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Canada Housing Market Outlook: Stepping on the Brake

Prepared by

Andres Carbacho-Burgos
Andres.Carbacho-Burgos@moodys.com
Director

Contact Us

Email
help@economy.com

U.S./Canada
+1.866.275.3266

EMEA
+44.20.7772.5454 (London)
+420.224.222.929 (Prague)

Asia/Pacific
+852.3551.3077

All Others
+1.610.235.5299

Web
www.economy.com
www.moodysanalytics.com

Introduction

The national housing market in Canada looks like it is set for several years of retrenchment. Exact turning points are difficult to predict, but the combination of restricted mortgage lending, taxes on foreign purchases in the largest metro areas, and the expectation of higher mortgage rates means that house prices are likely to experience a slowdown in the next few years, especially if speculative home purchases in Toronto and Vancouver are reduced or shut down. Another factor contributing to this change in momentum is slower real per capita income growth now that monetary policy is tightening. Moreover, affordability as measured by the median dwelling price to median family income ratio is also close to a record low, so it is hard to see house prices maintaining the same momentum as before.

Nevertheless, the combined effects of restricted mortgage lending, higher mortgage rates, and housing policy interventions by the provinces will be uneven across Canada. All regions will experience slower price growth in the years ahead, but Greater Toronto is likely to maintain moderate house price growth, while the more policy-restricted market in Vancouver will lead to prices holding steady in coming years. Slower demographics in Montreal will lead to slight declines in house prices in the short term. In other regions, slower in-migration and the relative shortage of wealth inflows, combined with housing market policy, will likely lead to at least a few subsequent years of falling house prices. In all regions though, the main policy direction will be to slow down house price growth in order to improve affordability.

Canada Housing Market Outlook: Stepping on the Brake

BY ANDRES CARBACHO-BURGOS

Canada's housing market is starting to feel the effects of federal and state government restrictions intended to deflate the housing bubble in Greater Toronto and Vancouver, and now the Bank of Canada has also started its long-awaited tightening of interest rates. However, the slowdown has not been as strong as many critics predicted; even the provincial markets outside of Greater Vancouver and the Golden Horseshoe have managed to hold their own in house price terms, with New Brunswick being the only exception.

Policy interventions over the past year and a half have included provincial government taxes and restrictions on the Toronto and Vancouver housing markets, Department of Finance regulations intended to tighten mortgage lending, and the projected tightening of interest rates over the next few years. Through the midpoint of 2017, these interventions have slowed but not eliminated the momentum for Toronto and Vancouver house prices, while fears that the outlying provincial housing markets would be hurt have not yet been borne out.

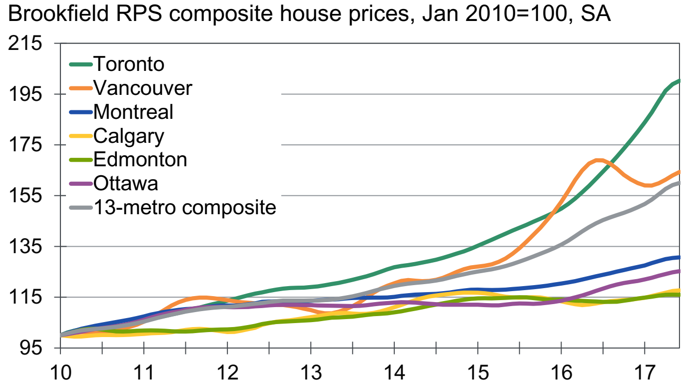
Nevertheless, the next few years will see a significant interest rate tightening amplifying the effects of government regulations on home sales, rents, vacancies and foreign purchases. The tightening of interest rates will not only affect mortgage rates directly but will also indirectly pull down on housing demand as economic activity and income growth start to slow over the next three years. While Greater Vancouver and Toronto will avoid any significant house price downturn, it is likely that Quebec, the Prairies, and the Atlantic provinces will have at least minor house price corrections in coming years.

