**	**4.5%**	**3.2%**

Source: Company reports, RBC Capital Markets estimates

- **There is some concern that the banks will face mortgage defaults/losses, but various indicators suggest to us that mortgage losses may not be as high as expected.**
  - The Canadian unemployment rate has remained relatively stable and below pre-pandemic levels, and Canadian retail provision for credit losses (PCLs) have been normalizing towards pre-pandemic levels (Exhibit 13).

Exhibit 13 - Canadian mortgage delinquencies increased at a faster rate for BNS and NA since Q2/22 relative to peers



* BMO, BNS, CM: 90 days and over delinquency rates disclosed for Canadian mortgages.
NA: 90+ days past due uninsured Canadian mortgages; not disclosed prior to 2019.
RY, TD: Gross impaired Canadian mortgage loans as a percentage of gross total Canadian mortgage loans (excludes HELOCs).
Canadian mortgage delinquencies are calculated on a weighted average basis for both BNS & NA and for the large Canadian banks excluding BNS & NA.
Source: Company reports, Haver, RBC Capital Markets

  - The large Canadian banks' average loan-to-value (LTV) ratio for the uninsured residential mortgage portfolio in Ontario is ~53%, a comfortable level below ~67% on average at origination, suggesting that Ontarians have been able to build equity in their homes (Exhibit 14). House prices have declined from peak levels in February 2022 (Exhibit 15), but we believe that there would need to be substantial decreases in average home prices in Canada for LTVs to increase significantly and hence result in higher default rates and mortgage losses.

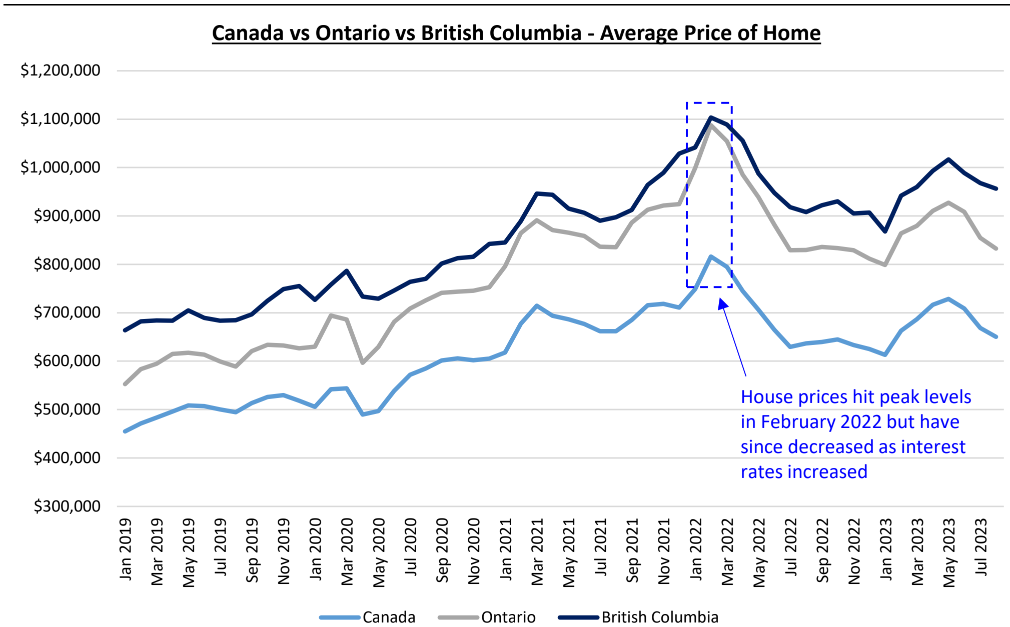
- Some Canadians have experienced wage growth, and while we do not believe an increase in wages alone will be sufficient for borrowers to handle large increases in monthly payments (along with general inflationary pressures), many Canadians have suggested that they have reduced their spending habits to brace for financial difficulties (Exhibit 27). Additionally, deposits continue to look "inflated" versus pre-pandemic levels (Exhibit 28) and the banks continue to suggest that on average, customers are wealthier than pre-pandemic. For customers who are at risk of mortgage default, the Financial Consumer Agency of Canada (FCAC) has set out a guideline of expectations on proactive measures that banks should take to provide relief (Exhibit 29). In our view, the banks' proactive measures will help curtail mortgage defaults (we discuss the banks' proactive measures in more detail later in this report).

Exhibit 14 - Exposures to mortgages in Ontario, credit cards, and Canada P&C revenues

As of Q3/23	% of Canadian Residential Mortgages in Ontario	Uninsured Residential Mortgages - Portfolio Ontario LTV Ratios[1]	Uninsured Residential Mortgages - Origination Ontario LTV Ratios	Credit Cards as a % of Gross Loans	Avg Credit Card Delinquencies[2]	Canada P&C Revenues as a % of Total Revenues[3]
BMO	47.1%	56%	70%	1.8%	0.64%	34.1%
BNS	55.6%		58%	2.2%	0.82%	36.8%
CM	56.0%		65%	3.4%	0.67%	57.1%
NA	31.8%	53%	70%	1.2%	0.76%	46.2%
RY	49.8%	50%	70%	2.6%	0.54%	40.0%
TD	53.4%		66%	4.3%	0.79%	39.7%
Total/Average	**51.7%**	**53%**	**67%**	**2.8%**	**0.70%**	**40.7%**

Grey means not disclosed.
(1) NA's portfolio LTV ratio is for Ontario uninsured mortgages and HELOCs. RY's portfolio LTV ratio is for Ontario within its Canadian Banking RESL portfolio.
(2) Credit card write-offs as percentage of gross credit card loans except BNS (retail 90+ days past due credit card loans in Canada). Average since Q1/18.
(3) Total revenues exclude revenues from the corporate segment.
Source: Company reports, RBC Capital Markets

Exhibit 15 - House prices in Canada have declined from February 2022 peak levels



Data not seasonally adjusted.
Source: CREA, Haver, RBC Capital Markets

- More likely, in our view, is a spillover effect onto other forms of credit, particularly unsecured credit and possibly auto loans, as the full-recourse nature of the Canadian mortgage market encourages borrowers to avoid defaulting on their loan. For the time being, we are not modeling a steep rise in PCLs (Exhibit 16). Delinquency data at BNS and NA, whose borrowers have already been experiencing higher payments, have not shown signs of significant credit deterioration (Exhibit 31, Exhibit 32, and Exhibit 33). The one exception where we have seen some credit deterioration is a subset of U.S. commercial real estate, specifically in offices. We concede that PCLs may be higher than our models currently suggest, but we leave our estimates unchanged until we see more signs of credit deterioration.

Exhibit 16 - We model PCLs to continue normalizing to an average 33 bps total PCL ratio in 2024

								CHG.		
$Millions	**2021**	**2022**	**2023E**	**2024E**	**2025E**	**2021**	**2022**	**2023E**	**2024E**	**2025E**
Total PCL Ratio										
BMO	0.00%	0.06%	0.23%	0.27%	0.27%	-0.63%	0.06%	0.17%	0.03%	0.00%
BNS	0.29%	0.19%	0.39%	0.45%	0.46%	-0.66%	-0.09%	0.19%	0.06%	0.01%
CM	0.04%	0.21%	0.44%	0.38%	0.37%	-0.57%	0.18%	0.23%	-0.06%	-0.01%
NA	0.00%	0.07%	0.16%	0.19%	0.21%	-0.52%	0.07%	0.09%	0.03%	0.01%
RY	-0.11%	0.06%	n/a	n/a	n/a	-0.76%	0.17%	n/a	n/a	n/a
TD	-0.03%	0.14%	0.33%	0.38%	0.39%	-1.03%	0.17%	0.20%	0.05%	0.01%
Average (ex-RY)	**0.06%**	**0.13%**	**0.31%**	**0.33%**	**0.34%**	**-0.68%**	**0.08%**	**0.18%**	**0.02%**	**0.01%**

Source: Company reports, RBC Capital Markets estimates

- If PCLs are only modestly touched by the higher payment strain on consumers, it is still possible that risk weighted assets (RWAs) increase because of credit migration. As the strain on customer finances rises, we believe RWA (in many different consumer loan categories) probably rises. See Exhibit 17 for our RWA estimates.

