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Chart 1

Mortgage Rate Scenarios

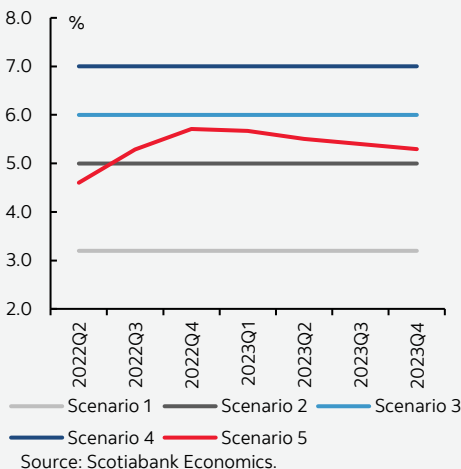
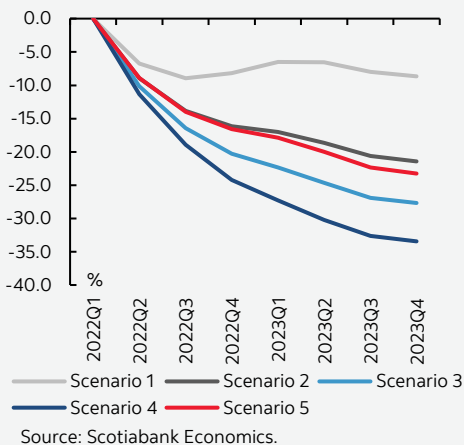


Chart 2

Home Price Outcomes, % change from 2022Q1 Peak



The Higher the Rate, the Bigger the Fall

HOME PRICES RESPONDING TO MARKET AND POLICY CONDITIONS

- According to the Scotiabank Canada-US macroeconomic model, the loss of purchasing power associated with higher inflation and input costs, along with the decline in equity markets, would have generated a decline in house prices even if mortgage rates had not increased. Had the conventional mortgage rate stayed at its 2021 quarterly trough, these factors suggest that average house prices would have dropped by almost 9% from their early 2022 peak.
- The monetary tightening we have seen so far and the resulting increase in the conventional mortgage rate is sufficient to halt housing demand, as measured by residential investment, over the next 2 years and add over 12% to the decline in home prices, with potential of further tightening reinforcing downward price pressures. In our baseline scenario, where the mortgage rate follows our July forecast of the GoC 5-year bond yields, home prices fall by 23% from their peak by end of 2023. This is not as dramatic as may seem however, as home prices would still be over 11% above their pre-pandemic levels, hovering around their December 2020 levels.
- This points to a period of heightened efficiency in the ability of monetary policy to fight inflation directly and indirectly. Monetary policy tightening and subsequent increases in mortgage rates impact inflation via three channels. First, it generates negative residential investment growth, which translates into a reduction of the output gap and in turn lower inflation. Second, it results in a fall in housing prices, which on its own is disinflationary with a lag. Third, the fall in house prices reduces owners' equity and net wealth and in turn consumption and, therefore, the output gap and inflation. These are however partly offset by the positive impact tighter policy has on inflation as higher rates lower housing affordability and shift more demand toward the rental market, causing rents to rise rapidly.

Mortgage rates have been on the rise as central bankers aggressively hike policy rates in an attempt to rein in inflation from historically high levels. This has, as expected, dampened demand for housing, as higher borrowing costs reduce affordability, and, in turn, are leading to price declines in many of the nation's housing markets. The speed of this response has been faster than expected—bigger mortgage loans and higher indebtedness may have led to increased sensitivity to rate hikes, amongst other factors. As rates continue to rise, will home prices continue to decline as a result, and by how much?

This note attempts to isolate the contribution of interest rates to the future path of house prices from other factors, such as the fall in purchasing power caused by high inflation, war uncertainty, deteriorating confidence, and the fall in stock markets. All else being equal, it explores different house price outcomes based on different paths for mortgage rates and their impact on housing activity, the latter measured by residential investment. Residential investment, a major component in our economic growth and output gap forecasts, captures demand and supply via its components of residential construction, renovations, and owner transfer costs.