Recent Performance

Though less effective so far at slowing house price growth, the new mortgage lending regulations, plus British Columbia's restrictions on the Vancouver market and Ontario's Fair Housing Plan, do seem to have put a damper on sales. According to the Canadian Real Estate Association, annualized seasonally adjusted home sales peaked at slightly more than 552,000 in the second quarter of last year and have now fallen to around 480,000 as of June, though most of that decline was in the past three months. Also, the Ontario Fair Housing Plan's measures to increase supply, including a tax on vacant homes, has had at least a temporary effect: annualized national listings shot up from less than 800,000 in the first quarter to more than 900,000 in the second and are higher than at any time in the past 10 years.

Chart 1: Vancouver Slows, Toronto Persists

Brookfield RPS composite house prices, Jan 2010=100, SA



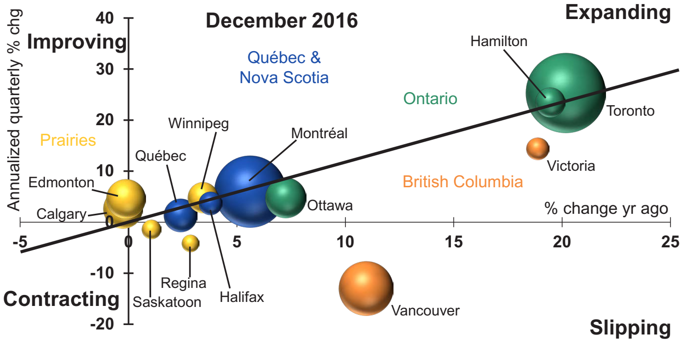
Sources: RPS, Moody's Analytics

It is likely the sudden increase in listings that has led to a deceleration of house price growth in Toronto and Vancouver. The two metro areas by themselves account for most of the national house price surge over the past three years, and without them, national indexes such as the RPS Real Property Solutions composite index would likely have recorded only moderate growth (see Chart 1). But the deceleration is evident, both in the second half of last year due to the direct and indirect effects of Vancouver's transfer tax on foreign purchases, and then in the last two months as Ontario's Fair Housing Plan has started to be implemented.

Over the past six months the regional picture has shifted substantially. Greater Toronto, including outlying metro areas like Hamilton, continues to lead house price growth but is starting to slow, at least when

Chart 2: Greater Toronto Started to Break Away…

Composite index, 1-yr vs. 1-qtr performance, 3-mo MA

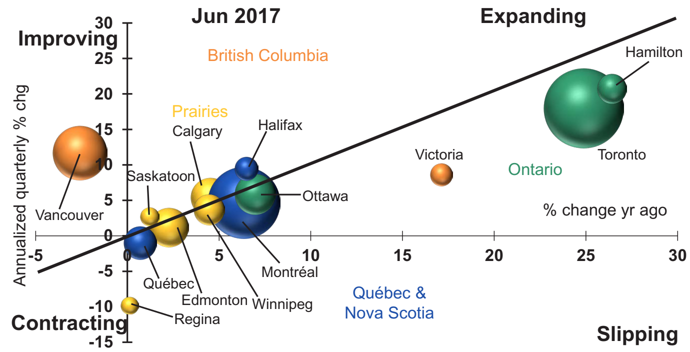


Sources: RPS, Moody's Analytics

* Bubble size indicates # of households

Chart 3: …While Vancouver Starts to Recover

Composite index, 1-yr vs. 1-qtr performance, 3-mo MA



Sources: RPS, Moody's Analytics

* Bubble size indicates # of households

comparing house price growth in December with growth in June (see Charts 2 and 3). House prices in Vancouver fell perceptibly in the second half of last year but have now started to recover. Victoria, which, unlike Vancouver, is not subject to the transfer tax and vacant apartment tax, continues to register strong house price growth. Calgary and Edmonton, which still had falling prices in mid-2016, have now recorded nearly a year of modest house price growth as the gradual recovery of oil prices and drilling have stabilized Alberta's economy. Most of the other major metro areas are unchanged. Currently, metro areas with correcting house prices include Greater Sudbury, Moncton, Regina, St. John, Saguenay, Saint John's and Trois-Rivières.

Lastly, residential construction remains volatile, but housing starts have been trending up since mid-2015. Additions to the housing stock combined with increased restrictions on mortgage lending, foreign purchases, and the retention of vacant homes will drag on house prices in coming years, but have not yet caused a turning point in the housing market outside of Vancouver.

