BANK OF CANADA
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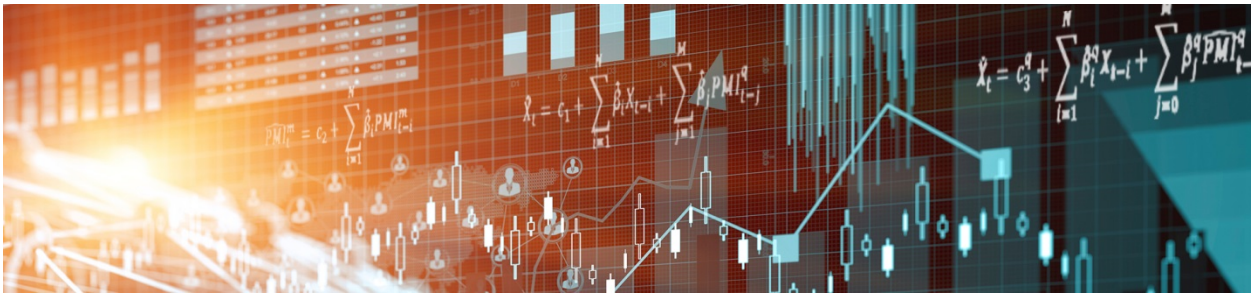
Staff Analytical Note/Note analytique du personnel 2019-8

# Non-Resident Taxes and the Role of House Price Expectations



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# Abstract

In recent years, the governments of Ontario and British Columbia have imposed taxes on purchases by non-Canadian residents of residential properties in certain jurisdictions. The outsized decline in housing resales observed after these taxes were implemented suggests that the taxes altered residents' housing market expectations. Using data from the Canadian Survey of Consumer Expectations (CSCE), we show that house price expectations played a material, albeit temporary, role in observed housing market dynamics following the implementation of the non-resident taxes. This effect was more pronounced in Metro Vancouver than in the Greater Golden Horseshoe Area.



*Bank topics: Housing; Financial stability*
*JEL codes: R21, D84*



# Résumé

Ces dernières années, les achats de propriétés résidentielles par des non-résidents du Canada ont été soumis à des taxes spéciales dans certaines régions de l'Ontario et de la Colombie-Britannique. La baisse considérable des reventes de logements enregistrée après l'instauration de ces taxes donne à croire que celles-ci ont eu une incidence sur les attentes des résidents à l'égard des marchés du logement. À l'aide des données de l'enquête sur les attentes des consommateurs au Canada, nous montrons que les attentes relatives aux prix des logements ont joué un rôle important, bien que temporaire, dans la dynamique de marché observée après l'instauration des taxes. Cet effet a été plus prononcé dans la région métropolitaine de Vancouver que dans la région élargie du Golden Horseshoe.

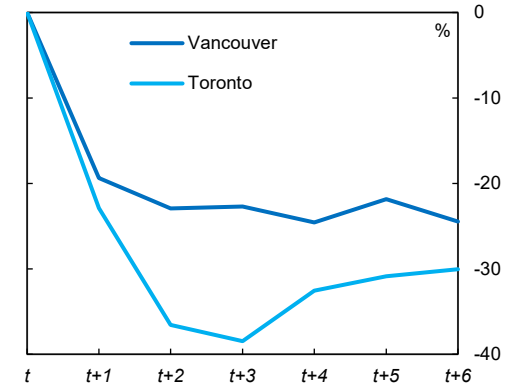


*Sujets : Logement; Stabilité financière*
*Codes JEL : R21, D84*

## Summary

In August 2016, the Government of British Columbia introduced a 15 per cent tax on purchases by non-Canadian residents of residential properties in Metro Vancouver (MV). The Government of Ontario followed suit by introducing a similar tax in the Greater Golden Horseshoe (GGH) area around Toronto in April 2017. In both cases, housing resales fell immediately, and by orders of magnitude more than the share of transactions directly subject to the new tax (**Chart 1** and **Chart 2**). For instance, resales in Toronto fell a cumulative 38 per cent in the three months following the implementation of the tax, despite non-residents previously accounting for less than 10 per cent of purchases.