The conventional fixed five-year mortgage rate is closely tied to government bond yields—the latter having been on the rise since the second half of 2021, when the Bank of Canada turned more hawkish in the face of rising inflationary pressures that proved more persistent than previously expected. Canada 5-year government bond yields, a benchmark for fixed mortgage rates, increased by over 200 bps between August 2021 and June 2022. During that same period, the rate on the most common five-year fixed-rate mortgage increased by 185 bps, from a trough of 3.2 in August 2021. The rate on variable-rate mortgages, which generally moves in tandem with the prime rate, has increased by 200 bps between August 2021 and July 2022.

Throughout the pandemic, an increasing share of new mortgages has been taken up by variable-rate mortgages, owing to the lower rate offered on these mortgages relative to fixed-rate

mortgages. Today, half of newly originated mortgages are variable-rate mortgages, with their share of total outstanding mortgages reaching 32%. There are signs that the originations of these mortgages have peaked however, as the share of originations has been steadily declining since reaching the 56% share recorded in January. In our estimation, we use the conventional fixed-mortgage rate as a proxy for broader movements in the full range of mortgage rates. We believe this still takes into account the impact of increases in variable rates, as fixed and variable rates have generally moved in tandem, just at different levels. Our dependent variable, average house prices, captures the entire housing market, regardless of mortgage type. The results are therefore best interpreted as the change in house prices given the increase in rates, rather than given a certain level of rates. The conventional fixed mortgage rate that we use in this estimation is a general benchmark that is the simple average of the posted, closed, 5-year interest rates for mortgages issued by banks, trust companies, credit unions, savings and loan and life insurance companies.

In this note, we consider 5 different scenarios for the conventional fixed five-year mortgage rate and corresponding outcomes for residential investment and home prices:

- Scenario 1: The mortgage rate had stayed at its trough of 3.20 through 2023Q4
- Scenario 2: The mortgage rate remains its June 2022 level of 5.00 in 2022Q2 and remains there through 2023Q4
- Scenario 3: The mortgage rate increases to 6.00 in 2022Q2 and remains there through 2023Q4
- Scenario 4: Mortgage rate increases to 7.00 in 2022Q2 and remains there through 2023Q4
- Scenario 5: Mortgage rate moves in line with our forecast of the Government of Canada 5-year bond yield as of July 18th. While this is our baseline scenario, the rates presented here are not a forecast of the rates Scotiabank will offer on its products in the future—it is merely an estimation of the 5-year fixed mortgage rate based on the historical spread between this rate and 5-year bond yields, among other factors.

We simulate these scenarios in the Scotiabank Canada-US macroeconomic Model. The determinants of residential investments and housing prices are described in Appendix 1. The results are summarized in table 1, with the different mortgage rate scenarios and home price outcomes shown in charts 1 and 2.

Table 1: Mortgage Rate Scenarios and Outcome

Scenarios	Mortgage Rate Scenario, %	Residential Investment Growth Outcome 2022, %	Residential Investment Growth Outcome 2023, %	House Price Outcomes Peak-to-Trough, 2022Q1-2023Q4, %
Scenario 1	3.2	0.4	0.3	-8.7
Scenario 2	5.0	-2.1	-4.3	-21.4
Scenario 3	6.0	-3.5	-6.7	-27.7
Scenario 4	7.0	-4.8	-9.1	-33.4
Scenario 5	GoC 5-year Bond Yield	-2.3	-5.1	-23.3

Source: Scotiabank Economics.