Exhibit 17 - We estimate ~9% growth in RWA in 2024, following ~5% growth in 2023

								CHG.		
$Millions	**2021**	**2022**	**2023E**	**2024E**	**2025E**	**2021**	**2022**	**2023E**	**2024E**	**2025E**
Risk-weighted assets										
BMO	325,433	363,997	417,072	462,026	491,454	-3.3%	11.9%	14.6%	10.8%	6.4%
BNS	416,105	462,448	443,557	479,594	505,734	-0.2%	11.1%	-4.1%	8.1%	5.5%
CM	272,814	315,634	320,586	338,974	354,582	7.0%	15.7%	1.6%	5.7%	4.6%
NA	104,358	116,840	122,370	129,562	138,323	10.1%	12.0%	4.7%	5.9%	6.8%
RY	552,541	609,879	n/a	n/a	n/a	1.2%	10.4%	n/a	n/a	n/a
TD	460,270	517,048	561,226	616,207	652,399	-3.9%	12.3%	8.5%	9.8%	5.9%
Total (ex-RY)	**1,578,980**	**1,775,967**	**1,864,812**	**2,026,363**	**2,142,492**	**-0.2%**	**12.5%**	**5.0%**	**8.7%**	**5.7%**

Source: Company reports, RBC Capital Markets estimates

- We believe there may be incremental hits to the Canadian banks' asset/wealth management segments as higher mortgage payments will result in less money for clients to make investments and/or clients will need to make redemptions to handle higher payments. At present, we have not completely analyzed this impact.
- Can (should?) the regulator continue to push for higher capital requirements from the banks? In our view, there is an argument to be made for either outcome. If this is a real threat, perhaps more capital ahead of weakness creates a sounder financial system. On the other hand, higher capital requirements restrict lending capacity and this may be a moment in time where more restrictive lending causes undue harm. We lean slightly towards the latter argument.

In Exhibit 31, we highlight our "canary in the coalmines", NA and BNS. These banks have customers that have already seen significant increases in mortgage payments (almost 60% in some cases). So far, there is very little evidence of weakness in BNS and NA's loan portfolios.

We believe these two banks in particular should be watched closely for signs of stress versus peers where larger swaths of customers have yet to experience mortgage payment shock.

Banks are being proactive – with some effect

Banks have been proactively reaching out to customers that are coming up for mortgage renewal and we explore the banks' approach and some tools available to help customers as they face higher payments. **To date, mortgage defaults are still below pre-pandemic levels though rising.**

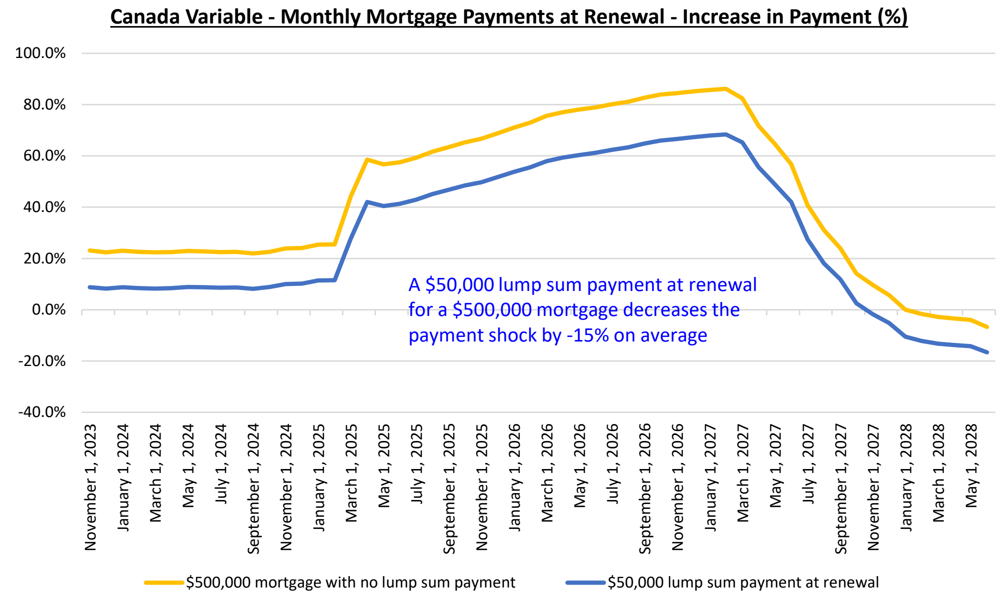
When variable-rate borrowers reach their "trigger rate", the point at which monthly mortgage payments are no longer sufficient to cover the cost of interest, the banks are not required by law/regulation to reach out to the customer for solutions, but they will typically approach borrowers with options when they hit the trigger rate. The trigger point (defined as either 105% of original mortgage balance or breaching 80% LTV, often called the "designated amount"), the mortgage payment is reset and the mortgage returns to its original amortization end date.

The FCAC expects the banks to proactively reach out to customers experiencing financial difficulty and at risk of mortgage default to explore their options for mortgage relief. In our discussions with the banks, this has most definitely been occurring for some time now. See Exhibit 29 for the FCAC's guideline on its expectations for the Canadian banks to help at-risk customers and Exhibit 30 for a summary of the large Canadian banks' proactive measures for at-risk customers and methods they propose for mortgage relief.

Relief measures can generally be grouped into the following three options:

1. **Increase monthly payments**. The banks may suggest to customers to increase their monthly payments before approaching the trigger rate. The large Canadian banks have suggested that their mortgagors have a comfortable balance of excess deposits amassed from the pandemic. Canadians typically prioritize making regular payments against their home, and a recent survey by the BoC suggests that Canadians have already started bracing for the high inflation environment by reducing their spending habits (Exhibit 27). Our calculations suggest a weighted average payment shock of over 30% in 2024, and as high as 52% for variable-rate mortgagors.
2. **Switch to a fixed rate**. Another option is switching to a fixed rate, and we believe that shorter fixed-rate terms have grown in popularity because customers are hoping that rates will go down in the near future. Switching terms before the current term ends usually comes with a fee, but the FCAC expects banks to waive any internal fees associated with the switch for at-risk customers. Typically, switching to a fixed-rate mortgage will result in a higher monthly payment unless the amortization period is extended (and this is also an option).
3. **Make a lump sum payment**. If a mortgagor chooses to make a lump sum payment to avoid negative amortization, the banks are expected to waive any pre-payment penalties and the banks have suggested that their mortgagors have a healthy level of deposits. If borrowers made a $50,000 lump sum payment at renewal on a $500,000 mortgage, the payment shock for variable-rate mortgagors would decrease -15% on average (Exhibit 18).

Exhibit 18 - A $50,000 lump sum payment on a $500,000 mortgage would reduce the payment shock by -15% on average



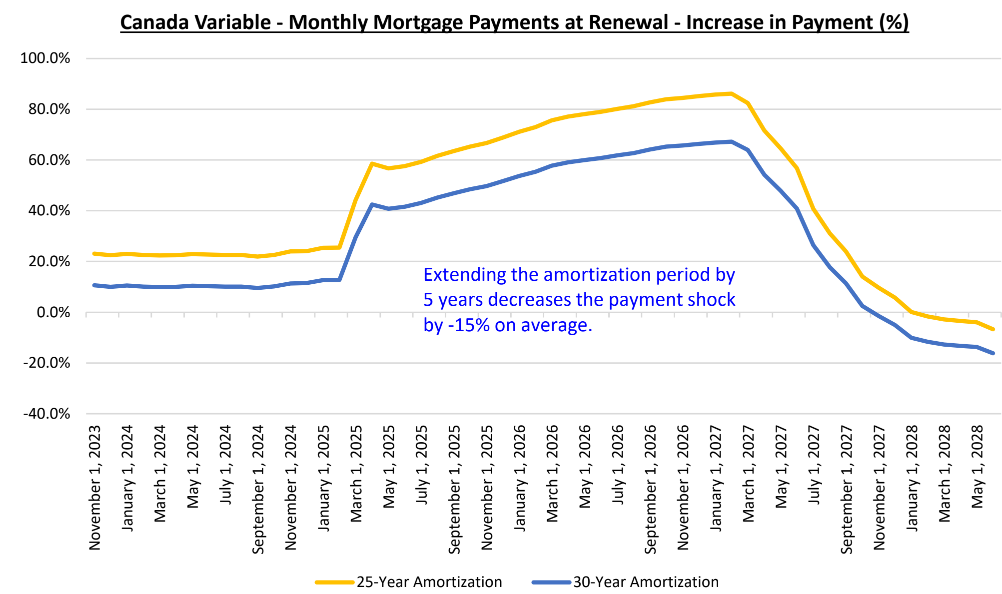
Source: CREA, Haver, Statistics Canada, RBC Capital Markets

Other mortgage relief options include amortization extensions, switching lenders, and at a last resort, selling the home. The FCAC's expectation is that a bank will waive any pre-payment penalties if an at-risk consumer chooses to sell their home.

If a borrower with a variable-rate mortgage extends their amortization period to a 30-year amortization (and this is very uncommon), the payment shock would decrease -15% on average, to an average 30% increase in payment (Exhibit 19).

If a bank offers to extend the amortization period, the FCAC expects the bank to offer an extension for the shortest period possible and to ensure that the total amortization period is reasonable. The banks are also expected to communicate the long-term impacts because an amortization extension will lower payment shock, but the amount of interest paid by the end of the amortization period will increase. An amortization extension also requires a mortgagor to refinance the loan, which means they must pass the stress test again. **With current mortgage rates nearing 6%, this means that a borrower must pass at an 8% mortgage rate.** It is possible that under these circumstances, debt service ratios would be too high for many borrowers.