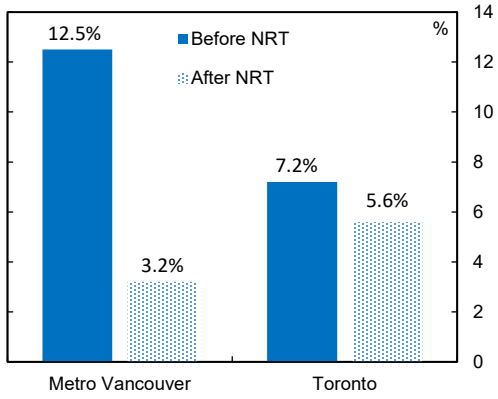
**Chart 1: Cumulative decline in resales following the non-resident taxes**




Note: *t* denotes month before implementation.

Sources: Canadian Real Estate Association and authors' calculations

**Chart 2: Share of non-resident home purchases**




Note: NRT is non-resident taxes.

Sources: Governments of Ontario and British Columbia

The outsized decline in resales suggests that the taxes altered residents' housing market expectations. Using data from the Canadian Survey of Consumer Expectations (CSCE), we formally assess the role of housing market expectations after the implementation of the taxes. We find the following:

- Survey respondents living in areas subject to the non-resident taxes (NRTs) materially lowered their expectations of year-ahead house price growth. This effect was more pronounced in MV than in the GGH area.

- The impact of the NRTs on house price expectations was large but short-lived. For instance, we estimate that the NRT halved house price expectations in MV, but that this effect had almost completely dissipated within a year.

- Overall, evidence from the CSCE suggests house price expectations played a material, albeit temporary, role in observed housing market dynamics following the implementation of NRTs.

## Data and methodology

Our expectations data are derived from the Canadian Survey of Consumer Expectations (CSCE), a nationally representative survey that has been fielded on a quarterly basis on behalf of the Bank of

Canada since the fourth quarter of 2014.[1] Each quarter, the CSCE surveys 1,000 household heads, with individuals remaining in the survey for up to a year. Our sample of observations covers the period from the fourth quarter of 2014 to the fourth quarter of 2017.

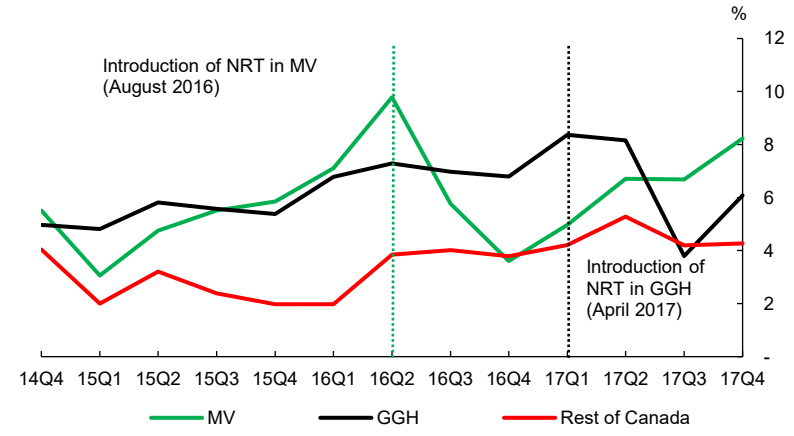
The CSCE elicits, among other things, forecasts of the year-ahead expected change in national house prices (in per cent). Khan and Verstraete (2018) show that Canadians systematically extrapolate from *local* experience to form their expectations of *national* house prices.[2] Thus, we would expect any local effects of the NRTs on house price expectations in MV and the GGH area to be evident in the national house price expectations of individuals residing in those regions.