Valuation

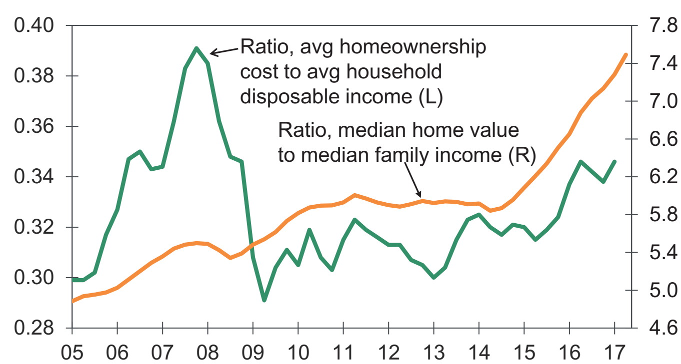
Although house prices in Toronto and Vancouver have started to slow, the slowdown has barely dented the main problem for Canada's housing market: the serious overvaluation of house prices in both of these regional markets. The influence of the two metro areas is reflected nationally: The ratio of the national median home value to median family income is still increasing, while the ratio of average homeownership costs—of which mortgage debt service is the largest component—to average household disposable income has also started to trend up since 2013 (see Chart 4). Over the last 2½ years, the increased household share of homeownership costs has thus been a primary danger signal in the eyes of housing market analysts. The Moody's Analytics forecast model for the RPS house price indexes compares current house prices to long-term trend prices, which are influenced by income, population size, the overall new house and land price index, and for a few metro areas, the deflated stock market price index as a proxy for national wealth (there is no easily available data for international wealth inflows that engage with the housing market). The divergence between the current price and this long-term trend price determines the degree of over- or undervaluation, which is an important driver of the house price forecast.

The deviation of house prices from trend bears an implicit forecast for long-term stability. In geographies with highly overvalued housing, house price growth would normally start to slow because of a combination of reduced affordability, excess construction, and a possible decline in mortgage debt performance leading to distress sales. Highly undervalued metro areas are likely to see a wave of opportunistic purchases, either to flip dwellings or to make them available on the rental market, with resulting appreciation as such purchases start to act on a limited supply of homes.

However, the usual caveat for measuring overvaluation continues to apply: A high degree of overvaluation is not a surefire guarantee that house prices will start to correct in the near future, especially if wealth inflows affecting local housing markets continue unabated. But the British Columbia and Ontario policy interventions are specifically targeting such wealth inflows, and macroeconomic policy will also be moving toward putting additional drag on housing demand.

Despite the various policy interventions, little has changed on the valuation front since the last housing market outlook. Of

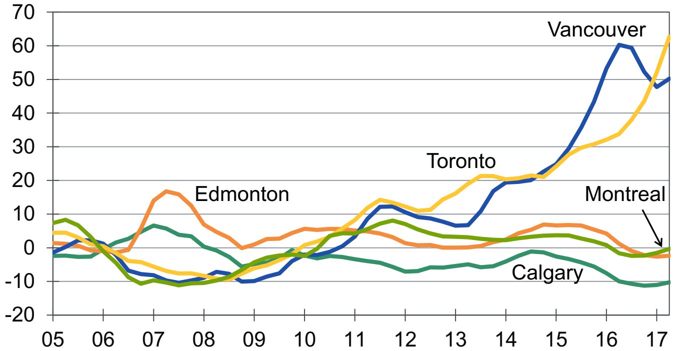
Chart 4: Affordability Is Still Deteriorating



Sources: RPS, Bank of Canada, Statistics Canada, Moody's Analytics

Chart 5: Vancouver Starts to Correct

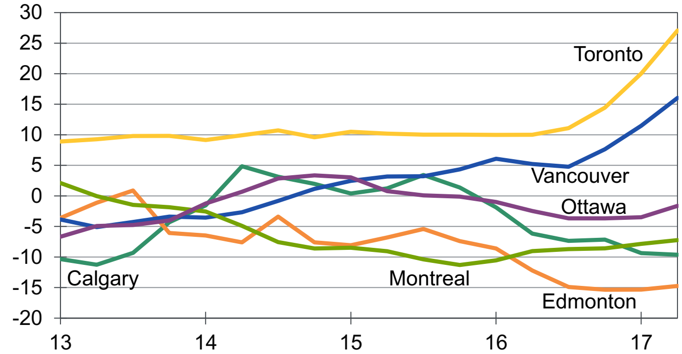
Brookfield RPS house price, s-f detached, % deviation from trend



Sources: RPS, Moody's Analytics

Chart 6: Apartment Bubble Coming Up?