Exhibit 19 - Extending the amortization period reduces payment shock

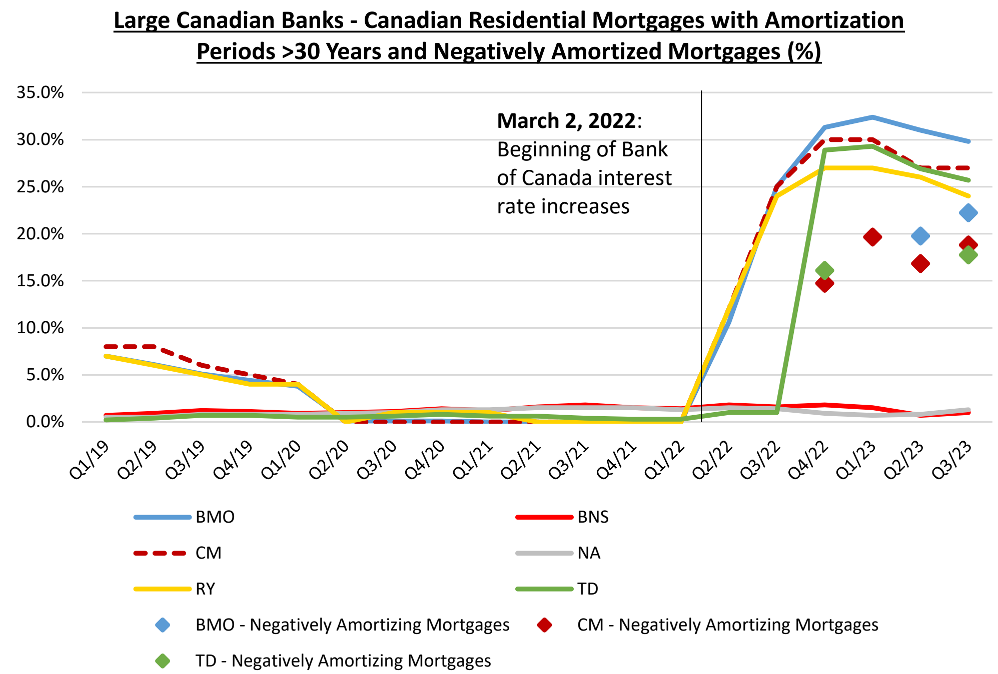


Source: CREA, Haver, Statistics Canada, RBC Capital Markets

How successful will proactive measures be?

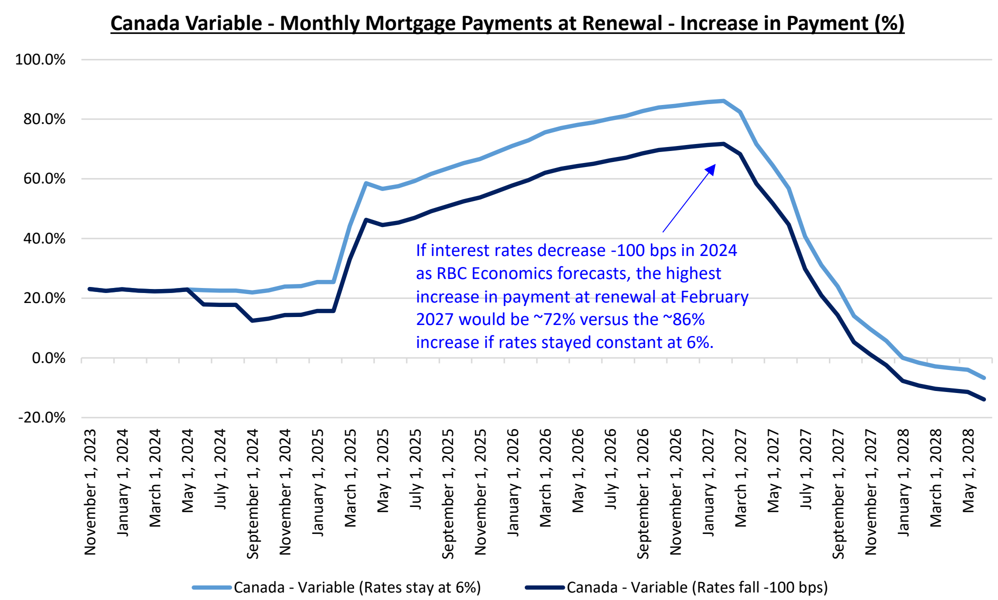
As we highlighted earlier in this report, variable-rate mortgagors with fixed payments are likely due for some significant shock. Canadian mortgages with amortization periods longer than 30 years represent ~18% of the large Canadian banks' residential mortgages in Canada on average. For the banks that have fixed-payment variable-rate mortgages (BMO, CM, RY, and TD), their exposure to mortgages with 30+ year amortization periods is around ~27% on average. For a look at these tails, see Exhibit 20. ***We believe that unless interest rates change, tracking the growth (or better yet, the decline) in these balances will serve as a measure of success or failure of the banks' proactive measures.***

Exhibit 20 - BMO, CM, RY, and TD's Canadian residential mortgages with amortization periods greater than 30 years increased significantly as the BoC hiked rates



Source: Company reports, RBC Capital Markets

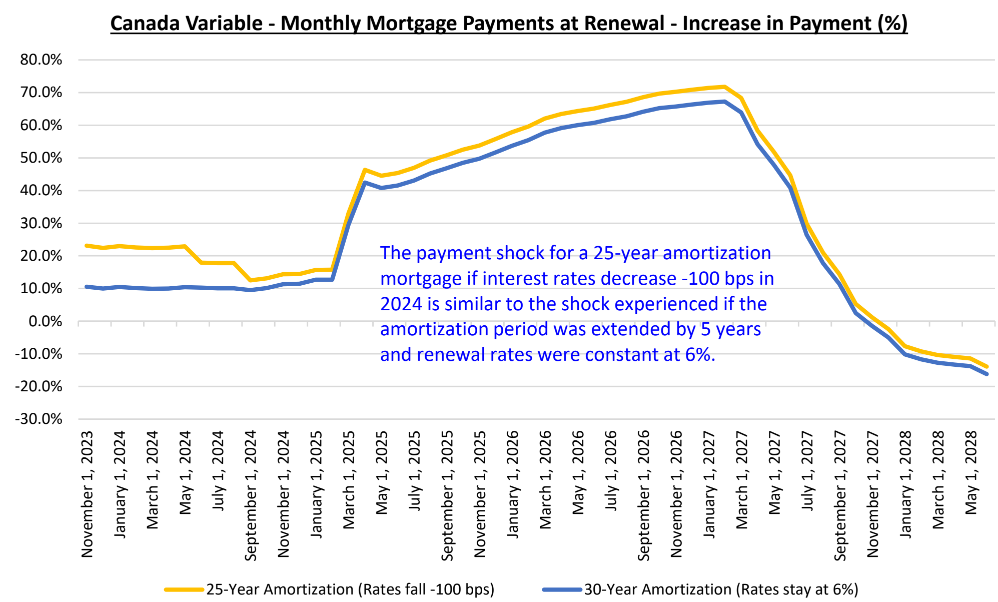
Exhibit 21 - If interest rates decreased -100 bps in 2024, the increase in payment at renewal would decrease compared to a constant renewal rate of 6%



Source: CREA, Haver, Statistics Canada, RBC Capital Markets

We compare the falling rate scenario to a case where rates at renewal remain constant, but borrowers successfully refinance their mortgage for a 30-year amortization period (5 years longer than the period at origination). Under a scenario where rates fall -100 bps in 2024, the payment shock for a variable-rate mortgage is very similar to the shock experienced if the amortization period was extended by 5 years while rates stayed constant (Exhibit 22).