An important advantage of the CSCE is that it contains respondents' postal codes, as our methodology requires that we be able to precisely identify individuals residing in areas subject to the NRT. We use the difference-in-differences (DD) procedure (Angrist and Krueger 1999; Lefebvre, Merrigan and Verstraete 2009) to identify the effect of NRTs on expectations. This technique is typically used to estimate the causal effect of a certain treatment (in this case, the NRT) by comparing data between a treatment group (MV and the GGH) and a control group (the rest of Canada). Further details on how this technique is implemented can be found in the Appendix.

## Results

**Chart 3** displays the average expected growth rate of house prices, over time, in different parts of Canada between the fourth quarter of 2014 and the fourth quarter of 2017. We see that expected *national* house price growth in MV and the GGH has tended to exceed that of the rest of Canada, consistent with *local* observed house price dynamics over the same period (**Chart 3**). The exception is after the introduction of the NRTs, with expectations in both regions falling sharply and briefly converging to align with those in the rest of Canada before rebounding.

**Chart 3: Average expected national house price changes for selected cities**




Note: NRT is non-resident tax, MV is Metro Vancouver and GGH is Greater Golden Horseshoe.
Source: Authors' calculations

[1] See Gosselin and Khan (2015) for further details.

[2] This finding is consistent with Kuchler and Zafar (2015), who show that this is also the case in the United States.

Next, we attempt to quantify the effect of the NRTs on house price expectations using the DD approach. **Table 1** presents the estimated effects of the policy.

The effect of the NRT on expectations is estimated to be immediate, negative and statistically significant in MV. The immediate impact observed in the GGH area is also negative, albeit not statistically different from zero. We find that the policy's peak effect occurs one quarter after its introduction, the negative effect being highly significant in both MV and the GGH. By the fourth quarter of 2016, the NRT had decreased expectations by approximately 5 percentage points in MV. In other words, the NRT cut house price expectations by half. However, the estimated effects of the NRTs are found to gradually dissipate. This is most evident for MV where, exactly one year after its introduction, in the third quarter of 2017, the estimated effect becomes insignificant.[3]

Overall, evidence from the CSCE suggests house price expectations played a material, albeit temporary, role in observed housing market dynamics following the implementation of NRTs.

**Table 1: Estimated effects of non-resident taxes on one-year-ahead expected national house price growth**

| | 2016Q3 | 2016Q4 | 2017Q1 | 2017Q2 | 2017Q3 | 2017Q4 |
|---|---|---|---|---|---|---|
| **Metro Vancouver non-resident tax** | **-2.879*** ** | **-4.800*** ** | **-2.950*** ** | **-2.649*** ** | **-1.181** | **-0.246** |
| | 2016Q3 | 2016Q4 | 2017Q1 | 2017Q2 | 2017Q3 | 2017Q4 |
| **Greater Golden Horseshoe non-resident tax** | - | - | - | **-1.623** | **-4.401*** ** | **-1.396*** ** |
| Time fixed effects | Yes | | | | | |
| Demographics | Yes | | | | | |
| Observations (N = ) | 11,398 | | | | | |

Note: Estimated effects of non-resident taxes expressed in percentage points. Statistical significance: * p < 0.10, ** p < 0.05, *** p < 0.01.

[3] We would likely observe the same pattern of effects for the GGH area. However, we stop our sample of observations in the fourth quarter of 2017 as the new BC provincial government introduced an additional property transfer tax for foreign buyers in the first quarter of 2018.

## References

Angrist, J. D. and A. B. Krueger. 1999. “Empirical Strategies in Labor Economics.” In *Handbook of Labor Economics*, volume 3, part A, edited by O. C. Ashenfelter and D. Card, 1277–1366. Amsterdam: North Holland.

Gosselin, M.-A. and M. Khan. 2015. “A Survey of Consumer Expectations for Canada.” *Bank of Canada Review* (Autumn): 14–23.

Khan, M. and M. Verstraete. 2018. “Personal Experiences and House Price Expectations: Evidence from the Canadian Survey of Consumer Expectations.” Bank of Canada Staff Analytical Note No. 2018-8.