Brookfield RPS median condo apt. price, % deviation from trend



Sources: RPS, Moody's Analytics

the six largest metro areas, Calgary remains slightly undervalued while Edmonton, Montreal and Ottawa are correctly valued (see Chart 5). Single-family house prices in Vancouver are overvalued at 50% after having peaked at 60% in early 2016, while overvaluation in Toronto is still trending upward and now exceeds 60%.

Although inflows of wealth and real estate speculation get most of the blame for increased overvaluation and reduced housing affordability in Toronto and Vancouver, excess demand is a more permanent culprit. Household formations in Toronto and Vancouver, as well as in Toronto's satellite metro areas like Guelph and Oshawa, have exceeded the national rate of household formation for some years now, and residential construction in these two metro areas has failed to keep up. While the new policy interventions have started to stabilize the market for single-family homes, demand has spilled over into apartments, and the first half of 2017 confirms that condo apartments in Toronto and Vancouver are also becoming overvalued (see Chart 6). Overvaluation for condo apartments is more difficult to attain than for house prices since the Moody's Analytics forecast model uses per capita income rather than median family income as the main trend determinant for condo apartment prices, and per capita income is significantly higher than median family income in the largest metro areas. So the divergence of condo apartment prices from trend for Toronto and Vancouver is a worrying sign and an indication that both markets are undersupplied relative to demand.

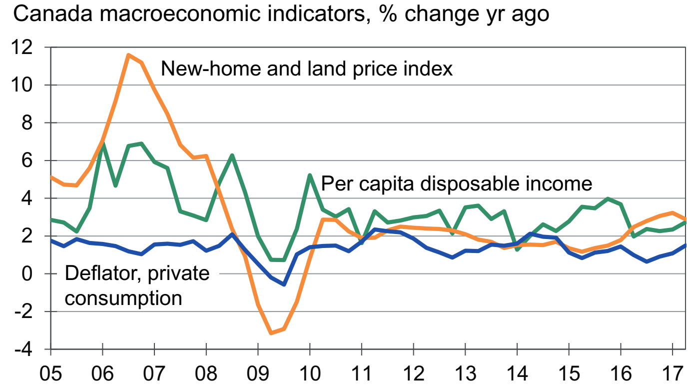
The macroeconomic forecast

As would be expected given the Bank of Canada's decision to start raising the monetary policy rate, the macroeconomic outlook for Canada has improved perceptibly over the last year. GDP growth has started to edge upward as the energy sector recovers in the wake of higher oil prices. Per capita disposable income growth has averaged slightly over 2% per year over the past five years, whereas consumer price inflation has averaged around 1.5% per year (see Chart 7). Growth in the national new house and land price index has started to pick up over the past year but is now at only about 3%, well within safety margins. Despite the current tight markets in Toronto and Vancouver, national residential construction will more than keep pace with household formation, which will push some regions closer to being in excess supply situations; only in Toronto and Montreal will residential construction lag slightly below household formation in coming years.

The most recent macroeconomic forecast for Canada from Moody's Analytics, as well as the forecast for the main RPS national house price indexes, is shown in Table 1. The influence of monetary policy is stronger in this forecast than it has been over the past several months and the housing market will react as interest rates climb upward. The Bank of Canada's overnight target rate will gradually rise from 0.5% before July's increase to nearly 3.9% by the end of 2020. In parallel, the five-year adjustable mortgage rate will increase from the current 3.6% to 6.3% by the end of 2020. Not only will the gradual increase in interest rates drag on home purchase demand, but it will act to slow spending growth as well, especially as the spread between short- and long-term interest rates starts to narrow, pushing lenders toward safer short-term assets; the spread between federal three-month and 10-year bond yields will narrow steadily before reaching bottom at below 1 percentage point in early 2021.