Exhibit 22 - If interest rates decrease -100 bps in 2024, the increase in variable-rate monthly mortgage payments would be largely in line with the payment shock if the amortization was extended

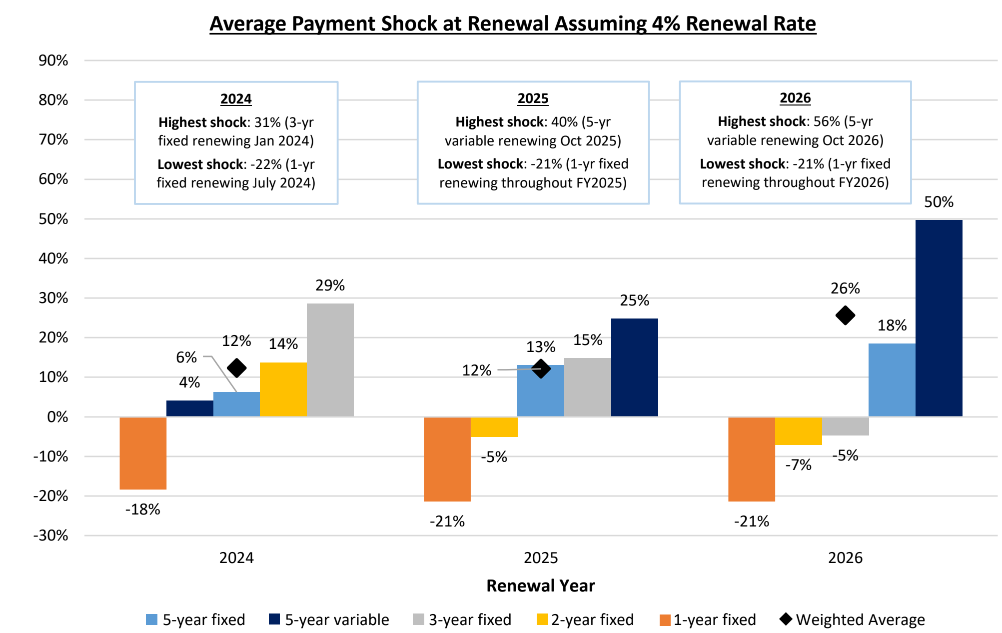


Source: CREA, Haver, Statistics Canada, RBC Capital Markets

If rates at renewal were 4%, the payment shock would be further reduced – borrowers renewing in 2024 would experience a 12% weighted average payment increase versus a 32% shock at a 6% renewal rate. The reduced shock would be even more pronounced in 2026 renewals at a 26% weighted average shock versus 48% shock at a 6% renewal rate. See Exhibit 23 for details on what payment shocks would look like if rates renewed at 4%.

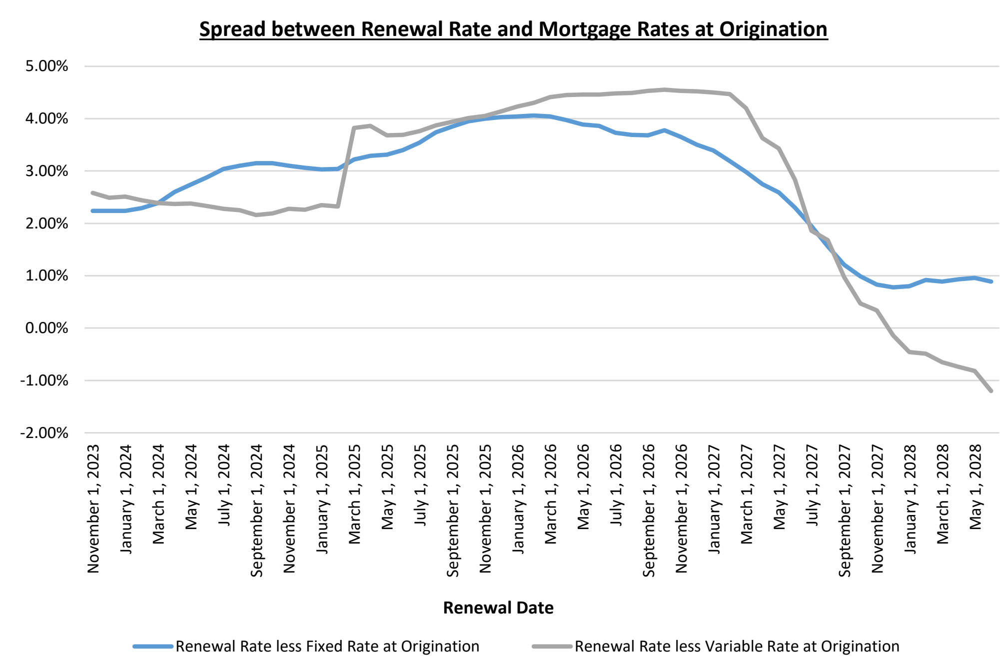
Appendix I – Additional details of our mortgage renewal calculations

Exhibit 23 - Payment shock at renewal if mortgages renewed at 4%



Average increase in mortgage payment at renewal is weighted by the distribution of mortgages up for renewal in each fiscal year by term. Data is not readily available to reliably estimate the proportion of 4-year fixed-rate mortgages and hence, the weighted average impact is likely overstating the 5-year fixed bucket.
Source: CREA, Haver, Statistics Canada, RBC Capital Markets

Exhibit 24 - Spread between a 6% renewal rate and originated fixed/variable rates



Assuming a 3-year fixed renewal rate of 6%.
Source: Statistics Canada, RBC Capital Markets

Exhibit 25 - Illustrative example of payment shock for 5-year fixed/variable-rate mortgages

		Canada	Ontario	British Columbia
Origination: November 2019				
Average House Price*		$529,944	$631,990	$748,625
20% Down Payment		$105,989	$126,398	$149,725
Mortgage Balance		$423,955	$505,592	$598,900
	Mortgage Rate		***Monthly Payment***	
5-Year Fixed Mortgage	2.90%	$1,985	$2,367	$2,804
5-Year Variable Mortgage	3.72%	$2,173	$2,591	$3,069
Renewal: November 2024	***Renewal Rate***		***Payment Shock***	
5-Year Fixed-Rate Mortgage	6.00%	$594	$708	$839
5-Year Variable-Rate Mortgage	6.00%	$520	$620	$734
Origination: November 2021				
Average House Price*		$718,155	$921,026	$989,009
20% Down Payment		$143,631	$184,205	$197,802
Mortgage Balance		$574,524	$736,821	$791,207
	Mortgage Rate		***Monthly Payment***	
5-Year Fixed Mortgage	2.35%	$2,531	$3,246	$3,486
5-Year Variable Mortgage	1.47%	$2,290	$2,936	$3,153
Renewal: November 2026	***Renewal Rate***		***Payment Shock***	
5-Year Fixed-Rate Mortgage	6.00%	$924	$1,185	$1,272
5-Year Variable-Rate Mortgage	6.00%	$1,934	$2,480	$2,663

*House price data is not seasonally adjusted.
Source: CREA, Haver, Statistics Canada, RBC Capital Markets

Appendix II – Additional details of the Canadian market

The Canadian and U.S. mortgage markets

Canada's mortgage product is structured differently versus other jurisdictions (see Exhibit 26 for a compare and contrast against the U.S. market) as mortgage payments are calculated with an "amortization" period (usually 25 years) but also having a term (most often 5 years, though currently seems to be 3 years). The term of the mortgage forces a mortgagor in Canada to "renew" their mortgage at current interest rates. As a result, there are many mortgagors today renewing at interest rates that are higher than original balances. RBC has many research reports available on Canada's mortgage and housing market:

- Our colleague Geoffrey Kwan's mortgage primer here and his most recent note on the mortgage industry here
- RBC Economics' most recent report on the Canadian housing market here

Exhibit 26 - Structural differences between the Canadian and U.S. mortgage market

	Canada	U.S.
Minimum down payment	5% for the first $500,000 plus 10% for the remaining balance; 20% for purchase price of $1,000,000 or more;	0-5% depending on type of mortgage loan
Mortgage insurance	Mortgage insurance is required for mortgages with less than a 20% down payment; Paid upfront or added to mortgage and remains insured for the life of the mortgage	Typically monthly payments until loan-to-value (LTV) hits 80%; coverage expires thereafter
Underwriting	Heavily regulated under Guideline B-20. Borrowers are subjected to a "stress test" to qualify at the greater of: 1) Mortgage contractual rate plus 2%; or 2) The Minimum Qualifying Rate (currently 5.25%); Examples of other criteria: credit score, loan-to-value ratios, debt service coverage etc.	Typical lender criteria for conforming mortgages: 1) > 620 credit score; 2) < 50% debt-to-income ratio; 3) ≤ 97% LTV ratio
Amortization periods	Typically 25 years	Typically 30 years
Typical Terms	Mostly 5 years or less	Mostly 30 years but can range from 15-30 years
End of Mortgage Term	Renew/renegotiate at the end of a term	Mortgage provisions remain unchanged for the entire term of the mortgage, don't need to be renegotiated
Tax deductibility	No	May be deductible
Funding	On balance sheet	May be sold/securitized
Full recourse* to the borrower	Almost all mortgages; Exceptions for some mortgages in Alberta and Saskatchewan	Less common, treatment varies by state
Prepayment penalties	Penalties on closed rate mortgages outside established prepayment opportunities	No penalty on most mortgages
Delinquency rates	90-day delinquency rate never exceeding 70 bps over the last 30 years**	Exceeding 5% in 2009