Kuchler, T. and B. Zafar. 2015. “Personal Experiences and Expectations about Aggregate Outcomes.” Federal Reserve Bank of New York Staff Report No. 748.

Lefebvre, P., P. Merrigan and M. Verstraete. 2009. “Dynamic Labour Supply Effects of Childcare Subsidies: Evidence from a Canadian Natural Experiment on Low-fee Universal Child Care.” *Labour Economics* 16 (5): 490–502.

# Appendix

## Canadian Survey of Consumer Expectations (CSCE) questions on households' house price expectations over the next 12 months

1. *"By about what percent do you expect the average home price nationwide to [increase/decrease]?"*

**Over the next 12 months**, I expect the average home price to [increase/decrease] by ___ %

The key identifying assumption of the difference-in-differences (DD) approach is that expectation *trends* would be the same in cities with and without non-resident taxes (NRTs) in the absence of said NRTs (the parallel trend assumption). Treatment (i.e., the NRT) induces a deviation from this common trend, as illustrated in **Chart 3**. The availability of data for multiple quarters before the policy change allows us to show that we are not just picking up long-running trends in differences between the cities affected by NRTs and other Canadian cities.

We estimate the effect of NRTs on individuals' expectations using regression equation (1). For illustration purposes, here we suppose that there is only the Metro Vancouver (MV) NRT.[4] The third quarter of 2016 can be considered the first date of possible effects of the MV NRT since the policy change was completely unexpected and implemented in August 2016.[5]

$$(1)\ Expectation_{it} = \alpha + \theta * MV_{it} + \gamma * I(t \geq 2016Q3) + \sum_{t=2016Q3}^{2017Q4} \beta_t * D_{it} * MV_{it} + \rho * Experience_{it} + \delta' * X_{it} + \mu * I_t + \varepsilon_{it}$$

The policy effects can be represented by a series of survey-specific dummies from the third quarter of 2016 onward interacted with a MV dummy, thus reflecting the possible diminishing impact of the policy on expectations over time. The parameter $\beta_t$ represents a time-specific effect of the policy; $X_{it}$ is a vector of socioeconomic control variables; and $\delta'$ is a vector of parameters. $Vanc_{it}$ takes the value of 1 if the person lives in MV, 0 otherwise; $I$ is an indicator function that takes the value of 1 if the period of observation corresponds to the moment when the NRT was introduced or after; and $D_{it}$ are survey-specific dummy variables. Finally, $Experience_{it}$ is the locally experienced (at the postal code level) house price change over the prior year; $I_t$ are time fixed effects that absorb the effect of any variable that does not vary by individual, such as the values of other aggregate outcomes.

[4] Equation (1) can be adjusted to include policy effects related to the GGH area NRT in addition to those of the MV NRT.
[5] Since the policy was unexpected, it can therefore be considered exogenous with respect to any variables in the error term.

The following restrictions yield the standard DD estimator: $\beta_{2016Q3} = \beta_{2016Q4} = \beta_{2017Q1} = \beta_{2017Q2} = \beta_{2017Q3} = \beta_{2017Q4}$. For the sake of robustness, we also present estimations where Ottawa, Montréal and Winnipeg (selected cities) are an alternative control group to all major cities in the rest of Canada.[6]

**Table A-1** presents the estimated effects of the policy for two specifications.[7] The first is a specification with constant policy effects over the period from the third quarter of 2016 to the fourth quarter of 2017 (e.g., $\beta_{2016Q3} = \beta_{2016Q4} = \ldots = \beta_{2017Q4}$) (see equation (1)). The second specification lets policy effects vary by survey (the focus of the discussion in the main text).

The specification with a constant policy effect, under the label "equal policy effects," shows that the policy significantly decreased expectations in both MV and the GGH (**Table A-1**).