Chart 7: Inflation, New-Home Prices Are Subdued

Canada macroeconomic indicators, % change yr ago



Sources: Statistics Canada, Moody's Analytics

Table 1: Canada Housing Market, History and Baseline Forecast

	Most recent	2015	2016	2017	2018	2019	2020	2021	2022
Detached single-family house price index, % change *	12.1	6.7	11.7	7.4	0.2	1.3	1.6	1.7	1.6
Condo apt. price index, % change *	14.9	4.1	9.8	10	0.2	0.9	1.1	1.2	1.2
Composite house price index, % change *	11.8	5.9	11.2	6.8	-0.1	1	1.3	1.3	1.3
Real per capita income, % change	1.3	2.3	1.6	0.7	0.4	0.5	0.5	0.6	0.8
Unemployment rate, %	6.5	6.9	7	6.6	6.6	6.6	6.7	6.8	6.8
Avg mortgage rate, 5-yr, %	3.6	3.8	3.7	3.9	4.8	5.8	6.3	6.2	6
Housing starts, ths	224.4	194.5	199	216.5	206.7	192.4	181.1	180.5	184.6
% change	13.2	3.1	2.3	8.8	-4.6	-6.9	-5.9	-0.4	2.3
Ratio, median dwelling price/median family income	7.5	6.3	6.9	7.4	7.4	7.3	7.2	7.2	7.2
Ratio, outstanding mortgage debt/disp. income	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3

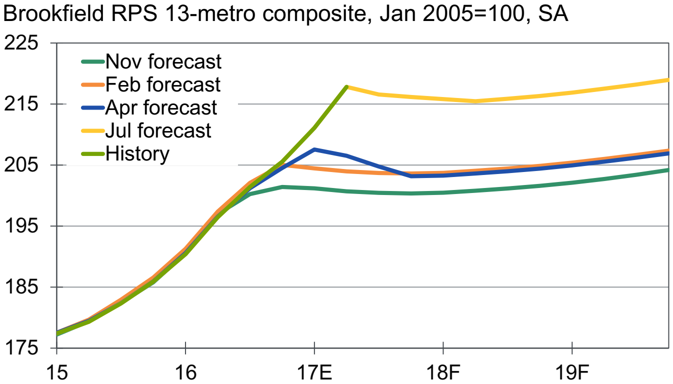
*Fourth qtr, yr over yr

Sources: RPS, Statistics Canada, CMHC, Moody's Analytics

In large part because of the combined effects of tighter monetary policy plus federal and state interventions to reduce speculative purchase demand and unsafe mortgage lending, the forecast for house price growth calls for a pronounced degree of slowdown, which will lead to temporary house price declines in many regions outside of Ontario and British Columbia, though in most cases the declines will be fairly moderate. It should be noted that as in past months, this forecast has broken sharply with the momentum of the actual national house price (see Chart 8). But it is hard to deny the logic that, at some point, the combination of restricted mortgage lending, taxes on foreign purchases in the largest metro areas, and the expectation of higher mortgage rates in the future means that house prices are likely to experience a sharp change in momentum, especially if speculative home purchases in Toronto and Vancouver are reduced or shut down. Also, real per capita income growth is likely to be slower than in the 2010-2016 period now that monetary policy is tightening. Affordability as measured by the ratio of median dwelling price to median family income is also close to a record low, so that it is hard to see house prices maintaining the same momentum as before.

Chart 8: Momentum Defies Policy and Forecasts

Brookfield RPS 13-metro composite, Jan 2005=100, SA



Sources: RPS, Moody's Analytics

The regional forecast

So the macroeconomic forecast implies a strong deceleration of national house price growth, as higher mortgage rates and restrictions on foreign purchases and mortgage borrowing kick in, and even a slight decline through early 2019. If all regional housing markets were being driven by the same underlying economic and demographic drivers and counted on approximate equality in wealth inflows, then the effect would be approximately uniform among the provinces, but that is not the case. On the contrary, the differences in industry drivers, demographics and wealth inflows are pronounced, and with the current restrictive environment this means that only Ontario and a few metro areas outside it can count on positive house price growth over the coming five years.