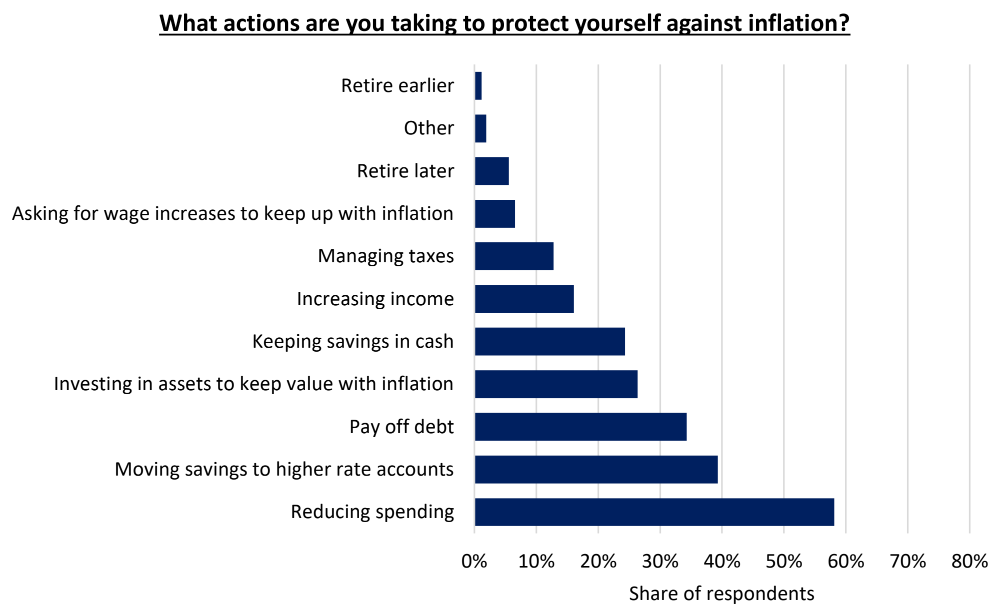
* Recourse allows lenders to seek repayment from income and non-housing assets of the defaulting borrower if proceeds from the sale of the house do not cover the outstanding mortgage balance and interest payments.
** As disclosed in BMO's Q3/23 Investor Presentation.
Source: OSFI, Bank of Canada, Canadian Government, CMHC, Federal Reserve, Federal Reserve Economic Data, Fannie Mae/Freddie Mac, Company data, RBC Capital Markets

Consumers' spending habits

Making monthly mortgage payments on their home is a top priority for many Canadians. We believe that the full-recourse nature of the Canadian mortgage market encourages mortgagors to explore ways to stay afloat in difficult times before resorting to last options such as selling their home and/or declaring bankruptcy.

In the BoC's latest Canadian Survey of Consumer Expectations, the most common action Canadians identified to protect themselves financially in the high inflation environment is a reduction in their spending habits, followed by using higher-rate savings accounts to grow their savings, and many other actions (Exhibit 27). We believe that during difficult times, Canadians will explore these options and/or obtain help from their lenders to continue making monthly payments on their home.

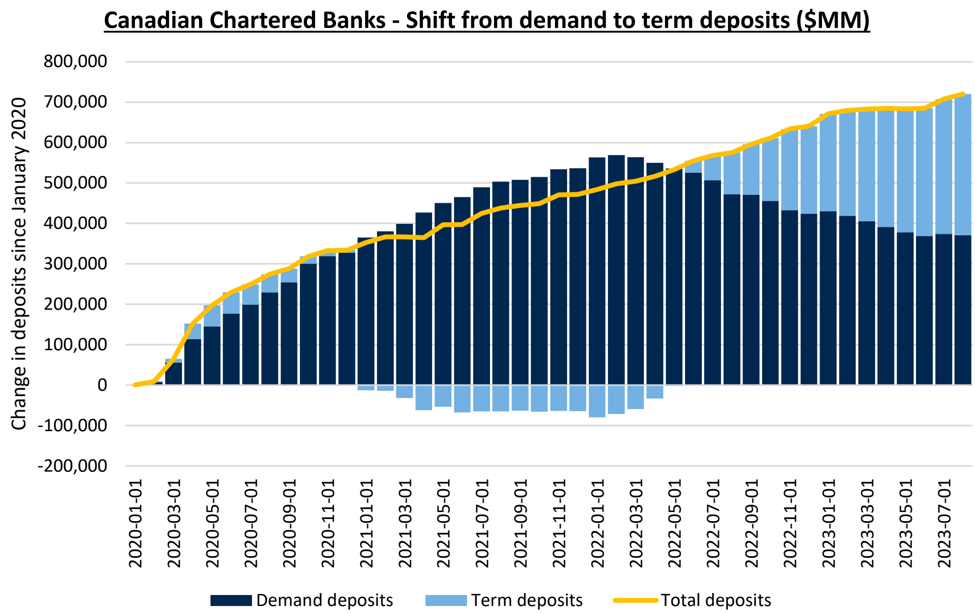
Exhibit 27 - Canadian consumers are reducing their spending habits



Source: Canadian Survey of Consumer Expectations, RBC Economics, RBC Capital Markets

Deposits

Exhibit 28 - Deposits at Canadian banks have been terming out since mid-2022



Data for Canadian chartered banks.
Source: Statistics Canada, Bank of Canada, RBC Capital Markets

FCAC's guideline for banks to support at-risk mortgagors

Exhibit 29 - FCAC expects banks to establish policies adhering to 3 main principles to help mortgagors at risk of default

Principle	Measures
Fairness	Banks are expected to provide temporary mortgage relief, such as: • Waiving prepayment penalties when a customer makes a lump sum payment to avoid negative amortization or sells their principal residence • Waiving internal fees for a limited period when activating mortgage relief measures • For a limited period, where mortgage relief measures result in negative amortization, ensuring that no interest is charged on interest that has been capitalized
Appropriateness	• Mortgage relief measures extending the amortization period should be for the shortest period possible. • Banks and consumers should develop a plan to restore the amortization to the original period, by ensuring that the total amortization period is reasonable and sufficient information about options to restore the amortization period is shared. • Banks should disclose the following to at-risk consumers in a manner that is clear and not misleading: - The outstanding amount on the original agreement before mortgage relief measures take effect - The impact of the relief measures on the total cost of the mortgage in dollars and the remaining amortization period after the relief measures - The new payment amount, due date, frequency - New interest rate and type - Date that the changes take effect
Accessibility	• Banks should proactively contact and provide information about mortgage relief measures • Making information on mortgage relief measures readily available

Source: FCAC, RBC Capital Markets

The large Canadian banks' variable-rate mortgages

Of the large Canadian banks, BNS and NA have adjustable-rate mortgages (ARMs) where the monthly payment varies with changes in the interest rate (Exhibit 30). For ARMs, both the interest component of monthly mortgage payments change when interest rates increase or decrease, therefore changing the total monthly payment. Monthly payments for fixed-payment variable-rate mortgages at the other large Canadian banks (BMO, CM, RY, and TD) remain the same until the end of the mortgage term regardless of changes in the interest rate.

Exhibit 30 - The large Canadian banks have different types of variable-rate mortgages

	Type of Variable-Rate Mortgage	Proactive Measures when Clients are Approaching Trigger Rate	Options to Bring Client Below Trigger Rate	Trigger Point
BMO	Fixed monthly payment (interest portion does not change with changes in the prime rate)	n.d.	1) Increase monthly payment 2) Make a lump sum payment 3) Make a lump sum payment *and* increase monthly payments 4) Convert to a fixed rate	Mortgage balance is 105% of the original mortgage amount
BNS	Adjustable payment (monthly payment changes because changes in the prime rate affects the interest payment)	n/a - no trigger rate	n/a - no trigger rate	n/a - no trigger point
CM	Fixed monthly payment (interest portion does not change with changes in the prime rate)	Relationship advisors reach out to customers approaching negative amortization on their options; At the trigger point, the client is sent a letter that they have 30 days to increase their payment to revert back to positive amortization	1) Increase monthly payment (30 days to increase the monthly payment) 2) Switch to a fixed rate 3) Make a lump sum payment Most popular choice is to increase monthly payments.	Mortgage balance is 105% of the original mortgage amount
NA	Adjustable payment (monthly payment changes because changes in the prime rate affects the interest payment)	n/a - no trigger rate	n/a - no trigger rate	n/a - no trigger point
TD	Fixed monthly payment (interest portion does not change with changes in the prime rate)	Phone calls to clients who are approaching negative amortization	1) Make a lump sum payment 2) Increase monthly payment 3) Switch to a fixed rate Most popular choice is to increase monthly payments.	80% LTV ratio