If the conventional mortgage rate had stayed at its 2021 trough of 3.20%, the model would have forecast weak, but positive growth of residential investment, or demand, throughout the 2022–2023 period. At this rate of 3.2% and level of demand, however, the model still produces a 6.7% (q/q) drop in home prices in 2022Q2. For reference, average home prices have declined by 8.6% (q/q) in 2022Q2, indicating that factors other than the mortgage rate, like slower disposable income growth, fall in purchasing power and declines in financial markets, have contributed to the bulk of price declines we have seen in 2022Q2. Under this scenario, the model forecasts that prices will continue to decline, falling by 8.7% from their early 2022 quarterly peak by the end of 2023.

The increase of the mortgage rate that we observed through June 2022 to 5.05% wipes out the otherwise small positive growth in residential investment, forecasting instead a 2-year consecutive fall, (by 2% and 4% in 2022 and 2023, respectively). All else being equal, this adds an additional decline in home prices of 12.7% by the end of 2023, bringing the peak-to-trough decline to 21.4%, and leaving home prices 14% above their pre-pandemic levels.

If mortgage rates increase further, then the projected fall in residential investment and home prices gets larger. The peak-to-trough declines in home prices is 27.7% if the mortgage rate increases to 6%, leaving home prices 5% above their February 2022 peak, and 33.4% if the mortgage rate increases to 7%. This is the only scenario that leaves home prices below their pre-pandemic peak. However, the likelihood of this scenario is quite low, given the current level of mortgage rates and prevalent forecasts of inflation and policy rates.

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Note that in scenarios 2, 3 and 4, we have the mortgage rate rising to 5.00%, 6.00%, and 7.00% in 2022Q2 and staying there until the end of 2023. Therefore, the above peak-to-trough declines reflect a shock that remains in place for almost 2 years. If the duration of the shock were shorter, then the peak-to-trough declines would be smaller.

Home prices continued to fall in July, leaving the average home price 15% below its 2022Q1 peak—in line with our simulation results of further price declines as higher mortgage rates play an increasingly bigger role in the housing market adjustment.

In our baseline scenario, where the mortgage rate follows from our GoC 5-year bond yields forecast, peaking at 5.7% in 2022Q4 before declining to 5.3% by end of 2023, home prices decline by 23.3% from their peak by end of 2023. Even with this peak-to-trough decline, however, home prices at the end of 2023 would still be over 11% higher than their pre-pandemic peak.

These results imply that home prices were set to decline even if monetary policy had not tightened, reflecting worsening economic conditions such as loss of purchasing power, fall in stock markets, and rising costs of inputs. However, the monetary tightening we have seen so far is sufficient to produce declines in residential investment and housing demand, and add over 12% to the decline in home prices, with further tightening amplifying the decline.

This points to a period of heightened efficiency in the ability of monetary policy to fight inflation directly and indirectly. First, monetary policy tightening impacts inflation directly by generating negative residential investment growth, which translates into a reduction of the output gap and in turn lower inflation. Second, the tightening results in a fall of housing prices which on its own has a lagged disinflationary impact. Third, the fall in house prices reduces owners' equity and net wealth and in turn consumption. This slower consumption dampens economic activity, reduces the output gap, and lowers inflation. These three channels are however partly offset by the positive impact tighter policy has on inflation via rents. Higher mortgage rates lower housing affordability and lead to more demand shifting toward the rental market, causing rents, which are captured by measures of inflation, to rise rapidly as we have seen in recent months.

APPENDIX 1:

To better identify the impact of mortgage rates on the housing market, we estimate equations for residential investment (to capture housing demand) and average house prices. These equations feature forward-looking behaviour, with agents attempting to optimally set the level of their decision variables, such as demand for housing, in the face of adjustments costs conditional on the expected evolution of many economic drivers.

The drivers of residential investment are (sign of the effect in parenthesis):

- Disposable income (+)
- Labour participation rate (+)
- Mortgage rate (-)
- Unit labour costs (-)
- Stock market (+)

The drivers of the average housing price are:

- Residential investment (+)
- Disposable income (+)
- Unemployment (-)
- Mortgage rate (-)

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