Table 2 presents the current regional situation for single-family home prices and the subsequent short-term forecast. The first column looks at the percentage deviation of the house price level in the second quarter of 2017 from the trend house price level determined in the forecast model. The main determinants of the trend house price are economic fundamentals such as real median family income multiplied by the metro area population, the Canada new house and land price tracked by Statistics Canada, and the inflation-adjusted Canadian stock market index (S&P/TSX Composite) used as a proxy for household wealth. As shown already in Chart 5, the degree of overvaluation in Toronto and Vancouver is alarming even after six months of Vancouver's house price correction. But it is not just these two metro areas but also all of their neighbors that have prices at least significantly above economic and demographic fundamentals; Oshawa is actually more overvalued than Toronto, and Hamilton is not far behind. Other metro areas that are overvalued by more than 10% include Québec and St. John's; both cities are being hobbled by slow population growth and stagnant median incomes. Of the major Canadian metro areas, only Calgary is significantly undervalued. The general overvaluation of the largest metro areas will result in an additional downward pull on house prices over the coming year and is also an important factor in the national house price forecast; only Calgary and to a lesser extent New Brunswick will see any upward pressure from undervaluation.

Table 2: Canada Subnational Forecast, Median Detached House Price

	% deviation from trend price, 2017Q2*	% change annualized, 2017Q2	Avg annualized house price growth, %, 2017Q3-2018Q2	Avg annualized house price growth, %, 2018Q3-2019Q2
Canada		**14.5**	**0.6**	**1.0**
Alberta		4.7	-1.9	-3.5
Calgary, census metropolitan area	-10.3	7.2	-1.8	-3.2
Edmonton, census metropolitan area	-2.4	5.2	-4.0	-5.9
British Columbia		8.9	0.7	-1.0
Abbotsford, census metropolitan area	20.1	8.7	-3.6	-0.7
Kelowna, census metropolitan area	10.6	14.6	-2.7	-0.4
Vancouver, census metropolitan area	50.2	9.0	1.1	-1.7
Victoria, census metropolitan area	11.1	14.0	-2.7	-1.5
Manitoba		4.1	-7.6	-2.2
Winnipeg, census metropolitan area	-2.1	4.2	-8.8	-2.8
New Brunswick		-11.4	-3.4	2.0
Moncton, census metropolitan area	-8.3	-0.9	-2.7	2.3
Saint John, census metropolitan area	-5.2	-18.6	-5.1	2.5
Newfoundland and Labrador		-5.4	-15.2	-12.3
St. John's, census metropolitan area	29.5	-6.3	-18.9	-15.8
Nova Scotia		6.3	-2.7	1.6
Halifax, census metropolitan area	-2.7	8.4	-3.4	0.7
Ontario		23.8	9.2	6.5
Barrie, census metropolitan area	45.6	36.3	13.2	7.0
Brantford, census metropolitan area	31.2	13.6	3.1	5.2
Greater Sudbury, census metropolitan area	10.8	-3.0	-10.4	-5.6
Guelph, census metropolitan area	30.0	19.5	6.9	6.1
Hamilton, census metropolitan area	55.4	27.0	9.3	6.5
Kingston, census metropolitan area	-1.2	3.7	-4.7	-1.6
Kitchener, census metropolitan area	33.7	31.4	10.0	5.0
London, census metropolitan area	15.7	20.1	3.1	0.6
Ottawa-Gatineau, census metropolitan area	1.8	8.6	0.5	4.8
Oshawa, census metropolitan area	77.7	38.5	16.5	10.5
Peterborough, census metropolitan area	19.0	32.8	12.4	6.1
St. Catharines-Niagara, census metropolitan area	35.9	22.7	3.6	-0.3
Thunder Bay, census metropolitan area	23.0	0.5	-8.7	-5.6
Toronto, census metropolitan area	62.7	27.6	10.7	8.5
Windsor, census metropolitan area	0.7	18.3	4.9	5.0
Prince Edward Island		15.2	-1.6	-0.1
Quebec		4.1	-3.8	-0.8
Montreal, census metropolitan area	-0.3	5.9	-3.7	-1.0
Quebec, census metropolitan area	12.4	-0.5	-7.5	-3.3
Saguenay, census metropolitan area	2.1	-7.1	-7.7	-1.5
Sherbrooke, census metropolitan area	-1.3	1.6	-4.6	-0.6
Trois-Rivieres, census metropolitan area	8.2	-7.7	-8.3	-2.5
Saskatchewan		-0.6	-13.7	-5.9
Regina, census metropolitan area	4.7	-5.8	-18.5	-7.3
Saskatoon, census metropolitan area	-6.1	3.8	-13.2	-6.9