n.d.: not disclosed
Source: Company data, RBC Capital Markets

BNS and NA: Adjustable-rate mortgages

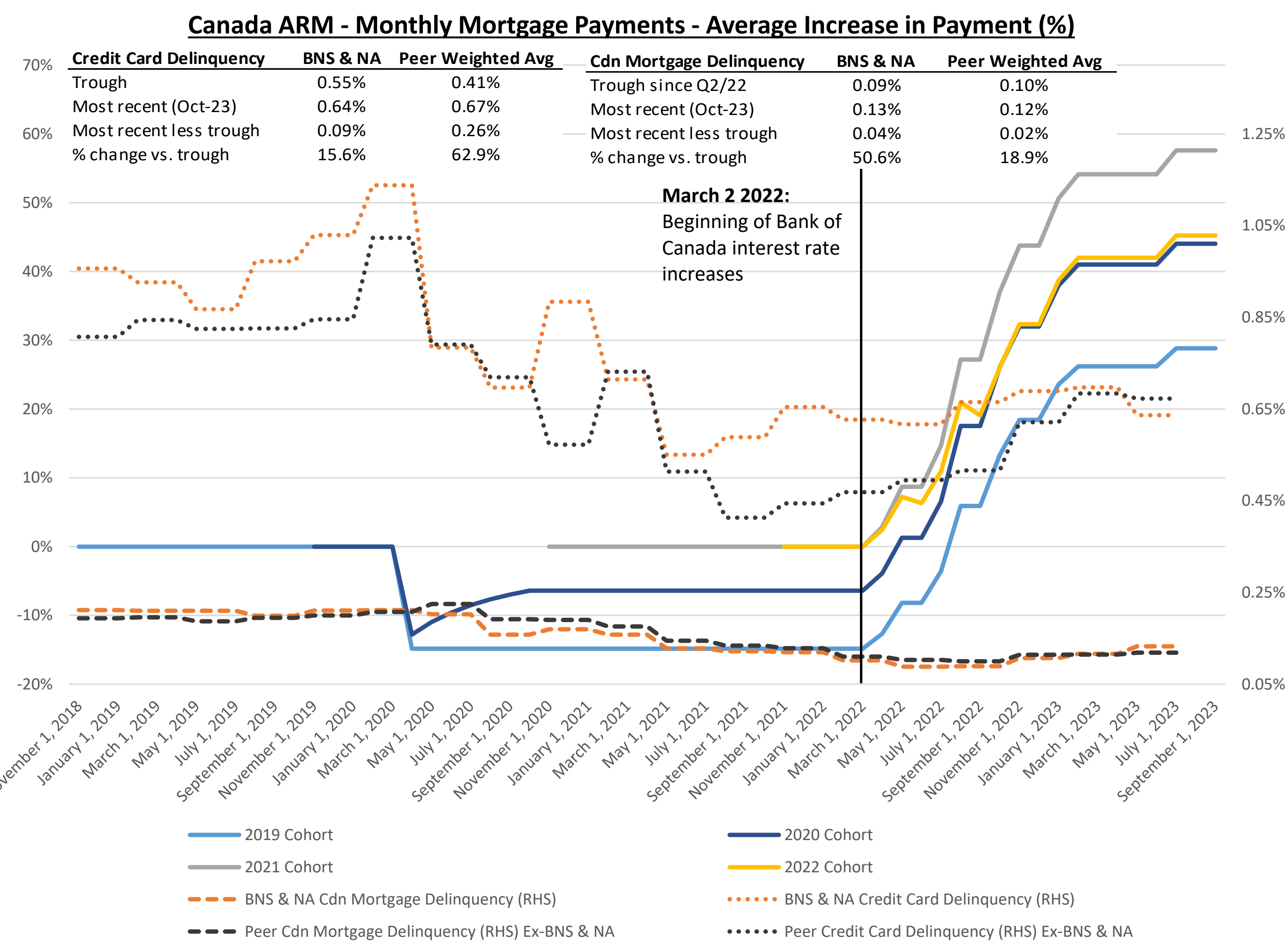
Adjustable-rate mortgage customers at BNS and NA have been facing monthly mortgage payment increases since the beginning of the interest rate cycle in March 2022 (Exhibit 31). We believe it is useful to track BNS and NA's credit card and Canadian mortgage delinquency data for early signs of stress in the large Canadian banks, as adjustable-rate mortgagors have already been impacted by higher monthly mortgage payments.

We observed the following:

- The weighted average Canadian mortgage delinquency rate for BNS and NA (0.13%) is slightly higher but largely in line with the peer group (0.12%);
- The weighted average credit card delinquency rate of 0.64% for BNS and NA is lower than the peer average of 0.67%;
- Current data suggests that since Q2/22, BNS and NA's mortgage delinquency has increased ~51%, higher than the ~16% increase in credit card delinquencies seen in peers.

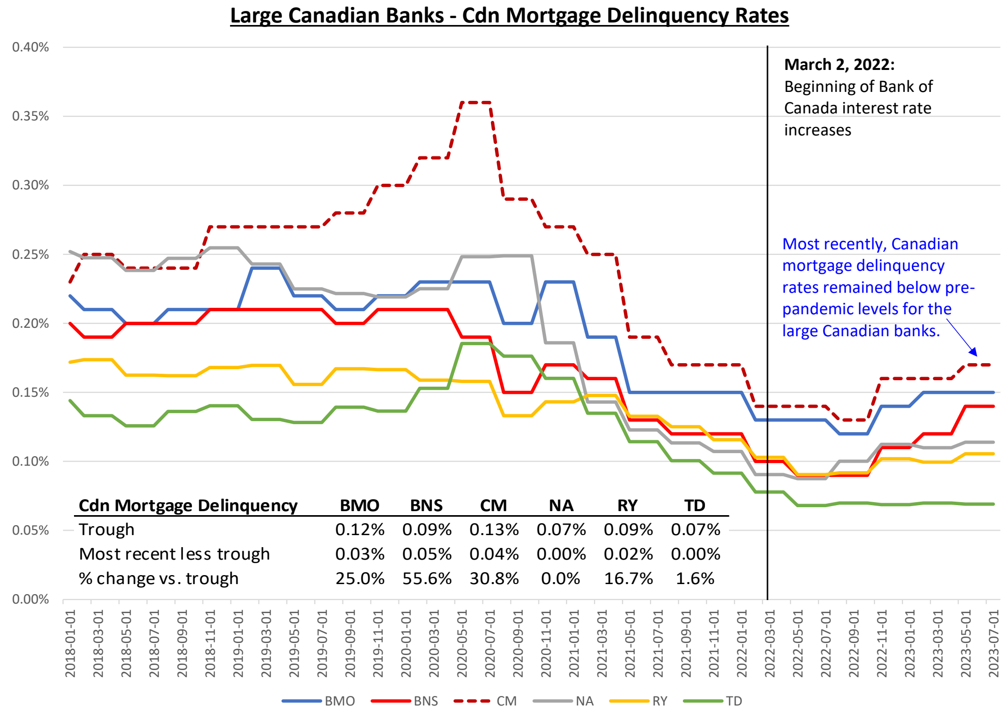
At first glance, we do not believe there is notable stress in credit quality at the time of writing, and we believe that BNS and NA adjustable-rate mortgagors are not yet facing significant financial stress. That said, it is notable that BNS and NA's mortgage delinquency rate has increased faster off the bottom than peers.

Exhibit 31 - BNS and NA adjustable-rate mortgagors have faced increases in monthly payments since March 2022



Note: Peer includes BMO, CM, RY, and TD
Source: Company reports, RBC Capital Markets

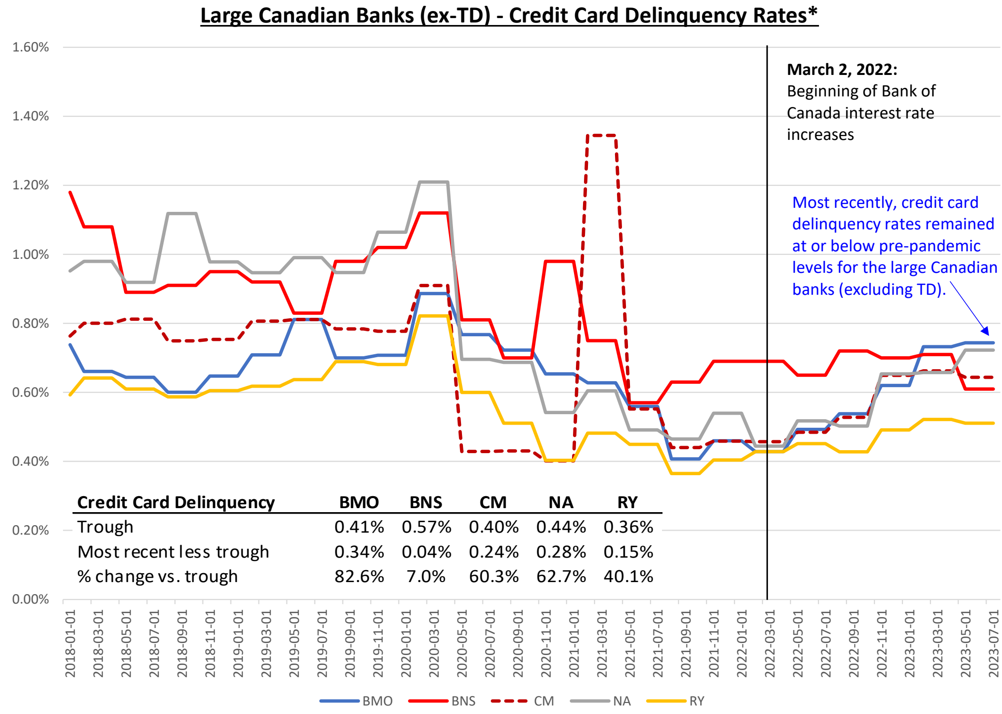
Exhibit 32 - Recent Canadian mortgage delinquency rates remain below pre-pandemic levels