The estimations performed with only selected cities as the control group basically give the same results as with all other major Canadian cities. This is not surprising, as approximately one-third of sampled respondents reside in these cities. However, the estimated effects of the policy are found to be lower and the standard errors are slightly larger. The specification with year-quarter specific effects of the policy, under the label "unequal policy effects," appears to be more relevant in the case of selected cities, since the null hypothesis of equal policy effects is always strongly rejected (see *Joint test of equal effects* in **Table A-1**). The regression results for the GGH are very interesting because they *also* underscore the transitory effect of the policy on expectations. The effect of the policy on GGH residents' expectations appears to dissipate only two quarters after its implementation, i.e., in the fourth quarter of 2017.

[6] The parallel trend assumption is more likely to be verified for the selected cities subgroup after inspecting their respective average national house price expectations.

[7] For the sake of comparison, the results of **Table 1** are repeated in **Table A-1**.

| Table A-1: Estimated effects of non-resident taxes (NRTs) on one-year-ahead expected national house price growth | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Constant policy effect | Time-varying policy effects | | | | | |
| | | **All observations** *(N = 11,398)* | | | | | |
| **Metro Vancouver NRT** | $\beta_{2016Q3\text{-}2017Q4}$ | $\beta_{2016Q3}$ | $\beta_{2016Q4}$ | $\beta_{2017Q1}$ | $\beta_{2017Q2}$ | $\beta_{2017Q3}$ | $\beta_{2017Q4}$ |
| | **-2.495**** | **-2.879***** | **-4.800***** | **-2.950***** | **-2.649***** | **-1.181** | **-0.246** |
| Clustered standard error | (1.123) | (0.767) | (0.751) | (0.786) | (0.875) | (0.752) | (0.780) |
| *H0: Joint test of equal effects* | - | | | *0.00* | | | |
| **Greater Golden Horseshoe NRT** | $\lambda_{2017Q2\text{-}2017Q4}$ | $\lambda_{2016Q3}$ | $\lambda_{2016Q4}$ | $\lambda_{2017Q1}$ | $\lambda_{2017Q2}$ | $\lambda_{2017Q3}$ | $\lambda_{2017Q4}$ |
| | **-2.765***** | - | - | - | **-1.623** | **-4.401***** | **-1.396***** |
| Clustered standard error | (0.581) | - | - | - | (1.057) | (0.985) | (0.477) |
| *H0: Joint test of equal effects* | - | | | *0.00* | | | |
| | | **Selected cities** *(N = 8,601)* | | | | | |
| **Metro Vancouver NRT** | $\beta_{2016Q3\text{-}2017Q4}$ | $\beta_{2016Q3}$ | $\beta_{2016Q4}$ | $\beta_{2017Q1}$ | $\beta_{2017Q2}$ | $\beta_{2017Q3}$ | $\beta_{2017Q4}$ |
| | **-2.166*** | **-2.612***** | **-4.224***** | **-2.908***** | **-2.360**** | **-0.453** | **0.332** |
| Clustered standard error | (1.111) | (0.821) | (0.770) | (0.850) | (0.987) | (0.861) | (0.835) |
| *H0: Joint test of equal effects* | - | | | *0.00* | | | |
| **Greater Golden Horseshoe NRT** | $\lambda_{2017Q2\text{-}2017Q4}$ | $\lambda_{2016Q3}$ | $\lambda_{2016Q4}$ | $\lambda_{2017Q1}$ | $\lambda_{2017Q2}$ | $\lambda_{2017Q3}$ | $\lambda_{2017Q4}$ |
| | **-2.321***** | - | - | - | **-0.958** | **-3.663***** | **-0.808** |
| Clustered standard error | (0.637) | - | - | - | (1.078) | (1.019) | (0.567) |
| *H0: Joint test of equal effects* | - | | | *0.00* | | | |

Note: 1. Standard errors are clustered at the city/year level. 2. All the tests show the *p* -values. 3. Selected cities are Ottawa, Montréal and Winnipeg.
Statistical significance: * p < 0.10, ** p < 0.05, *** p < 0.01.