Italicized metro areas are part of the Brookfield RPS 13-metro area composite index.
*Census metropolitan areas only

Sources: RPS, Moody's Analytics

The second column shows annualized house price growth as of the second quarter of 2017, the last quarter with historical data. With the exception of Vancouver, all of the overvalued metro areas have strong current house price growth, and even Vancouver has started to recover in the last few months from the downward shock of the transfer tax. Normally, the strong current house price growth in Ontario would lend substantial inertia to the short-term forecast, but this is precisely what the Ontario Fair Housing Plan is intended to interrupt. There are 16 total measures in the plan, including a transfer tax on total purchases, intended to brake house price growth and maintain affordability. The other measures include new rent control regulations and restrictions on quick resales (for example, shadow flipping) that drive up both house prices and realtor commissions. Even so, the transfer tax is the most prominent and is likely to have the most immediate short-term impact, whereas other regulatory measures will act to slow demand in the long term. Supply-side effects are likely to be less evident: Only the tax on vacant properties has an immediate incentive to put homes on the market.

The result of macroeconomic policies combined with the Fair Housing Plan in Toronto and its neighbors is evident in column 3, which shows significantly slower house price growth. The pressure of strong household formation that is not completely offset by residential construction, combined with wealth inflows and the lack of any major house price correction in Toronto's recent history, means that house prices will not decline. However, the more restrictive environment means that prices will grow at a much smaller rate: A decline from 27% growth in the second quarter to only 11% in the subsequent year for Toronto is no slight accomplishment, and there will be significant slowdowns in the neighboring metro areas as well.

Outside of Ontario with its tight demographic situation and higher average median income, the combination of rising interest rates, more restrictive mortgage regulations, and increasing provincial restrictions such as the Vancouver transfer tax creates a bleak short-term outlook for house prices, as shown in columns 3 and 4. Outside of Ontario, only New Brunswick and Nova Scotia will have any sort of increase in house prices in 2019, mainly because they do not have any sort of house price overvaluation compared with the larger provinces.

Table 3 sorts the census metro areas according to their projected five-year growth for the median single-family house price. With a more restricted lending environment and state initiatives to reduce speculative purchases and the effects of wealth inflows, the national median house price will undergo a drastic deceleration in comparison to the 14.5% annualized growth recorded in the second quarter. With all of the regional imbalances, only the Ontario metro areas will have positive house price growth on average over the coming five years, though significantly slower than the current pace. The other provinces will have mild house price declines, but in some metro areas this decline is likely to be significantly stronger due to a combination of falling median income and slow or negative rates of population growth and household formation; Thunder Bay and St. John's stand out in particular. With higher mortgage rates and restrictions on speculative purchases and foreign purchases, Vancouver's housing market can also expect approximately level house prices over the coming five years, as can less restricted markets in Montreal, where the demographic and wealth pressure on house prices is not as acute compared to Ontario.

Also, the July forecast contains significantly more regional divergence than the April forecast, in part due to the isolated effect of the Ontario and British Columbia housing market interventions, and also because more restrictive macroeconomic policies tend to drive wedges between different