Cdn Mortgage Delinquency	BMO	BNS	CM	NA	RY	TD
Trough	0.12%	0.09%	0.13%	0.07%	0.09%	0.07%
Most recent less trough	0.03%	0.05%	0.04%	0.00%	0.02%	0.00%
% change vs. trough	25.0%	55.6%	30.8%	0.0%	16.7%	1.6%

Notes:
BMO: 90 days and over delinquency ratios disclosed for Canadian consumer mortgage loans.
BNS: Retail 90+ days past due loans disclosed for Canadian mortgages.
CM: 90+ days delinquency rates disclosed for Canadian residential mortgages.
NA: 90+ past due disclosed for Canadian uninsured mortgage portfolio.
RY, TD: Gross impaired Canadian mortgage loans as a percentage of gross total Canadian mortgage loans (excludes HELOCs).
Source: Company reports, RBC Capital Markets

Exhibit 33 - Recent credit card delinquency rates remain below pre-pandemic levels



Credit Card Delinquency	BMO	BNS	CM	NA	RY
Trough	0.41%	0.57%	0.40%	0.44%	0.36%
Most recent less trough	0.34%	0.04%	0.24%	0.28%	0.15%
% change vs. trough	82.6%	7.0%	60.3%	62.7%	40.1%

* Credit card net write-offs as a percentage of gross credit card loans, except for BNS. BNS: Retail 90+ days past due credit card loans in Canada.
Source: Company reports, RBC Capital Markets

Companies mentioned

Bank of Montreal (TSX: BMO CN; C$102.94; Outperform)
Canadian Imperial Bank of Commerce (TSX: CM CN; C$48.15; Sector Perform)
National Bank of Canada (TSX: NA CN; C$85.61; Sector Perform)
The Bank of Nova Scotia (TSX: BNS CN; C$55.41; Sector Perform)
The Toronto-Dominion Bank (TSX: TD CN; C$76.16; Outperform)

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Sector Perform (SP): Returns expected to be in line with sector average over 12 months.
Underperform (U): Returns expected to be materially below sector average over 12 months.

Restricted (R): RBC policy precludes certain types of communications, including an investment recommendation, when RBC is acting as an advisor in certain merger or other strategic transactions and in certain other circumstances.
Not Rated (NR): The rating, price targets and estimates have been removed due to applicable legal, regulatory or policy constraints which may include when RBC Capital Markets is acting in an advisory capacity involving the company.
Risk Rating
The **Speculative** risk rating reflects a security's lower level of financial or operating predictability, illiquid share trading volumes, high balance sheet leverage, or limited operating history that result in a higher expectation of financial and/or stock price volatility.

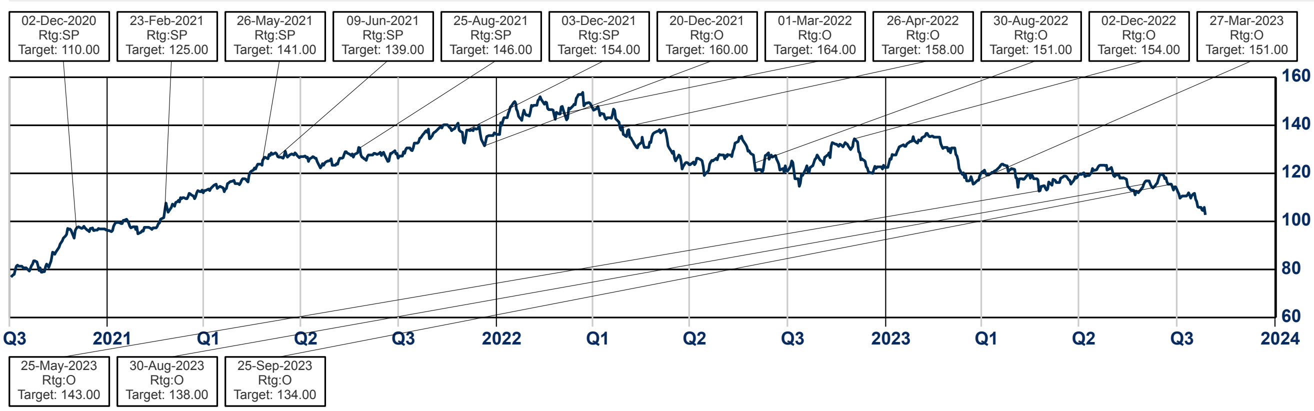
Distribution of ratings

For the purpose of ratings distributions, regulatory rules require member firms to assign ratings to one of three rating categories - Buy, Hold/Neutral, or Sell - regardless of a firm's own rating categories. Although RBC Capital Markets' ratings of Outperform (O), Sector Perform (SP), and Underperform (U) most closely correspond to Buy, Hold/Neutral and Sell, respectively, the meanings are not the same because our ratings are determined on a relative basis.

Distribution of ratings
RBC Capital Markets, Equity Research
As of 30-Sep-2023

			Investment Banking Serv./Past 12 Mos.	
Rating	**Count**	**Percent**	**Count**	**Percent**
BUY [Outperform]	820	55.97	250	30.49
HOLD [Sector Perform]	590	40.27	148	25.08
SELL [Underperform]	55	3.75	5	9.09

Rating and price target history for: Bank of Montreal, BMO CN as of 27-Oct-2023 (in CAD)



Legend:
O: Outperform; SP: Sector Perform; U: Underperform; R: Restricted; I: Initiation of Research Coverage; D: Discontinuation of Research Coverage;
NR: Not Rated; NA: Not Available; RL: Recommended List - RL: On: Refers to date a security was placed on a recommended list, while RL Off: Refers to date a security was removed from a recommended list; Rtg: Rating.

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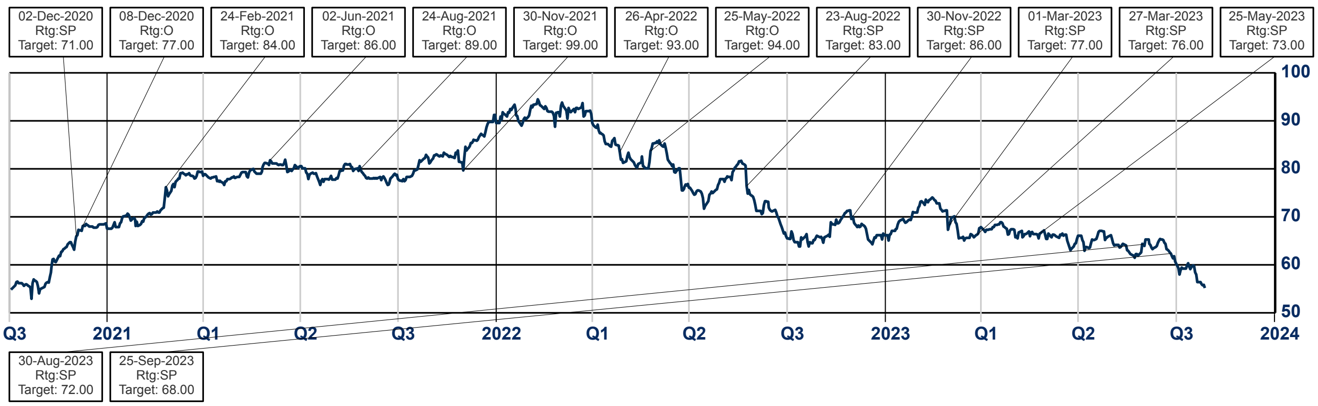
Rating and price target history for: The Bank of Nova Scotia, BNS CN as of 27-Oct-2023 (in CAD)



Legend:
O: Outperform; SP: Sector Perform; U: Underperform; R: Restricted; I: Initiation of Research Coverage; D: Discontinuation of Research Coverage;
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Rating and price target history for: Canadian Imperial Bank of Commerce, CM CN as of 27-Oct-2023 (in CAD)

Legend:
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NR: Not Rated; NA: Not Available; RL: Recommended List - RL: On: Refers to date a security was placed on a recommended list, while RL Off: Refers to date a security was removed from a recommended list; Rtg: Rating.

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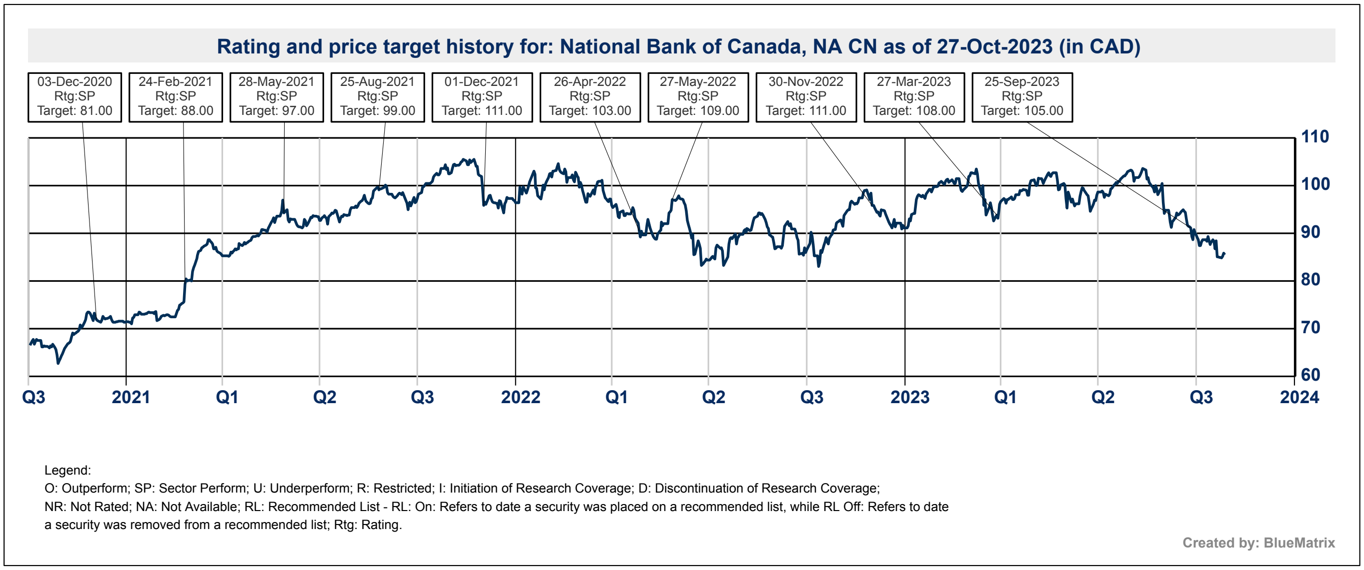

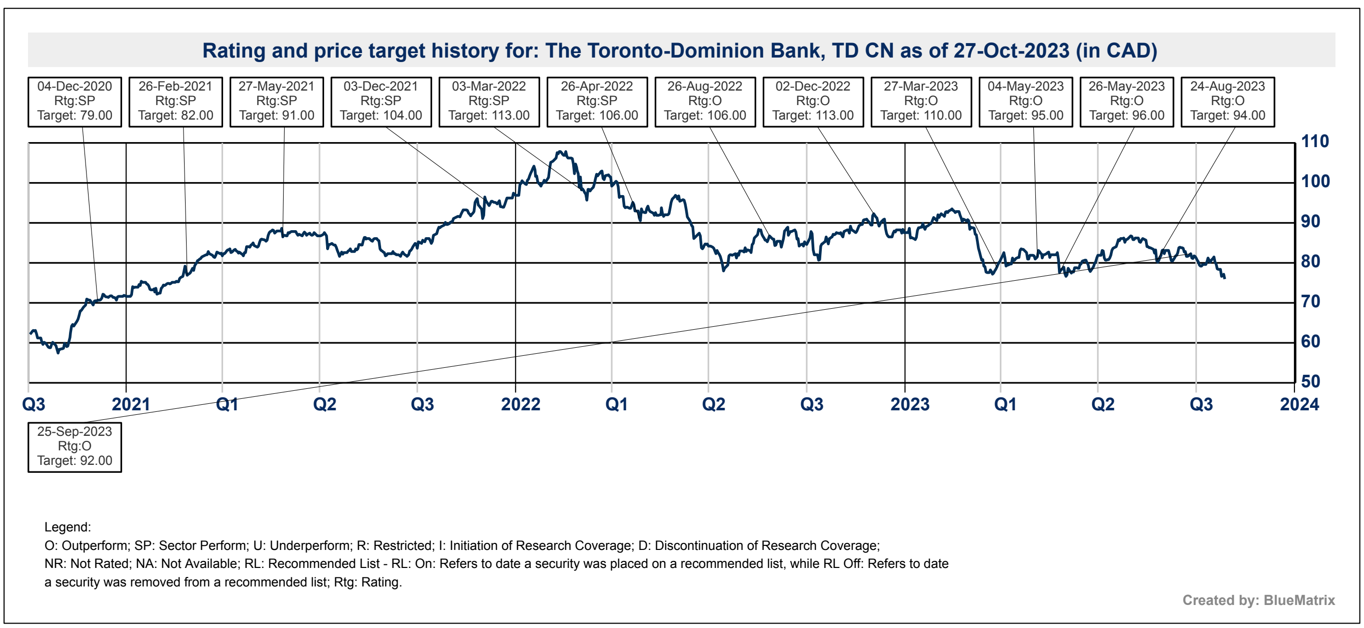

References to a Recommended List in the recommendation history chart may include one or more recommended lists or model portfolios maintained by RBC Wealth Management or one of its affiliates. RBC Wealth Management recommended lists include the Guided Portfolio: Prime Income (RL 6), the Guided Portfolio: Dividend Growth (RL 8), the Guided Portfolio: ADR (RL 10), and the Guided Portfolio: All Cap Growth (RL 12). The abbreviation 'RL On' means the date a security was placed on a Recommended List. The abbreviation 'RL Off' means the date a security was removed from a Recommended List. As of April 3, 2023, U.S. RBC Wealth Management's quarterly reports will serve as the primary communication for its models and will highlight any changes to the model made during the quarter.

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Bank of Montreal

Valuation

Our 12-month price target of $134, which supports our Outperform rating, is based on a P/E multiple of 10.0x our 2024 core cash EPS estimate. Our target multiple is in the middle of the 9.0–10.5x range that we use for the large Canadian banks, mainly reflecting our earnings outlook for BMO relative to its peers and the current environment.

Risks to rating and price target

Risks to our price target and rating include the health of the overall economy, sustained deterioration in the capital markets environment, the U.S. and Canadian housing markets, and greater-than-anticipated impact from off-balance sheet commitments. Additional risks include regulatory and political risk including the tax rate, litigation risk, and declining domestic market share.

Canadian Imperial Bank of Commerce

Valuation

Our 12-month price target of $66, which supports our Sector Perform rating, is based on a P/E multiple of 9.0x our 2024 core cash EPS estimate. Our target multiple is at the low end of the target range of 9.0–10.5x that we use for the large Canadian banks, reflecting CM's relative positioning and the current environment.

Risks to rating and price target

Risks to our rating and price target include the health of the overall Canadian economy, sustained deterioration in the capital markets environment, litigation and tax assessment risk, and greater-than-anticipated impact from off-balance sheet commitments. Additional risks include regulatory and political risk including tax rates, an unexpected acquisition, weakening retail credit quality, and loss of domestic market share.

National Bank of Canada

Valuation

Our 12-month price target of $105, which supports our Sector Perform rating, is based on a P/E multiple of 10.5x our 2024 core cash EPS estimate. Our target multiple is at the high end of the target range of 9.0x to 10.5x that we use for the large Canadian banks, reflecting our view of the strength of the Quebec economy, how the province is positioned, and how NA is positioned in the current environment.

Risks to rating and price target

Risks to our price target and rating include the health of the overall economy and the Quebec economy in particular, sustained deterioration in the capital markets environment, integration risk of acquisitions, an unexpected acquisition, and a change in the competitive or political environment in Quebec. Additional risks include regulatory and political risk including tax rates, rising business loan losses, greater-than-anticipated impact from off-balance sheet commitments, and litigation risk.

The Bank of Nova Scotia

Valuation

Our 12-month price target of $68, which supports our Sector Perform rating, is based on a P/E multiple of 9.0x our 2024 core cash EPS estimate. Our target multiple is at the low end of the 9.0–10.5x range that we use for the big Canadian banks, mainly reflecting the rising economic uncertainty in the Pacific Alliance and North American economies where BNS operates, as well as uncertainty around the bank's strategic direction under new leadership.

Risks to rating and price target

Risks to our price target and rating include the health of the overall economy, sustained deterioration in Latin America and in the capital markets environment, and greater-than-anticipated impact from off-balance sheet commitments. Additional risks include regulatory and political risk including tax rates, the potential for non-accretive acquisitions and/or related execution risk, deterioration in the Latin American political and economic climate, litigation risk, a rising Canadian dollar, and rising business loan losses.

The Toronto-Dominion Bank

Valuation

Our 12-month price target of $92, which supports our Outperform rating, is based on a P/E multiple of 10.5x our 2024 core cash

EPS estimate. Our target multiple is at the high end of the 9.0–10.5x target range that we use for the large Canadian banks, as we now believe TD's U.S. strategy to partly grow by acquisition is challenged, though it has the highest level of capital to deploy.

Risks to rating and price target

Risks to our price target and rating include the health of the overall economy, sustained deterioration in the capital markets environment, the Canadian and U.S. housing market, a failure of government programs, litigation and tax assessment risk, and greater-than-anticipated impact from off-balance-sheet commitments. Additional risks include regulatory and political risk including tax rates, acquisition and integration risk, weakening retail credit quality, and loss of domestic market share.

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