Table 3: Medium-Term House Price Outlook, Census Metropolitan Areas

Avg annualized projected single-family house price growth, %, 2017Q2-2022Q2

	Apr forecast	Jul forecast
Canada	1.0	1.3
Toronto	3.9	7.7
Oshawa	2.0	7.5
Guelph	3.8	5.9
Hamilton	3.2	5.8
Barrie	0.7	5.3
Kitchener	1.1	4.0
Brantford	2.9	3.6
Ottawa-Gatineau	2.2	3.4
Peterborough	-1.3	2.6
Windsor	-1.9	1.3
Moncton	1.8	0.7
Kelowna	0.7	0.5
Halifax	2.0	0.4
London	-1.1	-0.2
Saint John	0.9	-0.2
Vancouver	0.6	-0.3
Sherbrooke	1.8	-0.5
Abbotsford	0.7	-0.6
Montréal	0.8	-0.6
Calgary	1.1	-1.1
Victoria	-1.0	-1.4
Saguenay	-0.9	-1.6
St. Catharines-Niagara	-1.8	-1.8
Winnipeg	-0.8	-1.8
Saskatoon	-0.5	-2.1
Kingston	-1.1	-2.2
Trois-Rivières	-0.5	-2.4
Québec	-0.9	-2.6
Edmonton	-1.6	-2.8
Regina	-3.6	-4.5
Greater Sudbury	-1.9	-4.8
Thunder Bay	-2.2	-5.4
St. John's	-2.7	-6.1

Italicized metro areas are part of the Brookfield RPS 13-metro area composite index.

Sources: RPS, Moody's Analytics

regions depending on which are more or less exposed to international trade and continuing population growth.

Risks

In addition to the baseline forecast, the standard alternative scenarios for Canadian house prices incorporate the effects of interest rate tightening and more restricted mortgage lending. But there are other sources of risk that could lead to reduced housing affordability or to a disorderly correction after continued overvaluation.

Supply-side problems pose one particular source of risk. Though the residential construction outlook is adequate, there are no methods of predicting with any certainty the degree of supply in the existing-home market. After the initial dose of supply created in Greater Toronto by the tax on vacant homes, the pronounced reduction in listings evident over the past year could return, especially if house price growth in Greater Toronto remains unexpectedly strong, prompting potential home sellers to keep their homes off the market. In addition, demographics could provide pull rather than push: The projected share of the population age 45 to 54 will decline through 2025. This portion of the population, during which "empty nest status" is attained, can be considered the prime home-selling age cohort, so its relative decline, even if moderate, will pull against listings regardless of house price dynamics.

On the demand side, another risk is that the new capital gains reporting rules, as well as the transfer tax in Vancouver, restrict high-tier demand to the point where a significant number of developers or temporary buyers find themselves unable to sell homes at a high enough price and have to default on debt payments, leading to financial distress. While high-end markets in Toronto and Vancouver are unlikely to be large enough to lead to any sort of financial tremors at the national scale, such risk is inherent whenever government authorities try to deflate an asset bubble. The new mortgage lending regulations may have been necessary, but they are not completely devoid of risk.

Finally, the effects of the British Columbia and Ontario housing interventions are likely to ebb over time. It is possible to bypass prohibitions on foreign purchases through the creation of investment trusts and other corporate entities with national charters, for example, and taxes on vacant homes can also be bypassed through non-arm's-length sales that leave houses occupied but with minimal effect on housing markets. As the months stretch into years, the provincial government restrictions will thus be less effective at restricting the effects of wealth inflows and the speculative hoarding of homes. Therefore, the combination of transfer taxes, vacancy taxes, and restrictions on rapid resale may have been a necessary measure to break the momentum of the house price spiral, but it is not a substitute for measures that increase residential construction, especially in the tightest markets around Vancouver and Ontario's Golden Horseshoe.

About the Author

Andres Carbacho-Burgos is an economist at the West Chester office of Moody's Analytics. He covers the U.S. housing market, residential construction, and U.S. regional economies. Before joining Moody's Analytics, he taught economics at Texas State University, where he also researched open-economy macroeconomics and income inequality. Born in Chile, he obtained his PhD and master's in economics from the University of Massachusetts at Amherst and his BA in economics from Carleton College.

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The RPS Real Property Solutions – Moody's Analytics House Price Forecasts are based on fully specified regional econometric models that account for both housing supply-demand dynamics and long-term influences on house prices such as unemployment and changes in mortgage rates. Updated monthly and providing a 10-year forward-time horizon, the forecasts are available for the nation overall, its ten provinces and for 33 metropolitan areas, and cover three property style categories, comprising single-family detached, condominium apartments and aggregate, in a number of scenarios: a baseline house price scenario, reflecting the most likely outcome, and six alternative scenarios.

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